

**Declaration of Mr. Craig Bishop regarding
ETSI TS 123 040 V3.5.0, “Universal Mobile Telecommunications System
(UMTS);
Technical realization of the Short Message Service (SMS)
(3GPP TS 23.040 version 3.5.0 Release 1999)”**

I, Craig Bishop, based on my personal knowledge and information, hereby declare as follows:

1. I am an engineer with 26 years of mobile telecommunications experience, including over 22 years of experience with second-, third-, and fourth-generation (2G/3G/4G) mobile telecommunications technology, standards and device development.
2. My experience includes extensive knowledge of the European Telecommunications Standards Institute (“ETSI”) and 3GPP specifications, publication practices, and procedures that I acquired not only as a practicing mobile telecommunications engineer (since 1996) but also as proprietor of a full ETSI member company (from 2016 through the present) and as an member of the ETSI Board from November 2011 through November 2014.
3. The following is a summary of my relevant qualifications and professional experience.
4. I earned my Bachelor of Electronic Engineering degree with Honours from Polytechnic of Central London in 1989. In 2005, I earned my MSC in Computer Science with Distinction from the University of Kent.

5. After graduating with my first degree, I worked as an operations engineer at the British Broadcasting Corporation (BBC) for 4 years, then as a civil servant at the UK Radiocommunications Agency until 1996, during which time I became involved in telecommunications standardization in the European Telecommunication Standards Institute (“ETSI”), working in Technical Committee TC RES 2 concerned with the standardization of Private Mobile Radio (PMR). From 1994 through 1996, I acted as Rapporteur for voice and data related PMR standards ETS 300 086, ETS 300 113, ETS 300 219 and ETS 300 390. During this time period between 1994 and 1996, I participated as the only TC RES 2 delegate on behalf of the UK Radiocommunications Agency, generating proposals in support of UK administration and business requirements, downloading and reviewing other meeting input documents, and proposing changes as necessary to ensure input documents and the resulting specifications were in line with said requirements.

6. In 1996, I joined Samsung Electronic Research Institute (SERI) as a Senior Standards Engineer where I worked for 16 years, eventually becoming Director of Standards and Industry Affairs in 2011. My work at Samsung mainly focused on the standardization of the service requirements, architectures, protocols, and radio transmission technologies for the GSM/GPRS, UMTS, and LTE/EPS mobile communications systems. However, as one of only two standards

engineers in SERI between 1996 and 1999, I was also tasked from time to time to attend other standards meetings and obtain / advise on other standards. Such requests for wider standards support continued throughout my career with Samsung due to my familiarity with standardization, and because of the way in the standards group later evolved under my management.

7. Initially at SERI, I participated in ETSI Special Mobile Group (SMG) committees SMG1, SMG2, SMG4, SMG5, SMG9 and relevant UMTS related sub-committees until 1999, working on the air interface radio access network protocols, services, and terminal aspects of UMTS and GSM/GPRS. I was specifically involved in the ETSI SMG2 meetings leading up to selection of WCDMA as the radio access technology for the Frequency Division Duplex mode of UMTS.

8. From 1998, I worked as a Principal Standards Engineer on the 3rd Generation Partnership (3GPP) on UMTS, attending Radio Access Network committees RAN1 and RAN2, SA1 (Services Aspects), T2 (Terminals), and other working groups and Technical Specification Group (TSG) plenary meetings covering the same technical aspects as in my previous work in ETSI. As part of my work in 3GPP committees, I would prepare meeting contributions in support of Samsung's research and development activities. Also, by way of preparation for each meeting, I would download all contributions and review those of interest to

Samsung, and where necessary, prepare additional input to the meeting based on said review.

9. From 2000, I acted as project manager and then as manager of the Systems Engineering group providing technical requirements for the team working on Samsung's UMTS modem development. This involved scrutiny of ongoing standardization work, particularly that of 3GPP RAN2 and 3GPP Core Networks Working Group 1 (CN1 – responsible for layer 3 Non-Access Stratum signalling between the terminal and the core network of the mobile communications system) from which I would download and assess the impact of meeting contributions on the protocol stack of the development project, ensuring that the development team was kept informed about the latest developments as layers 2 and 3 of the UMTS standard were stabilized.

10. During the period 1998 through 2004, in addition to authoring and presenting technical contributions for the 3GPP standard, and producing technical requirements for the radio modem, I acted as rapporteur for 3GPP Technical Reports covering User Equipment (“UE”) capability requirements (3GPP TR 21.904 under TSG T WG2) from 1999-2000, and the Evolution of the 3GPP System (3GPP TR 21.902 under TSG SA) in 2003 (the first Study Item to consider the 3GPP system beyond UMTS towards LTE/EPS).

11. In 2005, I became Head of Advanced Technologies, Standards and Regulation (ATSR) at Samsung. In addition to my managerial duties which would by 2008 include responsibility for teams of standards and research engineers covering 3GPP, DVB Forum, and mobile applications (Open Mobile Alliance), as well as radio and mobile equipment regulations, I continued to work on 3GPP standardization issues. From 2005 until 2008 I worked in SA2, and from 2008 until 2011 in SA1. I also attended SA plenary meetings from 2008 until I left Samsung in 2013. As well as generating contributions in support of Samsung's research and development in preparation for each meeting, I would download and review documents from other 3GPP members, identifying, and where necessary preparing, additional contributions on those of interest to Samsung. The work required a sound working knowledge of the broader 3GPP system to ensure effective management of the 3GPP standards team, effective participation in meeting discussions, assessment of third-party contributions, and provision of implementation guidance to Samsung developers.

12. From 2006 until the time I stopped attending SA1 meetings in 2011, I authored and presented over 100 contributions to SA2 and SA1 meetings at 3GPP and appeared as an author/co-author on 18 patent applications related to User Equipment operation in the IMS and the 3GPP Core Network.

13. In 2011, I became Director of Standards and Industry Affairs at Samsung, and in November of that year I was elected to the Board of the ETSI on which I served for a term of 3 years until November 2014, and from which I gained further perspective on the organisation, management and activities of ETSI and its Technical Committees.

14. After leaving Samsung, I formed my own consulting company Bishop Communications Ltd., which is a full ETSI member, and as part of various projects undertaken, I have continued to regularly access the 3GPP and ETSI document servers, and to keep abreast of 3GPP and ETSI document handling practices.

15. Through my extensive work on 3GPP standardization issues and in ETSI over the years, I have become very familiar with 3GPP and ETSI practices relating to making draft standards and standards contributions publicly available, including in the 1994 – 2000 timeframe.

3GPP PUBLICATION PRACTICES AND AVAILABILITY OF 3GPP TS 23.040 v3.5.0

16. 3GPP is a global initiative partnership that unites seven 3GPP Organizational Partners from Asia, Europe and North America, the Association of Radio Industries and Businesses (ARIB) and Telecommunication Technology Committee (TTC) from Japan, the China Communications Standards Association (CCSA) from China, the Telecommunications Standards Development Society

(TSDSI) from India, the Telecommunications Technology Association (TTA) from Korea, the European Telecommunications Standards Institute (ETSI), and the Alliance for Telecommunications Industry Solutions (ATIS) from the United States.

17. The main goal of 3GPP is to provide its members with an environment to produce specifications and reports that define technologies covering cellular telecommunications networks, including the User Equipment (UE), Radio Access Network (RAN) technologies, Core Network (CN) technologies, service and system aspects which themselves include work on codecs, security, and quality of service.

18. The technical specifications developed by 3GPP were, and remain, contribution-driven by the 3GPP member companies and the many individual participants from these companies. In the 2000-2003 timeframe, there were well over one hundred members of 3GPP, e.g. Annex C of the report from 3GPP TSG SA #9 held in September 2000 around the time that TS 23.040 v3.5.0 was formally approved by 3GPP (attached as Appendix A), shows that there were 147 members eligible to vote in the meeting (note that the list only includes members present that had attended at least the previous SA meeting, and not necessarily those members that may have attended other WG or TSG meetings). At that time, 3GPP comprised five Technical Specification Groups (TSGs). Two of those were (and

still are in 2018) responsible for UMTS and LTE: Radio Access Networks (RAN) and Service & Systems Aspects (SA). The activities of two others: Core Networks (CN) & Terminals (T) were later amalgamated under Core Network and Terminals (CT) TSG following the closure of TSG T in 2005, with responsibility for test specifications being moved to TSG RAN WG3. The fifth, GSM EDGE Radio Access Networks (GERAN), was responsible for evolution of the GSM radio technology until its closure in 2016, when the work was transferred to a RAN working group (RAN6 – which now also has responsibility for UTRAN as a legacy mobile communications radio access network system). The Working Groups within the TSGs met regularly and had quarterly plenary meetings where member companies' Change Requests (CRs), draft specifications / reports, and other documents that had been agreed by the working groups were presented for formal approval.

19. In the ordinary course of 3GPP's regularly conducted business activities and pursuant to its standard business practices, the working groups created and still create incremental versions of draft specifications (*e.g.*, V0.2.1, V.1.0.0, V1.1.0 *etc.*) until such time that the specification is first approved by the relevant TSG plenary meeting. As explained in the "Foreword" section of all 3GPP deliverables, the version format $x.y.z$ is as follows: $x = 0$ for draft versions, $x = 1$ when the deliverable is presented to TSG for information, $x = 2$ when the

deliverable is presented to TSG for approval, and $x = 3$ or greater when the TSG has approved the deliverable and it is formally published and placed under ‘change control’. The specification is also usually functionally ‘frozen’ at this time, meaning that no new features or functionality can be introduced for the given release. For approved deliverables, $x = 3$ corresponds to Release 99, and $x = 4$ onwards correspond to the 3GPP release number, e.g. $x = 5$ identifies the deliverable as being for release 5. The second digit y is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc, and the third digit z is incremented when editorial only changes have been incorporated in the document. After a Technical Specification has been placed under ‘change control’ it can be modified only by formal Change Requests (CRs) submitted to and agreed by Working Group meetings, and then formally approved by TSG plenary. All versions including some pre-approval draft versions (when available) are made publicly available on the file server which is accessible from the 3GPP specifications page.

20. 3GPP TS 23.040 V3.5.0 is a technical specification published by 3GPP “3rd Generation Partnership Project; Technical Specification Group Radio Access Network; MAC protocol specification (Release 1999)” The date on the face of the specification (“2000-07”) corresponds to the date that specification was approved by 3GPP and was thereafter made publicly available. This date of

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publication is supported by the following screen shot of the 3GPP specification status list from March 2001 (available at:

[https://web.archive.org/web/20010311153140/http://www.3gpp.org/TSG/status_list/2000-09-\(4\).htm](https://web.archive.org/web/20010311153140/http://www.3gpp.org/TSG/status_list/2000-09-(4).htm)). This shows the latest available version of TS 23.040 as v3.5.0.

Note the of Jun 99 date indicates when the specification was first frozen (at TSG T#4, a meeting at which I was present - see report attached as Annex B). The first frozen version of 23.040 release 99 is substantively the same as version 3.5.0.

Specification ID	Title	Release	Version	Date	Status	Chairman	Members	Observers	Notes
TS 23.032	Universal Geographical Area Description (GAD)	R1999	3.1.0	April 99	Yes S2	...	SULTAN, Alan	S2 responsibility?	TSG#7: 3.1.0
TS 23.034	High Speed Circuit Switched Data (HSCSD) - Stage 2	R1999	3.2.0	April 99	Yes N1	MUONEN, Janne	NOKIA Corporation	AL-BAKRI, Ban	TSG#7: 3.2.0
TS 23.038	Alphabets & Language	R1999	3.3.0	Jun 99	Yes T2	HARRIS, Ian	VODAFONE Group Plc	RODERMUND, Friedhelm	additional CR for R99 on content expected at TSG#9
TS 23.039	Interface Protocols for the Connection of Short Message Service Centers (SMSCs) to Short Message Entities (SMEs)	R1999	3.2.0	Jun 99	Yes T2	HARRIS, Ian	VODAFONE Group Plc	RODERMUND, Friedhelm	TSG#9: 3.2.0
TS 23.040	Technical realisation of Short Message Service	R1999	3.5.0	Jun 99	Yes T2	HARRIS, Ian	VODAFONE Group Plc	RODERMUND, Friedhelm	additional CR for R99 on content expected at TSG#9: 3.5.0
TS 23.041	Technical Realization of Cell Broadcast Service	R1999	3.3.0	Oct 99	Yes T2	...	...	RODERMUND, Friedhelm	Transfer-TSG#4
TS 23.042	Compression algorithm for SMS	R1999	3.1.0	Jun 99	Yes T2	HARRIS, Ian	VODAFONE Group Plc	RODERMUND, Friedhelm	...
TS 23.054	Shared Interworking Functions - Stage 2	R1999	3.0.0	April 99	Yes N3	ROSTO, Tommy	TELIA AB	BOSWARTHICK, David	...
TS 23.057	Mobile Station Application Execution Environment (MxEx)	R1999	3.3.0	Dec 99	Yes T2	CATALDO, Mark	MOTOROLA Ltd	RODERMUND, Friedhelm	TSG#7: 3.1.0 TSG#8: 3.2.0
TS 23.060	General Packet Radio Service (GPRS) Service description Stage 2	R1999	3.5.0	Apr 99	Yes S2	DELECKI, Andrew	MOTOROLA Ltd	SULTAN, Alan	Transfer-TSG#4, CR at TSG#5
TS 23.066	Support of GSM Mobile Number Portability (MNP) stage 2	R1999	3.3.0	Oct 99	Yes N4	LOPEZ SORIA, Luis	ERICSSON ESPANA S.A.	KYMALAINEN, Kimmo	Open issues to be finalized 2000-01-12; TSG#7: 3.3.0
TS 23.067	Enhanced Multi-Level Precedence and Preemption Service (EMLPP) - Stage 2	R1999	3.1.0	April 99	Yes N4	...	...	KYMALAINEN, Kimmo	Transfer-TSG#4, CR at TSG#5
TS 23.072	Call Deflection Supplementary Service - Stage 2	R1999	3.3.0	April 99	Yes N4	...	...	KYMALAINEN, Kimmo	TSG#7: 3.1.0
TS 23.073	Support of Localised Service Area (LoSA) - Stage 2	R1999	3.0.1	Oct 99	Yes N4	...	...	KYMALAINEN, Kimmo	Transfer-TSG#4
TS 23.078	CAMEL Stage 2	R1999	3.6.0	April 99	Yes N2	HOMANN, Christian	ALCATEL SEL AG	JORGENSEN, Per Johan	CR at TSG#4, CR at TSG#5
TS 23.079	Support of Optimal Routing - Phase 1 - Stage 2	R1999	3.6.0	April 99	Yes N4	PARK, Ian David	VODAFONE Group Plc	KYMALAINEN, Kimmo	CR at TSG#4, CR at TSG#5
TS 23.081	Line Identification Supplementary Services - Stage 2	R1999	3.1.0	April 99	Yes N4	...	...	KYMALAINEN, Kimmo	TSG#7: 3.4.0 TSG#8: 3.5.0
TS 23.082	Call Forwarding (CF) Supplementary Services - Stage 2	R1999	3.4.0	April 99	Yes N4	...	...	KYMALAINEN, Kimmo	TSG#8: 3.1.0
TS 23.083	Call Waiting (CW) and Call Hold (HOLD) Supplementary Service - Stage 2	R1999	3.2.0	April 99	Yes N4	...	...	KYMALAINEN, Kimmo	TSG#7: 3.2.0 TSG#8: 3.0.0
TS 23.084	MultiParty (MPRTY) Supplementary Service - Stage 2	R1999	3.2.0	April 99	Yes N4	...	...	KYMALAINEN, Kimmo	TSG#9: 3.2.0

21. Regarding the availability date of 3GPP specifications, the 3GPP

FAQ: *“Is it possible to determine the date and time of publication of a particular version of a 3GPP Spec?”* (available at: <http://www.3gpp.org/about-3gpp/3gpp-faqs#MI1>) states the following: *“The first approved version is based upon the draft*

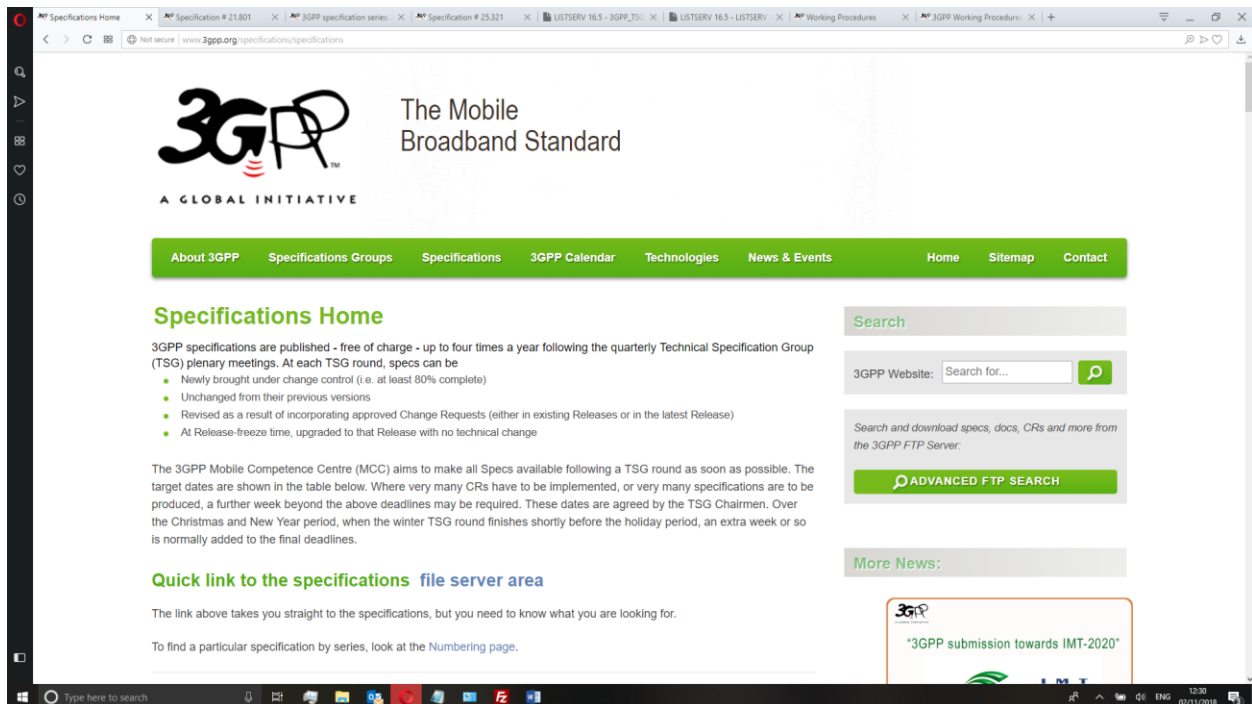
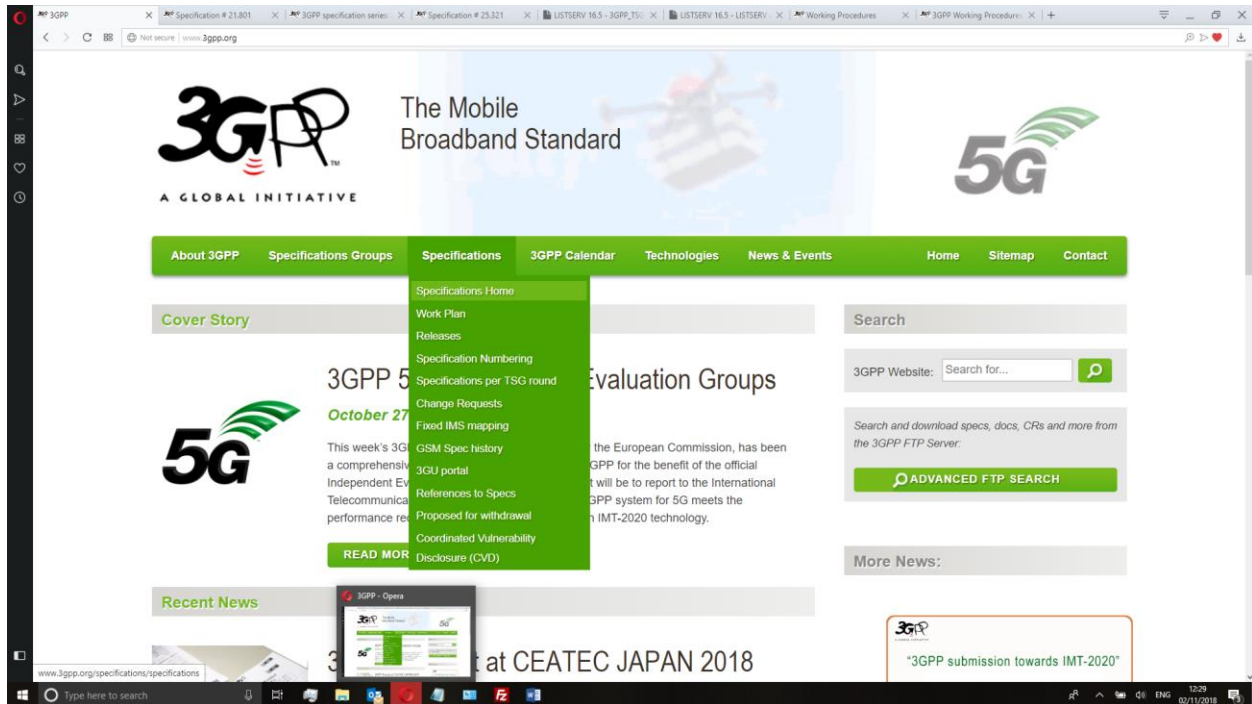
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version formally approved by the TSG, and thereafter versions are generated whenever Change Requests are approved by the TSG. These versions are made available shortly after the TSG meeting at which such approval occurred. The date (year and month) shown at the top of the Spec's cover page indicates either the date of (the last day of) the meeting, or the month in which the new version was prepared. However a more precise indication of the date of availability can be obtained from the Spec's web page (via the table at <http://www.3gpp.org/specifications/>) where a precise date is shown in the "available" column."

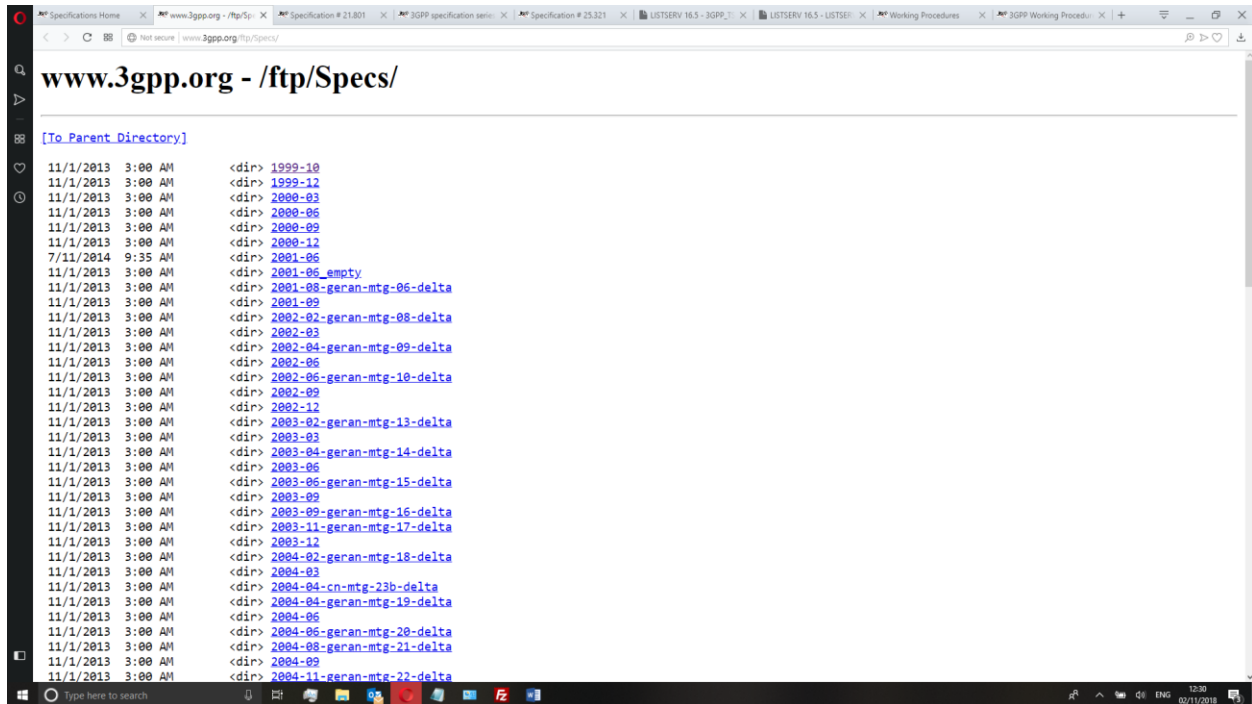
22. To retrieve 3GPP TS 23.040 v3.5.0 I accessed the file server by going to the 3GPP website at <http://www.3gpp.org/>, selected "Specifications" from the menu bar, and then selected "Specifications Home" from the dropdown. I then selected the "file server area" link to access the public file server where the specifications are stored.

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23. The technical specification says that it is “TS 23.040 V.3.5.0”.

Accordingly, at the file server website, I scrolled down the page to select the link “archive”, then the link “23_series,” and then selected the link “23.040,” where technical specifications versions of 23.040 are stored.

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24. A true and correct copy (with added red highlighting) of the relevant portion of the archive directory listing produced by the file server website is provided below.

3/30/2000	9:49 AM	869676	23040-340.zip
4/19/2000	5:06 PM	944734	23040-341.zip
7/11/2000	11:39 PM	956182	23040-350.zip
10/2/2001	8:11 AM	683596	23040-360.zip

Available at: http://www.3gpp.org/ftp/Specs/archive/23_series/23.040/

25. The archive directory index shows that TS 23.040 v3.5.0 was uploaded on and therefore publicly available from “7/11/2000.” I selected the link for “23040 - 350.zip” and downloaded a zip file of the same name. The zip file

contained a Microsoft Word document “23040-350.doc,” with a date stamp of “11/07/2000,” (UK date format as shown on my PC) the same day the zip file was uploaded.

26. A true and correct copy of the document within the zip file (23040-350.zip) is provided as Appendix C. Based on my experience, I understand these date stamps to mean that 23040-350.zip was uploaded to 3GPP’s publicly available website on July 11, 2000, and that any member of the public could have downloaded the zip file, extracted the Word document enclosed, and viewed the contents of the Word document without restriction on July 11, 2000 and thereafter. I have no reason to believe these date stamps are inaccurate. Based on my experience, I have determined that 3GPP TS 23.040 v3.5.0 was publicly available on the 3GPP file server no later than July 11, 2000.

ETSI PUBLICATION PRACTICES AND SPECIFICATION

AVAILABILITY

27. ETSI TS 123 040 V3.5.0, which is technically identical to 3GPP TS 23.040 V3.5.0 differing only terms of the cover page, copyright notice, and the inclusion of IPR and publication history information, was subsequently published by ETSI on August 22, 2000 as per the following work schedule (red highlighting added):

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The screenshot displays the ETSI Work Programme website. The main heading is 'Work Programme' with a version number of 2.3.3. Below this, there is a search bar and a link to 'Simple Search | Advanced Search | Pre-Defined Reports | Help'. The central focus is the 'Details of 'RTS/TSGT-0223040UR2' Work Item'. This section contains a table with the following data:

Work Item Reference	ETSI Doc. Number	STF	Technical Body in Charge	Download Standard
RTS/TSGT-0223040UR2	TS 123 849		3GPP T.2	
Current Status (Click to View Full Schedule) Publication (2000-08-22)	Latest Version 3.5.0	Cover Date 2000-07-22	Standstill	Creation Date 2000-07-31
Rapporteur Ian Harris	Technical Officer Alain Sallès		Harmonized Standard No	

Below the table, there is a section for 'Title' (Digital cellular telecommunications system (GSM); Universal Mobile Telecommunications System (UMTS); Technical realization of the Short Message Service (SMS); (3G TS 23.040 version 3.5.0 Release 1999)), 'Scope and Field of Application' (Transfer of GSM 03.40 to 3GPP; This TS describes the technical realization of the Short Message Service (SMS)), and 'Supporting Organizations' (Not Available). A table of 'Keywords' (UMTS), 'Projects' (MCC_3G_reporting), 'Clusters' (Wireless Systems), 'Frequencies', 'Mandates', and 'Directives' is also present. The 'Official Journal' section contains a 'Remarks' entry dated 2000-07-31. At the bottom, there is a link to 'Any comments or problems with this application? Please let us know...'.

Available at :

https://portal.etsi.org/webapp/workprogram/Report_WorkItem.asp?WKI_ID=11369).

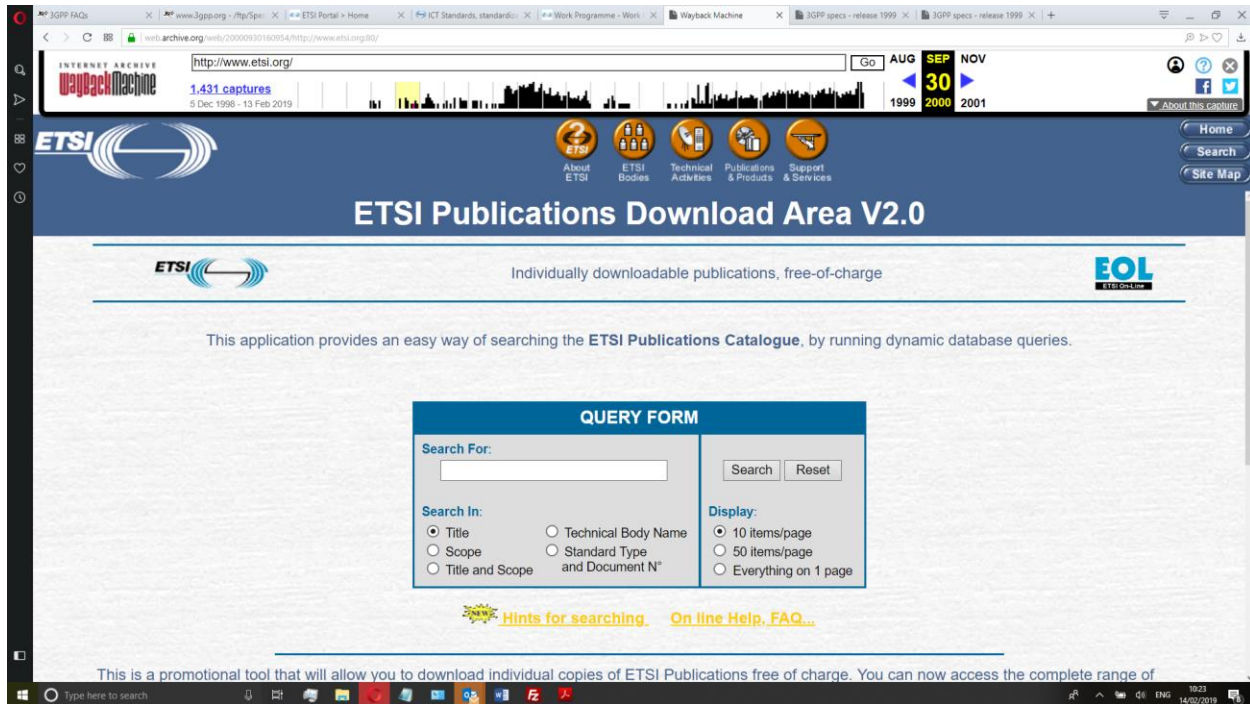
28. The work item record of any ETSI publication contains information regarding creation date, cover date, latest version / edition number, and a link to the detailed chronology of the material's development. I obtained this work item record by using the ETSI website. A given material's work item record can be found by navigating to the ETSI website at www.ETSI.org and using the Standards Search feature on the homepage (see screen shots below). After locating the standard in question, users can click on the menu button for their required record and choose the 'Details in work programme' option to open that material's work

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item record. In my experience, the publication date indicated by the Work Item record for an ETSI standard reliably indicates the date from which the standard was made accessible to the general public without undue restriction. For example, during the 2000-2003 timeframe, National Standards Organizations (NSOs) made paper copies of published ETSI standards available for sale to both members and non-members alike. Additionally, from 1997, ETSI produced on a quarterly basis a CD-ROM (later DVD-ROM) containing published standards that ETSI members and non-members of the public alike could obtain by purchase or subscription. By at least February 2000, ETSI's practice for publishing standards further included making standards freely available via the ETSI website so that they could be individually accessed via a search capability on the site or by following a series of links, and then downloaded free of charge. This is supported by the following screen shot of an archived ETSI web page from August available at:

<https://web.archive.org/web/20000815052807/http://www.etsi.org:80/>

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29. To retrieve TS 123 040 v3.5.0 from ETSI, I went to the [www.ETSI.org](http://www.etsi.org) home page, and followed the 'Standards' link. On the linked page I entered the search term 'TS 123 040 v3.5.0', then on the results page I checked the box 'All versions'. The first specification in the displayed results list was TS 123 040 v3.5.0. Following the Work Item details link highlighted in red on that page displayed the work schedule as shown above. Following the document number link opened a PDF version of the specification. Selecting the parent directory showed the directory listing for the specification including the upload date of 8/17/2000, 5 days before the official publication date.

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The top screenshot shows the ETSI website homepage. The banner reads: "Welcome to ETSI The Standards People. We produce globally applicable standards for ICT-enabled systems, applications and services deployed across all sectors of industry and society." The bottom screenshot shows the "Standards" search results page. The search term is "TS 23.040 V3.5.0". The results list three standards: "ETSI TS 123 040 V3.5.0 (2000-07)", "ETSI TR 126 975 V3.1.0 (2001-09)", and "ETSI TR 126 975 V3.0.0 (2001-03)". The first result is highlighted with a red box.

Standards

Filter search results

SEARCH TERM: TS 23.040 V3.5.0

SEARCH BY: Title, ETSI number, Content

VERSION / STATUS: All versions, Major versions only

FILTER BY / RESET: Published from 15/01/1988 to 14/02/2019

Select Keywords: 57 to 66 GHz, 2-volt, 3.1 kHz

Standards

There are 43557 results

Download All Export List

Sort By: Relevant

ETSI TS 123 040 V3.5.0 (2000-07) Published

Digital cellular telecommunications system (GSM); Universal Mobile Telecommunications System (UMTS); Technical realization of the Short Message Service (SMS); (3G TS 23.040 version 3.5.0 Release 1999)

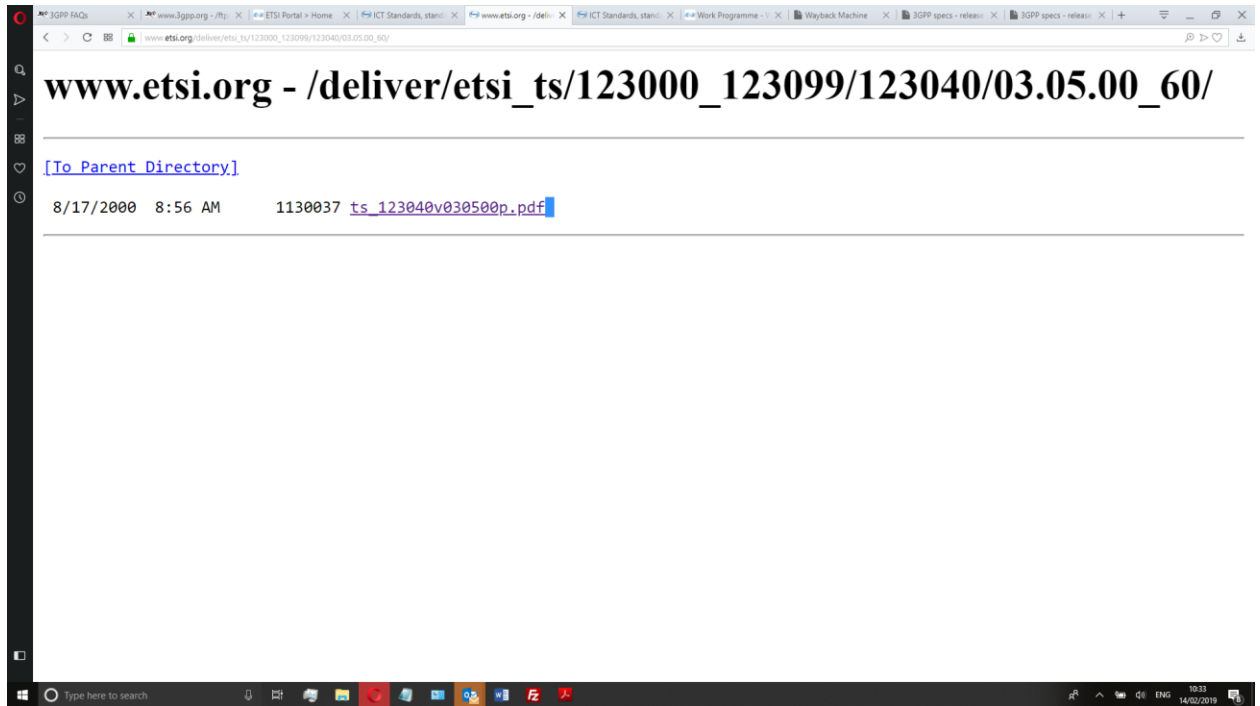
ETSI TR 126 975 V3.1.0 (2001-09) Published

Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); Performance characterization of the Adaptive Multi-Rate (AMR) speech codec (3GPP TR 26.975 version 3.1.0 Release 1999)

ETSI TR 126 975 V3.0.0 (2001-03) Published

Universal Mobile Telecommunications System (UMTS); Performance characterization of the AMR speech codec (3GPP TR 26.975 version 3.0.0 Release 1999)

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30. Based on the August 22, 2000 publication date indicated by the Work Item record and the upload date shown for ETSI TS 123 040 v3.5.0, it is my determination that TS 123 040 v3.5.0 was publicly available to both ETSI members and non-members no later than August 22, 2000.

SUMMARY

31. Documents published on the ETSI and 3GPP websites in the 2000 – 2003 timeframe were (and still are) freely accessible to the public and were disseminated or otherwise available to the extent that any interested person, ordinarily skilled in the subject matter or art, exercising reasonable diligence easily could have located them. In particular, these drafts, releases, and other documents

were indexed (for example, by platform, technology, version, etc.) in an on-line repository with descriptive links and keyword-searchable.

32. I accessed these drafts, releases, and other documents that were published and kept in an online repository in the course of my regularly conducted activity and ordinary course of business in performing my responsibilities in the roles I described above.

33. Based on my knowledge and experience, I have determined that ETSI TS 123 040 V3.5.0, “Universal Mobile Telecommunications System (UMTS); Technical realization of the Short Message Service (SMS) (3G TS 23.040 version 3.5.0 Release 1999)” was freely available as an ETSI publication no later than August 22, 2000 and from the 3GPP website no later than July 11, 2000, and was certainly freely available from both ETSI and 3GPP websites before April 4, 2003. A copy of ETSI TS 123 040 v.3.5.0 is attached to this declaration as Appendix D. Further, the technically identical specification 3GPP TS 23.040 v3.5.0 is attached as Appendix C.

34. Pursuant to Section 1746 of Title 28 of United States Code, I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct and that the foregoing is based upon personal knowledge and information and is believed to be true.

Signed:

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Craig Bishop 

February 22, 2019
Date

APPENDIX A

Source: Secretary TSG SA, Maurice Pope
Title: Report of TSG SA meeting #9, version 1.0.0
Status: Approved at TSG SA meeting #10

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1 Opening of the meeting

Dr. Asok Chatterjee welcomed delegates on behalf of the Friends of 3GPP to the United States of America and wished TSG SA a successful meeting.

2 Approval of the Agenda

The Chairman, Mr. Niels Peter Skov Andersen opened the meeting and introduced the draft agenda, provided in [TD SP-000356](#) which was **approved** without change. The inclusion of TSG GERAN was highlighted, which means that the complete GSM radio system is now a part of 3GPP, and maintenance of the GSM system is now under 3GPP responsibility.

The Chairman reminded delegates of the need to declare any essential Intellectual Property Rights (IPRs) that they may hold related to the work programme and systems of 3GPP.

3 Approval of the meeting report of TSG-SA Meeting # 8

[TD SP-000357](#) The report of the last meeting was **approved** without change.

4 Items for immediate consideration

[TD SP-000365](#): 3GPP Work Management, Release Planning and Vision. This was introduced by BT and considers the ongoing 3GPP activities relating to day-to-day Work Management and co-ordination. It suggested that the 3 main points needed to achieve the goals of the project were Work management and co-ordination, Release planning and Long term vision (3 to 5 years ahead). An objection to the proposal was received from France Telecom, as the mandate of TSG SA should be discussed within TSG SA. This was noted, and the matter was discussed further under agenda item 8.9.

5 Reports from TSG SA ad-hoc meetings

A brief report of the Release 2000 Planning ad-hoc meeting was provided by the Chairman. The meeting was reasonably successful, although there had been little discussion over e-mail before the meeting. 3 output documents were produced:

- [TD SP-000477](#): Draft Principles of 3GPP Work Planning - Release Mechanisms, which was **approved** after some clarification on the 3GPP release organisation diagrams in section 2. (see agenda item 8.7);
- How to handle Releases and definition of a Release (a consistent set of specifications containing stable Features);
- Releases were separated from the Year, and it was decided to relate the Release name to the version number (i.e. Rel4 for current Release 2000, version 4.x.y, Rel5 for version 5.x.y, etc.).

6 Letters / Reports from other groups

6.1 TSG-T, TSG-CN, TSG-RAN

[TD SP-000358](#): Liaison statement (to SA WG2) on appointment of people to maintain liaison with IGC. This LS was **noted**. TSG CN were thanked for taking care of this matter.

6.2 Partners and their bodies

There were no contributions discussed under this agenda item.

6.3 Others

[TD SP-000428](#): Standardisation of Service Operation Management from GSM/SERG. The GSMA noted that management of service operations was not included in the 3GPP work Programme and believed that this was necessary in order to facilitate the management of the sophisticated management needed for the 3GPP system. The SA WG5 Chairman stated that they were aware of the GSMA requirements and this was

proposed to be discussed within SA WG5. It was also suggested that this LS be forwarded to SA WG2 due to the architectural impact of the work that would be needed for this. It was **agreed** that the system should be designed to facilitate the management, so that SA WG2 should take this into account within the Architecture and that SA WG5 would need to study the Management aspects. Co-ordination on this between the two groups was encouraged. It was also suggested that some related items, such as charging, should be dealt with in SA WG1. The SA WG1 Chairman responded that the stage 1 aspects should be done in SA WG1, as is usual for basic Charging aspects. It was agreed that no response to GSM/SERG was needed at this time. It was suggested that a workshop could be set up to establish the service and, architecture and protocol specification. It was **agreed** that this is under the responsibility of SA WG1 (operational requirements), SA WG2 (architecture) and SA WG5 (Stages 2 and 3), and should be studied by these WGs, who should decide on the best way to co-operate on the issue (joint meeting, workshop, etc.).

TD SP-000468: LS from GSM North America Regarding the Proposal to Change IMEI Encoding. This was considered with **TD SP-000367** and was **noted**.

TD SP-000367: LS to 3GPP CN Chairman on IMEI Numbering and Format from the GSMA Terminals WG. The GSMA TWG outlined the importance of the IMEI numbering and format issue to their work and requested that any proposals to change standards relating to IMEI be suspended until an independent study which they are undertaking is completed and a considered action plan involving all parties is constructed. This was being dealt with in TSG CN and it was noted that this was awaiting the input of the independent studies. The contribution was then **noted**.

TD SP-000469: LS from GSM North America on All IP Network End-to-End Delay QoS Feasibility Study. GSM North America were concerned that end-to-end delay, especially across intermediate networks, may significantly impair IP-based networks from meeting service requirements and request 3GPP to pursue a feasibility study on this topic, with the intent to provide consideration of the degree to which various QoS scenarios may meet the service requirements. This Liaison was sent to SA WG1 and needed to be considered by SA WG1, TSGs CN, RAN and GERAN. SA WG2 also need to consider the architectural aspects and were asked to work on this matter to elaborate the architectural model and scenarios for end-to-end QoS. Members were asked to contribute to SA WG2 in order to progress this work in order to establish as early as possible for Rel4 and Rel5.

TD SP-000470: LS from GSM North America on Location Services Functionality in 3GPP Specifications. GSM North America had noticed that location services functionality standardised in GSM Releases '98 and '99 is missing from the 3GPP Release 2000 GERAN and UMTS specifications and asked for this to be included as a high priority. Some discussion ensued, due to differences in the radio architecture between GSM and UMTS, so direct re-use of the GSM specifications is not possible. The Core Network link would need to be specified in order to realise the LCS functionality. The LS was **noted** and it was agreed that an evolutionary path from GSM to UMTS LCS functionality should be considered within 3GPP via standardised interfaces. It was noted that WIs exist in RAN and CN and contribution into the relevant groups should be made to progress the work towards an Open solution. It was noted that the liaison statement had also been sent to SA WG1 and SA WG2 and TSG SA requested a report from SA WG2 on the discussions and agreements on this topic at TSG SA#10.

7 Reports from TSG-SA Working Groups

7.1 TSG-SA WG1

7.1.1 Report from TSG-SA WG1 and review of progress

TD SP-000369: Status report from SA WG1 to SA#9. The SA WG1 status report was presented by the SA WG1 Chairman, using the presentation slides in **TD SP-000368**. SA WG1 presented a number of correctional CRs to Release 1999 specifications and reported that good progress had been made on Release 2000 (Rel5) work. There was, however, some concerns in SA WG1 on how much can be achieved in Release 2000 considering the complexity of the work.

For the future outlook, the main emphasis of the work is now on IMServices for Rel5

The SA WG1 Chairman thanked M Clayton for his hard work in the group.

7.1.2 Questions for advice from TSG-SA WG1

TD SP-000359: Liaison Statement from SA WG1 - Applications on external devices (response to Tdoc SP-000353). SA WG1 believe that the access to external devices is a necessary service requirement and that the security and network integrity issues need to be addressed. This was **noted** and was addressed under the liaisons from TSG T (agenda item 8.3.2).

TD SP-000360: Proposed LS from SA WG1 on status of IMEI coding. After several discussions in various groups, S1 noted that an ad-hoc meeting of the GSMA TWG and GCF will discuss the IMEI issue in September 2000, and therefore suggested that 3GPP defer discussion of IMEI changes until the output from this meeting is available. It was reported that TSG CN had also decided to await the proposals from GSMA and asked TSG SA to postpone decision. It was therefore **agreed** to postpone any decisions on IMEI format until the results of these discussions were provided.

TD SP-000369, Annex 4, attached LS and CR: Liaison on Service Continuity requirements for Release 2000. This had also been seen at the TSG SA Release 2000 ad-hoc meeting. TSG SA were asked to consider the ser requirements in the service continuity and handover requirements in the wider scope of the TSG SA Release 2000 planning ad-hoc and to provide guidance to SA WG1 and other groups on which requirements should be met and in what timeframe. The request was **noted** and relevant WGs were asked to consider this annex in order to discuss in a future meeting.

7.1.3 Approval of contributions from TSG-SA WG1

Approval of CRs:

For a full list of CRs and their status from SA WG1 see Annex X.1.

TD SP-000371: CR (R99) to 22.002 on 32 kbit/s UDI/RDI multimedia in GSM. This CR was **approved**.

TD SP-000372: CRs (R99) to 22.011 on Alignment with 23.122 on selection procedure. These CRs were **approved**.

TD SP-000373: CR (R99) to 22.060 on Removal of PTM-G text from stage 1. This CR was **approved**.

TD SP-000374: CRs (R99) to 22.078 for alignment to stage 2. These CRs were **approved**.

TD SP-000375: CRs (R99) to 22.097 and 22.135 on Interaction between Multicall and MSP. These CRs were **approved**.

TD SP-000376: CR (R99) to 22.030 on Codes for defined Supplementary Services. This CR was **approved**.

TD SP-000377: CR (R99) to 22.091 on CLI presentation modifications. This CR was **approved**.

TD SP-000378: CRs (R99) to 22.071 on Correction to LCS Service Description Stage 1 for alignment. These CRs were **approved**.

TD SP-000379: CRs (R99) to 22.101 on Interactions between applications requiring the access to UE resources. CR055 was **withdrawn** and CR056 was **approved**.

TD SP-000380: CR (R99) to 21.905 on New Abbreviations and Definitions for R99. This CR was **approved**.

TD SP-000406: CRs to 22.135 on Multicall. These CRs were **approved**. It was confirmed that there was no impact on Stages 2 and 3 (as the requirement had never been implemented in Stages 2 and 3 (realignment)).

TD SP-000426 (Revision of **TD SP-000384**): CR to 22.129 on Removal of requirements for SoLSA support. This CR was **approved**.

TD SP-000381: Rel4 CRs to various specs on Change of MExE name. These CRs were **approved**.

TD SP-000382: Rel4 CR to 22.038 on SAT/USAT Support of Multimedia Services. This CR was **approved**.

TD SP-000383: Rel4 CRs to 22.101 to implement the requirements for R2000. These CRs were **approved**. (It was clarified that all of these CRs had been agreed by SA WG1 Plenary meeting).

TD SP-000429: Rel4 CRs to 22.101 to implement the requirements for R2000 Part 2. These CRs had been agreed by SA WG3 in Tåstrup, but after the meeting, a proposal to split the document into different parts was made to allow CRs to be implemented in different Releases based on TSG SA decision. **TD SP-000430** includes the split versions, with no additional changes, which were sent to SA WG1 for e-mail agreement, but were not agreed unanimously due to some confusion. The SA WG1 Chairman asked TSG SA to approve **either** the CRs in **TD SP-000429** **or** those in the split versions in **TD SP-000430**. The CRs in **TD SP-000429** were **withdrawn**. The CRs in **TD SP-000430** were **approved**. It was **agreed** that more work is needed in this area and SA WG1 were asked to do this.

TD SP-000385: Rel4 CR to 22.011 on Reselection attempts of GPRS terminals. This was **postponed** for discussion on the classification of the CR as it was considered to be an explicit technical term which caused a functional change. After discussion, the SA WG1 Chairman decided to **withdraw** this CR in order to have it reviewed by SA WG1 in the light of this discussion.

TD SP-000425 (Revision of **TD SP-000386**): Rel4 CRs to 22.078 for CAMEL phase 4. **CRs 054, 056, 058, 059, 061 and 064** were **approved**.

Some discussion over the adequacy of the remaining CRs for the use of CAMEL over IP-based networks ensued: Ericsson objected on the grounds that the term "IP telephony" was not defined in CRs. Further, Ericsson believed that this issue did not follow the TSG SA#08 guidance (ref TD SP-000337 from SA#08) and that the real requirements on control and applicability of CAMEL to the IM domain had not been fully discussed and agreed. Ericsson did not believe that it was feasible to use CAMEL in the IM subsystem. It was suggested that the principle of using CAMEL for support in the IM domain is included in the 22.078 and that if problems are found in the other groups, then it could be removed or further modified. The SA WG1 Chairman clarified that SA WG1 were mandated to define what is to be done, and other groups should analyse whether these requirements are feasible and implementable. It was further argued that there had not been full discussion within SA WG1 on this subject, but only by ad-hocs or over the e-mail for a short time. The SA WG1 Chairman clarified that these CRs had been agreed by both SA WG1 CAMEL ad hoc and plenary meeting which includes CAMEL experts who are also involved in CN and/or SA WG2 work. It was also reported to plenary that no SA WG1 CRs are presented to TSG SA Plenary unless they have been agreed at an SA WG1 plenary meeting or by 2 week e-mail approval. **CRs 051, 052, 053, 055 and 057** were **postponed** for off-line discussions. After discussion, the SA WG1 Chairman **withdrew** these 5 CRs for further consideration within SA WG1. SA WG1 were asked to ensure that the ongoing work was not impeded due to this delay in approval of these CRs and to strive to provide a common understanding on the services and interworking aspects in the IM domain and how these services should be controlled. **SA WG1 was asked to seek co-operation with SA WG2 in this area.**

The possibility of a workshop to discuss and elaborate this was suggested, to provide information into the next SA WG1 meeting. It was clarified that such a workshop would not be restricted to particular WGs, but is a workshop on service aspects or service missions for the future focused around the IM subsystem and should be open to the whole community. A draft scope for the workshop was produced in **TD SP-000490** (see agenda item 8.9).

TD SP-000387: Rel4 CRs to 22.121 on VHE for R00. These CRs were **approved**.

TD SP-000388: Rel4 CRs to 22.057 on MExE support of multimedia services. These CRs were **approved**.

TD SP-000389: Rel4 CRs to various specifications for Bearer Modification without pre-notification. These CRs were **approved**. It was noted that the impact on the time schedule of TSG CN should be checked. CN had been informed of this and were to investigate.

TD SP-000390: Rel4 CR to 22.002 on Deletion of bearer service BS 30 NT. This CR was **approved**. (It was noted that the CR cover table should indicate that the CR will produce a version 4.x.y rather than version 3.5.0).

TD SP-000391: Rel4 CR to 22.101 on Emergency Call. This CR was **approved**.

TD SP-000392: Rel4 CRs to 22.071 on LCS for R00. These CRs were **approved**.

TD SP-000405: Rel4 CR to 22.101 on Text conversion for global text telephony. This CR was **approved**.

TD SP-000457: Proposed CR to 22.078: Alignment with stage 2 & 3, and editorial clarification (revised TD SP-000403). This CR was provided and introduced by Vodafone. It was suggested that the CR be postponed in order to give sufficient time for review. Due to the significant number of changes for alignment, it was **agreed** that this should be **postponed** to the next TSG SA meeting, and SA WG1 were asked to consider this for presentation to SA#10. The SA WG1 Chairman asked for any comments to be sent to Mr. Ian Park (Vodafone) as soon as possible, to facilitate easy handling and agreement in SA WG1.

Specifications and Reports:

TD SP-000370: TS 22.228 version 1.0.0: "Service requirements for the IP Multimedia Core Network" was presented for information and was **noted**. Comments to SA WG1 are welcomed for the further elaboration of the document towards approval.

TD SP-000404: TS 22.226 version 1.0.0: "Global text telephony" was presented for information and was **noted**. The openness of the standard (i.e. concerning the use of modems) was questioned. Comments to SA WG1 are welcomed for the further elaboration of the document towards approval.

TD SP-000417: TS 22.127 version 1.0.0: "Service Requirement for the Open Services Access (OSA)" was presented for information and was **noted**. Comments to SA WG1 are welcomed for the further elaboration of the document towards approval.

Work Items:

TD SP-000393: New work Item Descriptions for VHE and OSA. This had been rejected in SA#08 and was updated slightly and re-presented. These Work Item descriptions were **approved**. It was **noted** that the second WID should be titled "Open Services Access" (rather than NIPS) this applies also to text in the body of WID.

7.2 TSG-SA WG2

7.2.1 Report from TSG-SA WG2 and review of progress

TD SP-000447: Status Report from SA WG2. This was presented by the SA WG2 Chairman. SA WG2 have had many dedicated activities (drafting sessions) on VHE/OSA, QoS, LCS, Split Architecture, IM subsystem and Project Planning (presented under agenda item 7.6). Many subjects were also handled via e-mail discussions.

It was reported that the main activities had been on the elaboration of the IM subsystem.

It was requested that priority is given to Rel4 work in order to complete the architectural aspects in good time. The SA WG2 Chairman confirmed that this would be taken into account in the meeting planning.

7.2.2 Questions for advice from TSG-SA WG2

SA WG2 asked for a clear indication from TSG SA whether the IM Subsystem would be a part of Rel4 or Rel5 in order to allow the correct implementation of the CRs on this topic. This issue was dealt with later under agenda item 8.7.

7.2.3 Approval of contributions from TSG-SA WG2

Approval of CRs:

For a full list of CRs and their status from SA WG1 see Annex X.2.

TD SP-000448: CRs on 03.60 v.7.4.0 and 23.060 v.3.4.0. It was clarified that the CR178r1 in S2-001607 was included in the cover table in error, and the updated agreed CR was provided in S2-0001654, which should show the CR identification **CR178r2**. With this clarification, these CRs were **approved**.

TD SP-000449: CRs on 23.002 v.3.3.0. These CRs were **approved**. It was **noted** that these CRs were all related to the IM Subsystem.

TD SP-000450: CRs on 23.107 v.3.3.0. These CRs were **approved**. The SA WG2 Chairman agreed to check on any impacts these CRs may have on other documents and take appropriate actions.

TD SP-000451: CRs on 23.121 v.3.3.0. These CRs were **approved**. CR060r2 was **approved** as Category A. It was **noted** that these CRs were all related to the IM Subsystem.

TD SP—000452: CRs on 23.127 v.3.1.0. These CRs were **approved**. It was clarified that CR011r1 was creating version 4.x.y with a modified title.

TD SP-000456: TS 23.228 version 1.0.0: IP Multimedia (IM) Subsystem - Stage 2. This was presented for information and **noted**. Comments to SA WG2 are welcomed for the further elaboration of the document towards approval.

TD SP-000487: CR184r2 to 23.060: This CR was agreed by e-mail within SA WG2 and presented to TSG SA for approval. This CR was **approved**.

Specifications and Reports:

TD SP-000454: 23.874 v.1.0.0. This was presented for information and was **noted**. Comments to SA WG2 are welcomed for the further elaboration of the document towards approval.

TD SP-000455: 23.271 v.1.0.0. This was presented for information and was **noted**. Comments to SA WG2 are welcomed for the further elaboration of the document towards approval.

Work Items:

TD SP-000453: Revised WI coversheet on FS on Push Services. This proposes the renaming of “Network requested PDP activation with user ID” to “Push Services”. This was **approved**.

7.3 TSG-SA WG3

7.3.1 Report from TSG-SA WG3 and review of progress

TD SP-000407: SA WG3 Status Report to TSG SA#09. Mr. Alan Cox, SA WG1 Chairman, presented the report using the presentation slides contained in **TD SP-000418** on behalf of the SA WG3 Chairman who was available for questions on a telephone link.

7.3.2 Questions for advice from TSG-SA WG3

TD SP-000419: Recommendation for S3/AHAG joint control document (S3-000591). This draft joint control agreement between SA WG3 and 3GPP2/AHAG was presented for information and **noted**. The principle of joint control of the AKA between 3GPP and 3GPP2 was **endorsed** by TSG SA. It was noted that SA WG3 intend to present a finalised agreement to SA#10 for approval/endorsement.

7.3.3 Approval of contributions from TSG-SA WG3

Approval of CRs:

TD SP-000411: 1 Corrective CR to TS 33.102: Re-transmission of authentication request using the same quintet. The T WG3 Chairman had been consulted on this CR and reported that there should be no problem on the implementation of this change, but that a small delay in the availability of testing USIMs to test this feature may result. It was clarified that any testing USIMs already available could be used to test all other features, and the new test USIMs used to include the testing of this feature (estimated approximately 1

month delay for the updated test USIMs). It was asked whether SA WG3 had considered all aspects of the sequence numbering (e.g. START value). The SA WG3 Chairman responded that there was no impact on the synchronisation of counters.

It was asked whether this was really a correction, or should be classified as a functional modification. It was clarified that this change only had impact on the specifications of T WG3, on the internal working of the USIM. With this, the CR was **approved** (as Category F).

TD SP-000442: 22 Corrective CRs to 33.102. There was some discussion on the Emergency Call handling procedure CR095R2. An off line discussion was held on the issues raised by North American companies and it was agreed that the CR could be approved as it stands, that the North American companies would check with their regulators on the acceptability of the procedure. If it is not acceptable then a further CR would be raised to cover their requirements. It was recognised that the robustness of the network authentication procedure in the handling of Emergency Calls would be advantageous. **TSG SA agreed that in order to make the rejection of false networks in emergency calls robust, then a solution to bar the cell for a period of time, to allow a new cell to be chosen on the repeat attempt, would be the preferred solution.** It was also noted that some testing of this procedure would be needed and TSG T should look into this.

It was also stated that regulators who attend TSG and WG meetings could receive valuable insight into problem areas, as they could contribute to, and hear, the discussions first hand. It was suggested that the North American regulators consider attending relevant meetings. Mr. Gary Jones agreed to ask the North American regulators to consider this.

With this, all CRs presented in **TD SP-000442** were **approved**.

TD SP-000412: 1 Functional CR to TS 33.102: Profiles for sequence number management. This CR was **approved**. However, it was stressed that this CR was accepted as an exception to the general rule due to the advantages of reducing the number of options and with the full support of SA WG3 to this change.

TD SP-000443: 1 Corrective CR to 33.103. This CR was **approved**.

TD SP-000444: 1 Corrective CR to 33.105. This CR was **approved**.

TD SP-000445: CRs to 33.102, 33.103 and 33.105 on anonymity key calculation during re-synchronisation. These CRs were **approved**.

TD SP-000446: CRs to 33.102 and 33.103 to clarify the integrity and ciphering is applied to radio bearers rather than logical channels. These CRs were **approved**.

Work Items:

TD SP-000420: These WI description updates were **approved**.

TD SP-000421: 6 new WIDs. It was reported that SA WG3 will receive a liaison statement from TSG CN, to study and clarify the “enhanced home control of security by HE” WI. The TSG CN Chairman also reported that the support of the 3GPP2 requirements for revocation and the positive confirmation of authentication vectors had been discussed and TSG CN need to be informed of the mechanisms for a 3GPP2 subscriber to roam onto a 3GPP network. Co-operation between TSG CN and SA WG3 was requested in order to help answer the signalling load impact question from SA WG3. These WI descriptions were **approved** with the condition that at least 4 supporting companies are included in the final version of the WI descriptions. The Release for work items would need to be verified after assessment of the work involved. France Telecom requested that work item description sheets for items introducing new functionality should indicate the supporting companies, which should be provided at the WG meeting in order to help ensure that the necessary work will be done. An explanation of the new security features was requested for the SA#10 meeting.

The WIs supporting companies were later clarified as follows:

WI description for enhancing home environment control of security: Telenor, Nokia, Vodafone, **Motorola**

WI description for LCS security: **Nokia, Ericsson, Siemens, Lucent, Nortel** (taken from main LCS WI support)

7.4 TSG-SA WG4

7.4.1 Report from TSG-SA WG4 and review of progress

TD SP-000394: TSG-S4 Status Report to TSG-SA#9. The SA WG4 Chairman presented the report, using the slides contained in Annex A of the document.

The status of the AMR Wideband Codec testing and the number of languages included was asked. The SA WG4 Chairman responded that the languages had to be limited for practical reasons and that 5 representative languages had been chosen (the Korean language was not included in the chosen languages). The Characterisation Phase had not yet started and other languages could be chosen for inclusion in the Characterisation tests.

For the 3G AMR Narrowband Characterisation Phase, the contracts for these tests had been prepared. The work was expected to start shortly. It was found that the cost of performing the tests in the Korean Language would be 5000 Euro higher than originally estimated and this additional cost needed to be agreed by the 3GPP Partners. Mr. Adrian Scrase, MCC undertook to take this request to the PCG.

7.4.2 Questions for advice from TSG-SA WG4

TD SP-000366: LS from SA WG4: Response LS to TSG SA on Call Control Applications in External Devices. The SA WG4 Chairman introduced this LS, which highlights the surprise of SA WG4 to find that TSG T thought they were specifying the call control functions within mobile equipment, as they do not intend to specify this. The liaison explains some scenarios for call configurations for support of 3G-324M. It was noted and the work produced by WG4 should not provide any limitations. The document was then **noted** and the issue was considered under agenda item 8.3.2 (report from TSG T).

7.4.3 Approval of contributions from TSG-SA WG4

Approval of CRs:

TD SP-000395: CR001 to TS 26.110 on CS Multimedia Codec specification for real time text conversation (R'00). It was **noted** that the Chairmans report contained an error in Category and should have been Category B, rather than F. This CR was **approved** (as Category B).

TD SP-000396: CR006 to TS 26.111 on MPEG-4 interface to multiplex (R99). During the presentation of the report, it was asked whether this CR referred to the physical or logical interfaces within the ME. It was clarified that this was an interface between the encoded bit stream and H.223, and was a logical interface, which would affect how the data appears on the physical interface. This CR was **approved**.

TD SP-000397: CR001 to TS 26.132 on Handheld hands-free Test Setup (R99). This CR was **approved**.

Liaisons:

TD SP-000399: Proposed LS to ITU-T Q.15/16 on H.263 Annex X. This LS provides comments as requested by ITU-T on 2 planned profiles for wireless multimedia terminals. SA WG4 report that more time is needed to study this. This liaison was **endorsed** by TSG SA and participating organisations were asked to input this to the ITU-T Q15/16.

TD SP-000400: Proposed LS to ITU-T SG16 on basic operators. This liaison was **endorsed** by TSG SA and participating organisations were asked to input this to the ITU-T SG16.

TD SP-000401: Proposed LS to MPEG-4 regarding 3G-324M. This explains that a subset of MPEG-4 is used in terminals due to space limitations and asks MPEG-4 to define a level 0 to the visual simple profile suite. This liaison was **endorsed** by TSG SA and participating organisations were asked to input this to the MPEG-4. **MCC were asked to ensure that MPEG-4 are added to the list of external liaison bodies, via the PCG.**

It was clarified that there was no formal reason for LSs to be endorsed by a TSG after approval in a WG, but that this was at the discretion of the WG. It is sufficient that the information on liaisons to external bodies is provided to the TSGs.

Work Items:

[TD SP-000398](#): Proposed WI description on Multimedia codecs for conversational packet-switched services. This work item was intended for completion and approval at SA#10 in December 2000.

The timescales were questioned as any specifications would need to be seen for information before approval, so that SA#11 would be more realistic for approval. The TSG SA Chairman agreed but emphasised that this procedure should not delay completion of work, but that there was a possibility that it would not be formally approved at SA#10, but at least a stable version would be available. It was also clarified that the main work was in choosing from existing codecs, rather than the design of new codecs. The overall timescale, including the performance characterisation and protocol work was SA#14.

The use of the CS domain codecs for the PS domain could be considered, but evaluation of this would be needed for audio codecs.

After this discussion, the WI description was **approved**. The concerns of the feasibility of fulfilling the first milestone by SA#10 was **noted**. The secondary responsibility for the WI was T WG2, and they should monitor any impact on their work.

It was also **noted that this work item needs to be linked correctly in the overall work plan.**

7.5 TSG-SA WG5

7.5.1 Report from TSG-SA WG5 and review of progress

[TD SP-000432](#): Status report from SA WG5 to SA#9. The SA WG5 Chairman presented the report using the presentation slides provided in [TD SP-000431](#). TMF is the telecommunication Management forum (used to be MMF). This is an influential group in telecommunication Management. This group is attempting to capture the 3rd Generation industry requirements and have informed SA WG5 of the requirements.

7.5.2 Questions for advice from TSG-SA WG5

Work Plan:

[TD SP-000440](#): Proposed Work-plan for SA5. This document was **noted**.

7.5.3 Approval of contributions from TSG-SA WG5

Approval of CRs:

[TD SP-000433](#): CRs to Telecommunications Management; Charging and billing; GSM call and event data for the Packet Switched (PS) domain (32.015). These CRs were **approved**.

[TD SP-000434](#): CRs to 3G Performance Management (32.104). It was noted that the front page of the CR indicates "R00" in error, and this CR was **approved as a Release 1999 CR**.

[TD SP-000435](#): CRs to Telecommunication Management; Configuration Management; Part 3: Notification Integration Reference Point; CORBA Solution Set version 1:1 (32.106-3). This CR was marked as editorial (Category D) which is not normally accepted for Release 1999. The CR is also an instruction on how to change the document to implement the CR. The instruction was not considered clear enough for sure implementation (i.e. the use of "etc." for where to implement the change). After consideration, the SA WG5 Chairman decided to **withdraw** this CR at this time for further elaboration in SA WG5 and re-presentation for approval at TSG SA#10.

[TD SP-000437](#): CRs to Telecommunications Management; Fault Management; Part 1: 3G fault management requirements (32.111-1). These CRs were **approved** (as Category F CRs).

TD SP-000438: CRs to Telecommunications Management; Fault Management; Part 2: Alarm Integration Reference Point: Information Service (32.111-2). These CRs were **approved** (as Category F CRs).

TD SP-000439: CRs to Telecommunications Management; Fault Management; Part 3: Alarm Integration Reference Point: CORBA solution set version 1:1 (32.111-3). It was noted that two of the CRs were marked as category D (Editorial) CRs. It was also noted that the corresponding CRs to 32.106 had not been produced for consistency with these CRs. **CRs 003** and **004** were **approved** and **CRs 001** and **002** were **postponed** in order to allow clarification on related changes and their categories.

NOTE: *The change bars for CR004 were not visible in the PDF version of this document and the Word version should be consulted.*

The CR numbers for 32.111 parts 1, 2 and 3 above were questioned, as the versions of the specifications were above version 3.0.x which implied that a CR had already been approved to it. It was clarified that version 3.1.x was a result of the splitting of 32.111 into parts.

Specifications and Reports:

TD SP-000436: 32.106-5 (v1.0.0) Configuration Management; Part 5: Basic Configuration Management IRP: Information Model version 1 (Release 1999). This specification was presented for information and was **noted**. Comments to SA WG5 are welcomed for the further elaboration of the document towards approval.

Work Items:

TD SP-000441: Work Item Descriptions for Release 2000 (R4/R5):.

Principles, high level Requirements and Architecture: The completion date of Rel5 was questioned. It was clarified that the TMN work lags the other specification work and this was intended for Release 2000 (Rel4) in the Rel5 time frame. The existence of related work items in SA WG1/SA WG2 were questioned. It was explained that these are building blocks which continuously update the management architecture. It was also pointed out that some of the “linked work items” do not exist.

This WI was **approved** with the **conditions** given below. It was **noted** that this WI would require completion in advance of the stated Rel5 date to allow other groups to complete their work and OAM aspects. An updated WI description should be presented to SA#10.

3G Telecom Management: Fault Management: This WI description was **approved** with the **conditions** given below.

UTRAN Operations and Maintenance procedures: This WI description was **approved** with the **conditions** given below.

Subscription Management: This was explained by the presentation of **TD SP-000479**. This WI description was **approved** with the **conditions** given below.

Conditions for approval:

MCC were asked to ensure that proper guidance is provided to SA WG5 on the use of Work Items and completion of Work Item Descriptions.

The affected areas (ME, USIM, etc.), were unclear and this should be reviewed to localise the affected areas. **The updated work items should be updated and presented to SA#10 in the correct format.**

TD SP-000479: Overview of the Subscription Management. SA WG5 proposed a new feature-level work item for the subscription management (see above) and this contribution was provided to clarify the subscription management's importance within the overall service operation management area. This document was discussed and **noted**.

7.6 Report and review of Inter-Group Co-ordination work (IGCs)

TD SP-000478: IGC presentation to SA#9. This was presented by Alain Sultan, MCC. The status of the work plan (status on 20 September 2000, updates may come from the TSG#09 meetings) and the activities and reported progress of the IGCs was outlined. Whether this work plan was for Release 1999 and Rel4 was questioned. It was clarified that the work plan is for Rel4 and Rel5, the exact content of each release being dependant on the agreements made for each work item and the content of Rel4. It was reported that the Advanced Cell Broadcast status was incorrect, and this may be deleted, depending upon decisions in TSGs and that Terminal Local Mode was delayed (rather than on schedule). The information on LCS was based upon a telephone call and should not be taken as accurate until it is updated by the IGC convenor.

It was generally agreed that even though the plan could be improved, it has provided better visibility to the progress of the work over that for the Release 1999 work.

TD SP-000486: Work Plan Version 26.9.00. This was introduced by Alain Sultan, MCC. A cover sheet was included which described the content of the project file. The Project file had been modified to identify the ability to transfer work items from one Release to another, by the inclusion of a "splittable" flag.

The agreement of inclusion of the Stage 3 for IP based basic call was questioned (as it was not directly attached to any other work item). It was explained that this was a milestone and not a work task. The CN Chairman explained that the milestone was thought to be useful for this item.

The change of row numbers due to addition/deletion of items in the project plan was thought to be a problem of identification. It was explained that there is a unique identifier available in the plan which can be used instead of the project table index numbers.

Delegates were asked to study this work plan in order to facilitate the Rel4 and Rel5 discussions later in the meeting.

It was agreed that Alain Sultan would distribute a TSG#9 corrected work plan on the TSG lists by 6 October 2000.

7.7 Review of TSG-SA Release 1999 completion

There were no contributions discussed under this agenda item.

7.8 Review of TSG-SA Release 2000 status

There were no contributions discussed under this agenda item.

7.9 Review of TSG-SA work programme

There were no contributions discussed under this agenda item.

7.10 Letters to other groups

There were no contributions discussed under this agenda item.

7.11 Other issues

TD SP-000475: Renaming the CS domain. This was introduced by Ericsson and proposed to change the term "Circuit Switched (CS) Domain" to "Telephony Domain" in order to reflect what the domain is most commonly used for, rather than refer to the transport mechanism used for the domain in Release 1999. Although there was support for re-naming the term "Circuit Switched Domain", there was some objection to the use of "Telephony Domain" instead, as this would cause confusion over the applicability of Telephony to certain domains (e.g. the Multimedia Domain). The confusion of the use of CS Domain was **noted** and interested delegates were asked to discuss whether to find another term to replace it, or to clearly define the term "Circuit Switched Domain".

8 Technical coordination with TSG-CN, TSG-RAN, TSG-T and TSG-GERAN

8.1 TSG-CN

8.1.1 Report and questions for discussion from TSG-CN

[TD SP-000480](#): CN#9 Draft Meeting Report. The draft report was provided for information and presented by the TSG CN Chairman using presentation slides provided in [TD SP-000481](#). guidance Was requested from TSG SA on the selection of the TrFO break solution. TSG CN have agreed to start a feasibility study on Positive Authentication Reporting in response to SA WG3 request for 3GPP2 harmonisation. Proposals for changes to the common working procedures to include revision tracking in the project plan and improved CR categories.

TSG CN also resolved issues from SA#08 on GEA2 Ciphering, Removal of Service Accept Message (compromise solution), Hexadecimal IMEI (no action taken) and Terminology.

The completion for Stages 2 & 3 multimedia subsystem was clarified to be targeted for December 2001.

[TD SP-000472](#): TrFO Workshop Status Report. This report was **noted**

[TD SP-000473](#): TrFO#03 Meeting Report. This report was **noted**

[TD SP-000474](#): Revised Meeting Report of the TrFO & TFO Harmonisation Workshop#2. This report was **noted**

8.1.2 Information on Release 1999 and Release 2000 status in TSG-CN

[TD SP-000423](#): TrFO Workshop Results (N4-000720). This document was presented for information and was **noted**.

[TD SP-000424](#): Report and questions for discussion from TSG-CN. This refers to the TrFO workshop results, provided in [TD SP-000423](#). [TD SP-000424](#) was introduced by Siemens AG and proposes the following (the fifth bullet was not included, as it had already been covered):

- SA plenary does not consider it appropriate to give a guidance (decision) on the specific technical matter as the two alternatives for obtaining RFCI information at TrFO Break.
- SA plenary suggests that a decision on the two alternatives is taken at the next TrFO joint work shop (17.-19.10.2000, UK)
- SA plenary encourages the participation of experts from all relevant working groups (N1, N4, R2, R3, S2, S4)
- During presentation of the document, Siemens remarked that the involvement of RAN WG2 is no longer part of the most recent version of the work plan, so that the proposal to this respect in SP-000424 was no longer valid.

TSG SA noted the information and that an action plan had been created for TSGs CN and RAN, so it was considered too soon for TSG SA to make any decisions at this point. TSGs CN and RAN were asked to develop the work and come to an agreement on the solution. If this could not be agreed then TSG SA would be willing to make a decision/recommendation at the SA #10 meeting.

8.1.3 Information on status and changes to deliverables

8.2 Report from TSG-RAN

8.2.1 Report and questions for discussion from TSG-RAN

[TD SP-000483](#): RAN#9 Status Report. The TSG RAN Chairman presented the report of TSG RAN Progress to TSG SA. It was reported that the Release 1999 specifications were becoming stable and that work items for Rel4/Rel5 had been considered and drafted at their meeting.

RAN WG1: The main work of RAN WG1 had moved to Rel4.

RAN WG2: There are no more open issues in RAN WG2, although there are still a significant number of Corrective CRs on RRC. Some holes were found in Security, which have been partially dealt with. The Stage 3 description is still missing for RRC.

RAN WG3: The Chairman had resigned and a new Chairman for RAN WG3 will be elected at the next meeting. Most of the problems were solved, but some issues remain, which are detailed in the RAN WG3 report to TSG RAN (TD RP-000369).

It was reported that the MCC support staff workload is very high, and that some relief had been provided by ARIB in the implementation of approved CRs (for a limited period of time) and by the recruitment of additional MCC staff.

It was asked what is not to be completed by March 2001 for the Real-Time services handover for the PS domain (a RAN Improvement Feature). It was clarified that the only part targeted for finalisation in March 2001 are the items in TSG RAN. The schedule for the other work in 3GPP was not known. It was reported that TSG GERAN had asked to make contributions to relevant groups on this, instead of holding long discussions in GERAN and it was warned that a similar problem may occur in TSG RAN.

It was clarified that the UE positioning requirements are for Rel4 (Slide 14 of [TD SP-000483](#)). It was further clarified that the lub/lur interfaces for UE positioning methods were for Rel4, but that the basic functionality was included in Release 1999.

(Slide 19)The Low Chip Rate TDD study on the impact was reported to be expected to be completed early in October 2000, and RAN WG1 and RAN WG4 will hold a workshop if considered necessary.

Work items on RAB QoS Negotiation/Renegotiation over lu (slide 12) should be provided to TSG CN and SA WG2 for information and copied to TSG GERAN.

It was questioned whether the WI "Smart Antenna" (Slide 15) had an impact on the terminal, and if TSG T needed to start work on this. It was clarified that the main impact was on the network side rather than on the terminal.

TSG SA **noted** that TSG RAN have received an input document requesting work on the UMTS 1800 band, which has been approved as a new work item in RAN WG4. The selection of bands was understood to be designed in such a way that code points are not used up preventing further bands to be selected in the future.

The adoption of the IETF solution for IP header compression (Slide 20) was questioned. TSG RAN had discussed this and potential problems noted, but it had been decided to adopt the IETF solution and monitor any problems that may come up.

8.2.2 Information on Release 1999 and Release 2000 status in TSG-RAN

It was agreed in TSG RAN that the target date for Rel4 (Release 2000) would be March 2001 (note, an error in the slides state this as March 2000). Some work items had been moved to Rel5 (see the presentation slides and TSG RAN meeting #09 report for details).

8.2.3 Information on status and changes to deliverables

There were no contributions discussed under this agenda item.

8.3 Report from TSG-T

8.3.1 Report and questions for discussion from TSG-T

[TD SP-000482](#): TSG T#9 Status Report. The report from TSG T to TSG SA was presented by the TSG T Chairman. The Terms of Reference were revised in TD TP-000183 and approved by TSG T. The UE Conformance testing specification was approved by TSG T (TS 34.123-2). After approval of some CRs to TS 34.109, it was agreed in TSG T that the specification was now stable enough for transfer to RAN WG2. The T WG2 SWGs were restructured to better organise the work of T WG2, a number of new work items were approved and specifications provided to TSG T for information (see presentation slides for details). It was reported that the "newSMG9" group had now officially become an ETSI Project EP SCP (Smart Card Platform) and that work was progressing on smart cards.

The statement that a R99 ME need not support USIM functionality was questioned (slide 17). It was clarified that T3 assume that if you have a GSM-only R99 mobile, it need not support the USIM application, because it uses the GSM security architecture (GSM AKA). The difference between the USIM application and the "SIM/USIM card" (UICC) was highlighted, such that a UICC which supports only the USIM application, inserted into a GSM-only R99 ME will not function, as the ME will not support the USIM application. It was reported that the assumptions of T WG3 were agreed by SA WG3 who would follow this when confirmed as a service requirement in SA WG1. After some discussion, it became apparent that there was confusion of the mechanisms and it was reported that TS 33.102, subclause 6.8 contained clarification of the different scenarios.

TSG T asked clarification from TSG SA on the need for the WI on Advanced Cell Broadcast (slide 22). The work item had not progressed for some time and deletion was considered. Alain Sultan reported that after a warning that the WI would be deleted if no progress was made, it had already been removed from the Project plan. A study was suggested to check the scope and feasibility of the advanced cell broadcast in 3G networks. TSG SA **endorsed** the deletion of the WI and agreed that a feasibility study should be set up on this by SA WG1 with cooperation of TSGs RAN, T.

Withdrawal of 03.39 (slide 10) Clarification of the version(s) that are intended for withdrawal was requested. It was clarified that the content was copied into TR 23.039. MCC were asked to clarify what would happen to this document.

8.3.2 Information on Release 1999 and Release 2000 status in TSG-T

[TD SP-000471](#): LS on Transfer of EMC documents 34.124 and 34.926. This LS was copied to TSG SA for information and was **noted**.

[TD SP-000364](#): LS on Priority of ME resources for WAP and SIM toolkit applications. This LS was discussed as part of [TD SP-000379](#) (see report under agenda item 7.1.3).

[TD SP-000363](#): LS from T WG2: RE: Applications on external devices. This Liaison was presented by the TSG T Chairman. T WG2 responded to TSG SA that joint work is needed in 3GPP groups in order to achieve a secure way of connecting applications to external devices. It was agreed that input from MRPs and other bodies is required in order to do this analysis in T WG2 and SA WG2. The UMTS Forum Coordinator agreed to take this question to the UMTS Forum for consideration.

The SA WG1 Chairman suggested that MRPs may not be able to provide the reasons for connection of applications on external devices. It was further suggested that it would be valuable and within their interest to give feedback on what they do NOT want as well. This could include possible scenarios endangering e.g. conformance testing validity. The involvement of outside bodies (who may be able to provide sound reasons for this functionality) should be considered, after the impact studies in SA WG2. These comments were **noted**.

Anyone interested in this topic were encouraged to participate in and contribute to the forthcoming T WG2 meetings.

8.3.3 Information on status and changes to deliverables

There were no contributions discussed under this agenda item.

8.4 Report from TSG-GERAN

8.4.1 Report and questions for discussion from TSG-GERAN

[TD SP-000463](#): GERAN Status Report#1. The first report from TSG GERAN to TSG SA was presented by the Convenor of GERAN (Niels Peter Skov Andersen).

The presentation included attachments of the TSG GERAN (GSM/EDGE Radio Access Network) Terms of Reference (ToR) and the ToRs of its four WGs. The titles of the working groups were as follows:

GERAN WG1: Radio Aspects
 GERAN WG2: Protocol Aspects
 GERAN WG3: Base Station Testing and O&M
 GERAN WG4: Terminal Testing

Also attached to the report was the list of CRs for TSG GERAN specifications and reports and a detailed work plan, which has been incorporated into the main 3GPP Project plan (but which had not yet been checked for correctness).

There had been some discussion about the transfer of GERAN Terminal Testing work (GERAN WG4) into TSG T (T WG1) in order to facilitate compatibility in the testing area. The following definition of responsibilities was made:

- TSG GERAN WG4 responsible for Access Stratum (AS) related to GERAN
- TSG T WG1 responsible for Access Stratum (AS) related to UTRAN
- Dual mode testing split following the core specifications
 - TSG GERAN WG4 responsible for GSM to 3G HO/ Cell selection
 - TSG T WG1 responsible for 3G to GSM HO/Cell selection

The situation for Non Access Stratum:

- Part of Non Access Stratum test dependent on access network, e. g., Mobility Management
- Part of Access Stratum common core specifications, but separate test cases
- TTCN test cases developed by TSG T can theoretically cover both GSM and 3G, however if adopted today no verified test cases would exist for GSM Release 99
- The GSM TTCN cases do not have a clear separation between AS and NAS – Therefore AS TTCN cases needs reworking to have common NAS test cases

TSG GERAN will have to consider the full consequences of any change on availability of single mode GSM tests.

8.4.2 Information on Release 1999 and Release 2000 status in TSG-GERAN

The specification numbering for the GSM specifications had been agreed:

Specifications up to GSM Release 99: No change to specification numbers and versions.

Specifications for GSM Release 2000 onwards:

GSM [ab.cd](#) → 3GPP TS/TR (40+ [ab](#)).[0cd](#) (e.g. GSM [05.08](#) version [9.1.0](#) → 3GPP TS [45.008](#) version [4.1.0](#)).

8.4.3 Information on status and changes to deliverables

Concerning meeting planning for TSG GERAN, the rule of not meeting in parallel with other TSGs was agreed, in order to allow the TSG RAN experts to follow both TSGs. This was extended as a principle for GERAN/RAN WGs where possible.

8.5 Letters to others groups

There were no contributions discussed under this agenda item.

8.6 Review of Release 1999 specification set

No contributions were provided and no real concerns had been identified during the meeting.

It was noted that TS 31.122 was a new specification in Release 1999. It was also **noted** that an update to TS 21.101 would be expected when this document is placed under change control.

8.7 General aspects of Release handling and definition

TD SP-000476: Draft 03 of the minutes of the SA Ad-Hoc on Work Plan for next Releases. This was provided for information and was **noted**.

TD SP-000477: Draft Principles of 3GPP Work Planning - Release Mechanism. This was presented by the TSG SA Chairman. The main Principles are outlined below:

- A release shall consist of a well-defined, stable and internally consistent set of functions;
- A release shall be documented in a maintained, consistent stream of specifications;
- Essential corrections to a stable or frozen release shall be included in the applicable release;
- New or changed functionality shall be included in new (rather than retrospectively in old) releases.

It was noted that some of the other basic principles of the work of TSG SA need to be included.

The workshop proposed that in order to decouple the Release from the Calendar Year, that Releases should be identified by a number corresponding to the major version number for specifications in that Release. e.g. Release 2000 becomes Release 4 (Rel4), the following release will be Release 5 (Rel5), etc.

The timing of Releases should be identified and maintained in the Project plan (i.e. a "3GPP Road Map"). The content of the Release should be based upon the work plan with a well defined closing time for the content of a Release (6 – 9 months before completion of a particular Release).

TSG SA were asked by the workshop to endorse the following points:

- The principles discussed in section 1 of **TD SP-000477**;
- The principle described in section 2 as "Proposed 3GPP release organisation" for handling documents;
- Extend and maintain the work plan to include items beyond what so far has been known as R00;
- Release mechanism principles discussed in section 3.

A clarification of the freezing of a feature was made, in that the approval of specifications may still allow update (via CRs) before freezing as well as after freezing. The point of freezing is a milestone for when a WI's functionality is stabilised.

A request to include these principles in a more permanent document was made, it was suggested that this be inserted into the working methods document (TR 21.900) in a suitable format in order to preserve the information. This proposal was **agreed** and a CR would be required for this which would be drafted by MCC for approval at SA#10.

The 4 principle points above were then **endorsed** by TSG SA.

TD SP-000462: Work Planning Principles. This was introduced by the TSG CN Chairman which confirmed that TSG CN have adopted the following principles and ask TSG SA to endorse them:

- the decoupling of standards releases (versions of the standards) from the year on year deliverable approach
- that the stage 2 and 3 of the IP Multimedia Subsystem are included in the same release of the specifications (Currently UE-CSCF SIP stage 3 is scheduled for completion by Dec 01).
- that there is no priority or precedence given to Release 4 over Release 5 when working the feature in the working groups. Generally, for future parallel working releases there should be no priority or precedence given of one release over another.

These principles were **endorsed** by SA and it was **noted** that the priorities are based upon the priority of individual WIs and not on a particular Release (e.g. Release X could be started before completion of Release X-1).

TD SP-000466: Handling of further studies items and editor's notes in documents for TSG approval. This was introduced by Lucent and asked for a consistent method for creation of editors notes in specification. It was **agreed** that Rapporteurs should avoid to leave areas "For Further Study". In reality, this does occur, and a note should be added to the Foreword to say that this means that the function is not a part of this Release/Protocol. **MCC were asked to take this into account.**

TD SP-000467: Handling of documentation for release 4 and release 5. This was introduced by Lucent and proposes that SA consider the following options.

1. The current working procedures are followed. Change requests are created, but these are not provided to the TSG until all further study items are closed. The Change requests are continuously revised in order to do this.
2. Release 4.y.z and 5.yz. versions of existing specifications are created and kept under change control. Change Requests are generated and accepted at SA plenary, even if further study items are not closed. Subsequent Change Requests will be required to remove the "For Further Study" items, before the release is declared stable.
3. Interim versions, that are not under change control, are produced and developed with the Working Groups until all further study items are closed. Then the document then moves into change control. An interim version will need to be clearly indicated in the version number. e.g. the version number of xA.y.z could be used to indicate an interim version under change control. The version number would then move to x.0.0 when the draft is approved at the TSG Plenary. i.e. 3.y.z -> 4A.y.z -> 4.y.z. It will be the responsibility of the Working group to ensure that changes from earlier releases are reflected within the interim draft as they are agreed.

It was noted that options 1 and 2 could be used, as trace-ability of changes to documents under change control is essential, and this is not provided with option 3. It was agreed that the application of the current working methods would produce option 2 with some allowance for exceptions to the good working practice of removing all "For Further Study" items before considering a document as stable. No change to the working procedures was therefore agreed, but the principles of full stability should be strived for in the documents.

8.8 Review of Release 2000 status and content

TD SP-000486: The TSG SA Chairman asked if the study of the work plan had raised any questions or comments. The changes from TSG CN needed to be included in the Work Plan, and the TSG CN Secretary was asked to help with this. It was confirmed that the distribution of the Project file should be accompanied by a PDF version for those who do not have the software to open the Project file. A request for a permanent solution for readability of the project plan was made and Alain Sultan was asked to try to provide an Excel file in addition. MCC were asked to consider a link from the web pages to facilitate access to the latest project plan. Mr. John Meredith, MCC agreed to investigate the possibilities for this.

Comments for update to the work plan should be addressed to the Secretary of the responsible TSG or WG for the work task.

It was **noted** that the Global text Telephony Stage 2 was planned for March 2001 by SA WG2, but this had slipped to June 2001 due to the slippage of the Stage 1 in SA WG1.

With these comments, the project plan was **noted**.

TD SP-000427: Planning for the Release 4 part of "Release 2000". This was introduced by Vodafone and asks TSG SA to endorse their proposal that Release 4 be targeted for completion in March 2001. It suggests that this is a realistic timescale and provides a useful content before Release 5. It was reported that the dates in the work plan on the second page of the contribution had not been agreed and the March 2001 timescale may no longer be realistic. It was clarified that the work plan had been updated since then and that this was used as an example in the contribution. Vodafone considered that the March 2001 timescale was a realistic target for all specifications to be stable, with the expectation of corrections after this date.

The handling of protocol versions was questions and it was clarified that the Protocol version numbering is decoupled from the Releases. This contribution intended to arrange the work items in order to allow the extraction of stand-alone features, which could be taken independently to construct a set of features for a Release.

After some discussion, the basic principles of this contribution were agreed, and it was also **agreed** that the finalisation of the content of Rel4 would be made, with a deadline of March 2001 for completion (TSG#11 / GERAN#03).

It was decided that a final list will be created in SA#10 for Rel4, containing items which will be completed in March and a list of items where non-corrective CRs are acceptable. The work plan will indicate which WIs will be completed in time and therefore included in Rel4, along with a list of open items for later completion. Long term work also needs to be tackled to plan future Releases. All WGs are expected to update the Project plan as accurately as possible before the TSG#10 meeting to facilitate this work.

It was noted that many operators are keen on having this freeze date.

MCC were asked to ensure that all CRs which were marked with uncertain Releases be marked with the correct Release in the CR database according to the Project Plan. A list of the CRs with their correct Releases will be attached to the meeting report.

TD SP-000422: Release 4 & 5 – Priorities. This contribution informs TSG SA that Hutchison 3G supports the TD AHROO- 0031, output document from the 3GPP TSG SA Work Planning Meeting. This contribution was **noted** and it was **decided** to make the target date for Rel5 as December 2001.

A request for the release of the next version of the project plan as quickly as possible was made. Alain Sultan (and MCC) were asked to make it available by 6 October 2000.

8.9 Beyond Release 2000 (Vision, Phasing etc.)

TD SP-000365: 3GPP Work Management, Release Planning and Vision. This contribution was introduced by BT under agenda item 4 and was represented for discussion. There was some objection to the principles of this contribution and it was suggested that the output of workshops and WG discussions should be used to provide widely supported ideas for the vision of the project. It was concluded that it is not the right time to create such a group on long term vision, recognising that some long term vision is needed and that a workshop is to be arranged for this.

BT requested that long term vision discussions could be reserved for a particular time at the TSG SA meetings to focus on the topic. The TSG SA Chairman replied that such scheduling could disrupt the completion of the meeting agenda at the meeting. It was also suggested that the detail of long term planning should not be done in the TSG Plenary, but rather in another group.

TD SP-000490: Scope and ToR for the "Service Vision and Scenarios" Workshop. This contribution was presented by BT and proposed to arrange a 3GPP TSG SA Ad-hoc, principally for guidance to SA WG1, SA WG2 and T WG2 to provide service scenarios for Rel4 onwards.

The adequacy of a 2 day workshop to tackle this large subject, and the non-inclusion of any CAMEL work was questioned. It was clarified that the object of the workshop was to provide an open arena where issues and ideas can be discussed and not to limit the progress on CAMEL. The proposed ToR for this workshop does not include progress of CAMEL, but to address the service aspects from an end-user service and service provider operational perspective.

It was **decided** that the open issues on service control (e.g. CAMEL issues) should be dealt with separately by SA WG1 and SA WG2, rather than in this workshop.

TSG SA noted the proposal for a Workshop. It was clarified that the workshop would deal with the service level and discuss how to operate services. It was emphasised that the workshop had no mandate to take decisions. The workshop would be a one-time event. TSG **approved** the scope and chairman (Mr. Harald Dettner) for the workshop, as provided in [TD SP-000490](#), and the Objectives and Terms of References were deleted. The workshop was expected to take in ideas from Members and provide information to SA WG2, SA WG1 and T WG2.

8.10 Other issues

No contributions were received

9 Project Management

9.1 Review of work programme

[TD SP-000488](#): 3GPP Specifications Status List near end of TSG SA. This status list was provided for information by John Meredith, MCC. It was noted that non-existent specifications were included. It was **agreed** that this should not be included in future, as it can cause confusion. It was also agreed that:

- a column indicating the specifications needed to build a 2G system and a column indicating those needed to build a 3G specification in order to be able to extract easily the full set was needed.
- the tables for each Release of the specifications should be separated.

The document was then **noted**.

9.2 Working methods

[TD SP-000402](#): Role of the Rapporteur CR to 21.900. MCC were asked to consider clarification to the role of the Rapporteur at TSG#08 meetings and this CR contained the proposed text. This CR was **approved**.

[TD SP-000460](#): Liaison statement to TSG-GERAN, TSG-RAN, TSG-SA & TSG-T on CR categories. The inclusion of editorial CRs to frozen specifications was objected to, as the inclusion of such changes add no value to the technical content. Editorial fixes should be done along with a Corrective CR to ensure that all CRs to frozen specifications are considered, and no changes go unnoticed. With this explanation, the CR was approved, with the removal of the changes for "Editorial modification" (but allowing the change "implication" to "implementation" and the addition of the text "This Category shall not be used for a frozen Release). The updated CR was provided in [TD SP-000492](#) which was modified editorially and relaced by [TD SP-000493](#) which was **approved**.

[TD SP-000461](#): Proposed LS and associated CR on CR categories for frozen releases. This CR includes the principles for the categorisation of CRs to frozen releases. This CR was **approved**.

It was asked whether these changes to 21.900 had an impact on the CR Form. It was concluded that there was no significant change, except the change to Release 4, Release 5 terminology should be added. It was asked whether the use of the old version of the CR form instead of the new version would cause rejection of a CR. It was stated that delegates should be urged to use the new CR form, however the use of the old CR form should not be the sole reason for the rejection of a CR as long as all necessary information is included.

MCC were asked to ensure that the results of WG meetings are provided to other WGs (via the Leaders List), using a common set of slides.

9.3 Other issues

There were no contributions discussed under this agenda item.

10 Project support

TD SP-000459: MCC report to TSG SA. Mr. Adrian Scrase presented the status report from MCC. He reported 3 departures from MCC expert team. Franco Settimo, David Williams and Monica Hellman who were thanked for their hard and dedicated work in MCC. Replacement experts have been recruited: Cesar Gutierrez, Kimmo Kymäläinen and Per Johan Jørgensen. Members were thanked for offering these experts to MCC. One further departure had been announced since the writing of the report, as Ban Al-Bakri will leave MCC at the end of the year. Ban was also thanked for her great contribution to the work.

In order to relieve the problem of CR implementation for RAN WG specifications, ARIB have agreed to provide voluntary experts on a temporary basis.

Support for 2001: An indication of additional resource requirements or funding for specific tasks in 2001 was requested: TSG Chairs were asked to provide info to next TSG meeting.

Wireless LAN: Purchase of IEEE 802.11b wireless LAN PC cards by delegates. There was support for the use of this, but delegates would need to justify this within their companies. MCC were asked to provide information to assist delegates to determine the cost and to acquire cards.

Webcasting of TSG meetings: A pilot study is being carried out by ETSI, which MCC is monitoring. TSG SA were asked to indicate whether there was any interest in the use of this facility during TSG meetings. The possibility of access restriction was discussed. This would be difficult to implement, as the current 3GPP site is not password protected. It was concluded that there was some interest in this, with some reservation on the openness of it.

TSG Meetings CD-ROMs: MCC asked whether a set of TSG CD-ROMs (or DVDs) would be wanted after each round of TSG meetings, and whether the inclusion of specification sets would be wanted (on a cost-recovery basis). Some reservation on supplying **only** on DVD was expressed for compatibility reasons. An indication was given (approx 20% of those present indicated they would purchase the CD).

On-line registration for meetings: Ericsson requested that this service is extended to all 3GPP meetings as soon as possible. This request was **noted**.

11 Postponed issues from earlier in the meeting

TD SP-000489: Liaison with IETF. This contribution was presented by BT and was a result of internal company discussions. It proposes that TSG SA supports a BOF (Birds of a Feather meeting) at the next IETF meeting in December, which would be attended by some delegates from 3GPP. The BOF would be set up with the objective of presenting the current status of the work in 3GPP and discussing how the IETF can develop additional protocols and extensions to existing protocols (e.g. SIP).

It was clarified that TSG SA had agreed to co-operate with the IETF to determine and try to influence the IETF documentation in order to re-use their work as far as possible. The Chairman commented that TSG SA did not need to endorse a presentation of the work of 3GPP to an outside body, as this could be done by anyone organising a conference and obtaining individuals to make presentations.

It was stated that the IETF are, in general, confused about the rules and procedures of 3GPP (and 3GPP2) and this is a cause of frustration when trying to co-operate in their work.

TSG SA encouraged the Members who attend the IETF to provide information from 3GPP to IETF and vice versa without the need for TSG SA to formally set up or endorse such communication. With this, the document was **noted**.

TD SP-000491: (equivalent to **TD SP-000350** at SA#08). Terms Of Reference – IETF coordination. This was introduced by the 3GPP IETF Liaison Coordinator (Ms. Ileana Leuca). It was reported that a collaboration had been established between ISOC/IETF and 3GPP in order to secure the timely development of the

Mobile Internet standards. It proposed that regular reporting on progress in IETF is provided to TSG SA. It was also asked that a method is established to communicate the work progress for items common to the IETF and 3GPP.

The meeting was reminded that the establishment of a low-level co-ordination function to the IETF was agreed at SA#06. The proposed ToR for the co-ordination ([TD SP-000350](#)) was provided to SA#08 and it was agreed to present it to the PCG for agreement. It was confirmed that this had been discussed in the PCG with the following result (extract from PCG report):

*During the discussion that followed it was noted that the existing 3GPP Working Procedures did not prevent a direct liaison being established with the IETF but this was not the IETF's normal method of co-operation which was based more on individual rather than company representation. ...
It was agreed that the PCG Chairman would lead an activity to discuss with the IETF how best to establish a closer co-operation. For this purpose, each Organizational Partner was requested to provide one representative to take part in the discussions. Comments were also invited on the draft text of the agreement which had been prepared by TSG SA.*

The responsibilities provided in the document was thought to be open to different interpretations, and needed to be clarified. It was further commented that the terms of reference had not been thoroughly examined at the last meeting, due to late submission of the document. The Chairman reminded the meeting that candidates for the co-ordinator role were requested at meeting SA#08.

After some discussion on the topic of co-ordination between 3GPP and the IETF it was concluded that there was general agreement on the need for this co-ordination, but that the responsibilities need to be revised as follows:

Responsibility of 3GPP/IETF Rapporteurs:

- **Monitor IETF activities of relevance to 3GPP;**
- **Monitor progress of IETF deliverables of importance to 3GPP; and**
- **Provide progress reports to 3GPP TSGs and interested WGs on IETF activities of interest to 3GPP.**

It was therefore decided at this point in time **not to accept** [TD SP-000491](#) but to adopt the above simplified terms of reference for 3GPP/IETF co-ordination rapporteurs. Candidates for the 3GPP/IETF co-ordination rapporteurs positions were invited to be sent to the TSG SA Chairman by Friday 13 October. Amongst the volunteers a group would be formed and the group would have to ensure that a progress report is provided TSG SA on the activities of interest from the IETF.

Delegates were invited to provide inputs further elaborating the issue of co-ordination with the IETF.

It was clarified that the update of the work plan of 3GPP is the responsibility of the WGs, independent of the activities reported in the IETF.

12 Work plan and future meetings

TD S3-000464 contained a list of future meetings (some minor changes were announced, which are reflected in the table below). A summary of the future meeting dates are given below.

TSG	No.	Date	Venue	Host
PCG	#05	14 November 2000	North America	T1
OP	#04	15 November 2000	North America	T1
GERAN	#02	6-10 November 2000	TBD, Sweden	TBD
CN	#10	06-08 December 2000	Bangkok, Thailand	Unisys Deutschland GmbH
RAN	#10	06-08 December 2000	Bangkok, Thailand	Unisys Deutschland GmbH
T	#10	06-08 December 2000	Bangkok, Thailand	Unisys Deutschland GmbH
SA	#10	11-14 December 2000	Bangkok, Thailand	Unisys Deutschland GmbH
GERAN	#03	15 - 19 January 2001	TBD	TBD
CN	#11	14 - 16 March 2001	Palm Springs, USA	T1
RAN	#11	14 - 16 March 2001	Palm Springs, USA	T1
T	#11	14 - 16 March 2001	Palm Springs, USA	T1
SA	#11	19 - 22 March 2001	Palm Springs, USA	T1
GERAN	#04	02 - 06 April 2001	TBD	TBD
GERAN	#05	28 May - 01 June 2001	TBD	TBD
CN	#12	13 - 15 June 2001	Stockholm, Sweden	Ericsson
RAN	#12	13 - 15 June 2001	Stockholm, Sweden	Ericsson
T	#12	13 - 15 June 2001	Stockholm, Sweden	Ericsson
SA	#12	18 - 21 June 2001	Stockholm, Sweden	Ericsson
GERAN	#06	27 - 31 August 2001	TBD	TBD
CN	#13	19 - 21 September 2001	TBD, China	Lucent Technologies, CWTS
RAN	#13	19 - 21 September 2001	TBD, China	Lucent Technologies, CWTS
T	#13	19 - 21 September 2001	TBD, China	Lucent Technologies, CWTS
SA	#13	24 - 27 September 2001	TBD, China	Lucent Technologies, CWTS
GERAN	#07	26 - 30 November 2001	TBD	TBD
CN	#14	12 - 14 December 2001	TBD, Japan	TTC
RAN	#14	12 - 14 December 2001	TBD, Japan	TTC
T	#14	12 - 14 December 2001	TBD, Japan	TTC
SA	#14	17 - 20 December 2001	TBD, Japan	TTC
CN	#15	<March 2002>	TBD, Korea	TTA
RAN	#14	<March 2002>	TBD, Korea	TTA
T	#14	<March 2002>	TBD, Korea	TTA
SA	#14	<March 2002>	TBD, Korea	TTA

13 Any other business

No contributions were received under this agenda item.

14 Close of meeting

The TSG SA Chairman thanked the hosts, the North American Friends of 3GPP, the Secretaries for their support and the delegates for their hard work and co-operation in the meeting, and closed the meeting.

Annex A: Co-ordinates of TSG and WG Officials

A.1 TSG SA Officials

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Annex B: List of documents

Number	Title	Source	Agenda item	Replaced by	Comment
SP-000356	Agenda for TSG SA Meeting #9	Chairman	2		Approved
SP-000357	Draft report of TSG SA Meeting #8	Secretary	3		Approved
SP-000358	Liaison statement (to SA WG2) on appointment of people to maintain liaison with IGC	CN WG4	8.1.1		Noted
SP-000359	Liaison Statement from SA WG1 - Applications on external devices (response to Tdoc SP-00353)	SA WG1	7.1.2		Noted
SP-000360	Proposed LS from SA WG1 on status of IMEI coding	SA WG1	7.1.2		Agreed to postpone decisions until GSMA have reported on IMEI format studies
SP-000361	Proposed CR 006 to 21.900 on Role of rapporteur for both Specifications and Work Items	TSG RAN	9.2	SP-000402	Replaced by TD402
SP-000362	Proposed CR 007 to 21.900 on Procedure for Work Items	TSG RAN	9.2	Withdrawn	Withdrawn
SP-000363	LS from T WG2: RE: Applications on external devices	T WG2	8.3.1		Noted
SP-000364	LS on Priority of ME resources for WAP and SIM toolkit applications	T WG2	8.3.1		Discussed as part of TD379
SP-000365	3GPP Work Management, Release Planning and Vision	BT	4, 8		Workshop discussed in TD490
SP-000366	LS from SA WG4: Response LS to TSG-SA on Call Control Applications in External Devices	SA WG4	7.4.2		Noted
SP-000367	LS to 3GPP CN Chairman	GSM Association Terminals Working Group (TWG)			Noted
SP-000368	Presentation of Status report from SA WG1 to SA#9	SA WG1 Chairman	7.1.1		Noted
SP-000369	Status report from SA WG1 to SA#9	SA WG1 Chairman	7.1.1		Noted
SP-000370	TS22.228 v 1.0.0 "Service requirements for the IP Multimedia Core Network"	SA WG1	7.1.3		Noted
SP-000371	CR (R99) to 22.002 on 32 kbit/s UDI/RDI multimedia in GSM	SA WG1	7.1.3		Approved
SP-000372	CRs (R99) to 22.011 on Alignment with 23.122 on selection procedure	SA WG1	7.1.3		Approved
SP-000373	CR (R99) to 22.060 on Removal of PTM-G text from stage 1	SA WG1	7.1.3		Approved
SP-000374	CRs (R99) to 22.078 for alignment to stage 2	SA WG1	7.1.3		Approved
SP-000375	CRs (R99) to 22.097 and 22.135 on Interaction between Multicall and MSP	SA WG1	7.1.3		Approved
SP-000376	CR (R99) to 22.030 on Codes for defined Supplementary Services	SA WG1	7.1.3		Approved
SP-000377	CR (R99) to 22.091 on CLI presentation modifications	SA WG1	7.1.3		Approved
SP-000378	CRs (R99) to 22.071 on Correction to LCS Service Description Stage 1 for alignment	SA WG1	7.1.3		Approved
SP-000379	CRs (R99) to 22.101 on Interactions between applications requiring the access to UE resources	SA WG1	7.1.3		CR055 Withdrawn, CR056 Approved
SP-000380	CR (R99) to 21.905 on New Abbreviations and Definitions for R99	SA WG1	7.1.3		Approved
SP-000381	CR to various specs on Change of MExE name	SA WG1	7.1.3		Approved
SP-000382	CR to 22.038 on SAT/USAT Support of Multimedia Services	SA WG1	7.1.3		Approved
SP-000383	CRs to 22.101 to implement the requirements for R2000	SA WG1	7.1.3		Approved
SP-000384	CR to 22.129 on Removal of requirements for SoLSA support	SA WG1	7.1.3	SP-000426	Replaced TD426
SP-000385	CR to 22.011 on Reselection attempts of GPRS terminals	SA WG1	7.1.3		CR Withdrawn
SP-000386	CRs to 22.078 for CAMEL phase 4	SA WG1	7.1.3	SP-000425	Replaced TD425
SP-000387	CRs to 22.121 on VHE for R00	SA WG1	7.1.3		Approved
SP-000388	CR to 22.057 on MExE support of multimedia services	SA WG1	7.1.3		Approved
SP-000389	CRs to various specs. for Bearer Modification without pre-notification	SA WG1	7.1.3		Approved
SP-000390	CR to 22.002 on Deletion of bearer service BS 30 NT	SA WG1	7.1.3		Approved
SP-000391	CR to 22.101 on Emergency Call	SA WG1	7.1.3		Approved
SP-000392	CRs to 22.071 on LCS for R00	SA WG1	7.1.3		Approved
SP-000393	New work Item Descriptions for VHE and OSA	SA WG1	7.1.3		Approved

Number	Title	Source	Agenda item	Replaced by	Comment
SP-000394	TSG-S4 Status Report to TSG-SA#9	SA WG4 Chairman	7.4.1		Noted
SP-000395	CR 001 to TS 26.110 on CS Multimedia Codec specification for real time text conversation (R'00)	SA WG4	7.4.3		Cat B CR: Approved
SP-000396	CR 006 to TS 26.111 on MPEG-4 interface to multiplex (R99)	SA WG4	7.4.3		Approved
SP-000397	CR 001 to TS 26.132 on Handheld hands-free Test Setup (R99)	SA WG4	7.4.3		Approved
SP-000398	Proposed WI description on Multimedia codecs for conversational packet-switched services	SA WG4	7.4.3		Concerns about completing milestone 1 at SA#10. Approved
SP-000399	Proposed LS to ITU-T Q. 15/16 on H.263 Annex X	SA WG4	7.4.3		Endorsed
SP-000400	Proposed LS to ITU-T SG16 on basic operators	SA WG4	7.4.3		Endorsed
SP-000401	Proposed LS to MPEG-4 regarding 3G-324M	SA WG4	7.4.3		Endorsed
SP-000402	Role of the rapporteur CR to 21.900	MCC	9.2		Approved
SP-000403	Proposed CR to 22.078:Alignment with stage 2 & 3, and editorial clarification	Vodafone	7.11	SP-000457	Replaced by TD 457
SP-000404	TS 22.226 version 1.0.0 "Global text telephony"	SA WG1	7.1.3		Noted
SP-000405	CR to 22.101 on Text conversion for global text telephony	SA WG1	7.1.3		Approved
SP-000406	CRs to 22.135 on MultiCall	SA WG1	7.1.3		Approved
SP-000407	SA WG3 Status Report to TSG SA#09	SA WG3 Chairman	7.3.1		Noted
SP-000408	Reports of SA WG3 meetings held since SA#08	SA WG3 Chairman	7.3.1		Noted
SP-000409	11 Editorial CRs to TS 33.102	SA WG3	7.3.3	Withdrawn	CRs rearranged in TDs 442 - 446
SP-000410	13 Corrective CRs to TS 33.102	SA WG3	7.3.3	Withdrawn	CRs rearranged in TDs 442 - 446
SP-000411	1 Corrective CR to TS 33.102: Re-transmission of authentication request using the same quintet	SA WG3	7.3.3		Cat F CR. Approved
SP-000412	1 Functional CR to TS 33.102: Profiles for sequence number management	SA WG3	7.3.3		Approved
SP-000413	Editorial CRs to TS 33.103: Correction to BEARER definition	SA WG3	7.3.3	Withdrawn	CRs rearranged in TDs 442 - 446
SP-000414	2 Corrective CRs to 33.103	SA WG3	7.3.3	Withdrawn	CRs rearranged in TDs 442 - 446
SP-000415	Editorial CR to TS 33.105: Calculation of AK in re-synchronisation	SA WG3	7.3.3	Withdrawn	CRs rearranged in TDs 442 - 446
SP-000416	2 Corrective CRs to 33.105	SA WG3	7.3.3	Withdrawn	CRs rearranged in TDs 442 - 446
SP-000417	TS22.127 v 1.0.0 "Service Requirement for the Open Services Access (OSA)"	SA WG1	7.1.3		Noted
SP-000418	Status Report from SA WG3 to SA#09 - presentation slides	SA WG3	7.3.1		Noted
SP-000419	Recommendation for S3/AHAG joint control document (S3-000591)	SA WG3	7.3.3		Endorsed
SP-000420	2 revised WIDs	SA WG3	7.3.3		Approved
SP-000421	6 new WIDs	SA WG3	7.3.3		Supporting companies needed. Approved.
SP-000422	Release 4 & 5 - Priorities	Hutchison 3G	8		Noted
SP-000423	TrFO Workshop Results (N4-000720)	CN WG4	8.1.1		Question to SA: Related doc SP-000424. Noted
SP-000424	Report and questions for discussion from TSG-CN	Siemens AG	8.1.1		Related to SP-000423 (N4-000720). CN responsible for decision.
SP-000425	CRs to 22.078 for CAMEL phase 4 (rev TD 386)	SA WG1	7.1.3		CRs 054, 056, 058, 059, 061 and 064 Approved. Others Withdrawn
SP-000426	CR to 22.129 on Removal of requirements for SoLSA support (rev TD 384)	SA WG1	7.1.3		Approved

Number	Title	Source	Agenda item	Replaced by	Comment
SP-000427	Planning for the R4 part of "Release 2000"	Vodafone	7.8		Basic principles agreed. To reviewed in SA#10
SP-000428	Standardisation of Service Operation Management	SERG /ISG	6.2		Discussed and Noted
SP-000429	CRs to 22.101 to implement the requirements for R2000 Part 2	SA WG1	7.1.3		Withdrawn
SP-000430	CRs to 22.101 to implement the requirements for R2000 Part 3	SA WG1	7.1.3		Approved
SP-000431	Status report from SA WG5 to SA#9 (presentation)	SA WG5	7.5.1		Noted
SP-000432	Status report from SA WG5 to SA#9 (Word)	SA WG5	7.5.1		Noted
SP-000433	CRs to Telecommunications Management; Charging and billing; GSM call and event data for the Packet Switched (PS) domain (32.015)	SA WG5	7.5.3		Approved
SP-000434	CRs to 3G Performance Management (32.104)	SA WG5	7.5.3		Release 1999 CRs - Approved
SP-000435	CRs to Telecommunication Management; Configuration Management; Part 3: Notification Integration Reference Point; CORBA Solution Set version 1:1 (32.106-3)	SA WG5	7.5.3		Withdrawn
SP-000436	32.106-5 (v1.0.0) Configuration Management; Part 5: Basic Configuration Management IRP: Information Model version 1 (Release 1999)	SA WG5	7.5.3		Noted
SP-000437	CRs to Telecommunications Management; Fault Management; Part 1: 3G fault management requirements (32.111-1)	SA WG5	7.5.3		Cat F CRs. Approved
SP-000438	CRs to Telecommunications Management; Fault Management; Part 2: Alarm Integration Reference Point: Information Service (32.111-2)	SA WG5	7.5.3		Approved
SP-000439	CRs to Telecommunications Management; Fault Management; Part 3: Alarm Integration Reference Point: CORBA solution set version 1:1 (32.111-3)	SA WG5	7.5.3		CRs 003, 004 Approved. CRs 001, 002 Postponed
SP-000440	Proposed Work-plan for SA5	SA WG5	7.5.2		Noted
SP-000441	Work Item Descriptions for Release 2000 (R4/R5)	SA WG5	7.5.3		Conditions applied and Approved
SP-000442	22 Corrective CRs to 33.102	SA WG3	7.3.3		Approved
SP-000443	1 Corrective CR to 33.103	SA WG3	7.3.3		Approved
SP-000444	1 Corrective CR to 33.105	SA WG3	7.3.3		Approved
SP-000445	CRs to 33.102, 33.103 and 33.105 on anonymity key calculation during re-synchronisation	SA WG3	7.3.3		Approved
SP-000446	CRs to 33.102 and 33.103 to clarify the integrity and ciphering is applied to radio bearers rather than logical channels	SA WG3	7.3.3		Approved
SP-000447	SA2 Status Report - Powerpoint version	SA WG2	7.2.1		Noted
SP-000448	CRs on 03.60 v.7.4.0 and 23.060 v.3.4.0	SA WG2	7.2.3		Approved
SP-000449	CRs on 23.002 v.3.3.0	SA WG2	7.2.3		Approved
SP-000450	CRs on 23.107 v.3.3.0	SA WG2	7.2.3		Approved
SP-000451	CRs on 23.121 v.3.3.0	SA WG2	7.2.3		Approved
SP-000452	CRs on 23.127 v.3.1.0	SA WG2	7.2.3		Approved
SP-000453	Revised WI coversheet on FS on Push Services	SA WG2	7.2.3		Approved
SP-000454	23.874 v.1.0.0	SA WG2	7.2.3		Noted
SP-000455	CRs on 23.271 v.1.0.0	SA WG2	7.2.3		Noted
SP-000456	23.228 v.1.0.0	SA WG2	7.2.3		Noted
SP-000457	Proposed CR to 22.078:Alignment with stage 2 & 3, and editorial clarification (revised TD 403)	Vodafone	7.11		Postponed to SA#10
SP-000458	Work Planning Principles	TSG CN	12	SP-000462	Replaced by TD462
SP-000459	MCC report to TSG SA	MCC			Noted
SP-000460	Liaison statement to TSG-GERAN, TSG-RAN, TSG-SA & TSG-T on CR categories	TSG CN	9.2	SP-000492	Revised in TD492
SP-000461	Proposed LS on CR categories for frozen releases	TSG CN	9.2		Approved
SP-000462	Work Planning Principles	TSG CN	8.7		Endorsed
SP-000463	GERAN Status Report#1	GERAN Convenor	8.4		Noted
SP-000464	3GPP Meeting Calendar	MCC, Adrian Scrase	12		Noted
SP-000465	Specifications Status List	MCC	9	SP-000488	Replaced by TD488

Number	Title	Source	Agenda item	Replaced by	Comment
SP-000466	Handling of further studies items and editor's notes in documents for TSG approval	Lucent Technologies	8.7		MCC to apply principles of doc for "FFS" in specs
SP-000467	Handling of documentation for release 4 and release 5	Discussion	8.7		No changes to WP, but strive to apply good practices for complete specs
SP-000468	LS Regarding the Proposal to Change IMEI Encoding	GSM North America	6.3		Considered with TD367 and Noted
SP-000469	LS on All IP Network End-to-End Delay QoS Feasibility Study	GSM North America	6.3		Contributions to SA WG2 on QoS requested
SP-000470	LS on Location Services Functionality in 3GPP Specifications	GSM North America	6.3		Noted
SP-000471	LS on Transfer of EMC documents 34.124 and 34.926	TSG T	8.3		Noted
SP-000472	TrFO Workshop Status Report	TrFO convenor	8.1.1		Noted
SP-000473	TrFO#03 Meeting Report	MCC	8.1.1.		Noted
SP-000474	Revised Meeting Report of the TrFO&TFO Harmonisation Workshop#2	N4	8.1.1		Noted
SP-000475	Renaming the CS domain	Ericsson	7.11		Not agreed, but clarification on the use of Circuit Switched Domain is needed.
SP-000476	Draft 03 of the minutes of the SA Ad-Hoc on Work Plan for next Releases	MCC	8.7		Noted
SP-000477	Draft Principles of 3GPP Work Planning - Release Mechanism	MCC	8.7		Endorsed
SP-000478	IGC presentation to SA#9	IGC Convenors	7.6		Input requested and Noted
SP-000479	Overview of the Subscription Management	SA5 Chairman	7.5.3		Noted
SP-000480	CN#9 Draft Meeting Report	CN Chairman	8.1.1		Noted
SP-000481	CN#9 Status Report	CN Chairman	8.1.1		Noted
SP-000482	TSG T#9 Status Report	TSG T Chairman	8.3.1		Noted
SP-000483	RAN#9 Status Report	TSG RAN Chairman	8.2.1		Noted
SP-000484	3GPP Specifications Status List near end of TSG SA	MCC	9		Comments requested and Noted
SP-000485	Withdrawn				Withdrawn
SP-000486	Work Plan Version 26.9.00	MCC	12		Updates to TSG/WG Secretary. Noted
SP-000487	CR 23.060-184r2	SA2	7.2.3		Approved
SP-000488	3GPP Specifications Status List near end of TSG SA	MCC	9		Noted
SP-000489	Liaison with IETF	BT, AT&T, Ericsson	7.11		Members encouraged to ensure communication flow. Noted.
SP-000490	Scope and ToR for the "Service Vision and Scenarios" Workshop	BT, Ericsson, Siemens, Vodafone	7		Scope Approved. Objectives and ToR deleted.
SP-000491	Terms Of Reference – IETF coordination	3GPP IETF Coordinator	13		Not Accepted
SP-000492	Liaison statement to TSG-GERAN, TSG-RAN, TSG-SA & TSG-T on CR categories	TSG CN	9.2	SP-000493	replaced by TD493
SP-000493	Liaison statement to TSG-GERAN, TSG-RAN, TSG-SA & TSG-T on CR categories	TSG CN	9.2		Approved

Annex C: List of attendees and TSG SA Voting List

C.1 List of Attendees

The attached list has not been verified: Please check that your attendance is recorded here:

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Report of TSG SA meeting #9

version 1.0.0

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Ms. Paola Tonelli	Vodafone Belgium S.A./N.V.	paola.tonelli@vodafone-us.com	+1 925 788 7608	+1 925 210 3445	+1 925 210 3446	3GPPMEMBER - ETSI	BE
Mr. Peter Trinkl	NTL	peter.trinkl@cablecom.ch		+41 1 277 9305	+41 1 2779207	3GPPMEMBER - ETSI	GB
Mr. Stephen Truelove	Telecom Modus Ltd.	stephen.truelove@t-modus.nec.co.uk		+44 1372 804 864	+44 1372 804 804	3GPPMEMBER - ETSI	GB
Mr. Paolino Usai	ETSI	paolo.usai@etsi.fr	+39 335 387 164	+33 4 92 94 42 36	+33 4 92 38 52 06	3GPPORG_REP - ETSI	FR
Mr. Jari Vainikka	NOKIA Corporation	jari.vainikka@nokia.com	+358 40 511 8866	+358 9 511 68098	+358 9 511 68080	3GPPMEMBER - ETSI	FI
Ms. Isabelle Valet-Harper	MICROSOFT EUROPE SARL	isavh@microsoft.com	+33 6 14 54 12 26	+33 1 46 35 12 26	+33 1 45 35 10 30	3GPPMEMBER - ETSI	FR
Mr. Hans van der Veen	ETSI	hans.vanderveen@etsi.fr	+31 6 5519 6615	+33 4 92 94 42 61	+33 4 92 38 49 46	3GPPORG_REP - ETSI	FR
Mr. Juan Manuel Vazquez	TELEFONICA de España S.A.	vazquez_jm1@tsm.es		+34 63 000 9397	+34 63000 7953	3GPPMEMBER - ETSI	ES
Dr. Klaus Vedder	GIESECKE & DEVRIENT GmbH	klaus.vedder@gdm.de		+49 89 4119 1542	+49 89 4119 1540	3GPPMEMBER - ETSI	DE
Mr. Paul Voskar	NOKIA UK Ltd	paul.voskar@nokia.com	+44 7771 980 062	+44 1252 865 2 76	+44 1252 865 065	3GPPMEMBER - ETSI	GB
Mr. Christopher Wallace	Nokia Telecommunications Inc.	chris.wallace@ntc.nokia.com	+19 17 98 05 525	+19 72 894 4947	+19 72 894 5525	3GPPMEMBER - T1	US
Mr. Knut Erik Walter	TELENOR AS	knut-erik.walter@telenor.com	+47 9002 2727	+47 2278 5525	+47 2278 5500	3GPPMEMBER - ETSI	NO
Mr. Liyan Wang	RITT			+86-10-68094152	+86-10-68034801	3GPPMEMBER - CWTS	CN
Ms. Jingyu Wang	CATT	wangjy@catt.ac.cn		+86 10 62304422-206	+86 10 62303127	3GPPMEMBER - CWTS	CN
Miss Wei Wang	ERICSSON L.M.	Victoria.Wang@etc.ericsson.se		+86 1065615566-10393	+86 1065611773	3GPPMEMBER - ETSI	SE
Dr. Kimberly Wasserman	Cisco Systems Inc.	kwasserm@cisco.com		+1 919 392 2940		3GPPMEMBER - ETSI	US
Mr. Kunio Watanabe	Fujitsu Limited	watanabe@mcws.ts.fujitsu.co.jp		+81 44 754 3018	+81 44 754 3322	3GPPMEMBER - ARIB	JP
Mr. Andrew W.D. Watson	MOTOROLA Ltd	watsona@ecid.cig.mot.com	+44 77 85 318 522	+44 1 793 566 230	+44 1 793 566225	3GPPMEMBER - ETSI	GB
Mr. Dirk Weiler	SIEMENS AG	Dirk.Weiler@icn.siemens.de	+49 171 334 0791	+49 89 722 26203	+49 89 722 33315	3GPPMEMBER - ETSI	DE
Dr. David Hugh Williams	QUALCOMM EUROPE S.A.R.L.	dwilliams@qualcomm.com	+33 6 12 98 69 35	+33 4 92 38 82 33	+33 492 38 82 30	3GPPMEMBER - ETSI	FR
Mr. Randolph Wohler	Pacific Bell Wireless	rwohler@tri.sbc.com		+1 512 372 5838	+1 512 372 5891	3GPPMEMBER - T1	US
Ms. Emmanuelle Wurffel	ETSI	emmanuelle.wurffel@etsi.fr		+33 4 92 94 42 66	+33 4 92 38 52 66	3GPPORG_REP - ETSI	FR
Mr. JingHao Xu	RITT	xujh@bupt.edu.cn		+86 10 68094407	+86 10 68034801	3GPPMEMBER - CWTS	CN

Report of TSG SA meeting #9

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Name	Represented Company	e-mail address	Mobile Telephone	Telephone	Facsimile	3GPP Status	Cty
Dr. Huan XU	TEKTRONIX GmbH & Co KG	huan.xu@tele.com		+49 30 386 254 29	+49 30 386 22 524	3GPPMEMBER - ETSI	GB
Mr. Chuan Xu	CATT	xuc@catt.ac.cn		+86 10 62304422-206	+86 10 62303127	3GPPMEMBER - CWTS	CN
Mr. Masahiko Yahagi	NEC Corporation	yamasa@mvc.biglobe.ne.jp		+81 471 85 7161	+81 471 85 6862	3GPPMEMBER - TTC	JP
Mr. Hiroyuki Yamaguchi	NTT DoCoMo	hyama@spg.vrp.nttdocomo.co.jp		+81 648 40 3512	+81 468 40 3788	3GPPMEMBER - ARIB	JP
Mr. Raziq Yaqub	ARIB	raziq@ddi.co.jp		+81 3 3221 9682	+81 3 3221 9694	3GPPORG REP - ARIB	JP
Mr. Hyuk Yi	LGIC	hlee@lgic.co.kr		+82 31 450 2061	+82 31 450 2944	3GPPMEMBER - TTA	KR
Mr. Yukio Yoshimura	NEC Corporation	y-yoshimura@ax.jp.nec.com		+81 3 3798 4743	+81 3 3798 9967	3GPPMEMBER - ARIB	JP
Mr. Keiji Yoshino	TTC	yoshino@ttc.or.jp		+81 334321551	+81 334321553	3GPPORG REP - TTC	JP
Mr. Mark YOUNGE	VoiceStream Wireless Corp.	myounge@mobile.com		+1 510 227 3099	+1 510 227 3282	3GPPMEMBER - T1	US
Dr. Albert Yuhan	VoiceStream Wireless Corp.	albert.yuhan@voicestream.com	+1 201 233 2203	+1 973 290 2665	+1 973 290 2575	3GPPMEMBER - T1	US
Mr. Donald E. Zelmer	Bellsouth Cellular	don_zelmer@bscc.bls.com	+1 404 376 6785	+1 404 249 3689	+1 404 249 5157	3GPPMEMBER - T1	US
Mr. Jun Zhang	Zhongxing Telecom Ltd.	zhangjun7@mail.zhongxing.com		+86 021 68810115 419		3GPPMEMBER - CWTS	CN
Mrs. Karin Zickermann	Golden Bridge Technology Inc.	kzickermann@gbtwireless.com		+1 732 870 8088	+1 732 870 9008	3GPPMEMBER - T1	US

C.2 List of eligible Voting members for TSG SA#10

The attached list is dependent upon the information in C.1 and Individual Member companies who are recorded as attending TSG SA Meetings #08 or #07 (representation of an Individual Member at any of TSG SA Meetings #07, #08 or #09).

Voting list for 3GPP TSG SA (Technical Specification Group - Services and System Aspects)		
List Created on: 3 Oct 2000		
This report shows the 3GPP Member Companies on the Voting List for TSG SA Meeting #10		
Inclusion on the list is obtained by attending a meeting of TSG SA		
A company is removed from this list if it is not represented at any of the 3 previous meetings of this group.		
If you believe your company should be included in this list, please provide supporting information to MCC, the 3GPP Support Team at: 3gppcontact@etsi.fr		

Organisation Name	Organisation Status	Partner
3COM	3GPPMEMBER	ETSI
Airnet Communications Corp.	3GPPMEMBER	ETSI
AIRTEL Movil SA (AIRTEL Movil SA)	3GPPMEMBER	ETSI
AirTouch Belgium S.A.	3GPPMEMBER	ETSI
ALCATEL BELL	3GPPMEMBER	ETSI
ALCATEL France	3GPPMEMBER	ETSI
ALCATEL Italia SpA	3GPPMEMBER	ETSI
ALCATEL SEL AG	3GPPMEMBER	ETSI
AT&T Corp.	3GPPMEMBER	T1
Beijing Pacific LinkAir (Beijing Pacific LinkAir Communications, Inc.)	3GPPMEMBER	CWTS
Bellsouth Cellular	3GPPMEMBER	T1
BLU S.p.A	3GPPMEMBER	ETSI
BOUYGUES Telecom	3GPPMEMBER	ETSI
BT	3GPPMEMBER	ETSI
BT Cellnet	3GPPMEMBER	ETSI
BMW (BUNDESMINISTERIUM FÜR WIRTSCHAFT)	3GPPMEMBER	ETSI
CATT	3GPPMEMBER	CWTS
CEGETEL	3GPPMEMBER	ETSI
CETECOM GmbH (CETECOM GmbH - Certification and Testing in Communications)	3GPPMEMBER	ETSI
China Mobile Company Corp. (China Mobile Company Corporation (CMCC))	3GPPMEMBER	CWTS
Cisco Systems Inc.	3GPPMEMBER	ETSI
Cisco Systems Inc.	3GPPMEMBER	T1
CMG (CMG Telecommunications & Utilities B.V.)	3GPPMEMBER	ETSI
COMNEON GmbH & Co	3GPPMEMBER	ETSI
Compaq Computer SpA	3GPPMEMBER	ETSI
Comverse Network Systems (Comverse Network Systems (CNS) Europe B.V.)	3GPPMEMBER	ETSI
Conexant Systems, Inc.	3GPPMEMBER	T1
DACOM Corporation	3GPPMEMBER	TTA
Dansk MobilTelefon I/S	3GPPMEMBER	ETSI
DDI Corporation Japan	3GPPMEMBER	ARIB
Deutsche Telekom MobilNet (Deutsche Telekom MobilNet GmbH)	3GPPMEMBER	ETSI
diAx Telecommunications	3GPPMEMBER	ETSI
DoCoMo Europe S.A.	3GPPMEMBER	ETSI
DTI (DTI - Department of Trade and Industry)	3GPPMEMBER	ETSI
E-PLUS Mobilfunk	3GPPMEMBER	ETSI
ETRI (Electronics & Telecommunications Research Institute)	3GPPMEMBER	TTA
ERA-GSM POLSKA TELEFONIA	3GPPMEMBER	ETSI
Ericsson Inc. (Ericsson Incorporated)	3GPPMEMBER	T1
ERICSSON KOREA	3GPPMEMBER	TTA
ERICSSON L.M. (ERICSSON L.M. Telefonaktiebolaget)	3GPPMEMBER	ETSI
FEEI (FEEI - Fachverband der Elektro- und Elektronikindustrie Bereich Technik)	3GPPMEMBER	ETSI
Finnet Group	3GPPMEMBER	ETSI
France Telecom (France Telecom R&D)	3GPPMEMBER	ETSI
FUJITSU Europe Telecom R & D C (FUJITSU Europe Telecom R & D Centre)	3GPPMEMBER	ETSI
Fujitsu Limited	3GPPMEMBER	ARIB
Fujitsu Limited	3GPPMEMBER	TTC
GIESECKE & DEVRIENT GmbH	3GPPMEMBER	ETSI
GOLDEN BRIDGE TECHNOLOGY INC.	3GPPMEMBER	ETSI
Golden Bridge Technology Inc.	3GPPMEMBER	T1
HEWLETT-PACKARD France	3GPPMEMBER	ETSI
HuaWei Technologies Co., Ltd	3GPPMEMBER	CWTS
HYUNDAI ELECTRONICS INDUSTRIES	3GPPMEMBER	TTA

Organisation Name	Organisation Status	Partner
ICP (ICP - Instituto das Comunicacoes de Portugal)	3GPPMEMBER	ETSI
IICS GmbH (Integrated Information & Communication Systems GmbH)	3GPPMEMBER	ETSI
InterWAVE Com. Intern. B.V. (InterWAVE Communications International B.V.)	3GPPMEMBER	ETSI
ITALTEL S.p.A.	3GPPMEMBER	ETSI
Japan Telecom Co. Ltd	3GPPMEMBER	ARIB
KOREA TELECOM CORP.	3GPPMEMBER	TTA
KPN (KPN - Koninklijke PTT Nederland NV)	3GPPMEMBER	ETSI
LGIC (LG Information & Communications)	3GPPMEMBER	TTA
LG Technology Center Europe	3GPPMEMBER	ETSI
Lucent Technologies BCS & ME (Lucent Technologies Business Communications Systems & Micro Electronics GmbH)	3GPPMEMBER	ETSI
Lucent Technologies EMEA B.V.	3GPPMEMBER	ETSI
Lucent Technologies Japan Ltd.	3GPPMEMBER	TTC
Lucent Technologies (Lucent Technologies Network System GmbH)	3GPPMEMBER	ETSI
Lucent Technologies N. S. UK (Lucent Technologies Network Systems UK)	3GPPMEMBER	ETSI
MANNESMANN Mobilfunk GmbH	3GPPMEMBER	ETSI
MARCONI COMMUNICATIONS	3GPPMEMBER	ETSI
MATAV (MATAV Hungarian Telecommunications Company Limited)	3GPPMEMBER	ETSI
Matsushita Communication (Matsushita Communication Industrial Co, Ltd)	3GPPMEMBER	ARIB
MAX.MOBIL. TELEKOM. (MAX.MOBIL. TELEKOMMUNIKATION SERVICE GMBH)	3GPPMEMBER	ETSI
MICROSOFT EUROPE SARL	3GPPMEMBER	ETSI
MINISTERO DELLE COMUNICAZIONI (MINISTERO DELLE COMUNICAZIONI - ISTITUTO SUPERIORE C.T.I.)	3GPPMEMBER	ETSI
Mitsubishi Electric Co.	3GPPMEMBER	ARIB
mitsubishi Electric (mitsubishi Electric France)	3GPPMEMBER	ETSI
MOTOROLA A/S	3GPPMEMBER	ETSI
Motorola Inc.	3GPPMEMBER	T1
MOTOROLA Ltd	3GPPMEMBER	ETSI
MOTOROLA S.A.	3GPPMEMBER	ETSI
NTL (National Transcommunications Ltd)	3GPPMEMBER	ETSI
NATIONAL RADIOCOMMS. AGENCY (NATIONAL RADIOCOMMUNICATIONS AGENCY)	3GPPMEMBER	ETSI
NEC Corporation	3GPPMEMBER	ARIB
NEC Corporation	3GPPMEMBER	TTC
NEC Europe Ltd	3GPPMEMBER	ETSI
Nippon Ericsson (Nippon Ericsson K.K.)	3GPPMEMBER	ARIB
NTT (Nippon Telegraph and Telephone Corporation (NTT))	3GPPMEMBER	TTC
NOKIA Corporation	3GPPMEMBER	ETSI
Nokia Telecommunications Inc.	3GPPMEMBER	T1
NOKIA UK Ltd	3GPPMEMBER	ETSI
NORTEL NETWORKS (EUROPE)	3GPPMEMBER	ETSI
Northstream AB	3GPPMEMBER	ETSI
Norwegian Post and Telecom. A. (Norwegian Post and Telecommunications Authority)	3GPPMEMBER	ETSI
NTT DoCoMo (NTT MOBILE COMMUNICATIONS NETWORK INC.)	3GPPMEMBER	ARIB
NTT DoCoMo (NTT Mobile Communications Network, Inc. (NTT DoCoMo))	3GPPMEMBER	TTC
OKI Electric Europe GmbH	3GPPMEMBER	ETSI
OMNITEL (OMNITEL Pronto Italia SpA)	3GPPMEMBER	ETSI
One 2 One Personal Comm. Ltd (One 2 One Personal Communications Limited)	3GPPMEMBER	ETSI
ORANGE PCS LTD	3GPPMEMBER	ETSI
Pacific Bell Wireless	3GPPMEMBER	T1
PANASONIC Deutschland GmbH (PANASONIC Deutschland GmbH c/o Matsushita European Technology Center (E-TEC))	3GPPMEMBER	ETSI
PHILIPS Consumer Communication	3GPPMEMBER	ETSI
PHILIPS Consumer Electronics	3GPPMEMBER	ETSI
PTK CENTERTEL (Polska Telefonia Komorkowa CENTERTEL Sp.z.o.o.)	3GPPMEMBER	ETSI
Portugal Telecom SA (Portugal Telecom SGPS, SA)	3GPPMEMBER	ETSI
QUALCOMM EUROPE S.A.R.L.	3GPPMEMBER	ETSI
RadioScape Limited	3GPPMEMBER	ETSI
RITT	3GPPMEMBER	CWTS
SAGEM Group (SAGEM Group)	3GPPMEMBER	ETSI
Samsung Electronics Co., Ltd (Samsung Electronics Ind. Co., Ltd.)	3GPPMEMBER	TTA
SAMSUNG Electronics (SAMSUNG Electronics Research Institute)	3GPPMEMBER	ETSI
SBC Communications Inc.	3GPPMEMBER	T1
SCHLUMBERGER (SCHLUMBERGER Automatic Test Equipment)	3GPPMEMBER	ETSI
Schlumberger Industries	3GPPMEMBER	ETSI
Secr�tariat d' Etat Industrie (Secr�tariat d'Etat � l'Industrie)	3GPPMEMBER	ETSI
SHARP Corporation	3GPPMEMBER	ARIB
SHARP Manufacturing France S.A (SHARP Manufacturing France SA)	3GPPMEMBER	ETSI
SIEMENS AG	3GPPMEMBER	ETSI
SIEMENS ATEA NV	3GPPMEMBER	ETSI
Siemens ICN S.p.A. (Siemens Information and Communication Networks SpA)	3GPPMEMBER	ETSI

Organisation Name	Organisation Status	Partner
Siemens K.K (Siemens K.K.)	3GPPMEMBER	ARIB
Siemens K.K.	3GPPMEMBER	TTC
SK TELECOM	3GPPMEMBER	TTA
SONERA Corporation	3GPPMEMBER	ETSI
SONY Corporation	3GPPMEMBER	ARIB
STMicroelectronics (STMicroelectronics S.A.)	3GPPMEMBER	ETSI
SWISSCOM	3GPPMEMBER	ETSI
Symmetry Communications Syst. (Symmetry Communications Systems)	3GPPMEMBER	ETSI
SYNOPTIS GmbH	3GPPMEMBER	ETSI
TEKTRONIX GmbH & Co KG	3GPPMEMBER	ETSI
Telcordia Technologies Inc.	3GPPMEMBER	T1
TELECOM ITALIA S.p.A.	3GPPMEMBER	ETSI
Telecom Modus Ltd. (Telecom Modus Limited)	3GPPMEMBER	ETSI
TELEFONICA de España S.A. (TELEFONICA DE ESPAÑA SA)	3GPPMEMBER	ETSI
Telekom Austria AG (Telekom Austria Aktiengesellschaft)	3GPPMEMBER	ETSI
TELELOGIC AB	3GPPMEMBER	ETSI
TELENOR AS	3GPPMEMBER	ETSI
TELIA AB	3GPPMEMBER	ETSI
TELIT Mobile Terminals S.p.A.	3GPPMEMBER	ETSI
Telrad Networks Ltd. (Telrad Network Ltd.)	3GPPMEMBER	ETSI
Unisys Deutschland GmbH	3GPPMEMBER	ETSI
ULB-STC (Université Libre de Bruxelles - Service Télématique et Communication)	3GPPMEMBER	ETSI
VIP-NET GSM d.o.o	3GPPMEMBER	ETSI
VODAFONE Group Plc	3GPPMEMBER	ETSI
VoiceStream Wireless Corp. (VoiceStream Wireless Corporation)	3GPPMEMBER	T1
WAVECOM (WAVECOM S.A.)	3GPPMEMBER	ETSI
WIND TELECOMUNICAZIONI SPA	3GPPMEMBER	ETSI
Zhongxing Telecom Ltd.	3GPPMEMBER	CWTS
Total Voting Members : 147		
This report shows the 3GPP Member Companies on the Voting List for TSG SA Meeting #10 Inclusion on this list is obtained by attending a meeting of TSG SA A company is removed from the list if it is not represented at any of the 3 previous meetings of this group. If you believe your company should be included in this list, please provide supporting information to MCC, the 3GPP Support Team at: 3gppcontact@etsi.fr		

Annex D: Status list of Specifications and Reports after TSG SA Meeting #9 ("September 2000 Release")

See also: http://www.3gpp.org/3G_Specs/3G_Specs.htm

Type	Number	Title	Ver at TSG#9	Rel	planned/achieved V3	TSG/WG	Editor	Comment
3GPP Specifications and reports								
TS	21.101	3rd Generation mobile system Release 1999 Specifications	3.1.0	R1999	Mar 00	SP	MEREDITH, John M	Aprvl by e-mail post TSG#6: 2.1.0 - comments: 2.2.0; TSG#7:2.3.0(SP-000037),2.4.0(SP-000104),2.5(SP-000xxx) 3.0.0 post-TSG#8:3.1.0
TS	21.102	3rd Generation mobile system Release 2000 Specifications	1.0.0	Rel-4	Dec 00	SP	MEREDITH, John M	TSG#8:1.0.0
TS	21.111	USIM and IC card requirements	3.3.0	R1999	April 99	T3	MARINGER, Günter	TSG#7: 3.1.0 TSG#8:3.2.0 TSG#9:3.3.0
TS	21.133	Security Threats and Requirements	3.1.0	R1999	April 99	S3	CHRISTOFFERSSON, Per	.
TR	21.801	3GPP drafting rules	4.0.0	Rel-4	Jun 00	SP	MEREDITH, John M	Formal doc created after TSG#7. (Was briefly 21.200) TSG#8:4.0.0 (1.0.1)
TR	21.810	Report on multi-mode UE issues; ongoing work and identified additional work	3.0.0	R1999	Jun 00	T2	PERSOON, Sofi	TSG#7:2.0.0 - number changed from 21.910. Not approved. 2.0.0 TSG#8:3.0.0 (2.2.0)
TR	21.900	3GPP Working methods	3.4.0	R1999	April 99	SP	MEREDITH, John M	TSG#8:3.3.0 TSG#9:3.4.0
TR	21.904	UE Capability Requirements (UCR)	3.2.0	R1999	Mar 00	T2	SOOD, Prem	TSG-T#7 is the new target for approval as part of R99. TSG#7:2.0.0(TP-000026), 3.0.0 TSG#8:3.1.0 (will not be propagated to R00) TSG#9:3.2.0
TR	21.905	3G Vocabulary	3.2.0	R1999	Mar 00	S1	ZARRI, Michele	TSG#7: (SP-000072) 3.0.0 TSG#8:3.1.0 TSG#9:3.2.0
TR	21.905	3G Vocabulary	4.0.0	Rel-4	Mar 00	S1	ZARRI, Michele	TSG#7: (SP-000072) 3.0.0 TSG#8:3.1.0 TSG#9:4.0.0
TR	21.910	Multi-mode UE issues; categories, principles and procedures	3.0.0	R1999	Jun 00	-	PERSOON, Sofi	TSG#7: 2.0.0, but not approved. Number to be changed to 21.810. TSG#8: Re-instated with changed title and contents. TSG#8:3.0.0 (2.1.0)
TR	21.978	Feasibility Technical Report – CAMEL Control of VoIP Services	3.0.0	R1999	Mar 00	N2	SMITH, David	Not approved N#6. TSG#8:3.0.0 (2.1.1)
TS	22.001	Principles of CircuitTelecommunication Services Supported by a Public Land Mobile Network (PLMN)	3.2.0	R1999	Mar 00	S1	KOKKOLA, Tommi	Transfer>TSG#5. TSG#7: 3.2.0
TS	22.001	Principles of CircuitTelecommunication Services Supported by a Public Land Mobile Network (PLMN)	4.0.0	Rel-4	Dec 00	S1	KOKKOLA, Tommi	Transfer>TSG#5. TSG#7: 3.2.0 TSG#9:4.0.0
TS	22.002	Circuit Bearer Services Supported by a PLMN	3.5.0	R1999	Oct 99	S1	CARPENTER, Paul	TSG#7: 3.3.0 TSG#8:3.4.0 TSG#9:3.5.0
TS	22.002	Circuit Bearer Services Supported by a PLMN	4.0.0	Rel-4	Dec 00	S1	CARPENTER, Paul	TSG#7: 3.3.0 TSG#8:3.4.0 TSG#9:4.0.0
TS	22.003	Circuit Teleservices supported by a Public Land Mobile Network (PLMN)	3.2.0	R1999	Jun 00	S1	KOKKOLA, Tommi	Transfer>TSG#5, CR@TSG#6. TSG#7: 3.2.0
TS	22.003	Circuit Teleservices supported by a Public Land Mobile Network (PLMN)	4.0.0	Rel-4		S1	KOKKOLA, Tommi	TSG#7: 4.0.0
TS	22.004	General on Supplementary Services	3.2.1	R1999	Oct 99	S1	CARPENTER, Paul	CR@TSG#6. TSG#7: 3.2.0
TS	22.011	Service accessibility	3.3.0	R1999	Oct 99	S1	GALLAIRE, Jean Paul	TSG#7: 3.2.0 TSG#9:3.3.0
TS	22.011	Service accessibility	4.2.0	Rel-4	Dec 00	S1	GALLAIRE, Jean Paul	TSG#7: 4.0.0 TSG#8:4.1.0 TSG#9:4.2.0
TS	22.016	International Mobile Equipment Identities (IMEI)	3.2.0	R1999	Oct 99	S1	KOKKOLA, Tommi	TSG#8:3.2.0
TS	22.022	Personalisation of GSM ME Mobile functionality specification - Stage 1	3.2.0	R1999	Oct 99	S3	NGUYEN NGOC, Sebastien	. TSG#9:3.2.0
TS	22.024	Description of Charge Advice Information (CAI)	3.0.1	R1999	Oct 99	S1	DWYER, Paul	.
TS	22.030	Man-Machine Interface (MMI) of the Mobile Station (MS)	3.4.0	R1999	Oct 99	S1	TOIVANEN, Annukka	TSG#7: 3.3.0 TSG#9:3.4.0
TS	22.034	High Speed Circuit Switched Data (HSCSD) - Stage 1	3.2.2	R1999	Oct 99	S1	KOKKOLA, Tommi	TSG#7: 3.2.0

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TS	22.038	SIM application toolkit (SAT); Stage 1	3.2.0	R1999	Oct 99	S1	ROBINSON, Bill	TSG#7: 3.1.0 TSG#8:3.2.0
TS	22.038	SIM application toolkit (SAT); Stage 1	5.0.0	Rel-5	Oct 99	S1	ROBINSON, Bill	TSG#7: 3.1.0 TSG#8:3.2.0 TSG#9:5.0.0
TS	22.041	Operator Determined Call Barring	3.1.0	R1999	Oct 99	S1	DWYER, Paul	.
TS	22.042	Network Identity and Time Zone (NITZ), stage 1	3.0.1	R1999	Oct 99	S1	DAHLKVIST, Mikael	CR to 3.0.1 not aprvd.
TS	22.043	Support of Localised Service Area (SoLSA) - Stage 1	3.1.0	R1999	Oct 99	S1	KOKKOLA, Tommi	TSG#8:3.1.0
TS	22.053	Tandem Free Operation of speech codecs; Stage 1 service description	0.1.1	Rel-4	tbd	S4	...	.
TS	22.057	Mobile Station Application Execution Environment (MExE); Stage 1	3.0.1	R1999	Oct 99	S1	CATALDO, Mark	.
TS	22.057	Mobile Station Application Execution Environment (MExE); Stage 1	4.0.0	Rel-4	Mar 01	S1	CATALDO, Mark	. TSG#9:4.0.0
TS	22.057	Mobile Station Application Execution Environment (MExE); Stage 1	5.0.0	Rel-5	Dec 01	S1	CATALDO, Mark	. TSG#9:5.0.0
TS	22.060	General Packet Radio Service (GPRS); Stage 1	3.5.0	R1999	Oct 99	S1	CARPENTER, Paul	TSG#7: 3.3.0 TSG#8:3.4.0 TSG#9:3.5.0
TS	22.060	General Packet Radio Service (GPRS); Stage 1	4.1.0	Rel-4	Oct 99	S1	CARPENTER, Paul	TSG#7: 4.0.0 TSG#8:4.1.0
TS	22.066	Support of Mobile Number Portability (MNP); Stage 1	3.2.0	R1999	Oct 99	S1	...	TSG#7:(not 3.2.0!) 3.1.0 TSG#8:3.2.0
TS	22.067	enhanced Multi-Level Precedence and Pre-emption service (eMLPP) - Stage 1	3.0.1	R1999	Oct 99	S1	SWETINA, Joerg	.
TS	22.071	Location Services (LCS); Stage 1	3.3.0	R1999	Oct 99	S1	WOHLERT, Randolph	. TSG#9:3.3.0
TS	22.071	Location Services (LCS); Stage 1	4.1.0	Rel-4	Dec 99	S1	WOHLERT, Randolph	based on 3.2.0 TSG#8:4.0.0 TSG#9:4.1.0
TS	22.072	Call Deflection (CD); Stage 1	3.0.1	R1999	Oct 99	S1	RAUCH, Horst	.
TS	22.078	CAMEL; Stage 1	3.5.0	R1999	Oct 99	S1	GRECH, Michel	TSG#7: 3.3.0 TSG#8:3.4.0 TSG#9:3.5.0
TS	22.078	CAMEL; Stage 1	4.0.0	Rel-4	Dec 00	S1	GRECH, Michel	TSG#7: 3.3.0 TSG#8:3.4.0 TSG#9:4.0.0
TS	22.078	CAMEL; Stage 1	5.0.0	Rel-5	Dec 00	S1	GRECH, Michel	TSG#7: 3.3.0 TSG#8:3.4.0 TSG#9:5.0.0
TS	22.079	Support of Optimal Routing; Stage 1	3.0.1	R1999	Oct 99	S1	...	.
TS	22.081	Line Identification Supplementary Services; Stage 1	3.2.0	R1999	Oct 99	S1	AHNBERG, Tomas	TSG#8:3.2.0
TS	22.082	Call Forwarding (CF) Supplementary Services; Stage 1	3.0.1	R1999	Oct 99	S1	GALLAIRE, Jean Paul	.
TS	22.083	Call Waiting (CW) and Call Hold (HOLD) Supplementary Services; Stage 1	3.0.1	R1999	Oct 99	S1	...	.
TS	22.084	MultiParty (MPY) Supplementary Service; Stage 1	3.0.1	R1999	Oct 99	S1	...	.
TS	22.085	Closed User Group (CUG) Supplementary Services; Stage 1	3.1.0	R1999	Oct 99	S1	...	.
TS	22.086	Advice of Charge (AoC) Supplementary Services; Stage 1	3.1.0	R1999	Oct 99	S1	DWYER, Paul	#5: 3.1.0
TS	22.087	User-to-user signalling (UUS); Stage 1	3.1.0	R1999	Oct 99	S1	BRADEN, Christian	#5: 3.0.1, but should have been 3.1.0 to include a CR wrongly attributed to 22.086.
TS	22.088	Call Barring (CB) Supplementary Services; Stage 1	3.0.1	R1999	Oct 99	S1	...	.
TS	22.090	Unstructured Supplementary Service Data (USSD); Stage 1	3.1.0	R1999	Oct 99	S1	KOKKOLA, Tommi	TSG#7: 3.1.0
TS	22.091	Explicit Call Transfer (ECT) Supplementary Service; Stage 1	1.0.0	R1999	Oct 99	S1	...	. TSG#9:1.0.0
TS	22.093	Call Completion to Busy Subscriber (CCBS); Stage 1	3.0.1	R1999	Oct 99	S1	...	.
TS	22.094	Follow Me Stage 1	3.1.0	R1999	Dec 99	S1	...	Transfer>TSG#6
TS	22.096	Calling Name Presentation (CNAP); Stage 1 (T1P1)	3.0.1	R1999	Oct 99	S1	...	.
TS	22.097	Multiple Subscriber Profile (MSP); Stage 1	3.2.0	R1999	Oct 99	S1	DWYER, Paul	. TSG#9:3.2.0
TS	22.100	UMTS Phase 1	3.6.0	R1999	April 99	S1	GALLAIRE, Jean Paul	CR@TSG#6; 3.7.0 awaiting attention from MCC expert; who later says 3.5.0 is the good version. TSG#7: 3.6.0
TS	22.101	UMTS Service principles	3.b.0	R1999	April 99	S1	DWYER, Paul	TSG#7: 3.9.0 TSG#8:3.10.0 TSG#9:3.b.0
TS	22.101	UMTS Service principles	4.1.0	Rel-4	Dec 00	S1	DWYER, Paul	based on 3.9.0 TSG#8:4.0.0 TSG#9:4.1.0
TS	22.101	UMTS Service principles	5.0.0	Rel-5	Dec 01	S1	DWYER, Paul	based on 3.9.0 TSG#8:4.0.0 TSG#9:5.1.0
TS	22.105	Services & Service capabilities	3.9.0	R1999	April 99	S1	ASHWELL, Wayne	TSG#7: 3.8.0 TSG#8:3.9.0
TS	22.105	Services & Service capabilities	4.0.0	Rel-4	Dec 00	S1	ASHWELL, Wayne	TSG#7: 3.8.0 TSG#8:3.9.0 TSG#9:4.0.0

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TS	22.115	Service Aspects Charging and billing	3.3.0	R1999	April 99	S1	MONTEGROSSO, Emanuele	TSG#7: 3.3.0
TS	22.121	Provision of Services in UMTS - The Virtual Home Environment - Stage 1	3.3.0	R1999	Jun 99	S1	OGUNBEKUN, Jumoke	TSG#7: 3.2.0 TSG#8:3.3.0
TS	22.121	Provision of Services in UMTS - The Virtual Home Environment - Stage 1	4.0.0	Rel-4	Jun 99	S1	OGUNBEKUN, Jumoke	TSG#7: 3.2.0 TSG#8:3.3.0 TSG#9:4.0.0
TS	22.127	Service Requirement for the Open Services Access (OSA) - stage 1	1.0.0	Rel-4	Dec 00	S1	SWETINA, Joerg	
TS	22.129	Handover Requirements between UMTS and GSM or other Radio Systems	3.4.0	R1999	April 99	S1	SAMPSON, Nick	TSG#8:3.3.0 TSG#9:3.4.0
TS	22.129	Handover Requirements between UMTS and GSM or other Radio Systems	4.0.0	Rel-4	Mar 01	S1	SAMPSON, Nick	TSG#8:3.3.0 TSG#9:4.0.0
TS	22.135	Multicall Stage 1	3.4.0	R1999	Dec 99	S1	KOKKOLA, Tommi	TSG#7: 3.2.0 TSG#8:3.3.0 TSG#9:3.4.0
TS	22.140	Multimedia Messaging Service Stage 1	3.1.0	R1999	Dec 99	S1	LAUMEN, Josef	TSG#8:3.1.0
TS	22.140	Multimedia Messaging Service Stage 1	4.0.1	Rel-4	Dec 99	S1	LAUMEN, Josef	based on 3.0.0 TSG#8:4.0.0
TS	22.226	Global text telephony; stage 1: Service description	1.0.0	Rel-4	Dec 00	S1	HELLSTROM, Gunnar	WI approved TSG#7 TSG#9:1.0.0
TS	22.228	IP multimedia subsystem; stage 1	1.0.0	Rel-4		S1	CATALDO, Mark	
TR	22.945	Study of provision of fax service in GSM and UMTS	3.0.0	R1999	Oct 99	T2	COLBAN, Erik	.
TR	22.971	Automatic establishment of roaming relationships	3.1.1	R1999	April 99	S1	MONTEGROSSO, Emanuele	.
TR	22.975	Advanced addressing	3.1.0	R1999	April 99	S1	KLEIER, Stephan	.
TR	22.976	Study on PS domain services and capabilities	2.0.0	Rel-4	Dec 00	S1	CATALDO, Mark	TSG#7:(SP-000073) 1.0.0 TSG#8:2.0.0
TS	23.002	Network Architecture	3.3.0	R1999	Oct 99	S2	SULTAN, Alain	Open issues to be finalized by TSG#7. TSG#7: 3.3.0
TS	23.002	Network Architecture	5.0.0	Rel-5	Dec 01	S2	SULTAN, Alain	Open issues to be finalized by TSG#7. TSG#7: 3.3.0 TSG#9:5.0.0
TS	23.003	Numbering, Addressing and Identification	3.6.0	R1999	April 99	N4	..,	TSG#7: 3.4.0 TSG#8:3.5.0 TSG#9:3.6.0
TS	23.007	Restoration procedures	3.4.0	R1999	April 99	N4	..,	TSG#7: 3.3.0 TSG#8:3.4.0
TS	23.008	Organisation of subscriber data	3.5.0	R1999	April 99	N4	..,	TSG#7: 3.3.0 TSG#8:3.4.0 TSG#9:3.5.0
TS	23.009	Handover procedures	3.4.0	R1999	April 99	N1	FARHOUMAND, Rouzbeh	TSG#7: 3.2.0 TSG#8:3.3.0 TSG#9:3.4.0
TS	23.011	Technical Realization of Supplementary Services - General Aspects	3.1.0	R1999	April 99	N4	..,	. TSG#9:3.1.0
TS	23.012	Location management procedures	3.3.0	R1999	April 99	N4	..,	TSG#7: 3.2.0 TSG#8:3.3.0
TS	23.014	Support of Dual Tone Multi Frequency (DTMF) signalling	3.1.0	R1999	April 99	N1	..,	.
TS	23.015	Technical realisation of Operator Determined Barring (ODB)	3.1.0	R1999	April 99	N4	PARK, Ian David Chalmers	.
TS	23.016	Subscriber data management - Stage 2	3.6.0	R1999	April 99	N4	..,	TSG#7: 3.4.0 TSG#8:3.5.0 TSG#9:3.6.0
TS	23.018	Basic Call Handling - Technical realisation	3.6.0	R1999	April 99	N4	PARK, Ian David Chalmers	TSG#7: 3.4.0 TSG#8:3.5.0 TSG#9:3.6.0
TS	23.032	Universal Geographical Area Description (GAD)	3.1.0	R1999	April 99	S2	..,	TSG#7: 3.1.0
TS	23.034	High Speed Circuit Switched Data (HSCSD) - Stage 2	3.2.0	R1999	April 99	N1	MUHONEN, Ahti	TSG#7: 3.2.0
TS	23.038	Alphabets & Language	3.3.0	R1999	Jun 99	T2	HARRIS, Ian	additional CR for R99 on SMS enhanced message content expected at TSG-T#7. No, evidently not.
TS	23.038	Alphabets & Language	4.1.0	Rel-4	Jun 99	T2	HARRIS, Ian	based on 3.3.0 TSG#8:4.0.0 TSG#9:4.1.0
TR	23.039	Interface Protocols for the Connection of Short Message Service Centers (SMSCs) to Short Message Entities (SMEs)	3.2.0	R1999	Jun 99	T2	HARRIS, Ian	. TSG#9:3.2.0
TS	23.040	Technical realisation of Short Message Service	3.5.0	R1999	Jun 99	T2	HARRIS, Ian	additional CR for R99 on SMS enhanced message content expected at TSG-T#7: TSG#7: 3.4.0 TSG#8:3.5.0
TS	23.040	Technical realisation of Short Message Service	4.1.0	Rel-4	Jun 99	T2	HARRIS, Ian	based on 3.4.0 TSG#8:4.0.0 TSG#9:4.1.0

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TS	23.041	Technical Realization of Cell Broadcast Service	3.3.0	R1999	Oct 99	T2	...	additional CR for R99 on UMTS amendments expected at TSG-T#7. TSG#7: 3.2.0 TSG#9:3.3.0
TS	23.042	Compression algorithm for SMS	3.1.0	R1999	Jun 99	T2	HARRIS, Ian	.
TS	23.054	Shared Interworking Functions - Stage 2	3.0.0	R1999	April 99	N3	ROSTÖ, Tommy	.
TS	23.057	Mobile Station Application Execution Environment (MExE)	3.3.0	R1999	Dec 99	T2	CATALDO, Mark	TSG#7: 3.1.0 TSG#8:3.2.0 TSG#9:3.3.0
TS	23.060	General Packet Radio Service (GPRS) Service description; Stage 2	3.5.0	R1999	Apr 99	S2	DELECKI, Andrew	Open issues to be finalized by TSG#7 (expect 3.2.1 2000-01-12). TSG#7: 3.3.0 TSG#8:3.4.0 TSG#9:3.5.0
TS	23.066	Support of GSM Mobile Number Portability (MNP) stage 2	3.3.0	R1999	Oct 99	N4	LOPEZ SORIA, Luis	TSG#7: 3.2.0 TSG#8:3.3.0
TS	23.067	Enhanced Multi-Level Precedence and Preemption Service (EMLPP) - Stage 2	3.1.0	R1999	April 99	N4	...	TSG#7: 3.1.0
TS	23.072	Call Deflection Supplementary Service - Stage 2	3.3.0	R1999	April 99	N4	...	.
TS	23.073	Support of Localised Service Area (SoLSA) - Stage 2	3.0.1	R1999	Oct 99	N4	...	.
TS	23.078	CAMEL Stage 2	3.6.0	R1999	April 99	N2	HOMANN, Christian	TSG#7: Aprvl CRs 56r3 & 18 by e-mail by 31-mar-00. 3.4.0 TSG#8:3.5.0 TSG#9:3.6.0
TS	23.079	Support of Optimal Routeing - Phase 1 - Stage 2	3.6.0	R1999	April 99	N4	PARK, Ian David Chalmers	TSG#7: 3.4.0 TSG#8:3.5.0 TSG#9:3.6.0
TS	23.081	Line Identification Supplementary Services - Stage 2	3.1.0	R1999	April 99	N4	...	TSG#8:3.1.0
TS	23.082	Call Forwarding (CF) Supplementary Services - Stage 2	3.4.0	R1999	April 99	N4	...	TSG#7: 3.2.0 TSG#8:3.0 TSG#9:3.4.0
TS	23.083	Call Waiting (CW) and Call Hold (HOLD) Supplementary Service - Stage 2	3.2.0	R1999	April 99	N4	...	. TSG#9:3.2.0
TS	23.084	MultiParty (MPY) Supplementary Service - Stage 2	3.2.0	R1999	April 99	N4	...	. TSG#9:3.2.0
TS	23.085	Closed User Group (CUG) Supplementary Service - Stage 2	3.1.0	R1999	April 99	N4	...	. TSG#9:3.1.0
TS	23.086	Advice of Charge (AoC) Supplementary Service - Stage 2	3.1.0	R1999	April 99	N4	...	. TSG#9:3.1.0
TS	23.087	User-to-User Signalling (UUS) - Stage 2	3.1.0	R1999	April 99	N4	...	. TSG#9:3.1.0
TS	23.088	Call Barring (CB) Supplementary Service - Stage 2	3.2.0	R1999	April 99	N4	...	TSG#7: 3.2.0 (not approved) TSG#9:3.2.0
TS	23.090	Unstructured Supplementary Service Data (USSD) - Stage 2	3.2.0	R1999	April 99	N4	...	. TSG#9:3.2.0
TS	23.091	Explicit Call Transfer (ECT) Supplementary Service - Stage 2	3.2.0	R1999	April 99	N4	...	. TSG#9:3.2.0
TS	23.093	Call Completion to Busy Subscriber (CCBS) - Stage 2	3.2.0	R1999	April 99	N4	...	. TSG#9:3.2.0
TS	23.094	Follow Me Stage 2	3.2.0	R1999	Dec 99	N4	...	Transfer>TSG#6. TSG#7: 3.1.0 TSG#9:3.2.0
TS	23.096	Name Identification Supplementary Service - Stage 2	3.0.1	R1999	April 99	N4	...	.
TS	23.097	Multiple Subscriber Profile (MSP); Stage 2	3.1.1	R1999	Oct 99	N4	...	TSG#7: 3.1.1
TS	23.101	General UMTS Architecture	3.0.1	R1999	Jun 99	S2	OLSSON, Magnus	.
TS	23.107	Quality of Service, Concept and Architecture	3.4.0	R1999	Oct 99	S2	GREIS, Marc	TSG#7: 3.2.0 TSG#8:3.3.0 TSG#9:3.4.0
TS	23.108	Mobile Radio Interface Layer 3 specification Core Network Protocols stage 2 (structured procedures)	3.2.0	R1999	Jun 99	N1	SALKINTZIS, Apostolis	TSG#7: 3.2.0
TS	23.110	UMTS Access Stratum Services and Functions	3.4.0	R1999	Mar 00	S2	LOPEZ-TORRES, Oscar	TSG#7: 3.4.0
TS	23.116	Super Charger - Stage 2	3.0.0	R1999	Mar 00	N4	ALLEN, Nicholas	TSG#7:2.1.0, 3.0.0
TS	23.119	Gateway Location Register (GLR) - Stage2	3.0.0	R1999	Mar 00	N4	SAWADA, Masahiro	Functionally frozen by CN#6, CN#7 is the new target for approval as part of R99. TSG#7:2.0.0 (NP-000108) 3.0.0
TS	23.121	Architecture Requirements for release 99	3.4.0	R1999	Jun 99	S2	DANIEL, Elizabeth	TSG#7: 3.3.0 TSG#9:3.4.0
TS	23.121	Architecture Requirements for release 99	5.0.0	Rel-5	Dec 01	S2	DANIEL, Elizabeth	TSG#7: 3.3.0 TSG#9:5.0.0
TS	23.122	Non-Access-Stratum functions related to Mobile Station (MS) in idle mode	3.4.0	R1999	April 99	N1	HIETALAHTI, Hannu	Created at TSG#6, CR@TSG#6, Was briefly 23.022. But regenerated from 03.22 in June99. Expect 3.1.0 to correct erroneous incorporation of a CR. Expect 3.1.1 to undo erroneously incorporated CR. TSG#7: 3.2.0 TSG#8:3.3.0 TSG#9:3.4.0
TS	23.127	Virtual Home Environment - Stage 2	3.2.0	R1999	Mar 00	S2	GOURRAUD, Christophe	TSG#7:2.0.0 (SP-000089) 3.0.0 TSG#8:3.1.0 TSG#9:3.2.0

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TS	23.127	Virtual Home Environment - Stage 2	4.0.0	Rel-4	Dec 00	S2	GOURRAUD, Christophe	TSG#7:2.0.0 (SP-000089) 3.0.0 TSG#8:3.1.0 TSG#9:4.0.0
TS	23.135	Multicall - Stage 2	3.2.0	R1999	Mar 00	N4	MITAMURA, Kazuo	TSG#7:1.1.0->3.0.0 3.0.0 TSG#8:3.1.0 TSG#9:3.2.0
TS	23.140	Multimedia Messaging Service (MMS)	3.0.1	R1999	Mar 00	T2	LAUMEN, Josef	TSG#7: 2.0.0(TP-000028) 3.0.0
TS	23.140	Multimedia Messaging Service (MMS)	4.0.0	Rel-4	Dec 00	T2	LAUMEN, Josef	TSG#7: 2.0.0(TP-000028) 3.0.0 TSG#9:4.0.0
TS	23.146	Technical realisation of facsimile Group 3 service - non-transparent	4.1.0	Rel-4	Mar 00	N3	HAGIWARA, Junichiro	New @ TSG#6, Circuit switched type of Real time Non transparent FAX specification. TSG#7:1.1.0 "but not stable enough to be made available"! N3#10: 2.0.0 TSG#8:4.0.0 (2.0.0) TSG#9:4.1.0
TS	23.153	Out of Band Transcoder Control - Stage 2	2.0.0	R1999	Mar 00	N4	...	TSG#7:2.0.0 [argument in SA over r99 or r00] concl: not approved.
TS	23.171	Functional stage 2 description of location services in UMTS	3.1.0	R1999	Mar 00	S2	KÄLL, Jan	TSG#7:2.0.0 (SP-000090), 3.0.0 TSG#8:3.1.0
TS	23.207	End to end quality of service concept and architecture	0.0.0	<?>		S2	OYAMA, Johnson	
TS	23.226	Global text telephony; stage 2: Architecture	0.0.0	Rel-4	Dec 00	N4	HELLSTROM, Gunnar	WI approved TSG#7
TS	23.227	Terminal local model	0.1.0	Rel-4		T2	GUSTAVSSON, Carl	.
TS	23.228	IP multimedia subsystem; stage 2	1.0.0	Rel-4	Dec 00	S2	DANIEL, Elizabeth	
TS	23.271	Functional stage 2 description of location services	1.0.0	Rel-4	Dec 00	S2	KÄLL, Jan	post-TSG#8: Recombined 2G and 3G spec. TSG#9:1.0.0
TR	23.814	Separating RR and MM specific parts of the MS Classmark	3.1.0	R1999	Dec 99	N1	YOKOTA, Fumihiko	TSG #5: 3.0.0: accidentally 3.1.0, but no tech change.
TR	23.821	Architecture Principles for Release 2000	1.0.1	Rel-4	Jun 00	S2	LIND, Christer	TSG#8:1.0.0
TR	23.873	Feasibility study for transport and control separation in the PS CN domain	0.2.0	Rel-4	Dec 00	S2	IBANEZ, Juan-Antonio	
TR	23.874	Feasibility study of architecture for network requested PDP context activation with User-ID	1.0.0	Rel-4	Dec 00	S2	KITADA, Yoshinori	
TR	23.908	Technical report on Pre-Paging	3.0.1	R1999	Jun 99	N4	...	.
TR	23.909	Technical report on the Gateway Location Register	3.0.1	R1999	Jun 99	N4	...	.
TR	23.910	Circuit Switched Data Bearer Services	3.2.0	R1999	Mar 00	N3	BRAUN, Achim	TSG#6: 1.0.0 TSG#7:2.0.0->3.0.0 TSG#8:3.1.0 TSG#9:3.2.0
TR	23.910	Circuit Switched Data Bearer Services	4.0.0	Rel-4	Dec 00	N3	BRAUN, Achim	TSG#6: 1.0.0 TSG#7:2.0.0->3.0.0 TSG#8:3.1.0 TSG#9:4.0.0
TR	23.911	Technical report on Out-of-band transcoder control	3.0.1	R1999	Oct 99	N4	...	.
TR	23.912	Technical report on Super-Charger	3.0.2	R1999	Oct 99	N4	SHARP, Iain	.
TR	23.922	Architecture for an All IP network	1.0.0	R1999		S2	...	Was suspected to be v3.0.0, but evidently not so.
TR	23.923	Combined GSM and Mobile IP mobility handling in UMTS IP CN	3.0.0	R1999	Dec 99	S2	HUBBARD, Elisabeth	.
TR	23.925	UMTS Core network based ATM transport	0.2.0	R1999	Mar 00	S2	ROUZ, Adel	.
TR	23.930	Iu Principles	3.0.0	R1999	Jun 99	S2	...	.
TR	23.972	Circuit Switched Multimedia Telephony	3.0.0	R1999	Mar 00	N1	KAUHANEN, Timo	TSG#7:1.0.0 (NP-000103), 3.0.0
TS	24.002	GSM-UMTS Public Land Mobile Network (PLMN) Access Reference Configuration	3.0.0	R1999	Mar 00	N1	SIMMONS, Paul	TSG#7: 3.0.0
TS	24.007	Mobile Radio Interface Signalling Layer 3 - General Aspects	3.5.0	R1999	Oct 99	N1	HOWELL, Andrew	TSG#7: 3.3.0 TSG#8:3.4.0 TSG#9:3.5.0
TS	24.008	Mobile Radio Interface Layer 3 specification; Core Network Protocols - Stage 3	3.5.0	R1999	April 99	N1	HOWELL, Andrew	CR@TSG#6, editorial mod later. TSG#7: 3.3.0 TSG#8:3.4.0 TSG#9:3.5.0
TS	24.008	Mobile Radio Interface Layer 3 specification; Core Network Protocols - Stage 3	4.0.0	Rel-4		N1	HOWELL, Andrew	
TS	24.010	Mobile Radio Interface Layer 3 - Supplementary Services Specification - General Aspects	3.1.0	R1999	April 99	N4	...	TSG#8:3.1.0
TS	24.011	Point-to-Point (PP) Short Message Service (SMS) Support on Mobile Radio Interface	3.4.0	R1999	Oct 99	N1	NOBUYUKI, Uda	TSG#7: 3.2.0 TSG#8:3.3.0 TSG#9:3.4.0
TS	24.012	Short Message Service Cell Broadcast (SMSCB) Support on the Mobile Radio Interface	3.0.0	R1999	Oct 99	G2	...	.

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TS	24.022	Radio Link Protocol (RLP) for Data and Telematic Services on the (MS-BSS) Interface and the Base Station System - Mobile-services Switching Centre (BSS-MSC) Interface	3.4.0	R1999	April 99	N3	KLEHN, Norbert	TSG#8:3.3.0 TSG#9:3.4.0
TS	24.030	Location Services LCS Stage 3 SS (MO-LR)	3.1.0	R1999	Jun 00	N4	DOSHI, Sonia	TSG#7:Decision to create. TSG#8:3.1.0
TS	24.067	Enhanced Multi-Level Precedence and Pre-emption service (eMLPP) - Stage 3	3.0.0	R1999	April 99	N4	...	.
TS	24.072	Call Deflection Supplementary Service - Stage 3	3.0.0	R1999	April 99	N4	...	.
TS	24.080	Mobile radio Layer 3 Supplementary Service specification - Formats and coding	3.4.0	R1999	April 99	N4	...	T1P1 CR @TSG#6. TSG#7: 3.2.0 TSG#8:3.3.0 TSG#9:3.4.0
TS	24.081	Line Identification Supplementary Service - Stage 3	3.1.0	R1999	April 99	N4	...	TSG#8:3.1.0
TS	24.082	Call Forwarding Supplementary Service - Stage 3	3.0.0	R1999	April 99	N4	...	.
TS	24.083	Call Waiting (CW) and Call Hold (HOLD) Supplementary Service - Stage 3	3.0.0	R1999	April 99	N4	...	.
TS	24.084	MultiParty (MPPTY) Supplementary Service - Stage 3	3.0.0	R1999	April 99	N4	...	.
TS	24.085	Closed User Group (CUG) Supplementary Service - Stage 3	3.0.0	R1999	April 99	N4	...	.
TS	24.086	Advice of Charge (AoC) Supplementary Service - Stage 3	3.0.0	R1999	April 99	N4	...	.
TS	24.087	User-to-User Signalling (UUS) - Stage 3	3.0.0	R1999	April 99	N4	...	.
TS	24.088	Call Barring (CB) Supplementary Service - Stage 3	3.0.0	R1999	April 99	N4	...	.
TS	24.090	Unstructured Supplementary Service Data (USSD) - Stage 3	3.0.0	R1999	April 99	N4	...	.
TS	24.091	Explicit Call Transfer (ECT) Supplementary Service - Stage 3	3.0.0	R1999	April 99	N4	...	.
TS	24.093	Call Completion to Busy Subscriber (CCBS) - Stage 3	3.0.0	R1999	April 99	N4	...	.
TS	24.096	Name Identification Supplementary Service - Stage 3	3.0.0	R1999	April 99	N4	...	.
TS	24.135	Multicall Stage 3	3.1.0	R1999	Mar 00	N4	MITAMURA, Kazuo	TSG#7:1.0.0->3.0.0 TSG#8:3.1.0
TS	25.101	UE Radio transmission and reception (FDD)	3.4.0	R1999	Oct 99	R4	FERNANDES, Edgar	TSG#7: 3.2.0 TSG#8:3.3.0 TSG#9:3.4.0
TS	25.102	UE Radio transmission and reception (TDD)	3.4.0	R1999	Oct 99	R4	KOTTKAMP, Meik	TSG#7: 3.2.0 TSG#8:3.3.0 TSG#9:3.4.0
TS	25.104	UTRA (BS) FDD; Radio transmission and reception	3.4.0	R1999	Oct 99	R4	SKÖLD, Johan	TSG#7: 3.2.0 TSG#8:3.3.0 TSG#9:3.4.0
TS	25.105	UTRA (BS) TDD; Radio transmission and reception	3.4.0	R1999	Oct 99	R4	KOTTKAMP, Meik	TSG#7: 3.2.0 TSG#8:3.3.0 TSG#9:3.4.0
TS	25.106	UTRA Repeater; Radio transmission and reception	1.0.0	Rel-4		R4	NILSSON, Martin	. TSG#9:1.0.0
TS	25.113	Base station EMC	3.3.0	R1999	Dec 99	R4	BARNES, David	TSG#7: 3.1.0 TSG#8:3.2.0 TSG#9:3.3.0
TS	25.123	Requirements for support of radio resource management (TDD)	3.3.0	R1999		R4	FRANCESCHI, Olle	TSG#7: 3.1.0 TSG#8:3.2.0 TSG#9:3.3.0
TS	25.133	Requirements for support of radio resource management (FDD)	3.3.0	R1999	Dec 99	R4	FRANCESCHI, Olle	TSG#7: 3.1.0 TSG#8:3.2.0 TSG#9:3.3.0
TS	25.141	Base station conformance testing (FDD)	3.3.0	R1999	Dec 99	R4	NAKAMURA, Takaharu	TSG#7: 3.1.0 TSG#8:3.2.0 TSG#9:3.3.0
TS	25.142	Base station conformance testing (TDD)	3.3.0	R1999	Dec 99	R4	MEYER, Juergen	TSG#7: 3.1.0 TSG#8:3.2.0 TSG#9:3.3.0
TS	25.143	UTRA Repeater; Conformance testing	0.0.2	Rel-4		R4	KUMMETZ, Thomas	Was to have been 25.107. But never was. TSG#9:0.0.2
TS	25.201	Physical layer -General Description	3.1.0	R1999	Oct 99	R1	TOSKALA, Antti	TSG#5: 3.0.0; edito post#6: 3.0.1. TSG#7: 3.0.2 TSG#8:3.1.0
TS	25.211	Physical channels and mapping of transport channels onto physical channels (FDD)	3.4.0	R1999	Oct 99	R1	WILDE, Andreas	TSG#7: 3.2.0 TSG#8:3.3.0 TSG#9:3.4.0
TS	25.212	Multiplexing and channel coding (FDD)	3.4.0	R1999	Oct 99	R1	TANAKA, Yoshinori	TSG#7: 3.2.0 TSG#8:3.3.0 TSG#9:3.4.0
TS	25.213	Spreading and modulation (FDD)	3.3.0	R1999	Oct 99	R1	CHAMBERS, David	TSG#7: 3.2.0 TSG#8:3.3.0
TS	25.214	Physical layer procedures (FDD)	3.4.0	R1999	Oct 99	R1	NAKAMURA, Takaharu	TSG#7: 3.2.0 TSG#8:3.3.0 TSG#9:3.4.0
TS	25.215	Physical layer; Measurements (FDD)	3.4.0	R1999	Oct 99	R1	...	TSG#7: 3.2.0 TSG#8:3.3.0 TSG#9:3.4.0
TS	25.221	Physical channels and mapping of transport channels onto physical channels (TDD)	3.4.0	R1999	Oct 99	R1	HIRAMATSU, Katsuhiko	TSG#7: 3.2.0 TSG#8:3.3.0 TSG#9:3.4.0
TS	25.222	Multiplexing and channel coding (TDD)	3.4.0	R1999	Oct 99	R1	KAHTAVA, Jussi	TSG#7: 3.2.0 TSG#8:3.3.0 TSG#9:3.4.0

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TS	25.223	Spreading and modulation (TDD)	3.4.0	R1999	Oct 99	R1	ITO, Kenji	TSG#7: 3.2.0 TSG#8:3.3.0 TSG#9:3.4.0
TS	25.224	Pphysical layer procedures (TDD)	3.4.0	R1999	Oct 99	R1	OESTREICH, Stefan	TSG#7: 3.2.0 TSG#8:3.3.0 TSG#9:3.4.0
TS	25.225	Physical layer; Measurements (TDD)	3.4.0	R1999	Oct 99	R1	...	TSG#7: 3.2.0 TSG#8:3.3.0 TSG#9:3.4.0
TS	25.301	Radio Interface Protocol Architecture	3.6.0	R1999	April 99	R2	GRANZOW, Wolfgang	TSG#7: 3.4.0 TSG#8:3.5.0 TSG#9:3.6.0
TS	25.302	Services provided by the physical layer	3.6.0	R1999	Oct 99	R2	MIHAILESCU, Claudiu	TSG#7: 3.4.0 TSG#8:3.5.0 TSG#9:3.6.0
TS	25.303	UE functions and inter-layer procedures in connected mode	3.5.0	R1999	Jun 99	R2	RINNE, Mikko J	TSG#7: 3.3.0 TSG#8:3.4.0 TSG#9:3.5.0
TS	25.304	UE Procedures in Idle Mode and Procedures for Cell Reselection in Connected Mode	3.4.0	R1999	Oct 99	R2	MAHKONEN, Marko	TSG#7: 3.2.0 TSG#8:3.3.0 TSG#9:3.4.0
TS	25.305	Stage 2 Functional Specification of Location Services in UTRAN (LCS)	3.3.0	R1999	Mar 00	R2	MIHAILESCU, Claudiu	TSG#7: 3.1.0 TSG#8:3.2.0 TSG#9:3.3.0
TS	25.321	Medium Access Control (MAC) Protocol Specification	3.5.0	R1999	Jun 99	R2	SITTE, Armin	TSG#7: 3.3.0 TSG#8:3.4.0 TSG#9:3.5.0
TS	25.322	Radio Link Control (RLC) Protocol Specification	3.4.0	R1999	Oct 99	R2	DUMAZY, Jean	TSG#7: 3.2.0 TSG#8:3.3.0 TSG#9:3.4.0
TS	25.323	Packet Data Convergence Protocol (PDCP) protocol	3.3.0	R1999	Dec 99	R2	HANS, Martin	TSG#7: 3.1.0 TSG#8:3.2.0 TSG#9:3.3.0
TS	25.324	Radio Interface for Broadcast/Multicast Services	3.2.0	R1999	Dec 99	R2	KRISCHAN, Peter	TSG#7: 3.1.0 TSG#9:3.2.0
TS	25.331	Radio Resource Control (RRC) Protocol Specification	3.4.1	R1999	Oct 99	R2	KUCHIBHOTLA, Ravi	TSG#7: 3.2.0 TSG#8:3.3.0 TSG#9:3.4.0
TS	25.401	UTRAN Overall Description	3.4.0	R1999	Oct 99	R3	CALMEL, Jean-Marie	TSG#7: 3.2.0 TSG#8:3.3.0 TSG#9:3.4.0
TS	25.402	Synchronisation in UTRAN Stage 2	3.3.0	R1999	Dec 99	R3	PIOLINI, Flavio	TSG#7: 3.1.0 TSG#8:3.2.0 TSG#9:3.3.0
TS	25.410	UTRAN Iu Interface: General Aspects and Principles	3.2.0	R1999	Oct 99	R3	TOWNEND, Richard	TSG#7: 3.2.0
TS	25.411	UTRAN Iu interface Layer 1	3.2.0	R1999	Jun 99	R3	BRANDT, Achim V.	TSG#7: 3.2.0
TS	25.413	UTRAN Iu interface RANAP signalling	3.3.0	R1999	Dec 99	R3	JUSSILA, Jyrki	TSG#7: 3.1.0 TSG#8:3.2.0 TSG#9:3.3.0
TS	25.414	UTRAN Iu interface data transport & transport signalling	3.5.0	R1999	Jun 99	R3	COMSTOCK, David	TSG#7: 3.3.0 TSG#8:3.4.0 TSG#9:3.5.0
TS	25.415	UTRAN Iu interface user plane protocols	3.4.0	R1999	Oct 99	R3	MAUPIN, Alain	TSG#7: 3.2.0 TSG#8:3.3.0 TSG#9:3.4.0
TS	25.419	UTRAN Iu interface: Cell broadcast protocols between SMS-CBC and RNC	3.2.0	R1999	Mar 00	R3	TAYLOR, Carolyn	TSG#7: 2.0.0 (RP-000113) 3.0.0 TSG#8:3.1.0 TSG#9:3.2.0
TS	25.420	UTRAN Iur Interface: General Aspects and Principles	3.2.0	R1999	Dec 99	R3	THAKARE, Kiran	TSG#7: 3.1.0 TSG#9:3.2.0
TS	25.421	UTRAN Iur interface Layer 1	3.0.0	R1999	Jun 99	R3	BRANDT, Achim V.	.
TS	25.422	UTRAN Iur interface signalling transport	3.4.1	R1999	Jun 99	R3	THAKARE, Kiran	TSG#7: 3.3.0 TSG#8:3.4.0
TS	25.423	UTRAN Iur interface RNSAP signalling	3.3.0	R1999	Dec 99	R3	RUNE, Göran	TSG#7: 3.1.0 TSG#8:3.2.0 TSG#9:3.2.0
TS	25.424	UTRAN Iur interface data transport & transport signalling for CCH data streams	3.4.0	R1999	Jun 99	R3	DREVON, Nicolas	TSG#7:cr was to 3.0.0 3.2.0 TSG#8:3.3.0 TSG#9:3.4.0
TS	25.425	UTRAN Iur interface user plane protocols for CCH data streams	3.2.0	R1999	Oct 99	R3	DREVON, Nicolas	TSG#7: 3.1.0 TSG#8:3.2.0
TS	25.426	UTRAN Iur and Iub interface data transport & transport signalling for DCH data streams	3.4.0	R1999	Jun 99	R3	KEKKI, Sami	TSG#7:cr was to 3.0.0 3.2.0 TSG#8:3.3.0 TSG#9:3.4.0
TS	25.427	UTRAN Iur and Iub interface user plane protocols for DCH data streams	3.4.0	R1999	Oct 99	R3	LONGONI, Fabio	TSG#7: 3.2.0 TSG#8:3.3.0 TSG#9:3.4.0
TS	25.430	UTRAN Iub Interface: General Aspects and Principles	3.3.0	R1999	Dec 99	R3	WILSON, Mick	TSG#7: 3.1.0 TSG#8:3.2.0 TSG#9:3.3.0
TS	25.431	UTRAN Iub interface Layer 1	3.0.0	R1999	Jun 99	R3	BRANDT, Achim V.	.
TS	25.432	UTRAN Iub interface signalling transport	3.1.0	R1999	Jun 99	R3	WILSON, Mick	.
TS	25.433	UTRAN Iub interface NBAP signalling	3.3.0	R1999	Dec 99	R3	ISHIKAWA, Nobutaka	TSG#7: 3.1.0 TSG#8:3.2.0 TSG#9:3.3.0
TS	25.434	UTRAN Iub interface data transport & transport signalling for CCH data streams	3.3.0	R1999	Jun 99	R3	ALDEN, Magnus	TSG#7: 3.2.0 TSG#9:3.3.0
TS	25.435	UTRAN Iub interface user plane protocols for CCH data streams	3.4.0	R1999	Oct 99	R3	CALMEL, Jean-Marie	TSG#7: 3.2.0 TSG#8:3.3.0 TSG#9:3.4.0
TS	25.442	UTRAN Implementation Specific O&M Transport	3.1.0	R1999	Oct 99	R3	RECKER, Stephan	TSG#7: 3.1.0
TR	25.831	Study Items for future release	0.0.2	R1999	Mar 00	R3	DREVON, Nicolas	.
TR	25.832	Manifestations of Handover and SRNS relocation	3.0.0	R1999	Oct 99	R3	TOWNEND, Richard	.
TR	25.833	Physical layer items not for inclusion in Release 99	1.1.0	R1999	Mar 00	R1	...	TSG#8:1.1.0
TR	25.834	UTRA TDD low chip rate option; Radio protocol aspects	1.0.0	Rel-4	Dec 00	R2	LIU, YanHui	

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TR	25.835	Report on hybrid ARQ type II/III	1.0.0	Rel-4	Dec 00	R2	SITTE, Armin	
TR	25.836	Node B synchronization for TDD	1.0.0	Rel-4	Mar 01	R1	OESTREICH, Stefan	
TR	25.837	Hybrid ARQ Type II/III (lub/lur aspects)	0.1.0	Rel-4		R3	BRANDT, Achim V.	
TR	25.838	Node B Synchronisation for TDD (lub/lur aspects)	0.1.0	Rel-4		R3	LENHART, Johannes	
TR	25.839	Uplink Synchronous Transmission Scheme (USTS) (lur/lub aspects)	0.1.0	Rel-4		R3	PARK, Jin Hyo	
TR	25.840	Terminal power saving features	1.0.0	Rel-4	Dec 00	R1	CHOI, Hokyu	
TR	25.841	DSCH power control improvement in soft handover	1.0.0	Rel-4	Dec 00	R1	TOSKALA, Antti	
TR	25.842	Smart antenna	1.0.0	Rel-4	Dec 00	R1	HU, Jinling	
TR	25.843	1.28 Mcps TDD UE Radio Access Capabilities	0.0.1	Rel-4	Dec 00	R2	ZHU, Yifei	
TR	25.844	Radio Acces Bearer Support Enhancements	0.0.0	Rel-4	Dec 00	R2	KRISHNARAJAH, Ainkaran	
TR	25.845	FDD RACH and AICH performance requirements	0.0.0	Rel-4	Dec 00	R4	VIHRIÄLÄ, Jaakko	
TR	25.846	CPCH performance	0.0.0	Rel-4		R4	KWAK, Joe	
TR	25.921	Guidelines and principles for protocol description and error handling	3.1.0	R1999	Dec 99	R2	DUMAZY, Jean	TSG#7: 3.1.0
TR	25.922	Radio Resource Management Strategies	3.3.0	R1999	Dec 99	R2	MAGNANI, Nicola Pio	TSG#7: 3.1.0 TSG#8:3.2.0 TSG#9:3.3.0
TR	25.924	Opportunity Driven Multiple Access (ODMA)	1.0.0	Rel-4	Mar 00	R2	LAW, Alan	.
TR	25.925	Radio Interface for Broadcast/Multicast Services	3.2.0	R1999	Dec 99	R2	KRISCHAN, Peter	TSG#7: 3.1.0 TSG#9:3.2.0
TR	25.926	UE Radio Access capabilities definition	3.2.0	R1999	Mar 00	R2	LUNDSJÖ, Johan	TSG#7:2.0.0 (RP-000052), 3.0.0 TSG#8:3.1.0 TSG#9:3.2.0
TR	25.928	1,28Mcps UTRA TDD Physical Layer	1.1.0	Rel-4	Jun 00	R1	AKSENTIJEVIC, Mirko	anticipated TSG#8; TSG#7:0.0.2 (RP-000091) 0.0.3 (RP-000158) 0.0.3 TSG#8:1.0.0 (0.2.0) TSG#9:1.1.0
TR	25.931	UTRAN Functions, examples on signalling procedures	3.1.0	R1999	Mar 00	R3	SCARRONE, Enrico	TSG#7:1.2.4 (RP-000125) 1.2.4 TSG#8:2.0.0 TSG#9:3.1.0
TR	25.932	Delay budget within the access stratum	1.1.0	Rel-4	Dec 00	R3	...	TSG#8:1.0.0 TSG#9:1.1.0
TR	25.933	IP Transport in UTRAN	0.2.0	Rel-4	Dec 00	R3	DREVON, Nicolas	. TSG#9:0.2.0
TR	25.934	AAL2 QoS optimization	0.2.0	Rel-4	Dec 00	R3	YOSHIMURA, Takayuki	. TSG#9:0.2.0
TR	25.935	RRM optimisation	0.1.0	Rel-4	Dec 00	R3	VAN LIESHOUT, Gert-Jan	
TR	25.936	Handover for realtime services from PS-domain	0.1.0	Rel-4	Dec 00	R3	MOUSSET, Claire	
TR	25.937	UTRAN TDD low chiprate	0.1.0	Rel-4	Dec 00	R3	XU, Bing	TSG#9:0.1.1 TSG#9:0.1.1
TR	25.938	Terminal power saving features	0.1.0	Rel-4	Dec 00	R3	CHOI, Sungho	
TR	25.941	Document structure	3.1.0	R1999	Dec 99	R4	TAKAMI, Tadao	.
TR	25.942	RF system scenarios	2.3.0	<?>	Mar 00	R4	BENABDALLAH, Nadia	TSG#7:2.1.3 2.1.3 TSG#9:2.3.0 not intended for immediate allocation to a particular release, so release set to 'unknown'.
TR	25.943	Deployment aspects	2.0.0	R1999	Mar 00	R4	SKÖLD, Johan	TSG#7:2.0.0
TR	25.944	Channel coding and multiplexing examples	3.2.0	R1999	Mar 00	R1	NAKAMURA, Takaharu	TSG#7:1.0.1, 3.0.0 TSG#8:3.1.0 TSG#9:3.2.0
TR	25.945	RF requirements for low chip rate TDD option	0.3.0	Rel-4	Dec 00	R4	ZHANG, Daijun	. TSG#9:0.3.0
TR	25.946	RAB Quality of Service Negotiation over lu	0.1.0	Rel-4		R3	MOLANDER, Anders	
TR	25.950	UTRA high speed downlink packet access	0.0.0	Rel-4	Dec 00	R2	KUCHIBHOTLA, Ravi	
TR	25.951	BS classification (FDD)	0.0.1	Rel-4	Mar 01	R4	JOKINEN, Sami	
TR	25.952	BS classification (TDD)	0.0.1	Rel-4	Mar 01	R4	ZEIRA, Eldad	
TR	25.990	Vocabulary for UTRAN	3.0.0	R1999	Oct 99	R4	OKRAH, Peter	.
TS	26.071	AMR speech Codec; General description	3.0.1	R1999	Jun 99	S4	EKUDDEN, Erik	.
TS	26.073	AMR speech Codec; C-source code	3.1.0	R1999	Dec 99	S4	EKUDDEN, Erik	approved TSG#6. TSG#7: 3.1.0
TS	26.074	AMR speech Codec; Test sequences	3.0.2	R1999	Dec 99	S4	EKUDDEN, Erik	.
TS	26.090	AMR speech Codec; Transcoding Functions	3.1.0	R1999	Jun 99	S4	EKUDDEN, Erik	.

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TS	26.091	AMR speech Codec; Error concealment of lost frames	3.1.0	R1999	Jun 99	S4	EKUDDEN, Erik	.
TS	26.092	AMR speech Codec; comfort noise for AMR Speech Traffic Channels	3.0.1	R1999	Jun 99	S4	EKUDDEN, Erik	.
TS	26.093	AMR speech Codec; Source Controlled Rate operation	3.2.0	R1999	Jun 99	S4	EKUDDEN, Erik	TSG#8:3.2.0
TS	26.094	AMR Speech Codec; Voice Activity Detector for AMR Speech Traffic Channels	3.0.0	R1999	Oct 99	S4	..,	.
TS	26.101	AMR speech Codec; Frame Structure	3.1.0	R1999	Dec 99	S4	HAGQVIST, Jari	TSG#7: 3.1.0
TS	26.102	AMR speech Codec; Interface to lu and Uu	3.1.0	R1999	Dec 99	S4	NAVARRO, William	TSG#7: 3.1.0
TS	26.103	Codec lists	3.0.0	R1999	Dec 99	S4	HELLWIG, Karl	.
TS	26.104	AMR speech Codec; Floating point C-Code	3.0.0	R1999	Mar 00	S4	..,	New at TSG#6. TSG#7:0.3.0 (SP-000022) 0.3.0 TSG#8:3.0.0 (1.0.0)
TS	26.110	Codec for Circuit switched Multimedia Telephony Service; General Description	3.0.1	R1999	Jun 99	S4	ARONSON, Barry	.
TS	26.110	Codec for Circuit switched Multimedia Telephony Service; General Description	4.0.0	Rel-4	Mar 01	S4	ARONSON, Barry	. TSG#9:4.0.0
TS	26.111	Codec for Circuit switched Multimedia Telephony Service; Modifications to H.324	3.3.0	R1999	Jun 99	S4	ARONSON, Barry	TSG#8:3.2.0 TSG#9:3.3.0
TS	26.131	Narrow Band (3,1kHz) Speech & Video Telephony Terminal Acoustic Characteristics	3.1.0	R1999	Dec 99	S4	GOETZ, Ian	TSG#8:3.1.0
TS	26.132	Narrow Band (3,1kHz) Speech & Video Telephony Terminal Acoustic Test Specification.	3.1.0	R1999	Jun 00	S4	GOETZ, Ian	Feb00: 0.0.1 TSG#8:3.0.0 (1.0.0) TSG#9:3.1.0
TS	26.226	Global text telephony;Transport of text in the voice channel	0.0.9	Rel-4	Dec 00	S4	HELLSTROM, Gunnar	WI approved TSG#7 TSG#9:0.0.9
TR	26.901	AMR Wideband Speech Codec Feasibility Study Report	4.0.1	Rel-4	Mar 00	S4	OHANA, Alain	TSG#7:2.0.0 (SP-000024), 4.0.0
TR	26.911	Codec for Circuit switched Multimedia Telephony Service;Terminal Implementor's Guide	3.2.1	R1999	Jun 99	S4	HAAVISTO, Petri	Oct00:3.2.1
TR	26.912	Codec for Circuit switched Multimedia Telephony Service; Quantitative performance evaluation of H.324 Annex C over 3G	3.0.0	R1999	Mar 00	S4	FRANCESCHI, Olle	TSG#7:2.0.0 (SP-000019), 3.0.0
TR	26.913	Quantitative performance evaluation of real-time packet switched multimedia services over 3G	0.0.1	R1999	Mar 00	S4	HONKO, Harri	.
TR	26.915	QoS for Speech and Multimedia Codec; Quantitative performance evaluation of real-time packet switched multimedia services over 3G	3.0.0	R1999	Mar 00	S4	GOETZ, Ian	TSG#7:1.0.0 (SP-000020), 3.0.0
TR	26.920	Architectural Model for the 3G Transcoders	0.1.1	Rel-4	tbd	S4	NAVARRO, William	.
TR	26.975	Performance characterization of the AMR speech codec	1.1.0	R1999	Mar 00	S4	EKUDDEN, Erik	was 25.075; Feb00: 1.1.0. TSG#7: 1.1.0
TS	27.001	General on Terminal Adaptation Functions (TAF) for Mobile Stations (MS)	3.6.0	R1999	April 99	N3	COLBAN, Erik	TSG#7: 3.4.0 TSG#8:3.5.0 TSG#9:3.6.0
TS	27.001	General on Terminal Adaptation Functions (TAF) for Mobile Stations (MS)	4.1.0	Rel-4		N3	COLBAN, Erik	TSG#8:4.0.0 TSG#9:4.1.0
TS	27.002	Terminal Adaptation Functions (TAF) for services using Asynchronous bearer capabilities	3.5.0	R1999	April 99	N3	COLBAN, Erik	TSG#7: 3.3.0 TSG#8:3.4.0 TSG#9:3.5.0
TS	27.002	Terminal Adaptation Functions (TAF) for services using Asynchronous bearer capabilities	4.0.0	Rel-4		N3	COLBAN, Erik	
TS	27.003	Terminal Adaptation Functions (TAF) for services using Synchronous bearer capabilities	3.5.0	R1999	April 99	N3	COLBAN, Erik	TSG#7: 3.3.0 TSG#8:3.4.0 TSG#9:3.5.0
TS	27.005	Use of Data Terminal Equipment - Data Circuit terminating Equipment (DTE - DCE) interface for Short Message Service (SMS) and Cell Broadcast Service (CBS)	3.1.0	R1999	Jun 99	T2	HARRIS, Ian	.
TS	27.007	AT command set for 3G User Equipment (UE)	3.6.0	R1999	Jun 99	T2	NOVAK, Lars	TSG#8:3.5.0 TSG#9:3.6.0

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TS	27.007	AT command set for 3G User Equipment (UE)	4.0.0	Rel-4	Jun 99	T2	NOVAK, Lars	TSG#8:3.5.0 TSG#9:4.0.0
TS	27.010	Terminal Equipment to User Equipment (TE-UE) multiplexer protocol User Equipment (UE)	3.3.0	R1999	Jun 99	T2	NOVAK, Lars	additional CR for R99 on UMTS amendments expected at TSG-T#7. TSG#7: 3.3.0
TS	27.060	GPRS Mobile Stations supporting GPRS	3.4.0	R1999	April 99	N3	HEATON, Graham	TSG#7: 3.4.0
TS	27.103	Wide Area Network Synchronisation	3.1.0	R1999	Oct 99	T2	LOCKHART, Rob	TSG#8:3.1.0 but this CR not impementable. TSG#9:3.1.0
TS	27.226	Global Text telephony; Terminal aspects	0.0.0	Rel-4	Dec 00	T2	HELLSTROM, Gunnar	WI approved TSG#7
TR	27.901	Report on Terminal Interfaces - An Overview	3.0.0	R1999	Dec 99	T2	REX, Thomas	.
TR	27.903	Discussion of Synchronisation Standards	3.0.0	R1999	Oct 99	T2	LOCKHART, Rob	.
TS	28.062	Inband Tandem Free Operation (TFO) of Speech Codecs; Service Description; Stage 3	0.0.0	Rel-4	Mar 01	S4	..,	.
TS	29.002	Mobile Application Part (MAP)	3.6.0	R1999	April 99	N4	..,	TSG#7: 3.4.0 TSG#8:3.5.0 TSG#9:3.6.0
TS	29.002	Mobile Application Part (MAP)	4.1.0	Rel-4	April 99	N4	..,	TSG#8:4.0.0 TSG#9:4.1.0
TS	29.007	General requirements on Interworking between the PLMN and the ISDN or PSTN	3.6.0	R1999	April 99	N3	KLEHN, Norbert	TSG#7: 3.4.0 TSG#8:3.5.0 TSG#9:3.6.0
TS	29.007	General requirements on Interworking between the PLMN and the ISDN or PSTN	4.0.0	Rel-4	Dec 00	N3	KLEHN, Norbert	TSG#7: 3.4.0 TSG#8:3.5.0 TSG#9:4.0.0
TS	29.010	Information Element Mapping between Mobile Station - Base Station System (MS - BSS) and Base Station System - Mobile-services Switching Centre (BSS - MCS) Signalling Procedures and the Mobile Application Part (MAP)	3.3.0	R1999	Oct 99	N4	..,	TSG#7: 3.2.0 TSG#9:3.3.0
TS	29.011	Signalling Interworking for Supplementary Services	3.0.0	R1999	April 99	N4	..,	.
TS	29.013	Signalling interworking between ISDN supplementary services Application Service Element (ASE) and Mobile Application Part (MAP) protocols	3.0.0	R1999	Oct 99	N4	..,	.
TS	29.016	Serving GPRS Support Mode SGSN - Visitors Location Register (VLR); Gs Interface Network Service Specification	3.1.0	R1999	April 99	N1	MILLS, Duncan	. TSG#9:3.1.0
TS	29.018	Serving GPRS Support Mode SGSN - Visitors Location Register (VLR); Gs Interface Layer 3 Specification	3.4.0	R1999	April 99	N1	MILLS, Duncan	TSG#7: 3.3.0 TSG#9:3.4.0
TS	29.060	GPRS Tunnelling protocol (GTP) across the Gn and Gp interface	3.6.0	R1999	April 99	N4	OLTEDAL, Einar	TSG#7: 3.4.0 TSG#8:3.5.0 TSG#9:3.6.0
TS	29.061	General Packet Radio Service (GPRS); Interworking between the Public Land Mobile Network (PLMN) supporting GPRS and Packet	3.4.0	R1999	April 99	N3	HEATON, Graham	TSG#7: 3.3.0 TSG#9:3.4.0
TS	29.078	CAMEL; Stage 3	3.5.0	R1999	Oct 99	N2	NOLDUS, Rogier	CR@TSG#6, note version changes are not available, 3.1.0 was not created. TSG#7: 3.3.0 TSG#8:3.4.0 TSG#9:3.5.0
TS	29.108	Application of the Radio Access Network Application Part (RANAP) on the E-interface	3.0.0	R1999	Jun 00	R3	VESELY, Alexander	TSG#8:3.0.0 (2.0.0)
TS	29.119	GPRS Tunnelling Protocol (GTP) specification for Gateway Location Register (GLR)	3.0.0	R1999	Mar 00	N4	AIKAWA, Shinichiro	Functionally frozen by CN#6. TSG#7:2.0.0 (TP-000107) 3.0.0
TS	29.120	Mobile Application Part (MAP) specification for Gateway Location Register (GLR); stage 3	3.1.0	R1999	Mar 00	N4	MITAMURA, Kazuo	Functionally frozen by CN#6, CN#7 is the new target for approval as part of R99. TSG#7:2.0.0 3.0.0 TSG#9:3.1.0
TS	29.198	Open Services Architecture API part 1	3.1.0	R1999	Jun 00	N5	HU, Yun Chao	TSG#7:1.0.0 (TP-000056) 1.0.0 TSG#8:3.0.0 (2.0.0) TSG#9:3.1.0
TR	29.998	Open Services Architecture API part 2	3.1.0	R1999	Jun 00	N5	HU, Yun Chao	TSG#7:1.0.0 (TP-000057) 1.0.0 TSG#8:3.0.0 (2.0.0) TSG#9:3.1.0
TR	30.504	Work Plan and Study Items - RAN WG4	2.2.0	<?>	Mar 00	R4	IWASA, Masaaki	.
TR	30.531	Work Plan and Study Items - RAN WG3	0.8.2	R1999	Mar 00	R3	TAYLOR, Carolyn	TSG#7:0.7.0 (RP-000142) 0.7.0 TSG#8:0.8.0 TSG#9:0.8.1 TSG#9:0.8.2
TR	30.801	Overall Project Plan	1.1.0	<?>	Mar 00	S2	SULTAN, Alain	.

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TR	30.802	Project plan on Bearer Services and QoS	1.0.0	<?>	Mar 00	S2	LOPEZ-TORRES, Oscar	.
TR	30.804	Project plan on GSM/UMTS Interoperation and Mobility Management	1.0.0	<?>	Mar 00	S2	COURAU, François	.
TR	30.806	Project plan on Location based services	1.0.0	<?>	Mar 00	S2	KÄLL, Jan	.
TR	30.808	Project plan on Packet Architecture and Circuit Architecture	1.0.0	<?>	Mar 00	S2	DROPMANN, Ulrich	.
TR	30.810	Project plan on Security	1.0.0	<?>	Mar 00	S2	PUDNEY, Chris	.
TR	30.812	Project plan on Services and Service platforms	1.0.0	<?>	Mar 00	S2	SCHMERSEL, Rob	.
TS	31.102	Characteristics of the USIM Application	3.3.0	R1999	Dec 99	T3	HEIM, Christian	TSG#7: 3.1.0 TSG#8:3.2.0 TSG#9:3.3.0
TS	31.110	Numbering system for telecommunication IC card applications	3.2.0	R1999	Dec 99	T3	DIETRICH, Christian	TSG#7: 3.1.0 TSG#9:3.2.0
TS	31.111	USIM Application Toolkit (USAT)	3.2.0	R1999	Mar 00	T3	WOODSEND, Kristian	TSG#7: 3.0.0 TSG#8:3.1.0 TSG#9:3.2.0
TS	31.111	USIM Application Toolkit (USAT)	4.0.0	Rel-4	Dec 00	T3	WOODSEND, Kristian	TSG#7: 3.0.0 TSG#8:3.1.0 TSG#9:4.0.0
TS	31.120	Terminal tests for the UICC Interface; part 1	1.0.0	R1999	Jun 00	T3	MAESER, Torsten	. TSG#9:1.0.0
TS	31.121	Terminal tests for the UICC Interface; part 2	1.0.0	R1999	Jun 00	T3	AFCHAR, Ramin	. TSG#9:1.0.0
TS	31.122	UICC Test Specification	1.0.0	R1999	Jun 00	T3	KNIGHT, Simon	. TSG#9:1.0.0
TS	32.005	Telecommunications Management; Charging and billing; 3G call and event data for the Circuit Switched (CS) domain	3.2.0	R1999	Jun 00	S5	NENNER, Karl Heinz	Title change. TSG#7: TSG#8:3.1.0->3.2.0 when fully implemented.
TS	32.015	Telecommunications Management; Charging and billing; 3G call and event data for the Packet Switched (PS) domain	3.3.0	R1999	Jun 00	S5	NENNER, Karl Heinz	Title change. TSG#7: 3.1.0 TSG#8:3.2.0 TSG#9:3.3.0
TS	32.101	3G Telecom Management principles and high level requirements	3.2.0	R1999	Mar 00	S5	TRUSS, Michael	Outstanding R99 issues. TSG#7: 3.1.0 TSG#8:3.2.0
TS	32.102	3G Telecom Management Architecture	3.2.0	R1999	Mar 00	S5	BERGGREN, Tommy	Outstanding R99 issues. TSG#7: 3.1.0 TSG#8:3.2.0
TS	32.104	3G Performance Management	3.3.0	R1999	Mar 00	S5	NENNER, Karl Heinz	Outstanding R99 issues. TSG#7: 3.1.0 TSG#8:3.2.0 TSG#9:3.3.0
TS	32.105	Charging & Billing; GSM call and event data for the Circuit Switched (CS) domain	0.0.4	R1999	Jun 00	S5	NENNER, Karl Heinz	New at TSG#6. TSG#7:
TS	32.106-1	Telecommunication Management; Configuration Management; Part 1: 3G configuration management; Concept and requirements	3.1.0	R1999	Mar 00	S5	TOVINGER, Thomas	TSG#8: multipart split from parent 3.0.1 TSG#8:3.1.0
TS	32.106-2	Telecommunication Management; Configuration Management; Part 2: Notification Integration Reference Point; Information Service version 1	3.1.0	R1999	Mar 00	S5	TOVINGER, Thomas	TSG#8: multipart split from parent 3.0.1 TSG#8:3.1.0
TS	32.106-3	Telecommunication Management; Configuration Management; Part 3: Notification Integration Reference Point; CORBA solution set version 1:1	3.1.0	R1999	Mar 00	S5	TOVINGER, Thomas	TSG#8: multipart split from parent 3.0.1 TSG#8:3.1.0
TS	32.106-4	Telecommunication Management; Configuration Management; Part 4: Notification Integration Reference Point: CMIP Solution Set Version 1:1	3.1.0	R1999	Mar 00	S5	TOVINGER, Thomas	TSG#8: multipart split from parent 3.0.1 TSG#8:3.1.0
TS	32.106-5	Telecommunication Management; Configuration Management; Part 5: Basic Configuration Management IRP information model (including NRM) version 1	1.0.1	R1999	Dec 00	S5	TOVINGER, Thomas	TSG#8: multipart split from parent 3.0.1 (not certain this part will be R99) TSG#9:1.0.0
TS	32.106-6	Telecommunication Management; Configuration Management; Part 6: Basic Configuration Management IRP CORBA solution set version 1:1	0.0.0	R1999	Dec 00	S5	TOVINGER, Thomas	TSG#8: multipart split from parent 3.0.1 (not certain this part will be R99)
TS	32.106-7	Telecommunication Management; Configuration Management; Part 7: Basic Configuration Management IRP CMIP solution set version 1:1	0.0.0	R1999	Dec 00	S5	TOVINGER, Thomas	TSG#8: multipart split from parent 3.0.1 (not certain this part will be R99)
TS	32.106-8	Telecommunication Management; Configuration Management; Part 8: Name convention for Managed Objects	3.1.0	R1999	Mar 00	S5	TOVINGER, Thomas	TSG#8: multipart split from parent 3.0.1 TSG#8:3.1.0

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TS	32.111-1	Telecommunication Management; Fault Management; Part 1: 3G fault management requirements	3.2.0	R1999	Jun 00	S5	JURE, Patrick	TSG#8: multipart split from parent 3.0.1 TSG#8:3.1.0 TSG#9:3.2.0
TS	32.111-2	Telecommunication Management; Fault Management; Part 2: Alarm Integration Reference Point: Information Service	3.2.0	R1999	Jun 00	S5	JURE, Patrick	TSG#8: multipart split from parent 3.0.1 TSG#8:3.1.0 TSG#9:3.2.0
TS	32.111-3	Telecommunication Management; Fault Management; Part 3: Alarm Integration Reference Point: CORBA solution set version 1:1	3.2.0	R1999	Jun 00	S5	JURE, Patrick	TSG#8: multipart split from parent 3.0.1 TSG#8:3.1.0 TSG#9:3.2.0
TS	32.111-4	Telecommunication Management; Fault Management; Part 4: Alarm Integration Reference Point: CMIP solution set	3.1.1	R1999	Jun 00	S5	JURE, Patrick	TSG#8: multipart split from parent 3.0.1 TSG#8:3.1.0
TS	32.140	3G Service Management Requirements & Framework	0.1.0	Rel-4		S5	CARYER, Geoffrey	TSG#8:0.1.0 but associated WI not approved.
TR	32.800	Management level procedures and interaction with UTRAN	0.0.0	Rel-4	Mar 01	S5	HIJDRA, Martijn	
TS	33.102	Security Architecture	3.6.0	R1999	Mar 00	S3	VINCK, Bart	TSG#7: 3.4.0 TSG#8:3.5.0 TSG#9:3.6.0
TS	33.103	Security Integration Guidelines	3.4.0	R1999	Oct 99	S3	BLANCHARD, Colin	TSG#7: 3.2.0 TSG#8:3.3.0 TSG#9:3.4.0
TS	33.105	Cryptographic Algorithm requirements	3.5.0	R1999	Jun 99	S3	CHIKAZAWA, Takeshi	TSG#7: 3.3.0 TSG#8:3.4.0 TSG#9:3.5.0
TS	33.106	Lawful interception requirements	3.1.0	R1999	Jun 00	S3	WILHELM, Berthold	.
TS	33.107	Lawful interception architecture and functions	3.0.0	R1999	Dec 99	S3	WILHELM, Berthold	New at TSG#6 approved
TS	33.120	Security Objectives and Principles	3.0.0	R1999	April 99	S3	WRIGHT, Tim	.
TR	33.900	Guide to 3G security	1.2.0	R1999	Mar 00	S3	BROOKSON, Charles	New at TSG#6
TR	33.901	Criteria for cryptographic Algorithm design process	3.0.0	R1999	Jun 99	S3	BLOM, Rolf	.
TR	33.902	Formal Analysis of the 3G Authentication Protocol	3.1.0	R1999	Oct 99	S3	HORN, Guenther	.
TR	33.908	Security Algorithms Group of Experts (SAGE); General report on the design, specification and evaluation of 3GPP standard confidentiality and integrity algorithms	3.0.0	R1999	Mar 00	S3	WALKER, Michael	TSG#7 SP-000039
TR	33.909	ETSI SAGE 3GPP Standards Algorithms Task Force: Report on the evaluation of 3GPP standard confidentiality and integrity algorithms	3.0.0	R1999	Jun 00	S3	WALKER, Michael	TSG#7: referred to in 33.908.
TS	34.108	Common Test Environments for User Equipment (UE) Conformance Testing	3.1.0	R1999	Jun 00	T1	CHALABI, Nouhman	TSG#7:(TP-000032) 1.0.0, 1.0.1 TSG#8:aprvi is controversial TSG#8:3.0.0 (2.0.0) TSG#9:3.1.0
TS	34.109	Logical Test Interface (TDD and FDD)	3.1.0	R1999	Jun 00	R2	MATTISSON, Leif	Feb00: 1.1.0 TSG#7: 1.2.0 TSG#8:3.0.0 (2.0.0) TSG#9:3.1.0
TS	34.121	Terminal Conformance Specification, Radio Transmission and Reception (FDD)	3.2.0	R1999	Mar 00	T1	HIGUCHI, Kenji	TSG#7: 2.0.0(TP-000033), 3.0.0 TSG#8:3.1.0 TSG#9:3.2.0
TS	34.122	Terminal Conformance Specification, Radio Transmission and Reception (TDD)	3.1.0	R1999	Jun 00	T1	MAUCKSCH, Thomas	TSG#7: 1.2.0 TSG#8:3.0.0 (2.0.0) TSG#9:3.1.0
TS	34.123-1	UE Conformance Specification, Part 1 – Conformance specification	3.1.0	R1999	Jun 00	T1	SALMERON, Lidia	TSG#8:3.0.0 (2.0.0) TSG#9:3.1.0
TS	34.123-2	UE Conformance Specification, Part 2 – ICS	3.1.0	R1999	Dec 00	T1	HU, Shicheng	TSG#7: 1.0.1 TSG#8: aprvi target postponed to end-00;TP-000137 TSG#9:2.0.0->3.1.0 (no 3.0.0 to keep in step with part 1).
TS	34.123-3	UE Conformance Specification, Part 3 Abstract Test suites	0.0.0	R1999	Dec 01	T1	HU, Shicheng	TSG#9: v3 expected Mar01, stable Dec01.
TS	34.124	Electro-Magnetic Compatibility (EMC) for Terminal equipment - stage 1	3.1.0	R1999	Mar 00	T1	SOERENSEN, Ole	TSG#7: 2.0.1(SP-000034), 3.0.0 TSG#9:3.1.0
TR	34.907	Report on electrical safety requirements and regulations	3.0.0	R1999	Oct 99	T2	IIMORI, Eiji	.
TR	34.910	Conformance Test specifications – Relevant for Regulatory use	0.0.1	Rel-4	Mar 01	T1	NIELSEN, Bjarke	.
TR	34.925	Specific Absorption Rate (SAR) requirements and regulations in different regions	3.0.0	R1999	Jun 99	T2	JOHNSSON, Sven	.
TR	34.926	Table of International EMC requirements	1.0.0	Rel-4	Jun 00	T1	FENN, John B	TP-000138 TSG#9:1.0.0

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TS	35.201	Specification of the 3GPP confidentiality and integrity algorithms; Document 1: f8 and f9 specifications	3.1.0	R1999	Mar 00	S3	WALKER, Michael	TSG#7: 3.1.0 ex SAGE 3.1.0
TS	35.202	Specification of the 3GPP confidentiality and integrity algorithms; Document 2: Kasumi algorithm specification	3.1.0	R1999	Mar 00	S3	WALKER, Michael	TSG#7: 3.1.0 ex SAGE 3.1.0
TS	35.203	Specification of the 3GPP confidentiality and integrity algorithms; Document 3: Implementors' test data	3.1.0	R1999	Mar 00	S3	WALKER, Michael	TSG#7: 3.1.0 ex SAGE 3.1.0
TS	35.204	Specification of the 3GPP confidentiality and integrity algorithms; Document 4: Design conformance test data	3.1.0	R1999	Mar 00	S3	WALKER, Michael	TSG#7: 3.1.0 ex SAGE 3.1.0
	41.001	GSM R99 Specification set	0.0.0	Rel-4		GP	COURAU, François	info at #30 Alignment with 21.101: 1.1.0. Aprvl expected SMG#31b; or #32 ... #32:2.0.0 -> 8.0.0
	41.004	Abbreviations and Acronyms	0.0.0	Rel-4		GP	CLAYTON, Michael	.
	41.031	Fraud Information Gathering System (FIGS); Service requirements - Stage 0	0.0.0	Rel-4		S3	WRIGHT, Tim	.
	41.033	Lawful Interception requirements for GSM	0.0.0	Rel-4		S3	MILES, David F.	.
	41.061	General Packet Radio Service (GPRS); GPRS ciphering algorithm requirements	0.0.0	Rel-4		S3	..,	.
	42.009	Security Aspects	0.0.0	Rel-4		S3	GILBERT, Henri	.
	42.017	Subscriber Identity Modules, Functional Characteristics	0.0.0	Rel-4		T3	GREEN, Mark	7.1.0 #30: 8.0.0
	42.019	Subscriber Identity Module Application Programming Interface (SIM API); Service description; Stage 1	0.0.0	Rel-4		T3	DIETRICH, Christian	.
	42.031	Fraud Information Gathering System (FIGS) Service description - Stage 1	0.0.0	Rel-4		S3	WRIGHT, Tim	.
	42.032	Immediate Service Termination (IST); Service description - Stage 1	0.0.0	Rel-4		S3	WRIGHT, Tim	.
	42.033	Lawful Interception - Stage 1	0.0.0	Rel-4		S3	MILES, David F.	.
	42.048	Security mechanisms for the SIM Application Toolkit; Stage 1	0.0.0	Rel-4		T3	BARNES, David	.
	42.056	GSM Cordless Telephony System (CTS), Phase 1; Service description; Stage 1	0.0.0	Rel-4		S1	GALLIGO, Michel	.
TS	42.068	Voice Group Call Service (VGCS) - Stage 1	4.0.0	Rel-4		S1	GILES, Les	#32:9.0.0 (based on CR to 8.0.0)
TS	42.069	Voice Broadcast Service (VBS) - Stage 1	4.0.0	Rel-4		S1	GILES, Les	#32:9.0.0 (based on CR to 8.0.0)
	42.094	Follow Me Service description - Stage 1	0.0.0	Rel-4		S1	..,	#28: 1.0.0 #30: 8.0.0
	42.095	Digital cellular telecommunications system (Phase 2+); Support of Private Numbering Plan (SPNP); Service description, Stage 1	0.0.0	Rel-4		S1	..,	.
	43.001	Network Functions	0.0.0	Rel-4		S2	GAASVIK, Per-Ola	.
	43.005	Technical Performance Objectives	0.0.0	Rel-4		NP	..,	.
	43.010	GSM Public Land Mobile Network (PLMN) Connection Types	0.0.0	Rel-4		N3	BRAUN, Achim	#29: 8.0.0 TSG#6: 8.1.0
	43.013	Discontinuous Reception (DRX) in the GSM System	0.0.0	Rel-4		GP	..,	.
	43.019	GSM API for SIM toolkit stage 2	0.0.0	Rel-4		T3	DIETRICH, Christian	.
	43.020	Security-related Network Functions	0.0.0	Rel-4		S3	GILBERT, Henri	#32:8.1.0
	43.022	Functions Related to Mobile Station (MS) in Idle Mode	4.0.0	Rel-4		G2	HOWELL, Andrew	#29: 8.0.0 #30: 8.1.0 #30bis: 8.2.0 eds 8.2.1 #31:8.3.0 GERAN#1:4.0.0
	43.026	Multiband operation of GSM/DCS 1800 by a single operator	0.0.0	Rel-4		GP	..,	.
	43.030	Radio Network Planning Aspects	4.0.0	Rel-4		GP	STEVENS, Peter John	#29: 8.0.0 #30: 8.1.0 #30b: 8.2.0 #31:8.3.0 GERAN#1:4.0.0
	43.031	Fraud Information Gathering System (FIGS); Service description; Stage 2	0.0.0	Rel-4		S3	WRIGHT, Tim	.
	43.033	Lawful Interception - stage 2	0.0.0	Rel-4		S3	MILES, David F.	.
	43.035	Immediate Service Termination (IST); Stage 2	0.0.0	Rel-4		S3	WRIGHT, Tim	.

	43.045	Technical Realization of Facsimile Group 3 Service - transparent	0.0.0	Rel-4		N3	...	#29: 8.0.0
	43.046	Technical Realization of Facsimile Group 3 Service - non transparent	0.0.0	Rel-4		N3	...	#29: 7.0.0 TSG#6: 8.0.0 (source Klehn)
	43.048	Security Mechanisms for SIM Toolkit Application - Stage 2	0.0.0	Rel-4		T3	BARNES, David	#29: 8.0.0 #30: 8.1.0 #31:8.2.0 TSG#8:8.3.0
	43.050	Transmission Planning Aspects of the Speech Service in the GSM Public Land Mobile Network (PLMN) System	0.0.0	Rel-4		S4	USAI, Paolino	#32:8.1.0
	43.051	GERAN overall description; stage 2	0.0.1	Rel-4		GP	SEBIRE, Guillaume	Created after TSG#8.
	43.052	Lower layers of the GSM Cordless Telephony System (CTS) radio interface - Stage 2	0.0.0	Rel-4		GP	DESBLANCS, Philippe	.
	43.053	Tandem Free Operation (TFO); Service description; Stage 2	0.0.0	Rel-4		S4	FAUCONNIER, Denis	.
	43.056	GSM Cordless Telephony System (CTS), Phase 1; CTS Architecture Description; Stage 2	0.0.0	Rel-4		S2	ROBERTS, Martin	.
	43.058	Characterisation, test methods and quality assessment for handsfree Mobile Stations (MSS)	0.0.0	Rel-4		S4	MONFORT, Jean-Yves	.
	43.059	Location services (LCS) GERAN; Stage 2	0.0.1	Rel-4		GP	LIVINGSTON, Margaret	
	43.059	Location services (LCS) GERAN; Stage 2	0.0.2	Rel-4		GP	LIVINGSTON, Margaret	
	43.063	Packet Data on Signalling channels service (PDS) Service description, Stage 21	0.0.0	Rel-4		N1	JACOBSON, Dieter	#31: 8.0.0
	43.064	Overall description of the GPRS radio interface; Stage 2	0.0.0	Rel-4		G2	...	#29: 8.0.0 #30: 8.1.0 #30b:8.2.0 #31:8.3.0 #31b:8.3.0 #32:8.5.0
TS	43.068	Voice Group Call Service (VGCS); Stage 2	4.1.0	Rel-4		N1	MÜNNING, Dirk	#31: 8.0.0 TSG#7: 8.1.0 #32:8.2.0 TSG#8:8.2.0 #32:9.0.0 TSG#8:9.0.0->4.0.0 TSG#9:4.1.0
TS	43.069	Voice Broadcast service (VBS); Stage 2	4.1.0	Rel-4		N1	MÜNNING, Dirk	#32:9.0.0 TSG#8:9.0.0 TSG#9:4.1.0
	43.071	Location services (LCS); Stage 2	0.0.0	Rel-4		S2	BROOK, Richard	Need identified at TSG#7, since 23.171 does not cover GSM.
	44.001	Mobile Station - Base Station System (MS - BSS) Interface General Aspects and Principles	0.0.0	Rel-4		N1	AVELINE, Sophie	#31: 8.0.0
	44.003	Mobile Station - Base Station System (MS - BSS) Interface Channel Structures and Access Capabilities	0.0.0	Rel-4		G2	THOMAS, Rémi	#30: 8.0.0
	44.004	Layer 1 - General Requirements	0.0.0	Rel-4		G2	THOMAS, Rémi	#30: 8.0.0 #30b: 8.1.0
	44.005	Data Link (DL) Layer General Aspects	0.0.0	Rel-4		G2	...	.
	44.006	Mobile Station - Base Stations System (MS - BSS) Interface Data Link (DL) Layer Specification	0.0.0	Rel-4		G2	...	.
	44.013	Performance Requirements on Mobile Radio Interface	0.0.0	Rel-4		N1	MILLS, Duncan	#31: 8.0.0
	44.014	Individual equipment type requirements and interworking; Special conformance testing functions	0.0.0	Rel-4		G2	HOWELL, Andrew	#32:8.1.0
TS	44.018	Mobile Radio Interface - Layer 3 Specification RR part	4.1.0	Rel-4		G2	HOWELL, Andrew	#32:9.0.0 MCC-converted Aug00:4.0.0 GERAN#1: 4.1.0
	44.021	Rate Adaption on the Mobile Station - Base Station System (MS-BSS) Interface	0.0.0	Rel-4		N3	RÄSÄNEN, Juha	#29: 8.0.0 TSG#8:8.1.0
	44.031	Location Services LCS RR LCS Protocol	0.0.0	Rel-4		G2	DOSHI, Sonia	.
	44.035	Location Services LCS Stage 3 E-OTD Enhanced Observed	0.0.0	Rel-4		G2	DOSHI, Sonia	.
	44.056	GSM Cordless Telephony System (CTS), (Phase 1) CTS Radio Interface Layer 3 Specification	0.0.0	Rel-4		N1	HUPPERICH, Peter	#31: 8.0.0
	44.057	GSM Cordless Telephony System (CTS), (Phase 1) CTS CTS supervising system Layer 3 Specification	0.0.0	Rel-4		N1	HUPPERICH, Peter	#31: 8.0.0

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	44.060	General Packet Radio Service (GPRS); Mobile Station (MS) - Base Station System (BSS) interface; Radio Link Control/ Medium Access Control (RLC/MAC) protocol	0.0.0	Rel-4		G2	...	#29: 8.0.0 #30: 8.1.0 #30b: 8.2.0 #31:8.3.0 #31b:8.3.0 #32:8.5.0
	44.063	Packet Data on Signalling channels Service (PDS) Service Description, Stage 3	0.0.0	Rel-4		N1	JACOBSOHN, Dieter	#31: 8.0.0
	44.064	Mobile Station - Serving GPRS Support Node (MS-SGSN) Logical Link Control (LLC) Layer Specification	0.0.0	Rel-4		N1	SALKINTZIS, Apostolis	#29: 8.0.0 #30: 8.1.0 post-TSG#6:8.2.0 #31:8.3.0 TSG#8:8.4.0
	44.065	Mobile Station (MS) - Serving GPRS Support Node (SGSN); Subnetwork Dependent Convergence Protocol (SNDCP)	0.0.0	Rel-4		N1	SALKINTZIS, Apostolis	#31: 8.0.0
TS	44.068	Group Call Control (GCC) Protocol	4.0.0	Rel-4		N1	...	#32:9.0.0 TSG#8:9.0.0 GERAN#1:4.1.0
TS	44.069	Broadcast Call Control (BCC) protocol	4.0.0	Rel-4		N1	...	TSG#8:9.0 GERAN#1:4.1.0
	44.071	Location services (LCS) stage 3	0.0.0	Rel-4		G2	DOSHI, Sonia	#32:8.1.0
	45.001	Physical Layer on the Radio Path (General Description)	4.0.0	Rel-4		GP	ANDERSEN, Niels Peter Skov	#29: 8.0.0 #30: 8.1.0 #30b:8.2.0 #31:8.3.0 #32:8.4.0 GERAN#1:4.0.0
	45.002	Multiplexing and Multiple Access on the Radio Path	4.0.0	Rel-4		GP	...	#29: 8.0.1 #30: 8.1.0 #30b: 8.2.0 #31:8.3.0 #31b:8.3.0 #32:8.5.0 GERAN#1:4.0.0
	45.003	Channel Coding	0.0.0	Rel-4		GP	...	#29: 8.0.0 #30: 8.1.0 #30b: 8.2.0 #31:8.3.0 #31b:8.3.0 #32:8.5.0
	45.004	Modulation	0.0.0	Rel-4		GP	REINER, Michaël	#28: 8.0.0 #30b 8.1.0 GERAN#1:4.0.0
	45.005	Radio Transmission and Reception	4.0.0	Rel-4		GP	CHARLES, Jean Pierre	#29: 8.0.0 #30: 8.1.0 #30b: 8.2.0 #31:8.3.0 #31b:8.4.0 #32:8.5.0
	45.008	Radio Subsystem Link Control	4.0.0	Rel-4		GP	WHITE, Phil	#29: 8.0.0 #30: 8.1.0 #30b: 8.2.0 #31:8.3.0 #31b:8.3.0 #32:8.5.0 GERAN#1:4.0.0
	45.009	Link Adaptation	0.0.0	Rel-4		GP	...	#31:8.0.0 #32:8.1.0
	45.010	Radio Subsystem Synchronization	0.0.0	Rel-4		GP	BENN, Howard	#30: 8.0.0 #30b: 8.1.0 #31:8.2.0 #31b:8.2.0 #32:8.4.0
	45.022	Radio link management in hierarchical networks	0.0.0	Rel-4		GP	...	.
	45.050	Background for RF Requirements	0.0.0	Rel-4		GP	...	#30: 8.0.0 #31:8.1.0 #31b:8.2.0
	45.056	CTS-FP Radio Sub-system	0.0.0	Rel-4		GP	...	.
	46.001	Full Rate Speech Processing Functions	0.0.0	Rel-4		S4	USAI, Paolino	.
	46.002	Half Rate Speech Processing Functions	0.0.0	Rel-4		S4	AFTELAK, Steve	.
	46.006	Half Rate Speech: ANSI-C Code for GSM Half Rate Speech Codec	0.0.0	Rel-4		S4	AFTELAK, Steve	.
	46.007	Half Rate Speech: Test Sequence for GSM Half Rate Speech Codec	0.0.0	Rel-4		S4	AFTELAK, Steve	.
	46.008	Half Rate Speech; Performance Characterization of the GSM Half Rate speech codec	0.0.0	Rel-4		S4	SALEM, Tarek	.
	46.010	Full Rate Speech Transcoding	0.0.0	Rel-4		S4	LORENZ, Dietmar	#32:8.1.0
	46.011	Substitution and Muting of Lost Frames for Full Rate Speech Channels	0.0.0	Rel-4		S4	NAVARRO, William	.
	46.012	Comfort Noise Aspects for Full Rate Speech Traffic Channels	0.0.0	Rel-4		S4	SERENO, Daniele	.
	46.020	Half Rate Speech Transcoding	0.0.0	Rel-4		S4	AFTELAK, Steve	.
	46.021	Substitution and Muting of Lost Frames for Half Rate Traffic Speech Traffic Channels	0.0.0	Rel-4		S4	AFTELAK, Steve	.
	46.022	Comfort Noise Aspects for Half Rate Speech Traffic Channels	0.0.0	Rel-4		S4	AFTELAK, Steve	.
	46.031	Discontinuous Transmission (DTX) for Full Rate Speech Traffic Channels	0.0.0	Rel-4		S4	...	.
	46.032	Voice Activity Detection (VAD)	0.0.0	Rel-4		S4	BARRETT, Paul	.

	46.041	Discontinuous Transmission (DTX) for Half Rate Speech Traffic Channels	0.0.0	Rel-4		S4	...	.
	46.042	Voice Activity Detection (VAD) for Half Rate Speech Traffic Channels	0.0.0	Rel-4		S4	BARRETT, Paul	.
	46.051	GSM Enhanced full rate speech processing functions: General description	0.0.0	Rel-4		S4	JÄRVINEN, Kari	#32:8.1.0
	46.053	ANSI-C code for the GSM Enhanced full rate speech codec	0.0.0	Rel-4		S4	JÄRVINEN, Kari	.
	46.054	Test sequences for the GSM Enhanced Full Rate (EFR)	0.0.0	Rel-4		S4	JÄRVINEN, Kari	#32:8.1.0
	46.055	Performance characterisation of the GSM EFR Speech Codec	0.0.0	Rel-4		S4	SALEM, Tarek	.
	46.060	Enhanced full rate speech transcoding	0.0.0	Rel-4		S4	JÄRVINEN, Kari	.
	46.061	Substitution and muting of lost frames for enhanced full rate speech traffic channels	0.0.0	Rel-4		S4	JÄRVINEN, Kari	.
	46.062	Comfort noise aspects for Enhanced Full Rate (EFR) speech traffic channels	0.0.0	Rel-4		S4	JÄRVINEN, Kari	.
	46.076	Adaptive Multi-Rate (AMR) speech codec; study phase report	0.0.0	Rel-4		S4	...	TSG#7:2.0.0, 8.0.0
	46.077	Minimum Performance Requirements for Noise Suppressor Application to the AMR Speech Encoder	0.0.0	Rel-4		S4	...	#32:8.0.0
	46.078	Results of the AMR noise suppression selection phase	0.0.0	Rel-4		S4	...	#32:8.0.0
	46.081	Discontinuous Transmission (DTX) for enhanced full rate speech traffic channels	0.0.0	Rel-4		S4	JÄRVINEN, Kari	.
	46.082	Voice Activity Detection (VAD) for enhanced full rate speech traffic channels	0.0.0	Rel-4		S4	JÄRVINEN, Kari	.
	46.085	Subjective tests on the interoperability of the HR/FR/EFR speech codecs; single, tandem and tandem free operation	0.0.0	Rel-4		S4	...	.
	48.001	General Aspects on the BSS-MSC Interface	0.0.0	Rel-4		G2	DAVIES, Rob	.
	48.002	Base Station System - Mobile Services Switching Centre (BSS-MSC) Interface - Interface Principles	0.0.0	Rel-4		G2	DAVIES, Rob	.
	48.004	Base Station System - Mobile Services Switching Centre (BSS-MSC) Interface Layer 1 Specification	0.0.0	Rel-4		G2	DAVIES, Rob	.
	48.006	Signalling Transport Mechanism Specification for the Base Station System - Mobile Services Switching Centre (BSS-MSC) Interface	0.0.0	Rel-4		G2	DAVIES, Rob	.
TS	48.008	Mobile Switching Centre - Base Station system (MSC-BSS) Interface Layer 3 Specification	4.1.0	Rel-4		G2	DAVIES, Rob	#32:9.0.0 MCC-converted Aug00:4.0.0 GERAN#1:4.1.0
	48.014	General Packet Radio Service (GPRS); Base Station System (BSS) - Serving GPRS Support Node (SGSN) interface; Gb Interface Layer 1	0.0.0	Rel-4		G2	...	.
	48.016	General Packet Radio Service (GPRS); Base Station System (BSS) - Serving GPRS Support Node (SGSN) Interface; Network Service	0.0.0	Rel-4		G2	...	.
	48.018	General Packet Radio Service (GPRS); Base Station System (BSS) - Serving GPRS Support Node (SGSN); BSS GPRS Protocol	0.0.0	Rel-4		G2	...	#30: 8.0.0 #30b: 8.1.0 #31:8.2.0 #31b:8.3.0
	48.020	Rate Adaptation on the Base Station System - Mobile Service Switching Centre (BSS-MSC) Interface	0.0.0	Rel-4		N3	RÄSÄNEN, Juha	#29: 8.0.0 #30: 8.1.0
	48.031	Location Services LCS SMLC Peer Protocol (SMLCPP)	0.0.0	Rel-4		G2	DOSHI, Sonia	.
	48.051	Base Station Controller - Base Transceiver Station (BSC-BTS) Interface General Aspects	0.0.0	Rel-4		G2	LYCKSELL, Edgar	.

	48.052	Base Station Controller - Base Transceiver Station (BSC-BTS) Interface - Interface Principles	0.0.0	Rel-4		G2	LYCKSELL, Edgar	.
	48.054	BSC-BTS : Layer 1 Structure of Physical Circuits	0.0.0	Rel-4		G2	LYCKSELL, Edgar	.
	48.056	BSC-BTS Layer 2 Specification	0.0.0	Rel-4		G2	ANDERSEN, Harald	.
	48.058	Base Station Controller - Base Transceiver Station (BSC-BTS) Interface Layer 3 Specification	0.0.0	Rel-4		G2	LYCKSELL, Edgar	#29: 8.0.0 #30: 8.1.0 #30: 8.2.0 #31:8.3.0 #31b:8.4.0
	48.060	Inband Control of Remote Transcoders and Rate Adaptors for EFR/FR	0.0.0	Rel-4		GP	...	#30: 8.0.1 #30b: 8.1.0
	48.061	Inband Control of Remote Transcoder and Rate Adaptors;(Half Rate)	0.0.0	Rel-4		GP	JACOB, Petra	.
	48.062	Inband Tandem Free Operation (TFO) of Speech Codecs; Service Description; Stage 3	0.0.0	Rel-4		S4	...	.
	48.071	Location services (LCS) SMLC-BSS intface L 3	0.0.0	Rel-4		G2	DOSHI, Sonia	.
	49.001	General Network Interworking Scenarios	0.0.0	Rel-4		N4	...	.
	49.008	Application of the Base Station System Application Part (BSSAP) on the E-Interface	0.0.0	Rel-4		N1	JORGENSEN, Per Johan	#31: 8.0.0
	49.031	Location Services LCS Extension (BSSAP-LE)	0.0.0	Rel-4		G2	DOSHI, Sonia	#32:8.2.0
	50.020	Lawful Interception requirements for GSM	0.0.0	Rel-4		S3	...	.
	50.056	Project scheduling and open issues: GSM Cordless Telephony System CTS, Phase 1	0.0.0	Rel-4		S2	GALLIGO, Michel	.
	50.059	Project scheduling and open issues for EDGE	0.0.0	Rel-4		GP	MUELLER, Frank	May00: 1.23.0 ("final" version) #32:8.0.0 (1.23.0)
	50.068	Introduction to the services: enhanced Multi-Level Precedence and Pre-emption (eMLPP), Voice Group Call Service (VGCS), Voice Broadcast Service (VBS)	0.0.0	Rel-4		S2	VAN DER AREND, Peter	.
	50.089	GSM to other Systems Handover and Cell Selection/Reselection; Project scheduling and open issues;	0.0.0	Rel-4		GP	ISAACS, Ken	0.0.5 appeared 19-apr-00
TR	50.099	GERAN project plan and open issues	0.0.7	Rel-4		GP	MUELLER, Frank	May00:0.0.5 #32:0.0.5
TS	51.010-1	Conformance Specification	4.0.1	Rel-4		G4	...	#32:9.0.0 MCC-converted Aug00:4.0.1
TS	51.010-2	Mobile station (MS) conformance specification; Part 2: Protocol Implementation Conformance Statement (PICS) proforma specification	0.0.0	Rel-4		T1	HU, Shicheng	
TS	51.010-3	Layer3 (L3) Abstract Test Suite (ATS)	4.0.0	Rel-4		G4	...	Tdoc 7-00-276; P-00-266 #32:9.0.0
	51.011	Specification of the Subscriber Identity Module - Mobile Equipment (SIM-ME) Interface	0.0.0	Rel-4		T3	VEDDER, Klaus	#29: 8.0.0 #30: 8.1.0 #31:8.2.0 #32:8.3.0
	51.014	Specification of Subscriber Identity Module - Mobile Equipment (SIM - ME) Interface for SIM Application Toolkit	0.0.0	Rel-4		T3	WOODSEND, Kristian	#29: 8.0.0 #30: 8.1.0 #31:8.2.0 #32:8.3.0
	51.018	Specification of the 1.8 Volt Subscriber Identity Module - Mobile Equipment (SIM - ME) Interface	0.0.0	Rel-4		T3	LINDHOLM, Rune	.
	51.021	GSM Radio Aspects Base Station System Equipment Specification	0.0.0	Rel-4		GP	BUSIN, Ake	#28: 7.0.0 #29: 7.1.0 #30: 7.2.0 #30b: 8.0.0 #31:8.1.0 #31b:8.1.0 #32:8.3.0
	51.026	GSM Repeater Equipment Specification	0.0.0	Rel-4		GP	BUSIN, Ake	#31b:8.0.0 (based on 5.2.1)
	52.003	Security Management	0.0.0	Rel-4		S5	...	.
	52.004	Performance Management and Measurements for a GSM Public Land Mobile Network (PLMN)	0.0.0	Rel-4		S5	...	.
	52.071	Location Services (LCS); Location services management	0.0.0	Rel-4		S5	DOSHI, Sonia	TSG#8:8.0.0 (2.0.1)
	53.021	Base station systems and repeater equipment covering essential requirements under article 3.2 of the R&TTE directive	0.0.0	Rel-4		MSG	BUSIN, Ake	No R99 impact. But #32 reinstated. #32:8.0.0
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01.00	Working Procedures for SMG	8.0.0	R1999		SP	BERGMANN, Ansgar	#30: 8.0.0
01.01	GSM R99 Specification set	8.0.0	R1999		GP	COURAU, François	info at #30 Alignment with 21.101: 1.1.0. Aprvl expected SMG#31b; or #32 ... #32:2.0.0 -> 8.0.0
01.04	Abbreviations and Acronyms	8.0.0	R1999		GP	CLAYTON, Michael	.
01.31	Fraud Information Gathering System (FIGS); Service requirements - Stage 0	8.0.0	R1999		S3	WRIGHT, Tim	.
01.33	Lawful Interception requirements for GSM	8.0.0	R1999		S3	MCKIBBEN, Bernie	.
01.61	General Packet Radio Service (GPRS); GPRS ciphering algorithm requirements	8.0.0	R1999		S3	WALKER, Michael	.
02.09	Security Aspects	8.0.0	R1999		S3	CHRISTOFFERSSON, Per	.
02.17	Subscriber Identity Modules, Functional Characteristics	8.0.0	R1999		T3	HOOKER, Philip	7.1.0 #30: 8.0.0
02.19	Subscriber Identity Module Application Programming Interface (SIM API); Service description; Stage 1	8.0.0	R1999		T3	DIETRICH, Christian	.
02.31	Fraud Information Gathering System (FIGS) Service description - Stage 1	8.0.0	R1999		S3	WRIGHT, Tim	.
02.32	Immediate Service Termination (IST); Service description - Stage 1	8.0.0	R1999		S3	WRIGHT, Tim	.
02.33	Lawful Interception - Stage 1	8.0.0	R1999		S3	MCKIBBEN, Bernie	.
02.48	Security mechanisms for the SIM Application Toolkit; Stage 1	8.0.0	R1999		T3	BARNES, Nigel	.
02.56	GSM Cordless Telephony System (CTS), Phase 1; Service description; Stage 1	8.0.0	R1999		S1	GALLIGO, Michel	.
02.68	Voice Group Call Service (VGCS) - Stage 1	8.0.0	R1999		S1	GILES, Les	#31:8.0.0
02.68	Voice Group Call Service (VGCS) - Stage 1	9.0.0	Rel-4		S1	GILES, Les	#32:9.0.0 (based on CR to 8.0.0) ->42.068v4.0.0
02.69	Voice Broadcast Service (VBS) - Stage 1	8.0.0	R1999		S1	GILES, Les	.
02.69	Voice Broadcast Service (VBS) - Stage 1	9.0.0	Rel-4		S1	GILES, Les	#32:9.0.0 (based on CR to 8.0.0) ->42.068v4.0.0
02.76	Noise Suppression for the AMR	8.0.0	R1998		S4	..,	#29: 2.0.0 but approval status unclear. R98 or R99? Conclusion: was approved, R99.
02.94	Follow Me Service description - Stage 1	8.0.0	R1999		S1	..,	#28: 1.0.0 #30: 8.0.0
02.95	Digital cellular telecommunications system (Phase 2+); Support of Private Numbering Plan (SPNP); Service description, Stage 1	8.0.0	R1999		S1	..,	.
03.01	Network Functions	8.0.0	R1999		S2	GAASVIK, Per-Ola	.
03.05	Technical performance objectives	8.0.0	R1999		NP	..,	.
03.10	GSM Public Land Mobile Network (PLMN) Connection Types	8.2.0	R1999		N3	BRAUN, Achim	#29: 8.0.0 TSG#6: 8.1.0 TSG#9:8.2.0
03.13	Discontinuous Reception (DRX) in the GSM System	8.0.0	R1999		GP	..,	.
03.19	GSM API for SIM toolkit stage 2	8.0.0	R1999		T3	DIETRICH, Christian	.
03.20	Security-related Network Functions	8.1.0	R1999		S3	NGUYEN NGOC, Sebastien	#32:8.1.0
03.22	Functions Related to Mobile Station (MS) in Idle Mode	8.3.0	R1999		G2	HOWELL, Andrew	#29: 8.0.0 #30: 8.1.0 #30bis: 8.2.0 eds 8.2.1 #31:8.3.0
03.26	Multiband operation of GSM/DCS 1800 by a single operator	8.0.0	R1999		GP	..,	.
03.30	Radio Network Planning Aspects	8.3.0	R1999		GP	STEVENS, Peter John	#29: 8.0.0 #30: 8.1.0 #30b: 8.2.0 #31:8.3.0
03.31	Fraud Information Gathering System (FIGS); Service description; Stage 2	8.0.0	R1999		S3	WRIGHT, Tim	.
03.33	Lawful Interception - stage 2	8.0.0	R1999		S3	MCKIBBEN, Bernie	.
03.35	Immediate Service Termination (IST); Stage 2	8.0.0	R1999		S3	WRIGHT, Tim	.
03.45	Technical Realization of Facsimile Group 3 Service - transparent	8.0.0	R1999		N3	..,	#29: 8.0.0

03.46	Technical Realization of Facsimile Group 3 Service - non transparent	8.0.0	R1999		N3	...	#29: 7.0.0 TSG#6: 8.0.0 (source Klehn)
03.48	Security Mechanisms for SIM Toolkit Application - Stage 2	8.4.0	R1999		T3	BARNES, Nigel	#29: 8.0.0 #30: 8.1.0 #31:8.2.0 TSG#8:8.3.0 TSG#9:8.4.0
03.50	Transmission Planning Aspects of the Speech Service in the GSM Public Land Mobile Network (PLMN) System	8.1.0	R1999		S4	USAI, Paolino	#32:8.1.0
03.52	Lower layers of the GSM Cordless Telephony System (CTS) radio interface - Stage 2	8.0.0	R1999		GP	DESBLANCS, Philippe	.
03.53	Tandem Free Operation (TFO); Service description; Stage 2	8.0.0	R1999		S4	FAUCONNIER, Denis	.
03.56	GSM Cordless Telephony System (CTS), Phase 1; CTS Architecture Description; Stage 2	8.0.0	R1999		S2	ROBERTS, Martin	.
03.58	Characterisation, test methods and quality assessment for handsfree Mobile Stations (MSS)	8.0.0	R1999		S4	MONFORT, Jean-Yves	.
03.63	Packet Data on Signalling channels service (PDS) Service description, Stage 2	8.0.0	R1999		N1	JACOBSON, Dieter	#31: 8.0.0
03.64	Overall description of the GPRS radio interface; Stage 2	8.6.0	R1999		G2	...	#29: 8.0.0 #30: 8.1.0 #30b:8.2.0 #31:8.3.0 #31b:8.3.0 #32:8.5.0 GERAN#1:8.6.0
03.68	Voice Group Call Service (VGCS); Stage 2	8.2.0	R1999		N1	MÜNNING, Dirk	#31: 8.0.0 TSG#7: 8.1.0 #32:8.2.0 TSG#8:8.2.0
03.68	Voice Group Call Service (VGCS); Stage 2	9.0.0	Rel-4		N1	MÜNNING, Dirk	#32:9.0.0 TSG#8:9.0.0->43.068v4.0.0
03.69	Voice Broadcast service (VBS); Stage 2	8.2.0	R1999		N1	MÜNNING, Dirk	TSG#7: 8.1.0 #32:8.2.0 TSG#8:8.2.0
03.69	Voice Broadcast service (VBS); Stage 2	9.0.0	Rel-4		N1	MÜNNING, Dirk	#32:9.0.0 TSG#8:9.0.0->43.069v4.0.0
03.71	Location services (LCS); Stage 2	8.0.0	R1999		S2	BROOK, Richard	Need identified at TSG#7, since 23.171 does not cover GSM.
04.01	Mobile Station - Base Station System (MS - BSS) Interface General Aspects and Principles	8.0.0	R1999		N1	AVELINE, Sophie	#31: 8.0.0
04.03	Mobile Station - Base Station System (MS - BSS) Interface Channel Structures and Access Capabilities	8.0.0	R1999		G2	THOMAS, Rémi	#30: 8.0.0
04.04	Layer 1 - General Requirements	8.1.0	R1999		G2	THOMAS, Rémi	#30: 8.0.0 #30b: 8.1.0
04.05	Data Link (DL) Layer General Aspects	8.0.0	R1999		G2	...	.
04.06	Mobile Station - Base Stations System (MS - BSS) Interface Data Link (DL) Layer Specification	8.0.0	R1999		G2	...	.
04.08	Mobile Radio Interface - Layer 3 Specification	8.0.0	R1999		N1	HOWELL, Andrew	#29: 8.0.0 but perhaps this should not have been created! (24.008 instead)
04.13	Performance Requirements on Mobile Radio Interface	8.0.0	R1999		N1	MILLS, Duncan	#31: 8.0.0
04.14	Individual equipment type requirements and interworking; Special conformance testing functions	8.1.0	R1999		G2	HOWELL, Andrew	#32:8.1.0
04.18	Mobile Radio Interface - Layer 3 Specification RR part	8.6.0	R1999		G2	HOWELL, Andrew	#29: 8.0.0 #30: 8.1.0 #30b: 8.2.0 #31:8.3.0 #31b:8.3.0 #32:8.5.0 GERAN#1:8.6.0
04.18	Mobile Radio Interface - Layer 3 Specification RR part	9.0.0	Rel-4		G2	HOWELL, Andrew	#32:9.0.0 Aug00: replaced by 44.018
04.21	Rate Adaption on the Mobile Station - Base Station System (MS-BSS) Interface	8.2.0	R1999		N3	RÄSÄNEN, Juha	#29: 8.0.0 TSG#8:8.1.0 TSG#9:8.2.0
04.31	Location Services LCS RR LCS Protocol	8.1.0	R1999		G2	DOSHI, Sonia	.
04.35	Location Services LCS Stage 3 E-OTD Enhanced Observed	8.2.0	R1999		G2	DOSHI, Sonia	. GERAN#1:8.2.0
04.56	GSM Cordless Telephony System (CTS), (Phase 1) CTS Radio Interface Layer 3 Specification	8.0.0	R1999		N1	HUPPERICH, Peter	#31: 8.0.0
04.57	GSM Cordless Telephony System (CTS), (Phase 1) CTS CTS supervising system Layer 3 Specification	8.0.0	R1999		N1	HUPPERICH, Peter	#31: 8.0.0
04.60	General Packet Radio Service (GPRS); Mobile Station (MS) - Base Station System (BSS) interface; Radio Link Control/ Medium Access Control (RLC/MAC) protocol	8.6.0	R1999		G2	...	#29: 8.0.0 #30: 8.1.0 #30b: 8.2.0 #31:8.3.0 #31b:8.3.0 #32:8.5.0 GERAN#1:8.6.0

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04.63	Packet Data on Signalling channels Service (PDS) Service Description, Stage 3	8.0.1	R1999		N1	JACOBSOHN, Dieter	#31: 8.0.0
04.64	Mobile Station - Serving GPRS Support Node (MS-SGSN) Logical Link Control (LLC) Layer Specification	8.5.0	R1999		N1	SALKINTZIS, Apostolis	#29: 8.0.0 #30: 8.1.0 post-TSG#6:8.2.0 #31:8.3.0 TSG#8:8.4.0 TSG#9:8.5.0
04.65	Mobile Station (MS) - Serving GPRS Support Node (SGSN); Subnetwork Dependent Convergence Protocol (SNDP)	8.1.0	R1999		N1	SALKINTZIS, Apostolis	#31: 8.0.0 TSG#9:8.1.0
04.68	Group Call Control (GCC) Protocol	8.1.0	R1999		N1	...	#31: 8.0.0 TSG#7: 8.1.0
04.68	Group Call Control (GCC) Protocol	9.0.0	Rel-4		N1	...	#32:9.0.0 TSG#8:9.0.0->44.069v4.0.0
04.69	Broadcast Call Control (BCC) protocol	8.1.0	R1999		N1	...	#31: 8.0.0 TSG#7: 8.1.0
04.69	Broadcast Call Control (BCC) protocol	9.0.0	Rel-4		N1	...	TSG#8:9.0.0->44.069v4.0.0
04.71	Location services (LCS) stage 3	8.1.0	R1999		G2	DOSHI, Sonia	#32:8.1.0
05.01	Physical Layer on the Radio Path (General Description)	8.5.0	R1999		GP	ANDERSEN, Niels Peter Skov	#29: 8.0.0 #30: 8.1.0 #30b:8.2.0 #31:8.3.0 #32:8.4.0 GERAN#1:8.5.0
05.02	Multiplexing and Multiple Access on the Radio Path	8.6.0	R1999		GP	...	#29: 8.0.1 #30: 8.1.0 #30b: 8.2.0 #31:8.3.0 #31b:8.3.0 #32:8.5.0 GERAN#1:8.6.0
05.03	Channel Coding	8.5.0	R1999		GP	...	#29: 8.0.0 #30: 8.1.0 #30b: 8.2.0 #31:8.3.0 #31b:8.3.0 #32:8.5.0
05.04	Modulation	8.1.0	R1999		GP	REINER, Michaël	#28: 8.0.0 #30b 8.1.0
05.05	Radio Transmission and Reception	8.6.0	R1999		GP	CHARLES, Jean Pierre	#29: 8.0.0 #30: 8.1.0 #30b: 8.2.0 #31:8.3.0 #31b:8.4.0 #32:8.5.0 GERAN#1:8.6.0
05.08	Radio Subsystem Link Control	8.6.0	R1999		GP	WHITE, Phil	#29: 8.0.0 #30: 8.1.0 #30b: 8.2.0 #31:8.3.0 #31b:8.3.0 #32:8.5.0 GERAN#1:8.6.0
05.09	Link Adaptation	8.1.0	R1999		GP	...	#31:8.0.0 #32:8.1.0
05.10	Radio Subsystem Synchronization	8.5.0	R1999		GP	BENN, Howard	#30: 8.0.0 #30b: 8.1.0 #31:8.2.0 #31b:8.2.0 #32:8.4.0 GERAN#1:8.5.0
05.22	Radio link management in hierarchical networks	8.0.0	R1999		GP	...	.
05.50	Background for RF Requirements	8.2.0	R1999		GP	...	#30: 8.0.0 #31:8.1.0 #31b:8.2.0
05.56	CTS-FP Radio Sub-system	8.0.0	R1999		GP	...	.
06.01	Full Rate Speech Processing Functions	8.0.0	R1999		S4	USAI, Paolino	.
06.02	Half Rate Speech Processing Functions	8.0.0	R1999		S4	AFTELAK, Steve	.
06.06	Half Rate Speech: ANSI-C Code for GSM Half Rate Speech Codec	8.0.0	R1999		S4	AFTELAK, Steve	.
06.07	Half Rate Speech: Test Sequence for GSM Half Rate Speech Codec	8.0.0	R1999		S4	AFTELAK, Steve	.
06.08	Half Rate Speech; Performance Characterization of the GSM Half Rate speech codec	8.0.0	R1999		S4	SALEM, Tarek	.
06.10	Full Rate Speech Transcoding	8.1.0	R1999		S4	LORENZ, Dietmar	#32:8.1.0
06.11	Substitution and Muting of Lost Frames for Full Rate Speech Channels	8.0.0	R1999		S4	NAVARRO, William	.
06.12	Comfort Noise Aspects for Full Rate Speech Traffic Channels	8.0.0	R1999		S4	SERENO, Daniele	.
06.20	Half Rate Speech Transcoding	8.0.0	R1999		S4	AFTELAK, Steve	.
06.21	Substitution and Muting of Lost Frames for Half Rate Traffic Speech Traffic Channels	8.0.0	R1999		S4	AFTELAK, Steve	.
06.22	Comfort Noise Aspects for Half Rate Speech Traffic Channels	8.0.0	R1999		S4	AFTELAK, Steve	.
06.31	Discontinuous Transmission (DTX) for Full Rate Speech Traffic Channels	8.0.0	R1999		S4	...	.
06.32	Voice Activity Detection (VAD)	8.0.0	R1999		S4	BARRETT, Paul	.

06.41	Discontinuous Transmission (DTX) for Half Rate Speech Traffic Channels	8.0.0	R1999		S4	...	.
06.42	Voice Activity Detection (VAD) for Half Rate Speech Traffic Channels	8.0.0	R1999		S4	BARRETT, Paul	.
06.51	GSM Enhanced full rate speech processing functions: General description	8.1.0	R1999		S4	JÄRVINEN, Kari	#32:8.1.0
06.53	ANSI-C code for the GSM Enhanced full rate speech codec	8.0.0	R1999		S4	JÄRVINEN, Kari	.
06.54	Test sequences for the GSM Enhanced Full Rate (EFR)	8.1.0	R1999		S4	JÄRVINEN, Kari	#32:8.1.0
06.55	Performance characterisation of the GSM EFR Speech Codec	8.0.0	R1999		S4	SALEM, Tarek	.
06.60	Enhanced full rate speech transcoding	8.0.0	R1999		S4	JÄRVINEN, Kari	.
06.61	Substitution and muting of lost frames for enhanced full rate speech traffic channels	8.0.0	R1999		S4	JÄRVINEN, Kari	.
06.62	Comfort noise aspects for Enhanced Full Rate (EFR) speech traffic channels	8.0.0	R1999		S4	JÄRVINEN, Kari	.
06.76	Adaptive Multi-Rate (AMR) speech codec; study phase report	8.0.0	R1999		S4	...	TSG#7:2.0.0, 8.0.0
06.77	Minimum Performance Requirements for Noise Suppressor Application to the AMR Speech Encoder	8.0.0	R1999		S4	...	#32:8.0.0
06.78	Results of the AMR noise suppression selection phase	8.0.0	R1999		S4	...	#32:8.0.0
06.81	Discontinuous Transmission (DTX) for enhanced full rate speech traffic channels	8.0.0	R1999		S4	JÄRVINEN, Kari	.
06.82	Voice Activity Detection (VAD) for enhanced full rate speech traffic channels	8.0.0	R1999		S4	JÄRVINEN, Kari	.
06.85	Subjective tests on the interoperability of the HR/FR/EFR speech codecs; single, tandem and tandem free operation	8.0.0	R1999		S4	...	.
08.01	General Aspects on the BSS-MSC Interface	8.0.0	R1999		G2	DAVIES, Rob	.
08.02	Base Station System - Mobile Services Switching Centre (BSS-MSC) Interface - Interface Principles	8.0.0	R1999		G2	DAVIES, Rob	.
08.04	Base Station System - Mobile Services Switching Centre (BSS-MSC) Interface Layer 1 Specification	8.0.0	R1999		G2	DAVIES, Rob	.
08.06	Signalling Transport Mechanism Specification for the Base Station System - Mobile Services Switching Centre (BSS-MSC) Interface	8.0.0	R1999		G2	DAVIES, Rob	.
08.08	Mobile Switching Centre - Base Station system (MSC-BSS) Interface Layer 3 Specification	8.6.0	R1999		G2	DAVIES, Rob	#29: 8.0.0 #30: 8.1.0 #30b: 8.2.0 #31:8.3.0 #31b:8.4.0 #32:8.5.0 GERAN#1:8.6.0
08.08	Mobile Switching Centre - Base Station system (MSC-BSS) Interface Layer 3 Specification	9.0.0	Rel-4		G2	DAVIES, Rob	#32:9.0.0 Aug00: replaced by 48.008
08.14	General Packet Radio Service (GPRS); Base Station System (BSS) - Serving GPRS Support Node (SGSN) interface; Gb Interface Layer 1	8.0.0	R1999		G2	...	.
08.16	General Packet Radio Service (GPRS); Base Station System (BSS) - Serving GPRS Support Node (SGSN) Interface; Network Service	8.0.0	R1999		G2	...	.
08.18	General Packet Radio Service (GPRS); Base Station System (BSS) - Serving GPRS Support Node (SGSN); BSS GPRS Protocol	8.4.0	R1999		G2	...	#30: 8.0.0 #30b: 8.1.0 #31:8.2.0 #31b:8.3.0 GERAN#1:8.4.0
08.20	Rate Adaptation on the Base Station System - Mobile Service Switching Centre (BSS-MSC) Interface	8.2.0	R1999		N3	RÄSÄNEN, Juha	#29: 8.0.0 #30: 8.1.0 TSG#9:8.2.0
08.31	Location Services LCS SMLC Peer Protocol (SMLCPP)	8.0.0	R1999		G2	DOSHI, Sonia	.

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08.51	Base Station Controller - Base Tranceiver Station (BSC-BTS) Interface General Aspects	8.0.0	R1999		G2	LYCKSELL, Edgar	.
08.52	Base Station Controller - Base Tranceiver Station (BSC-BTS) Interface - Interface Principles	8.0.0	R1999		G2	LYCKSELL, Edgar	.
08.54	BSC-BTS : Layer 1 Structure of Physical Circuits	8.0.0	R1999		G2	LYCKSELL, Edgar	.
08.56	BSC-BTS Layer 2 Specification	8.0.0	R1999		G2	ANDERSEN, Harald	.
08.58	Base Station Controller - Base Transceiver Station (BSC-BTS) Interface Layer 3 Specification	8.5.0	R1999		G2	LYCKSELL, Edgar	#29: 8.0.0 #30: 8.1.0 #30: 8.2.0 #31:8.3.0 #31b:8.4.0 GERAN#1:8.5.0
08.60	Inband Control of Remote Transcoders and Rate Adaptors for EFR/FR	8.1.0	R1999		GP	...	#30: 8.0.1 #30b: 8.1.0
08.61	Inband Control of Remote Transcoder and Rate Adaptors;(Half Rate)	8.0.0	R1999		GP	JACOB, Petra	.
08.62	Inband Tandem Free Operation (TFO) of Speech Codecs; Service Description; Stage 3	8.0.1	R1999		S4	...	.
08.71	Location services (LCS) SMLC-BSS intface L 3	8.1.0	R1999		G2	DOSHI, Sonia	.
09.01	General Network Interworking Scenarios	8.0.0	R1999		N4	...	.
09.08	Application of the Base Station System Application Part (BSSAP) on the E-Interface	8.0.0	R1999		N1	JORGENSEN, Per Johan	#31: 8.0.0
09.31	Location Services LCS Extension (BSSAP-LE)	8.3.0	R1999		G2	DOSHI, Sonia	#32:8.2.0 GERAN#1:8.3.0
10.56	Project scheduling and open issues: GSM Cordless Telephony System CTS, Phase 1	8.0.0	R1999		S2	GALLIGO, Michel	.
10.59	Project scheduling and open issues for EDGE	8.0.0	R1999		GP	MUELLER, Frank	May00: 1.23.0 ("final" version) #32:8.0.0 (1.23.0)
10.68	Introduction to the services: enhanced Multi-Level Precedence and Pre-emption (eMLPP), Voice Group Call Service (VGCS), Voice Broadcast Service (VBS)	8.0.0	R1999		S2	VAN DER AREND, Peter	.
11.10-1	Mobile station (MS) conformance specification; Part1: Conformance specification	8.2.0	R1999		G4	...	#29: 7.0.0 #30: 7.1.0 #31: 8.0.0 & 8.1.0 #32:closed. #32:8.2.0
11.10-1	Mobile station (MS) conformance specification; Part1: Conformance specification	9.0.1	Rel-4		G4	...	#32:9.0.0->51.010-1v4.0.1
11.10-3	Layer3 (L3) Abstract Test Suite (ATS)	9.0.0	Rel-4		G4	...	Tdoc 7-00-276; P-00-266 #32:9.0.0->51.010-3v4.0.0
11.11	Specification of the Subscriber Identity Module - Mobile Equipment (SIM-ME) Interface	8.4.0	R1999		T3	GUTHERY, Scott B.	#29: 8.0.0 #30: 8.1.0 #31:8.2.0 #32:8.3.0 TSG#9:8.4.0
11.14	Specification of Subscriber Identity Module - Mobile Equipment (SIM - ME) Interface for SIM Application Toolkit	8.4.0	R1999		T3	WOODSEND, Kristian	#29: 8.0.0 #30: 8.1.0 #31:8.2.0 #32:8.3.0 TSG#9:8.4.0
11.18	Specification of the 1.8 Volt Subscriber Identity Module - Mobile Equipment (SIM - ME) Interface	8.0.0	R1999		T3	LINDHOLM, Rune	.
11.21	GSM Radio Aspects Base Station System Equipment Specification	8.4.0	R1999		G3	BUSIN, Ake	#28: 7.0.0 #29: 7.1.0 #30: 7.2.0 #30b: 8.0.0 #31:8.1.0 #31b:8.1.0 #32:8.3.0 GERAN#1:8.4.0
11.26	GSM Repeater Equipment Specification	8.0.1	R1999		G3	BUSIN, Ake	#31b:8.0.0 (based on 5.2.1)
12.03	Security Management	8.0.0	R1999		S5	...	.
12.04	Performance Management and Measurements for a GSM Public Land Mobile Network (PLMN)	8.0.0	R1999		S5	...	.
12.71	Location Serices (LCS); Location services management	8.0.0	R1999		S5	DOSHI, Sonia	TSG#8:8.0.0 (2.0.1)
13.21	Base station systems and repeater equipment covering essential requirements under article 3.2 of the R&TTE directive	8.0.0	R1999		MSG	BUSIN, Ake	No R99 impact. But #32 reinstated. #32:8.0.0

Annex E: List of Change Requests and their status after TSG SA Meeting #9

E.1 CRs from SA WG1:

TSG SA Doc	SPEC	CR	rev	Current version	Phase	SUBJECT	TSG status	Cat	New version	Specification Title
SP-000380	21.905	002		3.1.1	R99	New Abbreviations and Definitions for R99	approved	D	3.2.0	3G Vocabulary
SP-000381	21.905	003		3.1.1	rel-4	Change of Name of MExE	approved	D	4.0.0	3G Vocabulary
SP-000389	22.001	004		3.2.0	rel-4	CR on TS22.001 for Bearer Modification without pre-notification	approved	B	4.0.0	Principles of Circuit Telecommunication Services Supported by a Public Land Mobile Network (PLMN)
SP-000371	22.002	007		3.4.0	R99	32 kbit/s UDI/RDI multimedia in GSM	approved	F	3.5.0	Circuit Bearer Services Supported by a PLMN
SP-000390	22.002	008		3.4.0	rel-4	Deletion of bearer service BS 30 NT	approved	C	4.0.0	Circuit Bearer Services Supported by a PLMN
SP-000372	22.011	017		3.2.0	R99	Alignment with 23.122 on selection procedure	approved	F	3.3.0	Service accessibility
SP-000372	22.011	018		4.1.0	rel-4	Alignment with 23.122 on selection procedure	approved	F	4.2.0	Service accessibility
SP-000385	22.011	019		4.1.0	rel-4	Reselection attempts of GPRS terminals	withdrawn	D		Service accessibility
SP-000376	22.030	009		3.3.0	R99	Codes for defined Supplementary Services	approved	F	3.4.0	Man-Machine Interface (MMI) of the Mobile Station (MS)
SP-000382	22.038	004		3.2.0	rel-5	Release 2000 features	approved	B	5.0.0	SIM application toolkit (SAT); Stage 1
SP-000381	22.038	005		3.2.0	rel-4	Change of MExE name	approved	D	4.0.0	SIM application toolkit (SAT); Stage 1
SP-000381	22.057	002		3.0.1	rel-4	Mobile Execution Environment	approved	D	4.0.0	Mobile Station Application Execution Environment (MExE); Stage 1
SP-000388	22.057	003		3.0.1	rel-5	MExE support of multimedia services	approved	B	5.0.0	Mobile Station Application Execution Environment (MExE); Stage 1
SP-000388	22.057	004		3.0.1	rel-4	MExE Release 2000	approved	D	4.0.0	Mobile Station Application Execution Environment (MExE); Stage 1
SP-000388	22.057	005		3.0.1	rel-4	MExE Classmark updates	approved	B	4.0.0	Mobile Station Application Execution Environment (MExE); Stage 1
SP-000373	22.060	018		3.4.0	R99	Removal of PTM-G text from stage 1	approved	F	3.5.0	General Packet Radio Service (GPRS); Stage 1
SP-000378	22.071	007		3.2.0	R99	Correction to LCS Service Description Stage 1 Document (R'99)	approved	F	3.3.0	Location Services (LCS); Stage 1
SP-000378	22.071	008		4.0.0	rel-4	Correction to LCS Service Description Stage 1 Document (R'00)	approved	F	4.1.0	Location Services (LCS); Stage 1
SP-000392	22.071	009		4.0.0	rel-4	Provision of Velocity for Location Services	approved	C	4.1.0	Location Services (LCS); Stage 1
SP-000392	22.071	010		4.0.0	rel-4	External LCS client identity	approved	B	4.1.0	Location Services (LCS); Stage 1
SP-000392	22.071	011		4.0.0	rel-4	Privacy Control for LCS	approved	B	4.1.0	Location Services (LCS); Stage 1
SP-000392	22.071	012		4.0.0	rel-4	Privacy Control for LCS	approved	F	4.1.0	Location Services (LCS); Stage 1
SP-000392	22.071	013		4.0.0	rel-4	Clarifications to LCS on privacy and Service response	approved	D	4.1.0	Location Services (LCS); Stage 1
SP-000392	22.071	014		4.0.0	rel-4	LCS: Geographic Location	approved	F	4.1.0	Location Services (LCS); Stage 1
SP-000392	22.071	015		4.0.0	rel-4	Adding statement on "active" and "idle" UE in chapter 4.13	approved	D	4.1.0	Location Services (LCS); Stage 1
SP-000392	22.071	016		4.0.0	rel-4	Radio Access Network support for LCS	approved	D	4.1.0	Location Services (LCS); Stage 1
SP-000392	22.071	017		4.0.0	rel-4	LCS: Identification of a Target UE using IP addresses	approved	D	4.1.0	Location Services (LCS); Stage 1
SP-000392	22.071	018		4.0.0	rel-4	LCS: LCS Open Service Architecture (OSA) and Application Programming Interface.	approved	D	4.1.0	Location Services (LCS); Stage 1
SP-000374	22.078	049		3.4.1	R99	Removal of user interaction at answer DPs (Release 99)	approved	F	3.5.0	CAMEL; Stage 1
SP-000381	22.078	050		3.4.1	rel-4	Change of MExE name	approved	D	4.0.0	CAMEL; Stage 1
SP-000425	22.078	051		3.4.1	rel-5	Proposed CR to 22.078 Section 6 for IP Telephony in CAMEL Phase 4	withdrawn -> S1	C		CAMEL; Stage 1
SP-000425	22.078	052		3.4.1	rel-5	Proposed CR to 22.078 Section 1 for IP Telephony in CAMEL Phase 4	withdrawn -> S1	C		CAMEL; Stage 1

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SP-000425	22.078	053		3.4.1	rel-5	Proposed CR to 22.078 Section 4 for IP Telephony in CAMEL Phase 4	withdrawn -> S1	C		CAMEL; Stage 1
SP-000425	22.078	054		3.4.1	rel-5	Introduction of MT SMS interworking with CAMEL4	approved	B	5.0.0	CAMEL; Stage 1
SP-000425	22.078	055		3.4.1	rel-5	Proposed CR to 22.078 Section 3 for IP Telephony in CAMEL Phase 4	withdrawn -> S1	C		CAMEL; Stage 1
SP-000425	22.078	056		3.4.1	rel-5	Removal of tags associated with previous releases of CAMEL	approved	C	5.0.0	CAMEL; Stage 1
SP-000425	22.078	057		3.4.1	rel-5	Introduction of IPT for CAMEL4	withdrawn -> S1	B		CAMEL; Stage 1
SP-000425	22.078	058		3.4.1	rel-5	Inclusion of Mid call event	approved	B	5.0.0	CAMEL; Stage 1
SP-000425	22.078	059		3.4.1	rel-5	Inclusion of flexible tone injection	approved	B	5.0.0	CAMEL; Stage 1
SP-000374	22.078	060		3.4.1	R99	GPRS AC/ACR alignment of shared data volume control (Stage 1 vs. 2)	approved	F	3.5.0	CAMEL; Stage 1
SP-000425	22.078	061		3.4.1	rel-5	GPRS AC/ACR alignment of shared data volume control (Stage 1 vs. 2)	approved	C	5.0.0	CAMEL; Stage 1
SP-000457	22.078	062	1	3.4.1	R99	Alignment with stage 2 & 3, and editorial clarification	Postponed to SP-10	F		CAMEL; Stage 1
SP-000425	22.078	064		3.4.1	rel-5	Transport of Charging Information to the Home Network	approved	B	5.0.0	CAMEL; Stage 1
SP-000377	22.091	002		3.0.1	R99	CR on CLI presentation modifications	approved	F	3.1.0	Explicit Call Transfer (ECT) Supplementary Service; Stage 1
SP-000375	22.097	003		3.1.0	R99	Interaction with Multicall	approved	F	3.2.0	Multiple Subscriber Profile (MSP); Stage 1
SP-000383	22.101	040		4.0.0	rel-4	Multimedia messaging	approved	B	4.1.0	UMTS Service principles
SP-000383	22.101	041		4.0.0	rel-4	Service Management requirements	approved	C	4.1.0	UMTS Service principles
SP-000429	22.101	042		4.0.0	rel-5	General corrections and clarifications to 22.101 for Release 2000	Withdrawn	F		UMTS Service principles
SP-000430	22.101	042	1	4.0.0	rel-4	General corrections and clarifications to 22.101 for Release 2000	approved	F	4.1.0	UMTS Service principles
SP-000383	22.101	043		4.0.0	rel-5	Classification of services	approved	F	5.0.0	UMTS Service principles
SP-000383	22.101	044		4.0.0	rel-5	IP multimedia services	approved	B	5.0.0	UMTS Service principles
SP-000383	22.101	045		4.0.0	rel-5	IP multimedia session for Emergency call	approved	B	5.0.0	UMTS Service principles
SP-000383	22.101	046		4.0.0	rel-4	Editorial changes to 22.101 for Release 2000	approved	D	4.1.0	UMTS Service principles
SP-000429	22.101	047		4.0.0	rel-5	Numbering Principles	withdrawn	C		UMTS Service principles
SP-000430	22.101	047	1	4.0.0	rel-4	Numbering Principles	approved	C	4.1.0	UMTS Service principles
SP-000383	22.101	048		4.0.0	rel-4	Service evolution	approved	C	4.1.0	UMTS Service principles
SP-000391	22.101	049		4.0.0	rel-4	Emergency Call	approved	D	4.1.0	UMTS Service principles
SP-000405	22.101	050		4.0.0	rel-4	Text Conversation	approved	B	4.1.0	UMTS Service principles
SP-000430	22.101	051		4.0.0	rel-5	IM Number portability	approved	C	5.0.0	UMTS Service principles
SP-000430	22.101	052		4.0.0	rel-5	Introduction of IM CN Subsystem	approved	F	5.0.0	UMTS Service principles
SP-000383	22.101	053		4.0.0	rel-5	Subscription	approved	F	5.0.0	UMTS Service principles
SP-000383	22.101	054		4.0.0	rel-5	Roaming	approved	F	5.0.0	UMTS Service principles
SP-000379	22.101	055		3.10.0	R99	Handling of interactions between applications requiring the access to UE resources	withdrawn	F		UMTS Service principles
SP-000379	22.101	056		3.10.0	R99	Handling of interactions between applications requiring the access to UE resources	approved	F	3.11.0	UMTS Service principles
SP-000381	22.105	026		3.9.0	rel-4	Change of MExE name	approved	D	4.0.0	Services & Service capabilities
SP-000389	22.105	027		3.9.0	rel-4	Bearer Modification without pre-notification	approved	B	4.0.0	Services & Service capabilities

TSG SA Doc	SPEC	CR	rev	Current version	Phase	SUBJECT	TSG status	Cat	New version	Specification Title
SP-000387	22.121	011		3.3.0	rel-4	VHE in R00 User Profile	approved	C	4.0.0	Provision of Services in UMTS - The Virtual Home Environment - Stage 1
SP-000387	22.121	012		3.3.0	rel-4	VHE in R00	approved	C	4.0.0	Provision of Services in UMTS - The Virtual Home Environment - Stage 1
SP-000381	22.121	013		3.3.0	rel-4	Change of MExE name	approved	D	4.0.0	Provision of Services in UMTS - The Virtual Home Environment - Stage 1
SP-000387	22.121	014		3.3.0	rel-4	Realisation of Application interface	approved	D	4.0.0	Provision of Services in UMTS - The Virtual Home Environment - Stage 1
SP-000387	22.121	015		3.3.0	rel-4	Synchronisation of distributed user profiles	approved	B	4.0.0	Provision of Services in UMTS - The Virtual Home Environment - Stage 1
SP-000387	22.121	016		3.3.0	rel-4	Uniquely addressable user profiles	approved	B	4.0.0	Provision of Services in UMTS - The Virtual Home Environment - Stage 1
SP-000387	22.121	017		3.3.0	rel-4	VASP indirect support of VHE	approved	D	4.0.0	Provision of Services in UMTS - The Virtual Home Environment - Stage 1
SP-000426	22.129	013		3.3.0	R99	Removal of requirements for SoLSA support	approved	F	3.4.0	Handover Requirements between UMTS and GSM or other Radio Systems
SP-000389	22.129	014		3.3.0	rel-4	Bearer Modification without pre-notification	approved	B	4.0.0	Handover Requirements between UMTS and GSM or other Radio Systems
SP-000375	22.135	006		3.3.0	R99	Interaction with MSP	approved	F	3.4.0	Multicall Stage 1
SP-000406	22.135	007		3.3.0	R99	Removal of the Requirement on Network to Tear Down Calls to Accept EC in Multicall	approved	F	3.4.0	Multicall Stage 1
SP-000406	22.135	008		3.3.0	R99	Addition of Ncs_MT limitation to number of MPTY members	approved	F	3.4.0	Multicall Stage 1

E.2 CRs from SA WG2:

TSG SA Doc	SPEC	CR	rev	Current version	Phase	SUBJECT	TSG status	Cat	New version	Specification Title
SP-000449	23.002	016		3.3.0	rel-5	Introduction of R00 Definitions from 23.821 into 23.002	Approved	B	5.0.0	Network Architecture
SP-000449	23.002	017		3.3.0	rel-5	CR on functional elements	Approved	B	5.0.0	Network Architecture
SP-000449	23.002	018		3.3.0	rel-5	CR on reference model	Approved	B	5.0.0	Network Architecture
SP-000449	23.002	019		3.3.0	rel-5	CR on reference points	Approved	B	5.0.0	Network Architecture
SP-000448	23.060	147	3	3.4.0	R99	Change of the Cell update procedure	Approved	F	3.5.0	General Packet Radio Service (GPRS) Service description; Stage 2
SP-000448	23.060	170	0	3.4.0	R99	DTM: simultaneous LAU and RAU procedures on an SDCCH	Approved	F	3.5.0	General Packet Radio Service (GPRS) Service description; Stage 2
SP-000448	23.060	171	1	3.4.0	R99	DTM: reuse of the GPRS Suspension procedure in cells with no DTM capabilities	Approved	F	3.5.0	General Packet Radio Service (GPRS) Service description; Stage 2
SP-000448	23.060	172	1	3.4.0	R99	DTM: download of the IMSI from the SGSN to the BSC	Approved	F	3.5.0	General Packet Radio Service (GPRS) Service description; Stage 2
SP-000448	23.060	173	0	3.4.0	R99	CS Paging procedure in UMTS	Approved	F	3.5.0	General Packet Radio Service (GPRS) Service description; Stage 2
SP-000448	23.060	174	0	3.4.0	R99	Clarification on P-TMSI and P-TMSI signature at Detach	Approved	F	3.5.0	General Packet Radio Service (GPRS) Service description; Stage 2

TSG SA Doc	SPEC	CR	rev	Current version	Phase	SUBJECT	TSG status	Cat	New version	Specification Title
SP-000448	23.060	175	1	3.4.0	R99	Serving RNS Relocation Procedure	Approved	F	3.5.0	General Packet Radio Service (GPRS) Service description; Stage 2
SP-000448	23.060	176	1	3.4.0	R99	DRX and MS network capabilities within UMTS	Approved	F	3.5.0	General Packet Radio Service (GPRS) Service description; Stage 2
SP-000448	23.060	177	1	3.4.0	R99	Compatibility GTPv0/GTPv1 in case of SGSN change	Approved	F	3.5.0	General Packet Radio Service (GPRS) Service description; Stage 2
SP-000448	23.060	178	2	3.4.0	R99	Correction on Iu Release Procedure	Approved	F	3.5.0	General Packet Radio Service (GPRS) Service description; Stage 2
SP-000448	23.060	182	1	3.4.0	R99	Removal of PDP type OSP:IHOSS in R99	Approved	F	3.5.0	General Packet Radio Service (GPRS) Service description; Stage 2
SP-000487	23.060	184	2	3.4.0	R99	Clarification to Service Request procedure	Approved	F	3.5.0	General Packet Radio Service (GPRS) Service description; Stage 2
SP-000450	23.107	026	2	3.3.0	R99	Attribute and parameter	Approved	F	3.4.0	Quality of Service, Concept and Architecture
SP-000450	23.107	027	1	3.3.0	R99	Informational content in clause 6.2	Approved	F	3.4.0	Quality of Service, Concept and Architecture
SP-000450	23.107	029	2	3.3.0	R99	Traffic class editorial corrections	Approved	F	3.4.0	Quality of Service, Concept and Architecture
SP-000451	23.121	056		3.3.0	rel-5	Architectural Principles for Release 2000	Approved	B	5.0.0	Architecture Requirements for release 99
SP-000451	23.121	060	2	3.3.0	R99	Correction to Data Retrieve protocol stacks endpoints	Approved	F	5.0.0	Architecture Requirements for release 99
SP-000451	23.121	062	2	3.3.0	R99	Correction to Data Retrieve protocol stacks endpoints	Approved	F	3.4.0	Architecture Requirements for release 99
SP-000452	23.127	011	1	3.2.0	rel-4	Change of TS 23.127 title for version 4.0 and up	Approved	D	4.0.0	Virtual Home Environment - Stage 2
SP-000452	23.127	012		3.1.0	R99	CR on Parlay-OSA alignment: basic service interface	Approved	F	3.2.0	Virtual Home Environment - Stage 2
SP-000452	23.127	013		3.1.0	R99	CR on Parlay-OSA alignment: initial contact interfaces	Approved	F	3.2.0	Virtual Home Environment - Stage 2
SP-000452	23.127	014		3.1.0	R99	CR on Parlay-OSA alignment : access SCF	Approved	F	3.2.0	Virtual Home Environment - Stage 2
SP-000452	23.127	015		3.1.0	R99	CR on Parlay-OSA alignment: load manager SCF	Approved	F	3.2.0	Virtual Home Environment - Stage 2
SP-000452	23.127	016		3.1.0	R99	CR on Parlay-OSA alignment: fault manager SCF	Approved	F	3.2.0	Virtual Home Environment - Stage 2
SP-000452	23.127	017		3.1.0	R99	CR on Parlay-OSA alignment: service factory SCF	Approved	F	3.2.0	Virtual Home Environment - Stage 2
SP-000452	23.127	018		3.1.0	R99	CR on Parlay-OSA alignment: authentication interface	Approved	F	3.2.0	Virtual Home Environment - Stage 2

E.3 CRs from SA WG3:

TSG SA Doc	SPEC	CR	rev	Current version	Phase	SUBJECT	TSG status	Cat	New version	Specification Title
SP-000442	33.102	095	2	3.5.0	R99	Handling of emergency call	approved	F	3.6.0	Security Architecture
SP-000411	33.102	104	1	3.5.0	R99	Re-transmission of authentication request using the same quintet	approved	F	3.6.0	Security Architecture
SP-000442	33.102	105		3.5.0	R99	Length of CFN	approved	F	3.6.0	Security Architecture
SP-000442	33.102	106		3.5.0	R99	Clarification on Sequence Numbers (SQN - SEQ)	approved	F	3.6.0	Security Architecture
SP-000442	33.102	107		3.5.0	R99	Replace IMUI and TMUI with IMSI and TMSI	approved	F	3.6.0	Security Architecture
SP-000442	33.102	108		3.5.0	R99	Replace Quintuplet by Quintet	approved	F	3.6.0	Security Architecture
SP-000442	33.102	109		3.5.0	R99	Conversion function c2	approved	F	3.6.0	Security Architecture
SP-000442	33.102	110		3.5.0	R99	Update terminology regarding VLR/SGSN	approved	F	3.6.0	Security Architecture
SP-000442	33.102	111		3.5.0	R99	Start of ciphering	approved	F	3.6.0	Security Architecture
SP-000442	33.102	112		3.5.0	R99	Removal of ME triggered authentication during RRC connection	approved	F	3.6.0	Security Architecture
SP-000442	33.102	113		3.5.0	R99	Removal of EUIC	approved	F	3.6.0	Security Architecture

TSG SA Doc	SPEC	CR	rev	Current version	Phase	SUBJECT	TSG status	Cat	New version	Specification Title
SP-000442	33.102	114		3.5.0	R99	Removal of duplicate text on USIM toolkit secure messaging and addition of a reference to 02.48 and 03.48 instead.	approved	F	3.6.0	Security Architecture
SP-000442	33.102	115		3.5.0	R99	Removal of secure authentication mechanism negotiation.	approved	F	3.6.0	Security Architecture
SP-000442	33.102	116		3.5.0	R99	Removal of HE control of some aspects of security configuration	approved	F	3.6.0	Security Architecture
SP-000442	33.102	117		3.5.0	R99	Specification of authentication vector handling in serving network nodes.	approved	F	3.6.0	Security Architecture
SP-000442	33.102	118		3.5.0	R99	Update of References	approved	F	3.6.0	Security Architecture
SP-000412	33.102	119		3.5.0	R99	Profiles for sequence number management	approved	C	3.6.0	Security Architecture
SP-000442	33.102	120		3.5.0	R99	Change of parameter value x regarding the capability of the USIM to store information on past successful authentication events	approved	F	3.6.0	Security Architecture
SP-000442	33.102	121		3.5.0	R99	Clarifications on integrity and ciphering of radio bearers.	approved	F	3.6.0	Security Architecture
SP-000445	33.102	122		3.5.0	R99	Change of computation of the anonymity key in the re-synchronisation procedure	approved	F	3.6.0	Security Architecture
SP-000442	33.102	123		3.5.0	R99	Clarification on condition on rejecting keys CK and IK	approved	F	3.6.0	Security Architecture
SP-000442	33.102	124		3.5.0	R99	Clarifications on the START parameter handling	approved	F	3.6.0	Security Architecture
SP-000442	33.102	125		3.5.0	R99	New FRESH at SRNC relocation	approved	F	3.6.0	Security Architecture
SP-000442	33.102	126		3.5.0	R99	Addition of authentication parameter lengths	approved	F	3.6.0	Security Architecture
SP-000442	33.102	127		3.5.0	R99	Clarifications on the COUNT parameters	approved	F	3.6.0	Security Architecture
SP-000442	33.102	128		3.5.0	R99	Minor editorial changes	approved	F	3.6.0	Security Architecture
SP-000443	33.103	010		3.3.0	R99	Removal of Network Wide Confidentiality for R99 (clause 6)	approved	F	3.4.0	Security Integration Guidelines
SP-000446	33.103	011		3.3.0	R99	Correction to BEARER definition	approved	F	3.4.0	Security Integration Guidelines
SP-000445	33.103	012		3.3.0	R99	Computation of the anonymity key for re-synchronisation	approved	F	3.4.0	Security Integration Guidelines
SP-000445	33.105	012		3.4.0	R99	Calculation of AK in re-synchronisation	approved	F	3.5.0	Cryptographic Algorithm requirements
SP-000444	33.105	013		3.4.0	R99	Deletion of eUIC	approved	F	3.5.0	Cryptographic Algorithm requirements
SP-000445	33.105	014		3.4.0	R99	Anonymity key computation during re-synchronisation	approved	F	3.5.0	Cryptographic Algorithm requirements

E.4 CRs from SA WG4:

TSG SA Doc	SPEC	CR	rev	Current version	Phase	SUBJECT	TSG status	Cat	New version	Specification Title
SP-000395	26.110	001		3.0.1	rel-4	CS Multimedia Codec specification for real time text conversation	approved	B	4.0.0	Codec for Circuit switched Multimedia Telephony Service; General Description
SP-000396	26.111	006		3.2.0	R99	MPEG-4 interface to multiplex	approved	F	3.3.0	Codec for Circuit switched Multimedia Telephony Service; Modifications to H.324
SP-000397	26.132	001		3.0.0	R99	Handheld hands-free Test Setup	approved	F	3.1.0	Narrow Band (3,1kHz) Speech & Video Telephony Terminal Acoustic Test Specification.

E.5 CRs from SA WG5:

TSG SA Doc	SPEC	CR	rev	Current version	Phase	SUBJECT	TSG status	Cat	New version	Specification Title
SP-000433	32.015	010		3.2.0	R99	Clarifications to chapter 7 characteristics per PDP context	approved	F	3.3.0	Telecommunications Management; Charging and billing; GSM call and event data for the Packet Switched (PS) domain
SP-000433	32.015	011		3.2.0	R99	Clarifications and corrections characteristics per PDP context	approved	F	3.3.0	Telecommunications Management; Charging and billing; GSM call and event data for the Packet Switched (PS) domain
SP-000433	32.015	012		3.2.0	R99	Clarification for QoS parameter characteristics per PDP context	approved	F	3.3.0	Telecommunications Management; Charging and billing; GSM call and event data for the Packet Switched (PS) domain
SP-000434	32.104	007		3.2.0	R99	Clarification of the table oriented structure of the file format, and addition of ASN.1 example, according to annex D	approved	F	3.3.0	3G Performance Management
SP-000435	32.106-3	001		3.1.0	R99	Add pragma statement to Notification IRP IDL	rejected	F		Telecommunication Management; Configuration Management; Part 3: Notification Integration Reference Point; CORBA solution set version 1:1
SP-000437	32.111-1	001		3.1.0	R99	Clarification On Mediation Function Algorithms	approved	F	3.2.0	Telecommunication Management; Fault Management; Part 1: 3G fault management requirements
SP-000437	32.111-1	002		3.1.0	R99	Clarification On Clear Alarm Suppression	approved	F	3.2.0	Telecommunication Management; Fault Management; Part 1: 3G fault management requirements
SP-000438	32.111-2	001		3.1.1	R99	Correction of qualifier for SystemDN	approved	F	3.2.0	Telecommunication Management; Fault Management; Part 2: Alarm Integration Reference Point: Information Service
SP-000438	32.111-2	002		3.1.1	R99	Addition of a missing constraint in acknowledgeAlarm operation	approved	F	3.2.0	Telecommunication Management; Fault Management; Part 2: Alarm Integration Reference Point: Information Service
SP-000439	32.111-3	001		3.1.0	R99	Update TS 32.111-3 Iterator	rejected	D	3.2.0	Telecommunication Management; Fault Management; Part 3: Alarm Integration Reference Point: CORBA solution set version 1:1
SP-000439	32.111-3	002		3.1.0	R99	Clarification On Filterable Body Fields	rejected	D	3.2.0	Telecommunication Management; Fault Management; Part 3: Alarm Integration Reference Point: CORBA solution set version 1:1
SP-000439	32.111-3	003		3.1.0	R99	Correct push_structured_event of push_structured_events	approved	F	3.2.0	Telecommunication Management; Fault Management; Part 3: Alarm Integration Reference Point: CORBA solution set version 1:1
SP-000439	32.111-3	004		3.1.0	R99	Remove the use of interface to encapsulate const strings	approved	F	3.2.0	Telecommunication Management; Fault Management; Part 3: Alarm Integration Reference Point: CORBA solution set version 1:1

E.6 CRs from TSG level:

TSG SA Doc	SPEC	CR	rev	Current version	Phase	SUBJECT	TSG status	Cat	New version	Specification Title
SP-000402	21.900	007	1	3.3.0	R99	Role of rapporteur for both Specifications and Work Items	approved	F	3.4.0	3GPP Working methods
SP-000402	21.900	007	1	3.2.0	R99	Role of rapporteur for both Specifications and Work Items	approved	C	3.3.0	3GPP Working methods

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SP-000492	21.900	008	2	3.3.0	R99	Clarification of CR categories	approved	F	3.4.0	3GPP Working methods
SP-000493	21.900	008	3	3.2.0	R99	Clarification of CR categories	approved	C	3.3.0	3GPP Working methods
SP-000461	21.900	010		3.3.0	R99	Clarification of CR categories for a frozen 3GPP release	approved	F	3.4.0	3GPP Working methods

Annex F: Status of all 3GPP CRs after TSG SA #9 Meeting

TSG Doc	SPEC	CR	rev	Current version	Phase	SUBJECT	TSG status	Cat	New version	Specification Title	WG Responsible
NP-000499	03.08	A033		7.3.0	R98	Deletion of "Barring of roaming" stored in the SGSN	approved	A	7.4.0	Organization of Subscriber Data	N4
NP-000499	03.08	A034		6.4.0	R97	Deletion of "Barring of roaming" stored in the SGSN	approved	F	6.5.0	Organization of Subscriber Data	N4
NP-000473	03.10	A012		8.1.0	R99	32kbit/s UDI/RDI multimedia	revised	F		GSM Public Land Mobile Network (PLMN) Connection Types	
NP-000551	03.10	A012	1	8.1.0	R99	32kbit/s UDI/RDI multimedia	approved	F	8.2.0	GSM Public Land Mobile Network (PLMN) Connection Types	
NP-000499	03.16	A041		7.3.0	R98	Correction to Delete Subscriber Data	approved	A	7.4.0	Subscriber Data Management	
NP-000499	03.16	A042		6.4.0	R97	Correction to Delete Subscriber Data	approved	F	6.5.0	Subscriber Data Management	
NP-000482	03.18	A062	1	6.5.0	R97	Correction of Obtain_Routeing_Address for the reconnect case	approved	F	6.6.0	Basic Call Handling	
NP-000482	03.18	A063	1	7.3.0	R98	Correction of Obtain_Routeing_Address for the reconnect case	approved	A	7.4.0	Basic Call Handling	
TP-000146	03.19	A003		7.2.0	R98	Definition of the value of the getShareableInterfaceObject() method byte parameter for the ToolkitInterface.	approved	F	7.3.0	GSM API for SIM toolkit stage 2	
TP-000159	03.19	A004		7.2.0	R98	Correction of the AID coding for the API packages	approved	F	7.3.0	GSM API for SIM toolkit stage 2	
TP-000147	03.48	A012		8.3.0	R99	Modification of the fields to be included in the 03.48 response packet checksum computation.	approved	F	8.4.0	Security Mechanisms for SIM Toolkit Application - Stage 2	
TP-000147	03.48	A013		8.3.0	R99	Clarification of the KID and KIC fields for Open Platform keys.	approved	F	8.4.0	Security Mechanisms for SIM Toolkit Application - Stage 2	
TP-000147	03.48	A014		8.3.0	R99	Clarification on Access Domain parameters in Install(Install) command	approved	F	8.4.0	Security Mechanisms for SIM Toolkit Application - Stage 2	
NP-000450	03.68	A032		6.2.0	R97	Clarification of anchor MSC address format	approved	F	6.3.0	Voice Group Call Service (VGCS); Stage 2	
NP-000450	03.68	A033		7.1.0	R98	Clarification of anchor MSC address format	approved	A	7.2.0	Voice Group Call Service (VGCS); Stage 2	
NP-000450	03.69	A022		6.2.0	R97	Clarification of anchor MSC address format	approved	F	6.3.0	Voice Broadcast service (VBS); Stage 2	
NP-000450	03.69	A023		7.1.0	R98	Clarification of anchor MSC address format	approved	A	7.2.0	Voice Broadcast service (VBS); Stage 2	
NP-000438	04.08	A103 9		7.8.0	R98	Deletion of references to OSP:IHOSS for R98	approved	F	7.9.0	Mobile Radio Interface - Layer 3 Specification	
NP-000439	04.08	A104 1		6.11.0	R97	Missing P-TMSI reallocation after Attach or RAU	approved	F	6.12.0	Mobile Radio Interface - Layer 3 Specification	
NP-000439	04.08	A104 3		7.8.0	R98	Missing P-TMSI reallocation after Attach or RAU	approved	A	7.9.0	Mobile Radio Interface - Layer 3 Specification	
NP-000437	04.08	A104 5	1	6.11.0	R97	Optional support of GEA/2 Encryption Algorithm in the MS	approved	F	6.12.0	Mobile Radio Interface - Layer 3 Specification	
NP-000437	04.08	A104 7	1	7.8.0	R98	Optional support of GEA/2 Encryption Algorithm in the MS	approved	A	7.9.0	Mobile Radio Interface - Layer 3 Specification	
NP-000439	04.08	A993	1	6.11.0	R97	Usage of cause code IE in network initiated detach	approved	F	6.12.0	Mobile Radio Interface - Layer 3 Specification	
NP-000439	04.08	A995	1	7.8.0	R98	Usage of cause code IE in network initiated detach	approved	A	7.9.0	Mobile Radio Interface - Layer 3 Specification	
NP-000440	04.11	A019		4.10.1	PH2	Corrections of CP/RP-DATA IE lengths	approved	F	4.11.0	Point-to-Point (PP) Short Message Service (SMS) Support on Mobile Radio Interface	
NP-000440	04.11	A020		5.2.1	R96	Corrections of CP/RP-DATA IE lengths	approved	A	5.3.0	Point-to-Point (PP) Short Message Service (SMS) Support on Mobile Radio Interface	

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TSG Doc	SPEC	CR	rev	Current version	Phase	SUBJECT	TSG status	Cat	New version	Specification Title	WG Responsible
NP-000440	04.11	A021		6.0.1	R97	Corrections of CP/RP-DATA IE lengths	approved	A	6.1.0	Point-to-Point (PP) Short Message Service (SMS) Support on Mobile Radio Interface	
NP-000440	04.11	A022		7.0.0	R98	Corrections of CP/RP-DATA IE lengths	approved	A	7.1.0	Point-to-Point (PP) Short Message Service (SMS) Support on Mobile Radio Interface	
NP-000473	04.21	A019		8.1.0	R99	32kbit/s UDI/RDI multimedia	revised	F		Rate Adaption on the Mobile Station - Base Station System (MS-BSS) Interface	
NP-000551	04.21	A019	1	8.1.0	R99	32kbit/s UDI/RDI multimedia	approved	F	8.2.0	Rate Adaption on the Mobile Station - Base Station System (MS-BSS) Interface	
NP-000441	04.64	A143	1	8.4.0	R99	Corrections regarding NULL frame	approved	F	8.5.0	Mobile Station - Serving GPRS Support Node (MS-SGSN) Logical Link Control (LLC) Layer Specification	
NP-000441	04.65	A070	1	8.0.0	R99	Deletion of PDP type X.25	approved	F	8.1.0	Mobile Station (MS) - Serving GPRS Support Node (SGSN); Subnetwork Dependent Convergence Protocol (SNDCP)	
NP-000441	04.65	A071	1	8.0.0	R99	Supporting RFC2507 Header Compression in SNDCP	approved	F	8.1.0	Mobile Station (MS) - Serving GPRS Support Node (SGSN); Subnetwork Dependent Convergence Protocol (SNDCP)	
NP-000492	04.80	A018		7.3.0	R98	Addition of error type description for PositionMethodFailure	approved	F	7.4.0	Mobile Radio Interface Layer 3 - Supplementary Services Specification Formats and Coding	
NP-000473	08.20	A008		8.1.0	R99	32kbit/s UDI/RDI multimedia	revised	F		Rate Adaptation on the Base Station System - Mobile Service Switching Centre (BSS-MSC) Interface	
NP-000551	08.20	A008	1	8.1.0	R99	32kbit/s UDI/RDI multimedia	approved	F	8.2.0	Rate Adaptation on the Base Station System - Mobile Service Switching Centre (BSS-MSC) Interface	
NP-000499	09.02	A304		5.15.0	R96	Deletion of Annex C	approved	F	5.16.0	Mobile Application Part (MAP) Specification	
NP-000499	09.02	A305		6.8.0	R97	Deletion of Annex C	approved	A	6.9.0	Mobile Application Part (MAP) Specification	
NP-000499	09.02	A306		7.5.0	R98	Deletion of Annex C	approved	A	7.6.0	Mobile Application Part (MAP) Specification	
NP-000492	09.02	A310	1	7.5.1	R98	Correction to QoS indication	approved	F	7.6.0	Mobile Application Part (MAP) Specification	
NP-000536	09.60	A089	2	6.8.0	R97	MM Context information coding clarification	approved	F	6.9.0	General Packet Radio Service (GPRS); GPRS Tunnelling Protocol GPT) across the Gn and Gp Interface	
NP-000536	09.60	A090	2	7.5.0	R98	MM Context information coding clarification	approved	A	7.6.0	General Packet Radio Service (GPRS); GPRS Tunnelling Protocol GPT) across the Gn and Gp Interface	
NP-000536	09.60	A091	1	7.5.0	R98	Encoding of IMSI	approved	F	7.6.0	General Packet Radio Service (GPRS); GPRS Tunnelling Protocol GPT) across the Gn and Gp Interface	

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NP-000536	09.60	A092	1	6.8.0	R97	Encoding of IMSI	approved	F	6.9.0	General Packet Radio Service (GPRS); GPRS Tunnelling Protocol GPT) across the Gn and Gp Interface	
NP-000536	09.60	A094		7.5.0	R98	Removal of IHOSS from GTP	approved	F	7.6.0	General Packet Radio Service (GPRS); GPRS Tunnelling Protocol GPT) across the Gn and Gp Interface	
NP-000536	09.60	A095	1	7.5.0	R98	Coding of TI in PDP Context IE	approved	F	7.6.0	General Packet Radio Service (GPRS); GPRS Tunnelling Protocol GPT) across the Gn and Gp Interface	
NP-000536	09.60	A096		6.8.0	R97	Addition of MS Not Reachable Reason to Send Routing Information For GPRS Response	approved	F	6.9.0	General Packet Radio Service (GPRS); GPRS Tunnelling Protocol GPT) across the Gn and Gp Interface	
NP-000536	09.60	A097		7.5.0	R98	Addition of MS Not Reachable Reason to Send Routing Information For GPRS Response	approved	A	7.6.0	General Packet Radio Service (GPRS); GPRS Tunnelling Protocol GPT) across the Gn and Gp Interface	
TP-000176	11.11	A116		8.3.0	R99	PLMN Selection Corrections and additions for EDGE	approved	F	8.4.0	Specification of the Subscriber Identity Module - Mobile Equipment (SIM-ME) Interface	
TP-000176	11.11	A119		8.3.0	R99	Addition of RPLMN file	approved	C	8.4.0	Specification of the Subscriber Identity Module - Mobile Equipment (SIM-ME) Interface	
TP-000148	11.11	A125		8.3.0	R99	Addition of warning regarding network selection with access technology	withdrawn	F		Specification of the Subscriber Identity Module - Mobile Equipment (SIM-ME) Interface	
TP-000148	11.11	A126		8.3.0	R99	Standardise the current GAIT commands and reserving these CLA/INS codes	approved	F	8.4.0	Specification of the Subscriber Identity Module - Mobile Equipment (SIM-ME) Interface	
TP-000149	11.14	A183		7.5.0	R98	Clarification for Alpha Identifier in PLAY TONE	approved	F	7.6.0	Specification of Subscriber Identity Module - Mobile Equipment (SIM - ME) Interface for SIM Application Toolkit	
TP-000149	11.14	A184		8.3.0	R99	Clarification for Alpha Identifier in PLAY TONE	approved	F	8.4.0	Specification of Subscriber Identity Module - Mobile Equipment (SIM - ME) Interface for SIM Application Toolkit	
TP-000149	11.14	A185		7.5.0	R98	EVENT DOWNLOAD-MT call : correction of the sub-address description	approved	F	7.6.0	Specification of Subscriber Identity Module - Mobile Equipment (SIM - ME) Interface for SIM Application Toolkit	
TP-000149	11.14	A186		8.3.0	R99	EVENT DOWNLOAD-MT call : correction of the sub-address description	approved	F	8.4.0	Specification of Subscriber Identity Module - Mobile Equipment (SIM - ME) Interface for SIM Application Toolkit	
TP-000149	11.14	A187		7.5.0	R98	correction to GET INPUT regarding number of response string variables	approved	F	7.6.0	Specification of Subscriber Identity Module - Mobile Equipment (SIM - ME) Interface for SIM Application Toolkit	
TP-000149	11.14	A188		8.3.0	R99	correction to GET INPUT regarding number of response string variables	approved	F	8.4.0	Specification of Subscriber Identity Module - Mobile Equipment (SIM - ME) Interface for SIM Application Toolkit	
TP-000150	21.111	005		3.2.0	R99	Partial AID selection requirements	approved	F	3.3.0	USIM and IC card requirements	
SP-000402	21.900	007	1	3.2.0	R99	Role of rapporteur for both Specifications and Work Items	approved	C	3.3.0	3GPP Working methods	
SP-000402	21.900	007	1	3.3.0	R99	Role of rapporteur for both Specifications and Work Items	approved	F	3.4.0	3GPP Working methods	

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SP-000492	21.900	008	2	3.3.0	R99	Clarification of CR categories	approved	F	3.4.0	3GPP Working methods	
SP-000493	21.900	008	3	3.2.0	R99	Clarification of CR categories	approved	C	3.3.0	3GPP Working methods	
SP-000461	21.900	010		3.3.0	R99	Clarification of CR categories for a frozen 3GPP release	approved	F	3.4.0	3GPP Working methods	
SP-000461	21.900	10		3.2.0	R99	Clarification of CR categories for a frozen 3GPP release	approved	C	3.3.0	3GPP Working methods	
TP-000143	21.904	006		3.1.0	R99	Reflection of document structure changes in core specifications and correction of editorial mistakes in the annexes	approved	F	3.2.0	UE Capability Requirements (UCR)	
TP-000143	21.904	007		3.1.0	R99	Reflection of document structure changes in core specifications and correction of editorial mistakes in the main text	approved	F	3.2.0	UE Capability Requirements (UCR)	
SP-000380	21.905	002		3.1.1	R99	New Abbreviations and Definitions for R99	approved	D	3.2.0	3G Vocabulary	
SP-000381	21.905	003		3.1.1	rel-4	Change of Name of MExE	approved	D	4.0.0	3G Vocabulary	
SP-000389	22.001	004		3.2.0	rel-4	CR on TS22.001 for Bearer Modification without pre-notification	approved	B	4.0.0	Principles of Circuit Telecommunication Services Supported by a Public Land Mobile Network (PLMN)	
SP-000371	22.002	007		3.4.0	R99	32 kbit/s UDI/RDI multimedia in GSM	approved	F	3.5.0	Circuit Bearer Services Supported by a PLMN	
SP-000390	22.002	008		3.4.0	rel-4	Deletion of bearer service BS 30 NT	approved	C	4.0.0	Circuit Bearer Services Supported by a PLMN	
SP-000372	22.011	017		3.2.0	R99	Alignment with 23.122 on selection procedure	approved	F	3.3.0	Service accessibility	
SP-000372	22.011	018		4.1.0	rel-4	Alignment with 23.122 on selection procedure	approved	F	4.2.0	Service accessibility	
SP-000385	22.011	019		4.1.0	rel-4	Reselection attempts of GPRS terminals	withdrawn	D		Service accessibility	
SP-000376	22.030	009		3.3.0	R99	Codes for defined Supplementary Services	approved	F	3.4.0	Man-Machine Interface (MMI) of the Mobile Station (MS)	
SP-000382	22.038	004		3.2.0	rel-5	Release 2000 features	approved	B	5.0.0	SIM application toolkit (SAT); Stage 1	
SP-000381	22.038	005		3.2.0	rel-4	Change of MExE name	approved	D	4.0.0	SIM application toolkit (SAT); Stage 1	
SP-000381	22.057	002		3.0.1	rel-4	Mobile Execution Environment	approved	D	4.0.0	Mobile Station Application Execution Environment (MExE); Stage 1	
SP-000388	22.057	003		3.0.1	rel-5	MExE support of multimedia services	approved	B	5.0.0	Mobile Station Application Execution Environment (MExE); Stage 1	
SP-000388	22.057	004		3.0.1	rel-4	MExE Release 2000	approved	D	4.0.0	Mobile Station Application Execution Environment (MExE); Stage 1	
SP-000388	22.057	005		3.0.1	rel-4	MExE Classmark updates	approved	B	4.0.0	Mobile Station Application Execution Environment (MExE); Stage 1	
SP-000373	22.060	018		3.4.0	R99	Removal of PTM-G text from stage 1	approved	F	3.5.0	General Packet Radio Service (GPRS); Stage 1	
SP-000378	22.071	007		3.2.0	R99	Correction to LCS Service Description Stage 1 Document (R'99)	approved	F	3.3.0	Location Services (LCS); Stage 1	
SP-000378	22.071	008		4.0.0	rel-4	Correction to LCS Service Description Stage 1 Document (R'00)	approved	F	4.1.0	Location Services (LCS); Stage 1	
SP-000392	22.071	009		4.0.0	rel-4	Provision of Velocity for Location Services	approved	C	4.1.0	Location Services (LCS); Stage 1	
SP-000392	22.071	010		4.0.0	rel-4	External LCS client identity	approved	B	4.1.0	Location Services (LCS); Stage 1	
SP-000392	22.071	011		4.0.0	rel-4	Privacy Control for LCS	approved	B	4.1.0	Location Services (LCS); Stage 1	
SP-000392	22.071	012		4.0.0	rel-4	Privacy Control for LCS	approved	F	4.1.0	Location Services (LCS); Stage 1	
SP-000392	22.071	013		4.0.0	rel-4	Clarifications to LCS on privacy and Service response	approved	D	4.1.0	Location Services (LCS); Stage 1	
SP-000392	22.071	014		4.0.0	rel-4	LCS: Geographic Location	approved	F	4.1.0	Location Services (LCS); Stage 1	
SP-000392	22.071	015		4.0.0	rel-4	Adding statement on "active" and "idle" UE in chapter 4.13	approved	D	4.1.0	Location Services (LCS); Stage 1	

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SP-000392	22.071	016		4.0.0	rel-4	Radio Access Network support for LCS	approved	D	4.1.0	Location Services (LCS); Stage 1	
SP-000392	22.071	017		4.0.0	rel-4	LCS, Identification of a Target UE using IP addresses	approved	D	4.1.0	Location Services (LCS); Stage 1	
SP-000392	22.071	018		4.0.0	rel-4	LCS: LCS Open Service Architecture (OSA) and Application Programming Interface.	approved	D	4.1.0	Location Services (LCS); Stage 1	
SP-000374	22.078	049		3.4.1	R99	Removal of user interaction at answer DPs (Release 99)	approved	F	3.5.0	CAMEL; Stage 1	
SP-000381	22.078	050		3.4.1	rel-4	Change of MEXE name	approved	D	4.0.0	CAMEL; Stage 1	
SP-000425	22.078	051		3.4.1	rel-5	Proposed CR to 22.078 Section 6 for IP Telephony in CAMEL Phase 4	withdrawn -> S1	C		CAMEL; Stage 1	
SP-000425	22.078	052		3.4.1	rel-5	Proposed CR to 22.078 Section 1 for IP Telephony in CAMEL Phase 4	withdrawn -> S1	C		CAMEL; Stage 1	
SP-000425	22.078	053		3.4.1	rel-5	Proposed CR to 22.078 Section 4 for IP Telephony in CAMEL Phase 4	withdrawn -> S1	C		CAMEL; Stage 1	
SP-000425	22.078	054		3.4.1	rel-5	Introduction of MT SMS interworking with CAMEL4	approved	B	5.0.0	CAMEL; Stage 1	
SP-000425	22.078	055		3.4.1	rel-5	Proposed CR to 22.078 Section 3 for IP Telephony in CAMEL Phase 4	withdrawn -> S1	C		CAMEL; Stage 1	
SP-000425	22.078	056		3.4.1	rel-5	Removal of tags associated with previous releases of CAMEL	approved	C	5.0.0	CAMEL; Stage 1	
SP-000425	22.078	057		3.4.1	rel-5	Introduction of IPT for CAMEL4	withdrawn -> S1	B		CAMEL; Stage 1	
SP-000425	22.078	058		3.4.1	rel-5	Inclusion of Mid call event	approved	B	5.0.0	CAMEL; Stage 1	
SP-000425	22.078	059		3.4.1	rel-5	Inclusion of flexible tone injection	approved	B	5.0.0	CAMEL; Stage 1	
SP-000374	22.078	060		3.4.1	R99	GPRS AC/ACR alignment of shared data volume control (Stage 1 vs. 2)	approved	F	3.5.0	CAMEL; Stage 1	
SP-000425	22.078	061		3.4.1	rel-5	GPRS AC/ACR alignment of shared data volume control (Stage 1 vs. 2)	approved	C	5.0.0	CAMEL; Stage 1	
SP-000457	22.078	062	1	3.4.1	R99	Alignment with stage 2 & 3, and editorial clarification	Postponed to SP-10	F		CAMEL; Stage 1	
SP-000425	22.078	064		3.4.1	rel-5	Transport of Charging Information to the Home Network	approved	B	5.0.0	CAMEL; Stage 1	
SP-000377	22.091	002		3.0.1	R99	CR on CLI presentation modifications	approved	F	3.1.0	Explicit Call Transfer (ECT) Supplementary Service; Stage 1	
SP-000375	22.097	003		3.1.0	R99	Interaction with Multicall	approved	F	3.2.0	Multiple Subscriber Profile (MSP); Stage 1	
SP-000383	22.101	040		4.0.0	rel-4	Multimedia messaging	approved	B	4.1.0	UMTS Service principles	
SP-000383	22.101	041		4.0.0	rel-4	Service Management requirements	approved	C	4.1.0	UMTS Service principles	
SP-000429	22.101	042		4.0.0	rel-5	General corrections and clarifications to 22.101 for Release 2000	Withdrawn	F		UMTS Service principles	
SP-000430	22.101	042	1	4.0.0	rel-4	General corrections and clarifications to 22.101 for Release 2000	approved	F	4.1.0	UMTS Service principles	
SP-000383	22.101	043		4.0.0	rel-5	Classification of services	approved	F	5.0.0	UMTS Service principles	
SP-000383	22.101	044		4.0.0	rel-5	IP multimedia services	approved	B	5.0.0	UMTS Service principles	
SP-000383	22.101	045		4.0.0	rel-5	IP multimedia session for Emergency call	approved	B	5.0.0	UMTS Service principles	
SP-000383	22.101	046		4.0.0	rel-4	Editorial changes to 22.101 for Release 2000	approved	D	4.1.0	UMTS Service principles	
SP-000429	22.101	047		4.0.0	rel-5	Numbering Principles	withdrawn	C		UMTS Service principles	
SP-000430	22.101	047	1	4.0.0	rel-4	Numbering Principles	approved	C	4.1.0	UMTS Service principles	
SP-000383	22.101	048		4.0.0	rel-4	Service evolution	approved	C	4.1.0	UMTS Service principles	
SP-000391	22.101	049		4.0.0	rel-4	Emergency Call	approved	D	4.1.0	UMTS Service principles	
SP-000405	22.101	050		4.0.0	rel-4	Text Conversation	approved	B	4.1.0	UMTS Service principles	
SP-000430	22.101	051		4.0.0	rel-5	IM Number portability	approved	C	5.0.0	UMTS Service principles	

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SP-000430	22.101	052		4.0.0	rel-5	Introduction of IM CN Subsystem	approved	F	5.0.0	UMTS Service principles	
SP-000383	22.101	053		4.0.0	rel-5	Subscription	approved	F	5.0.0	UMTS Service principles	
SP-000383	22.101	054		4.0.0	rel-5	Roaming	approved	F	5.0.0	UMTS Service principles	
SP-000379	22.101	055		3.10.0	R99	Handling of interactions between applications requiring the access to UE resources	withdrawn	F		UMTS Service principles	
SP-000379	22.101	056		3.10.0	R99	Handling of interactions between applications requiring the access to UE resources	approved	F	3.11.0	UMTS Service principles	
SP-000381	22.105	026		3.9.0	rel-4	Change of MExE name	approved	D	4.0.0	Services & Service capabilities	
SP-000389	22.105	027		3.9.0	rel-4	Bearer Modification without pre-notification	approved	B	4.0.0	Services & Service capabilities	
SP-000387	22.121	011		3.3.0	rel-4	VHE in R00 User Profile	approved	C	4.0.0	Provision of Services in UMTS - The Virtual Home Environment - Stage 1	
SP-000387	22.121	012		3.3.0	rel-4	VHE in R00	approved	C	4.0.0	Provision of Services in UMTS - The Virtual Home Environment - Stage 1	
SP-000381	22.121	013		3.3.0	rel-4	Change of MExE name	approved	D	4.0.0	Provision of Services in UMTS - The Virtual Home Environment - Stage 1	
SP-000387	22.121	014		3.3.0	rel-4	Realisation of Application interface	approved	D	4.0.0	Provision of Services in UMTS - The Virtual Home Environment - Stage 1	
SP-000387	22.121	015		3.3.0	rel-4	Synchronisation of distributed user profiles	approved	B	4.0.0	Provision of Services in UMTS - The Virtual Home Environment - Stage 1	
SP-000387	22.121	016		3.3.0	rel-4	Uniquely addressable user profiles	approved	B	4.0.0	Provision of Services in UMTS - The Virtual Home Environment - Stage 1	
SP-000387	22.121	017		3.3.0	rel-4	VASP indirect support of VHE	approved	D	4.0.0	Provision of Services in UMTS - The Virtual Home Environment - Stage 1	
SP-000426	22.129	013		3.3.0	R99	Removal of requirements for SoLSA support	approved	F	3.4.0	Handover Requirements between UMTS and GSM or other Radio Systems	
SP-000389	22.129	014		3.3.0	rel-4	Bearer Modification without pre-notification	approved	B	4.0.0	Handover Requirements between UMTS and GSM or other Radio Systems	
SP-000375	22.135	006		3.3.0	R99	Interaction with MSP	approved	F	3.4.0	Multicall Stage 1	
SP-000406	22.135	007		3.3.0	R99	Removal of the Requirement on Network to Tear Down Calls to Accept EC in Multicall	approved	F	3.4.0	Multicall Stage 1	
SP-000406	22.135	008		3.3.0	R99	Addition of Ncs_MT limitation to number of MPTY members	approved	F	3.4.0	Multicall Stage 1	
SP-000449	23.002	016		3.3.0	rel-5	Introduction of R00 Definitions from 23.821 into 23.002	Approved	B	5.0.0	Network Architecture	
SP-000449	23.002	017		3.3.0	rel-5	CR on functional elements	Approved	B	5.0.0	Network Architecture	
SP-000449	23.002	018		3.3.0	rel-5	CR on reference model	Approved	B	5.0.0	Network Architecture	
SP-000449	23.002	019		3.3.0	rel-5	CR on reference points	Approved	B	5.0.0	Network Architecture	
NP-000499	23.003	023	1	3.5.0	R99	Alignment of 23.003 with text from 25.401	approved	F	3.6.0	Numbering, Addressing and Identification	
NP-000499	23.008	030		3.3.0	R99	Deletion of "Barring of roaming" stored in the SGSN	approved	A	3.4.0	Organisation of subscriber data	
NP-000499	23.008	031		3.4.0	R99	Corrections of the description of BC allocation for VLR	approved	A	3.5.0	Organisation of subscriber data	
NP-000444	23.009	012	1	3.3.0	R99	Correction to transcoder handling for R99	approved	F	3.4.0	Handover procedures	
NP-000500	23.011	002		3.0.1	R99	SDL refresh	revised	D		Technical Realization of Supplementary Services - General Aspects	
NP-000556	23.011	002	1	3.0.1	R99	SDL refresh	approved	D	3.1.0	Technical Realization of Supplementary Services - General Aspects	
NP-000499	23.016	016		3.5.0	R99	Correction to Delete Subscriber Data	approved	F	3.6.0	Subscriber data management - Stage 2	
NP-000499	23.018	053		3.5.0	R99	Correction of connector numbering in process ICH_MSC	approved	F	3.6.0	Basic Call Handling - Technical realisation	
NP-000496	23.018	054		3.5.0	R99	Correction of the SDL diagram for Pre-paging	approved	F	3.6.0	Basic Call Handling - Technical realisation	

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NP-000545	23.018	055	4	3.5.0	rel-4	Inclusion of Call Hold in Basic Call Handling	approved	C	4.0.0	Basic Call Handling - Technical realisation	
NP-000483	23.018	056		3.5.0	R99	Correction to Process ICH_VLR	approved	F	3.6.0	Basic Call Handling - Technical realisation	
NP-000483	23.018	057	3	3.5.0	R99	Handling of the Call Diversion Treatment Indicator	approved	F	3.6.0	Basic Call Handling - Technical realisation	
NP-000499	23.018	059		3.5.0	R99	Corrections to procedure obtain routeing address	approved	F	3.6.0	Basic Call Handling - Technical realisation	
NP-000499	23.018	060		3.5.0	R99	Corrections to process ICH_VLR	approved	F	3.6.0	Basic Call Handling - Technical realisation	
NP-000483	23.018	061	2	3.5.0	R99	Update of CAMEL References	approved	F	3.6.0	Basic Call Handling - Technical realisation	
NP-000483	23.018	063	1	3.5.0	R99	Correction of Obtain_Routeing_Address for the reconnect case	approved	A	3.6.0	Basic Call Handling - Technical realisation	
TP-000143	23.039	002		3.1.0	R99	Clarification of SC to SME protocol reference information.	approved	F	3.2.0	Interface Protocols for the Connection of Short Message Service Centers (SMSCs) to Short Message Entities (SMEs)	
TP-000144	23.040	016		4.0.0	rel-4	Presence of TP-PI	approved	F	4.1.0	Technical realisation of Short Message Service	
TP-000144	23.040	017		4.0.0	rel-4	Big endian integer representation	approved	D	4.1.0	Technical realisation of Short Message Service	
TP-000144	23.040	018		4.0.0	rel-4	SMS Address fields section needs clarification	approved	B	4.1.0	Technical realisation of Short Message Service	
TP-000144	23.040	019		4.0.0	rel-4	User prompt indication	approved	B	4.1.0	Technical realisation of Short Message Service	
TP-000143	23.041	005		3.2.0	R99	Defining Assisted GPS Broadcast Identifiers	approved	A	3.3.0	Technical Realization of Cell Broadcast Service	
TP-000143	23.057	010		3.2.0	R99	Storage of user private data in the user profile in the network	approved	F	3.3.0	Mobile Station Application Execution Environment (MEXE)	
TP-000143	23.057	011		3.2.0	R99	Correction of UAPProf tags	approved	F	3.3.0	Mobile Station Application Execution Environment (MEXE)	
TP-000143	23.057	012		3.2.0	R99	WAP UAPProf URL correction	approved	F	3.3.0	Mobile Station Application Execution Environment (MEXE)	
SP-000448	23.060	147	3	3.4.0	R99	Change of the Cell update procedure	Approved	F	3.5.0	General Packet Radio Service (GPRS) Service description; Stage 2	
SP-000448	23.060	170	0	3.4.0	R99	DTM: simultaneous LAU and RAU procedures on an SDCCH	Approved	F	3.5.0	General Packet Radio Service (GPRS) Service description; Stage 2	
SP-000448	23.060	171	1	3.4.0	R99	DTM: reuse of the GPRS Suspension procedure in cells with no DTM capabilities	Approved	F	3.5.0	General Packet Radio Service (GPRS) Service description; Stage 2	
SP-000448	23.060	172	1	3.4.0	R99	DTM: download of the IMSI from the SGSN to the BSC	Approved	F	3.5.0	General Packet Radio Service (GPRS) Service description; Stage 2	
SP-000448	23.060	173	0	3.4.0	R99	CS Paging procedure in UMTS	Approved	F	3.5.0	General Packet Radio Service (GPRS) Service description; Stage 2	
SP-000448	23.060	174	0	3.4.0	R99	Clarification on P-TMSI and P-TMSI signature at Detach	Approved	F	3.5.0	General Packet Radio Service (GPRS) Service description; Stage 2	
SP-000448	23.060	175	1	3.4.0	R99	Serving RNS Relocation Procedure	Approved	F	3.5.0	General Packet Radio Service (GPRS) Service description; Stage 2	
SP-000448	23.060	176	1	3.4.0	R99	DRX and MS network capabilities within UMTS	Approved	F	3.5.0	General Packet Radio Service (GPRS) Service description; Stage 2	
SP-000448	23.060	177	1	3.4.0	R99	Compatibility GTPv0/GTPv1 in case of SGSN change	Approved	F	3.5.0	General Packet Radio Service (GPRS) Service description; Stage 2	
SP-000448	23.060	178	2	3.4.0	R99	Correction on Iu Release Procedure	Approved	F	3.5.0	General Packet Radio Service (GPRS) Service description; Stage 2	

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SP-000448	23.060	182	1	3.4.0	R99	Removal of PDP type OSP:IHOSS in R99	Approved	F	3.5.0	General Packet Radio Service (GPRS) Service description; Stage 2	
SP-000487	23.060	184	2	3.4.0	R99	Clarification to Service Request procedure	Approved	F	3.5.0	General Packet Radio Service (GPRS) Service description; Stage 2	
NP-000483	23.072	004		3.2.0	R99	Transfer of Procedure Check_CD_SII2 to TS 23.078	approved	F	3.3.0	Call Deflection Supplementary Service - Stage 2	
NP-000483	23.072	005		3.2.0	R99	Handling of the Call Diversion Treatment Indicator	approved	F	3.3.0	Call Deflection Supplementary Service - Stage 2	
NP-000456	23.078	134	4	3.5.0	R99	Interworking of Call Forwardings and new CAMEL3 trigger detection points	approved	F	3.6.0	CAMEL Stage 2	
NP-000456	23.078	137	4	3.5.0	R99	E-parameter handling of distinct CAP dialogues/TDPs	approved	F	3.6.0	CAMEL Stage 2	
NP-000459	23.078	181	2	3.5.0	R99	Indication of Network requested PDP Context in Initial DPGPRS message	approved	F	3.6.0	CAMEL Stage 2	
NP-000456	23.078	185	1	3.5.0	R99	Addition of the Handle_FCI_GPRS procedure	approved	F	3.6.0	CAMEL Stage 2	
NP-000456	23.078	186		3.5.0	R99	Correction to Procedure CAMEL_ICH_MSC_INIT	approved	F	3.6.0	CAMEL Stage 2	
NP-000456	23.078	187	1	3.5.0	R99	Transfer of Procedure Check_CD_SII2 from TS 23.072	approved	F	3.6.0	CAMEL Stage 2	
NP-000456	23.078	188	2	3.5.0	R99	Update of References for the Location Information IE	approved	F	3.6.0	CAMEL Stage 2	
NP-000456	23.078	190		3.5.0	R99	Removal of duplicate SGSN address/number from IDP-GPRS	approved	F	3.6.0	CAMEL Stage 2	
NP-000456	23.078	191		3.5.0	R99	Clean-up the Monitoring state User Interaction	approved	F	3.6.0	CAMEL Stage 2	
NP-000456	23.078	192		3.5.0	R99	Editorial corrections and enhancements	approved	D	3.6.0	CAMEL Stage 2	
NP-000456	23.078	193	1	3.5.0	R99	GPRS Change of Position Procedure for Session and Context	approved	F	3.6.0	CAMEL Stage 2	
NP-000456	23.078	194	3	3.5.0	R99	Corrections on GPRS	approved	F	3.6.0	CAMEL Stage 2	
NP-000456	23.078	198	3	3.5.0	R99	Location Number GPRS	approved	F	3.6.0	CAMEL Stage 2	
NP-000456	23.078	200	7	3.5.0	R99	ACR/AC supervision for GPRS	approved	F	3.6.0	CAMEL Stage 2	
NP-000456	23.078	201	1	3.5.0	R99	Correction to Procure CAMEL_Modify_CUG_Info	approved	F	3.6.0	CAMEL Stage 2	
NP-000456	23.078	203	1	3.5.0	R99	Move of processing rules for GPRS context.	approved	D	3.6.0	CAMEL Stage 2	
NP-000457	23.078	204		3.5.0	R99	Interaction with CUG	approved	F	3.6.0	CAMEL Stage 2	
NP-000457	23.078	205	1	3.5.0	R99	Handling of the Call Diversion Treatment Indicator	approved	F	3.6.0	CAMEL Stage 2	
NP-000457	23.078	206	1	3.5.0	R99	GPRS location information in GPRSEventSpecificInformation	approved	F	3.6.0	CAMEL Stage 2	
NP-000457	23.078	207	1	3.5.0	R99	Removal of NPI check in DP Analyzed_Information	approved	F	3.6.0	CAMEL Stage 2	
NP-000457	23.078	208	2	3.5.0	R99	SDL modelling and overlapping dialogue case	approved	F	3.6.0	CAMEL Stage 2	
NP-000457	23.078	209		3.5.0	R99	Correction CAMEL_MT_GMSC_INIT	approved	F	3.6.0	CAMEL Stage 2	
NP-000457	23.078	213	1	3.5.0	R99	Correction of MO-SMS SDL's	approved	F	3.6.0	CAMEL Stage 2	
NP-000457	23.078	215		3.5.0	R99	Correction to description of DP Collected_Info	approved	F	3.6.0	CAMEL Stage 2	
NP-000457	23.078	216	1	3.5.0	R99	Introduction of Guard Timer for GPRS TCAP dialogue handling	approved	F	3.6.0	CAMEL Stage 2	
NP-000459	23.078	217		3.5.0	R99	PDP establishment	approved	F	3.6.0	CAMEL Stage 2	
NP-000457	23.078	218	1	3.5.0	R99	Clarification of description of number comparison for dialled services	approved	D	3.6.0	CAMEL Stage 2	
NP-000457	23.078	219		3.5.0	R99	Correction to Initial DP SMS Information Flow	approved	F	3.6.0	CAMEL Stage 2	
NP-000581	23.078	220		3.5.0	R99	Correction to the missing connection in SDL gsmSSF	approved	F	3.6.0	CAMEL Stage 2	
NP-000499	23.079	015		3.5.0	R99	Sheet 1 of Procedure OR_HLR_CF	approved	F	3.6.0	Support of Optimal Routeing - Phase 1 - Stage 2	

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NP-000500	23.082	008		3.2.0	R99	SDL refresh	revised	D		Call Forwarding (CF) Supplementary Services - Stage 2	
NP-000556	23.082	008	1	3.2.0	R99	SDL refresh	approved	D	3.3.0	Call Forwarding (CF) Supplementary Services - Stage 2	
NP-000500	23.083	004		3.1.0	R99	SDL refresh	revised	D		Call Waiting (CW) and Call Hold (HOLD) Supplementary Service - Stage 2	
NP-000556	23.083	004	1	3.1.0	R99	SDL refresh	approved	D	3.2.0	Call Waiting (CW) and Call Hold (HOLD) Supplementary Service - Stage 2	
NP-000545	23.083	005	1	3.2.0	R-4	Inclusion of call hold in basic call handling	approved	D	4.0.0	Call Waiting (CW) and Call Hold (HOLD) Supplementary Service - Stage 2	
NP-000500	23.084	002		3.1.0	R99	SDL refresh	revised	D		MultiParty (MPTY) Supplementary Service - Stage 2	
NP-000556	23.084	002	1	3.1.0	R99	SDL refresh	approved	D	3.2.0	MultiParty (MPTY) Supplementary Service - Stage 2	
NP-000500	23.085	001		3.0.1	R99	SDL refresh	revised	D		Closed User Group (CUG) Supplementary Service - Stage 2	
NP-000556	23.085	001	1	3.0.1	R99	SDL refresh	approved	D	3.1.0	Closed User Group (CUG) Supplementary Service - Stage 2	
NP-000500	23.086	001		3.0.1	R99	SDL refresh	revised	D		Advice of Charge (AoC) Supplementary Service - Stage 2	
NP-000556	23.086	001	1	3.0.1	R99	SDL refresh	approved	D	3.1.0	Advice of Charge (AoC) Supplementary Service - Stage 2	
NP-000500	23.087	001		3.0.1	R99	SDL refresh	revised	D		User-to-User Signalling (UUS) - Stage 2	
NP-000556	23.087	001	1	3.0.1	R99	SDL refresh	approved	D	3.1.0	User-to-User Signalling (UUS) - Stage 2	
NP-000500	23.088	002		3.1.0	R99	SDL refresh	revised	D		Call Barring (CB) Supplementary Service - Stage 2	
NP-000556	23.088	002	1	3.1.0	R99	SDL refresh	approved	D	3.2.0	Call Barring (CB) Supplementary Service - Stage 2	
NP-000500	23.090	002		3.1.0	R99	SDL refresh	revised	D		Unstructured Supplementary Service Data (USSD) - Stage 2	
NP-000556	23.090	002	1	3.1.0	R99	SDL refresh	approved	D	3.2.0	Unstructured Supplementary Service Data (USSD) - Stage 2	
NP-000500	23.091	002		3.1.0	R99	SDL refresh	revised	D		Explicit Call Transfer (ECT) Supplementary Service - Stage 2	
NP-000556	23.091	002	1	3.1.0	R99	SDL refresh	approved	D	3.2.0	Explicit Call Transfer (ECT) Supplementary Service - Stage 2	
NP-000483	23.093	003	1	3.1.0	R99	Handling of the Call Completion Treatment Indicator	approved	F	3.2.0	Call Completion to Busy Subscriber (CCBS) - Stage 2	
NP-000483	23.093	004		3.1.0	R99	Handling of the Call Diversion Treatment Indicator	approved	F	3.2.0	Call Completion to Busy Subscriber (CCBS) - Stage 2	
NP-000481	23.094	002		3.1.0	R99	Correction of the wrong Service Code	approved	F	3.2.0	Follow Me Stage 2	
SP-000450	23.107	026	2	3.3.0	R99	Attribute and parameter	Approved	F	3.4.0	Quality of Service, Concept and Architecture	
SP-000450	23.107	027	1	3.3.0	R99	Informational content in clause 6.2	Approved	F	3.4.0	Quality of Service, Concept and Architecture	
SP-000450	23.107	029	2	3.3.0	R99	Traffic class editorial corrections	Approved	F	3.4.0	Quality of Service, Concept and Architecture	
SP-000451	23.121	056		3.3.0	rel-5	Architectural Principles for Release 2000	Approved	B	5.0.0	Architecture Requirements for release 99	

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SP-000451	23.121	060	2	3.3.0	R99	Correction to Data Retrieve protocol stacks endpoints	Approved	F	5.0.0	Architecture Requirements for release 99	
SP-000451	23.121	062	2	3.3.0	R99	Correction to Data Retrieve protocol stacks endpoints	Approved	F	3.4.0	Architecture Requirements for release 99	
NP-000443	23.122	009	2	3.3.0	R99	Clarifications of the PLMN Selection procedures for UMTS and COMPACT.	approved	F	3.4.0	Non Access Stratum functions related to Mobile Station (MS) in idle mode	
SP-000452	23.127	011	1	3.2.0	rel-4	Change of TS 23.127 title for version 4.0 and up	Approved	D	4.0.0	Virtual Home Environment - Stage 2	
SP-000452	23.127	012		3.1.0	R99	CR on Parlay-OSA alignment: basic service interface	Approved	F	3.2.0	Virtual Home Environment - Stage 2	
SP-000452	23.127	013		3.1.0	R99	CR on Parlay-OSA alignment: initial contact interfaces	Approved	F	3.2.0	Virtual Home Environment - Stage 2	
SP-000452	23.127	014		3.1.0	R99	CR on Parlay-OSA alignment : access SCF	Approved	F	3.2.0	Virtual Home Environment - Stage 2	
SP-000452	23.127	015		3.1.0	R99	CR on Parlay-OSA alignment: load manager SCF	Approved	F	3.2.0	Virtual Home Environment - Stage 2	
SP-000452	23.127	016		3.1.0	R99	CR on Parlay-OSA alignment: fault manager SCF	Approved	F	3.2.0	Virtual Home Environment - Stage 2	
SP-000452	23.127	017		3.1.0	R99	CR on Parlay-OSA alignment: service factory SCF	Approved	F	3.2.0	Virtual Home Environment - Stage 2	
SP-000452	23.127	018		3.1.0	R99	CR on Parlay-OSA alignment: authentication interface	Approved	F	3.2.0	Virtual Home Environment - Stage 2	
NP-000559	23.135	002	4	3.0.0	R99	Requirement on Network to Tear Down Calls to Accept Emergency Calls in Multicall	approved	F	3.1.0	Multicall - Stage 2	
NP-000545	23.135	003	1	3.0.0	rel-4	Inclusion of call hold in basic call handling	approved	D	4.0.0	Multicall - Stage 2	
NP-000495	23.135	004		3.0.0	R99	Correction to MT_Multicall SDL	revised	F		Multicall - Stage 2	
NP-000559	23.135	004	1	3.0.0	R99	Correction to MT_Multicall SDL	approved	F	3.1.0	Multicall - Stage 2	
TP-000144	23.140	001		3.0.1	rel-4	Set of mandatory media formats for MMS	approved	B	4.0.0	Multimedia Messaging Service (MMS)	
NP-000476	23.146	001		4.0.0	rel-4	Correction of SDL Diagrams	approved	F	4.1.0	Technical realisation of facsimile Group 3 service - non-transparent	
NP-000552	23.146	002		4.0.0	rel-4	Modification from V.25bis to V.250	approved	F	4.1.0	Technical realisation of facsimile Group 3 service - non-transparent	
NP-000543	23.910	009		3.1.0	R99	Cleanup of RAB parameter setting	approved	F	3.2.0	Circuit Switched Data Bearer Services	
NP-000468	23.910	010		3.1.0	rel-4	Transparent 32kbit/s data rate with I.460 rate adaptation	approved	A	4.0.0	Circuit Switched Data Bearer Services	
NP-000468	23.910	011		3.1.0	R99	Transparent 32kbit/s data rate with I.460 rate adaptation	approved	F	3.2.0	Circuit Switched Data Bearer Services	
NP-000475	23.910	012		3.1.0	R99	Deletion of UMTS NT-RT FAX from R'99	approved	F	3.2.0	Circuit Switched Data Bearer Services	
NP-000543	23.910	013		3.1.0	rel-4	Cleanup of RAB parameter setting	approved	A	4.0.0	Circuit Switched Data Bearer Services	
NP-000542	23.910	014		3.1.0	R99	3.1kHz multimedia at 33.6kbit/s	approved	F	3.2.0	Circuit Switched Data Bearer Services	
NP-000543	23.910	015		3.1.0	rel-4	Delivery of erroneous SDUs parameter value	approved	A	4.0.0	Circuit Switched Data Bearer Services	
NP-000543	23.910	016		3.1.0	R99	Delivery of erroneous SDUs parameter value	approved	F	3.2.0	Circuit Switched Data Bearer Services	
NP-000542	23.910	017		3.1.0	rel-4	3.1kHz multimedia at 33.6kbit/s	approved	A	4.0.0	Circuit Switched Data Bearer Services	
NP-000443	24.007	013	3	3.4.0	R99	SAPs and Service primitives for UMTS, PS mode.	approved	F	3.5.0	Mobile Radio Interface Signalling Layer 3 - General Aspects	
NP-000443	24.007	018		3.4.0	R99	Protocol discriminator value for UE special conformance testing functions	approved	F	3.5.0	Mobile Radio Interface Signalling Layer 3 - General Aspects	
NP-000443	24.007	019	1	3.4.0	R99	Correction of send sequence number method applied protocols	approved	F	3.5.0	Mobile Radio Interface Signalling Layer 3 - General Aspects	
NP-000443	24.007	020		3.4.0	R99	Editorial corrections	approved	F	3.5.0	Mobile Radio Interface Signalling Layer 3 - General Aspects	
NP-000441	24.007	021		3.4.0	R99	Protocol Discriminator for DTM (simple class A)	approved	F	3.5.0	Mobile Radio Interface Signalling Layer 3 - General Aspects	
NP-000448	24.008	073	5	3.5.0	rel-4	CC Enhancements for Codec Selection	approved	B	4.0.0	Mobile Radio Interface Layer 3 specification; Core Network Protocols - Stage 3	
NP-000443	24.008	229	1	3.4.1	R99	P-TMSI signature handling	approved	F	3.5.0	Mobile Radio Interface Layer 3 specification; Core Network Protocols - Stage 3	

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NP-000445	24.008	230	1	3.4.1	R99	Network Authentication Failure	approved	F	3.5.0	Mobile Radio Interface Layer 3 specification; Core Network Protocols - Stage 3	
NP-000443	24.008	233	1	3.4.1	R99	DRX IE as mandatory IE for RAU	approved	F	3.5.0	Mobile Radio Interface Layer 3 specification; Core Network Protocols - Stage 3	
NP-000443	24.008	235		3.4.1	R99	New cause for Modify PDP Context Reject	approved	F	3.5.0	Mobile Radio Interface Layer 3 specification; Core Network Protocols - Stage 3	
NP-000443	24.008	236	2	3.4.1	R99	Reaction to duplicated PDP context activation	approved	F	3.5.0	Mobile Radio Interface Layer 3 specification; Core Network Protocols - Stage 3	
NP-000443	24.008	238	1	3.4.1	R99	Editorial Modification on SM state transition model	approved	F	3.5.0	Mobile Radio Interface Layer 3 specification; Core Network Protocols - Stage 3	
NP-000440	24.008	242		3.4.1	R99	Wrong reference after 04.08 split	approved	F	3.5.0	Mobile Radio Interface Layer 3 specification; Core Network Protocols - Stage 3	
NP-000443	24.008	243		3.4.1	R99	Editorial correction of figure in QoS IE	approved	F	3.5.0	Mobile Radio Interface Layer 3 specification; Core Network Protocols - Stage 3	
NP-000436	24.008	244	2	3.4.1	R99	Clarification to Service Request procedure	approved	F	3.5.0	Mobile Radio Interface Layer 3 specification; Core Network Protocols - Stage 3	
NP-000447	24.008	245	3	3.5.0	rel-4	Emergency Call Additions	approved	B	4.0.0	Mobile Radio Interface Layer 3 specification; Core Network Protocols - Stage 3	
NP-000438	24.008	247		3.4.1	R99	Deletion of references to OSP:HOSS for R99	approved	A	3.5.0	Mobile Radio Interface Layer 3 specification; Core Network Protocols - Stage 3	
NP-000443	24.008	248	1	3.4.1	R99	Editorial corrections	approved	F	3.5.0	Mobile Radio Interface Layer 3 specification; Core Network Protocols - Stage 3	
NP-000439	24.008	249		3.4.1	R99	Missing P-TMSI reallocation after Attach or RAU	approved	A	3.5.0	Mobile Radio Interface Layer 3 specification; Core Network Protocols - Stage 3	
NP-000443	24.008	251	2	3.4.1	R99	Introduction of 3G Radio Access Technology capabilities in the MS Radio Access Capability IE	approved	F	3.5.0	Mobile Radio Interface Layer 3 specification; Core Network Protocols - Stage 3	
NP-000445	24.008	252		3.4.1	R99	Modifications to the authentication failure procedure	approved	F	3.5.0	Mobile Radio Interface Layer 3 specification; Core Network Protocols - Stage 3	
NP-000442	24.008	254	1	3.4.1	R99	3.1 kHz multimedia calls at 33.6 kbit/s data rate	approved	F	3.5.0	Mobile Radio Interface Layer 3 specification; Core Network Protocols - Stage 3	
NP-000443	24.008	255	3	3.4.1	R99	Duplicated PDP context activation and clarification of TI related issues.	approved	F	3.5.0	Mobile Radio Interface Layer 3 specification; Core Network Protocols - Stage 3	

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NP-000446	24.008	260		3.4.1	R99	MS Classmark 3 Tidy-up	approved	F	3.5.0	Mobile Radio Interface Layer 3 specification; Core Network Protocols - Stage 3	
NP-000445	24.008	261		3.4.1	R99	Correction of the storage of the ciphering key	approved	F	3.5.0	Mobile Radio Interface Layer 3 specification; Core Network Protocols - Stage 3	
NP-000440	24.011	008		3.3.0	R99	Corrections of CP/RP-DATA IE lengths	approved	A	3.4.0	Point-to-Point (PP) Short Message Service (SMS) Support on Mobile Radio Interface	
NP-000540	24.022	005	1	3.3.0	R99	Relevance of GSM specific BC-IE parameters for negotiating RLP version in UMTS	approved	F	3.4.0	Radio Link Protocol (RLP) for Data and Telematic Services on the (MS-BSS) Interface and the Base Station System - Mobile-services Switching Centre (BSS-MSC) Interface	
NP-000488	24.080	005	1	3.3.0	R99	Message type: Alignment to 24.007 and 24.008	approved	F	3.4.0	Mobile radio Layer 3 Supplementary Service specification - Formats and coding	
NP-000492	24.080	006		3.3.0	R99	Addition of error type description for PositionMethodFailure	approved	A	3.4.0	Mobile radio Layer 3 Supplementary Service specification - Formats and coding	
RP-000394	25.101	63		3.3.1	R99	Corrections to DL compressed mode tests in TS 25.101	approved	F	3.4.0	UE Radio transmission and reception (FDD)	
RP-000394	25.101	64		3.3.1	R99	Combining of TPC commands in soft handover	approved	F	3.4.0	UE Radio transmission and reception (FDD)	
RP-000394	25.101	65		3.3.1	R99	Clarifications for power steps in RACH/CPCH message transmission	approved	F	3.4.0	UE Radio transmission and reception (FDD)	
RP-000394	25.101	66		3.3.1	R99	Editorial corrections for TS 25.101	approved	F	3.4.0	UE Radio transmission and reception (FDD)	
RP-000394	25.101	67		3.3.1	R99	Corrections to power control	approved	F	3.4.0	UE Radio transmission and reception (FDD)	
RP-000394	25.101	68		3.3.1	R99	Corrections for compressed mode patterns	approved	F	3.4.0	UE Radio transmission and reception (FDD)	
RP-000394	25.101	69		3.3.1	R99	Editorial modification for BTFD measurement channels	approved	F	3.4.0	UE Radio transmission and reception (FDD)	
RP-000394	25.101	70		3.3.1	R99	Definition of period for frequency error	approved	F	3.4.0	UE Radio transmission and reception (FDD)	
RP-000394	25.101	71		3.3.1	R99	Downlink power control, wind up effects	approved	F	3.4.0	UE Radio transmission and reception (FDD)	
RP-000394	25.101	72		3.3.1	R99	Inclusion of OCNS definition for performance tests	approved	F	3.4.0	UE Radio transmission and reception (FDD)	
RP-000394	25.101	73		3.3.1	R99	Removal of confidence levels	approved	F	3.4.0	UE Radio transmission and reception (FDD)	
RP-000394	25.101	74		3.3.1	R99	Corrections to all tests with power control ON in TS 25.101	approved	F	3.4.0	UE Radio transmission and reception (FDD)	
RP-000394	25.101	75		3.3.1	R99	Editorial modification to Annex A.5 of TS 25.101	approved	F	3.4.0	UE Radio transmission and reception (FDD)	
RP-000394	25.101	76		3.3.1	R99	Tap magnitudes and phases for Birth-Death propagation conditions	approved	F	3.4.0	UE Radio transmission and reception (FDD)	
RP-000394	25.101	77		3.3.1	R99	UE emission mask measurement filter definition correction for TS 25.101	approved	F	3.4.0	UE Radio transmission and reception (FDD)	

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RP-000394	25.101	78		3.3.1	R99	Handling of measurement uncertainties in UE radio conformance testing (FDD)	approved	F	3.4.0	UE Radio transmission and reception (FDD)	
RP-000395	25.102	32		3.3.0	R99	Performance requirements with TFCI decoding for TDD UE	approved	F	3.4.0	UE Radio transmission and reception (TDD)	
RP-000395	25.102	33		3.3.0	R99	Performance test for UE power control in downlink	approved	F	3.4.0	UE Radio transmission and reception (TDD)	
RP-000395	25.102	34		3.3.0	R99	Definition of period for frequency error	approved	F	3.4.0	UE Radio transmission and reception (TDD)	
RP-000395	25.102	35		3.3.0	R99	Handling of measurement uncertainties in UE radio conformance testing (TDD)	approved	F	3.4.0	UE Radio transmission and reception (TDD)	
RP-000396	25.104	49		3.3.0	R99	Correction to 25.104 ch. 6.6.3.6	approved	F	3.4.0	UTRA (BS) FDD; Radio transmission and reception	
RP-000396	25.104	50		3.3.0	R99	Corrections to spectrum mask	approved	F	3.4.0	UTRA (BS) FDD; Radio transmission and reception	
RP-000396	25.104	51		3.3.0	R99	Handling of measurement uncertainties in Base station conformance testing (FDD)	approved	F	3.4.0	UTRA (BS) FDD; Radio transmission and reception	
RP-000396	25.104	52		3.3.0	R99	Tap magnitudes and phases for Birth-Death propagation conditions	approved	F	3.4.0	UTRA (BS) FDD; Radio transmission and reception	
RP-000397	25.105	39		3.3.0	R99	Maximum frequency deviation for receiver performance.	approved	F	3.4.0	UTRA (BS) TDD: Radio transmission and reception	
RP-000397	25.105	40		3.3.0	R99	Corrections to spectrum mask	approved	F	3.4.0	UTRA (BS) TDD: Radio transmission and reception	
RP-000397	25.105	41		3.3.0	R99	Handling of measurement uncertainties in base station radio conformance testing (TDD)	approved	F	3.4.0	UTRA (BS) TDD: Radio transmission and reception	
RP-000397	25.105	42		3.3.0	R99	Performance requirements with TFCI decoding	approved	F	3.4.0	UTRA (BS) TDD: Radio transmission and reception	
RP-000397	25.105	43		3.3.0	R99	Inner Loop Power Control	approved	F	3.4.0	UTRA (BS) TDD: Radio transmission and reception	
RP-000397	25.105	44		3.3.0	R99	BS Transmit ON/OFF time mask for TDD-mode	approved	F	3.4.0	UTRA (BS) TDD: Radio transmission and reception	
RP-000397	25.105	45		3.3.0	R99	Definition of period for frequency error	approved	F	3.4.0	UTRA (BS) TDD: Radio transmission and reception	
RP-000398	25.113	5		3.2.0	R99	Alignment of EMC requirements.	approved	F	3.3.0	Base station EMC	
RP-000399	25.123	16		3.2.0	R99	Handling of measurement uncertainties in conformance testing (TDD) for RRM measurements	approved	F	3.3.0	Requirements for support of radio resource management (TDD)	
RP-000399	25.123	17		3.2.0	R99	Basestation Physical Channel BER Measurement	approved	F	3.3.0	Requirements for support of radio resource management (TDD)	
RP-000399	25.123	18		3.2.0	R99	Repetition Period of System Information	approved	F	3.3.0	Requirements for support of radio resource management (TDD)	
RP-000399	25.123	19		3.2.0	R99	RRC connection mobility in cell_FACH, cell_PCH and URA_PCH	approved	F	3.3.0	Requirements for support of radio resource management (TDD)	
RP-000399	25.123	20		3.2.0	R99	Basestation SIR Measurement	approved	F	3.3.0	Requirements for support of radio resource management (TDD)	
RP-000399	25.123	21		3.2.0	R99	UE SIR Measurement Accuracy	approved	F	3.3.0	Requirements for support of radio resource management (TDD)	
RP-000399	25.123	22		3.2.0	R99	UE TS ISCP range/mapping correction	approved	F	3.3.0	Requirements for support of radio resource management (TDD)	

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RP-000399	25.123	23		3.2.0	R99	Alignment of TDD measurements for UE: SFN-CFN observed time difference	approved	F	3.3.0	Requirements for support of radio resource management (TDD)	
RP-000399	25.123	24		3.2.0	R99	UTRAN Transport Channel BLER	approved	F	3.3.0	Requirements for support of radio resource management (TDD)	
RP-000399	25.123	25		3.2.0	R99	Accuracy requirements for Node-B synchronisation	approved	F	3.3.0	Requirements for support of radio resource management (TDD)	
RP-000399	25.123	26		3.2.0	R99	Alignment of TDD measurements with FDD: GPS related measurements	approved	F	3.3.0	Requirements for support of radio resource management (TDD)	
RP-000400	25.133	36		3.2.0	R99	Corrections to definitions, symbols and abbreviations	approved	F	3.3.0	Requirements for support of radio resource management (FDD)	
RP-000400	25.133	37		3.2.0	R99	Handling of measurement uncertainties in Base station conformance testing (FDD) for RRM measurements	approved	F	3.3.0	Requirements for support of radio resource management (FDD)	
RP-000400	25.133	38		3.2.0	R99	Proposal for section 4	approved	F	3.3.0	Requirements for support of radio resource management (FDD)	
RP-000400	25.133	39		3.2.0	R99	Proposal for section 5	approved	F	3.3.0	Requirements for support of radio resource management (FDD)	
RP-000400	25.133	40		3.2.0	R99	Proposal for section 8	approved	F	3.3.0	Requirements for support of radio resource management (FDD)	
RP-000400	25.133	41		3.2.0	R99	Proposal for section 9	approved	F	3.3.0	Requirements for support of radio resource management (FDD)	
RP-000400	25.133	42		3.2.0	R99	Revision of requirement and range of measurement for CPCH	revised	B		Requirements for support of radio resource management (FDD)	
RP-000480	25.133	42		3.2.0	R99	Revision of requirement and range of measurement for CPCH	revised	B		Requirements for support of radio resource management (FDD)	
RP-000497	25.133	42	1	3.2.0	R99	Revision of requirement and range of measurement for CPCH	approved	F	3.3.0	Requirements for support of radio resource management (FDD)	
RP-000400	25.133	43		3.2.0	R99	Inclusion of UTRAN measurements in 25.133	revised	B		Requirements for support of radio resource management (FDD)	
RP-000480	25.133	43		3.2.0	R99	Inclusion of UTRAN measurements in 25.133	revised	B		Requirements for support of radio resource management (FDD)	
RP-000497	25.133	43	1	3.2.0	R99	Inclusion of UTRAN measurements in 25.133	approved	F	3.3.0	Requirements for support of radio resource management (FDD)	
RP-000400	25.133	44		3.2.0	R99	Proposal for section 7 and A.7	approved	F	3.3.0	Requirements for support of radio resource management (FDD)	
RP-000400	25.133	45		3.2.0	R99	Text proposal for section A.1, A.2 and A.3	approved	F	3.3.0	Requirements for support of radio resource management (FDD)	
RP-000400	25.133	46		3.2.0	R99	Proposal for section 6	approved	F	3.3.0	Requirements for support of radio resource management (FDD)	
RP-000470	25.141	38		3.2.0	R99	Corrections to spectrum mask	approved	F	3.3.0	Base station conformance testing (FDD)	
RP-000470	25.141	39		3.2.0	R99	Editorial corrections for TS 25.141	approved	F	3.3.0	Base station conformance testing (FDD)	
RP-000470	25.141	40		3.2.0	R99	Global In-Channel TX-Test for use as annex in 25.141	approved	F	3.3.0	Base station conformance testing (FDD)	
RP-000470	25.141	41		3.2.0	R99	Reference measurement channels	approved	F	3.3.0	Base station conformance testing (FDD)	
RP-000470	25.141	42		3.2.0	R99	Handling of measurement uncertainties in Base station conformance testing (FDD)	approved	F	3.3.0	Base station conformance testing (FDD)	
RP-000470	25.141	43		3.2.0	R99	Clarifications of modulation accuracy and code domain error tests for TD operation	approved	F	3.3.0	Base station conformance testing (FDD)	
RP-000470	25.141	44		3.2.0	R99	Corrections to spectrum mask measurement method	approved	F	3.3.0	Base station conformance testing (FDD)	
RP-000470	25.141	45		3.2.0	R99	Test model clarifications	approved	F	3.3.0	Base station conformance testing (FDD)	

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RP-000470	25.141	46		3.2.0	R99	Clarifications of modulation accuracy and code domain error tests for TD operation	Withdrawn	F		Base station conformance testing (FDD)	
RP-000470	25.141	47		3.2.0	R99	Clarification of applicability of environmental range spec in section 4	approved	F	3.3.0	Base station conformance testing (FDD)	
RP-000470	25.141	48		3.2.0	R99	Clarification of "confidence level of 95%" in section 4.1	approved	D	3.3.0	Base station conformance testing (FDD)	
RP-000470	25.141	49		3.2.0	R99	Corrections to test models in TS 25.141	approved	F	3.3.0	Base station conformance testing (FDD)	
RP-000470	25.141	50		3.2.0	R99	Tap magnitudes and phases for Birth-Death propagation conditions	approved	F	3.3.0	Base station conformance testing (FDD)	
RP-000402	25.142	28		3.2.1	R99	Handling of measurement uncertainties in Base station conformance testing (TDD)	approved	F	3.3.0	Base station conformance testing (TDD)	
RP-000402	25.142	29		3.2.1	R99	Conformance test description for maximum output power	approved	F	3.3.0	Base station conformance testing (TDD)	
RP-000402	25.142	30		3.2.1	R99	Conformance test description for minimum transmit power	approved	F	3.3.0	Base station conformance testing (TDD)	
RP-000402	25.142	31		3.2.1	R99	Conformance test description for power control steps	approved	F	3.3.0	Base station conformance testing (TDD)	
RP-000402	25.142	32		3.2.1	R99	Conformance test description for spectrum emission mask	approved	F	3.3.0	Base station conformance testing (TDD)	
RP-000402	25.142	33		3.2.1	R99	Corrections to spectrum mask	approved	F	3.3.0	Base station conformance testing (TDD)	
RP-000402	25.142	34		3.2.1	R99	Conformance test description for modulation accuracy	approved	F	3.3.0	Base station conformance testing (TDD)	
RP-000402	25.142	35		3.2.1	R99	Conformance test description for blocking characteristics	approved	F	3.3.0	Base station conformance testing (TDD)	
RP-000402	25.142	36		3.2.1	R99	Conformance test description for performance requirements	approved	F	3.3.0	Base station conformance testing (TDD)	
RP-000402	25.142	37		3.2.1	R99	Conformance test description for spectrum emission mask	approved	F	3.3.0	Base station conformance testing (TDD)	
RP-000340	25.211	065	-	3.3.0	R99	Correction of reference	approved	F	3.4.0	Physical channels and mapping of transport channels onto physical channels (FDD)	
RP-000340	25.211	066	4	3.3.0	R99	Clarification of paging indicator mapping	approved	F	3.4.0	Physical channels and mapping of transport channels onto physical channels (FDD)	
RP-000340	25.211	068	-	3.3.0	R99	Editorial modification of the 25.211 about the CD/CA-ICH	approved	D	3.4.0	Physical channels and mapping of transport channels onto physical channels (FDD)	
RP-000340	25.211	070	1	3.3.0	R99	Support of closed loop transmit diversity modes	approved	F	3.4.0	Physical channels and mapping of transport channels onto physical channels (FDD)	
RP-000340	25.211	071	-	3.3.0	R99	DPCH initialisation procedure	approved	F	3.4.0	Physical channels and mapping of transport channels onto physical channels (FDD)	
RP-000340	25.211	072	3	3.3.0	R99	Correction on indicators	approved	F	3.4.0	Physical channels and mapping of transport channels onto physical channels (FDD)	
RP-000340	25.211	074	-	3.3.0	R99	Correction of STTD for DPCH	approved	F	3.4.0	Physical channels and mapping of transport channels onto physical channels (FDD)	
RP-000340	25.211	075	-	3.3.0	R99	Clarification of first significant path	approved	F	3.4.0	Physical channels and mapping of transport channels onto physical channels (FDD)	
RP-000340	25.211	076	-	3.3.0	R99	Clarification of SCH transmitted by TSTD	approved	F	3.4.0	Physical channels and mapping of transport channels onto physical channels (FDD)	

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RP-000340	25.211	077	1	3.3.0	R99	Clarification of FBI field	approved	F	3.4.0	Physical channels and mapping of transport channels onto physical channels (FDD)	
RP-000341	25.212	079	-	3.3.0	R99	Clarification of compressed mode terminology	approved	F	3.4.0	Multiplexing and channel coding (FDD)	
RP-000341	25.212	085	1	3.3.0	R99	Editorial corrections in Turbo code internal interleaver section	approved	F	3.4.0	Multiplexing and channel coding (FDD)	
RP-000341	25.212	086	1	3.3.0	R99	Clarification on DL slot format for compressed mode by SF/2	approved	F	3.4.0	Multiplexing and channel coding (FDD)	
RP-000341	25.212	087	-	3.3.0	R99	Corrections	approved	F	3.4.0	Multiplexing and channel coding (FDD)	
RP-000341	25.212	088	1	3.3.0	R99	Clarifications to TS 25.212	approved	F	3.4.0	Multiplexing and channel coding (FDD)	
RP-000341	25.212	089	-	3.3.0	R99	Correction regarding DSCH	approved	F	3.4.0	Multiplexing and channel coding (FDD)	
RP-000341	25.212	090	-	3.3.0	R99	Correction regarding CPCH	approved	F	3.4.0	Multiplexing and channel coding (FDD)	
RP-000341	25.212	092	1	3.3.0	R99	Bit separation and collection for rate matching	approved	F	3.4.0	Multiplexing and channel coding (FDD)	
RP-000341	25.212	093	-	3.3.0	R99	Puncturing Limit definition in WG1 specification	approved	F	3.4.0	Multiplexing and channel coding (FDD)	
RP-000342	25.214	110	4	3.3.0	R99	Downlink inner-loop power control in compressed mode	approved	F	3.4.0	Physical layer procedures (FDD)	
RP-000342	25.214	112	-	3.3.0	R99	Adding reference for power offset variation text in TS 25.214	approved	F	3.4.0	Physical layer procedures (FDD)	
RP-000342	25.214	113	-	3.3.0	R99	Combining TPC commands in soft handover	approved	F	3.4.0	Physical layer procedures (FDD)	
RP-000342	25.214	115	1	3.3.0	R99	Corrections to power control	approved	F	3.4.0	Physical layer procedures (FDD)	
RP-000342	25.214	116	-	3.3.0	R99	Corrections to 25.214	approved	F	3.4.0	Physical layer procedures (FDD)	
RP-000342	25.214	117	-	3.3.0	R99	Clarification to downlink power control	approved	F	3.4.0	Physical layer procedures (FDD)	
RP-000342	25.214	118	3	3.3.0	R99	Clarification of power control at maximum and minimum power	approved	F	3.4.0	Physical layer procedures (FDD)	
RP-000342	25.214	119	-	3.3.0	R99	Clarification of SSDT text	approved	F	3.4.0	Physical layer procedures (FDD)	
RP-000342	25.214	120	-	3.3.0	R99	Corrections to CL transmit diversity mode 1	approved	F	3.4.0	Physical layer procedures (FDD)	
RP-000342	25.214	121	1	3.3.0	R99	Clarification of SSDT ID code bit transmission order	approved	F	3.4.0	Physical layer procedures (FDD)	
RP-000342	25.214	122	1	3.3.0	R99	Clarification on RACH and CPCH subchannel definition	approved	F	3.4.0	Physical layer procedures (FDD)	
RP-000342	25.214	123	1	3.3.0	R99	DPCH initialisation procedure	approved	F	3.4.0	Physical layer procedures (FDD)	
RP-000342	25.214	124	-	3.3.0	R99	Clarification of closed loop mode TX diversity initialisation	approved	F	3.4.0	Physical layer procedures (FDD)	
RP-000342	25.214	127	2	3.3.0	R99	Uplink power control in compressed mode	approved	F	3.4.0	Physical layer procedures (FDD)	
RP-000342	25.215	067	-	3.3.0	R99	Insertion of UTRAN SIRerror measurement in 25.215	approved	F	3.4.0	Physical layer; Measurements (FDD)	
RP-000343	25.215	068	-	3.3.0	R99	Reporting of UTRAN Transmitted carrier power	approved	F	3.4.0	Physical layer; Measurements (FDD)	
RP-000343	25.215	070	-	3.3.0	R99	Clarification of UTRAN SIR measurement	approved	F	3.4.0	Physical layer; Measurements (FDD)	
RP-000343	25.215	071	-	3.3.0	R99	Clarification of first significant path	approved	F	3.4.0	Physical layer; Measurements (FDD)	
RP-000343	25.215	072	-	3.3.0	R99	Clarification of radio link set as the measured object	approved	F	3.4.0	Physical layer; Measurements (FDD)	
RP-000344	25.221	022	1	3.3.0	R99	Correction to midamble generation in UTRA TDD	approved	F	3.4.0	Physical channels and mapping of transport channels onto physical channels (TDD)	
RP-000344	25.221	026	2	3.3.0	R99	Some corrections for TS25.221	approved	F	3.4.0	Physical channels and mapping of transport channels onto physical channels (TDD)	
RP-000344	25.221	028	-	3.3.0	R99	Terminology regarding the beacon function	approved	F	3.4.0	Physical channels and mapping of transport channels onto physical channels (TDD)	
RP-000344	25.221	030	1	3.3.0	R99	TDD Access Bursts for HOV	approved	F	3.4.0	Physical channels and mapping of transport channels onto physical channels (TDD)	

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RP-000344	25.221	031	1	3.3.0	R99	Number of codes signalling for the DL common midamble case	approved	F	3.4.0	Physical channels and mapping of transport channels onto physical channels (TDD)	
RP-000345	25.222	040	1	3.3.0	R99	Update of TS 25.222	approved	F	3.4.0	Multiplexing and channel coding (TDD)	
RP-000345	25.222	041	1	3.3.0	R99	Editorial corrections in Turbo code internal interleaver section	approved	F	3.4.0	Multiplexing and channel coding (TDD)	
RP-000345	25.222	042	-	3.3.0	R99	Paging Indicator Terminology	approved	F	3.4.0	Multiplexing and channel coding (TDD)	
RP-000345	25.222	043	1	3.3.0	R99	Bit separation and collection for rate matching	approved	F	3.4.0	Multiplexing and channel coding (TDD)	
RP-000345	25.222	048	-	3.3.0	R99	Puncturing Limit definition in WG1 specification	approved	F	3.4.0	Multiplexing and channel coding (TDD)	
RP-000346	25.223	007	1	3.3.0	R99	Gain Factors for TDD Mode	approved	F	3.4.0	Spreading and modulation (TDD)	
RP-000346	25.223	014	-	3.3.0	R99	Synchronisation codes	approved	F	3.4.0	Spreading and modulation (TDD)	
RP-000347	25.224	019	1	3.3.0	R99	Gain Factors for TDD Mode	approved	F	3.4.0	Pphysical layer procedures (TDD)	
RP-000347	25.224	025	-	3.3.0	R99	Terminology regarding the beacon function	approved	F	3.4.0	Pphysical layer procedures (TDD)	
RP-000347	25.224	026	1	3.3.0	R99	Synchronisation of timing advance adjustment and timing deviation measurement	approved	F	3.4.0	Pphysical layer procedures (TDD)	
RP-000347	25.224	027	1	3.3.0	R99	CCTrCH UL/DL pairing for DL inner loop power control	approved	F	3.4.0	Pphysical layer procedures (TDD)	
RP-000347	25.224	028	1	3.3.0	R99	RACH timing in TDD mode	approved	F	3.4.0	Pphysical layer procedures (TDD)	
RP-000347	25.224	030	1	3.3.0	R99	TDD Access Bursts for HOV	approved	F	3.4.0	Pphysical layer procedures (TDD)	
RP-000347	25.224	032	-	3.3.0	R99	Removal of ODMA related abbreviations and correction of references	approved	F	3.4.0	Pphysical layer procedures (TDD)	
RP-000347	25.224	033	-	3.3.0	R99	Clarifications on the Out-of-sync handling for UTRA TDD	approved	F	3.4.0	Pphysical layer procedures (TDD)	
RP-000348	25.225	012	1	3.3.0	R99	Alignment of TDD measurements with FDD: GPS related measurements	approved	F	3.4.0	Physical layer; Measurements (TDD)	
RP-000348	25.225	013	1	3.3.0	R99	Alignment of TDD measurements with FDD:SFN-CFN observed time difference	approved	F	3.4.0	Physical layer; Measurements (TDD)	
RP-000348	25.225	014	-	3.3.0	R99	Clarification of the Timeslot ISCP measurements	approved	F	3.4.0	Physical layer; Measurements (TDD)	
RP-000348	25.225	015	-	3.3.0	R99	Terminology regarding the beacon function	approved	F	3.4.0	Physical layer; Measurements (TDD)	
RP-000348	25.225	016	-	3.3.0	R99	Removal of Physical Channel BER	approved	F	3.4.0	Physical layer; Measurements (TDD)	
RP-000348	25.225	017	-	3.3.0	R99	Update of TS25.225 due to recent change for FDD: Reporting of UTRAN TX carrier power	approved	F	3.4.0	Physical layer; Measurements (TDD)	
RP-000352	25.301	041		3.5.0	R99	RLC modes for SHCCH	approved	F	3.6.0	Radio Interface Protocol Architecture	
RP-000353	25.302	065		3.5.0	R99	Filtering period in case of periodical reporting	approved	F	3.6.0	Services provided by the physical layer	
RP-000353	25.302	066		3.5.0	R99	UE simultaneous Physical and Transport channel combinations for PDSCH and DSCH	approved	F	3.6.0	Services provided by the physical layer	
RP-000353	25.302	067		3.5.0	R99	Inclusion of SIR ERROR measurement	approved	F	3.6.0	Services provided by the physical layer	
RP-000353	25.302	068	1	3.5.0	R99	Simultaneous reception of PCCPCH and SCCPCH	approved	F	3.6.0	Services provided by the physical layer	
RP-000353	25.302	070		3.5.0	R99	Removal of puncturing limit from the transport format definition	approved	F	3.6.0	Services provided by the physical layer	
RP-000353	25.302	071		3.5.0	R99	Clarification of the Timeslot ISCP Measurements	approved	F	3.6.0	Services provided by the physical layer	
RP-000354	25.303	035	2	3.4.0	R99	SRNS relocation	approved	F	3.5.0	UE functions and inter-layer procedures in connected mode	
RP-000354	25.303	037		3.4.0	R99	Variable Rate Transmission	approved	F	3.5.0	UE functions and inter-layer procedures in connected mode	
RP-000354	25.304	035	2	3.3.0	R99	Paging channel selection	approved	F	3.4.0	UE Procedures in Idle Mode and Procedures for Cell Reselection in Connected Mode	

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RP-000355	25.304	037	1	3.3.0	R99	Editorial corrections	approved	F	3.4.0	UE Procedures in Idle Mode and Procedures for Cell Reselection in Connected Mode	
RP-000355	25.304	039		3.3.0	R99	HCS measurement rules	approved	F	3.4.0	UE Procedures in Idle Mode and Procedures for Cell Reselection in Connected Mode	
RP-000355	25.304	042	2	3.3.0	R99	Usage of Ec/N0 measurement quantity for cell ranking	approved	F	3.4.0	UE Procedures in Idle Mode and Procedures for Cell Reselection in Connected Mode	
RP-000355	25.304	044		3.3.0	R99	Correction and restructuring	approved	F	3.4.0	UE Procedures in Idle Mode and Procedures for Cell Reselection in Connected Mode	
RP-000356	25.305	020		3.2.0	R99	Alignment of FDD and TDD positioning methods and editorial changes	approved	F	3.3.0	Stage 2 Functional Specification of Location Services in UTRAN (LCS)	
RP-000356	25.305	021	3	3.2.0	R99	Assisted GPS Procedures	approved	F	3.3.0	Stage 2 Functional Specification of Location Services in UTRAN (LCS)	
RP-000356	25.305	022	2	3.2.0	R99	TDD/FDD alignment of OTDOA and GPS assisted positioning methods	approved	F	3.3.0	Stage 2 Functional Specification of Location Services in UTRAN (LCS)	
RP-000356	25.305	023		3.2.0	R99	Clean-up	approved	F	3.3.0	Stage 2 Functional Specification of Location Services in UTRAN (LCS)	
RP-000356	25.305	024		3.2.0	R99	Corrections from LCS Ad Hoc	approved	F	3.3.0	Stage 2 Functional Specification of Location Services in UTRAN (LCS)	
RP-000357	25.321	047		3.4.0	R99	Movement of primitives text to the correct section	approved	F	3.5.0	Medium Access Control (MAC) Protocol Specification	
RP-000357	25.321	048		3.4.0	R99	Corrections to RACH procedure	approved	F	3.5.0	Medium Access Control (MAC) Protocol Specification	
RP-000357	25.321	049		3.4.0	R99	Clarification on the parameters of the MAC-RLC primitives	approved	F	3.5.0	Medium Access Control (MAC) Protocol Specification	
RP-000357	25.321	051	1	3.4.0	R99	Editorial Cleanup	approved	F	3.5.0	Medium Access Control (MAC) Protocol Specification	
RP-000358	25.322	059	1	3.3.0	R99	State variables after window change	approved	F	3.4.0	Radio Link Control (RLC) Protocol Specification	
RP-000358	25.322	060	4	3.3.0	R99	SDU discard	approved	F	3.4.0	Radio Link Control (RLC) Protocol Specification	
RP-000358	25.322	061	5	3.3.0	R99	General RLC corrections	approved	F	3.4.0	Radio Link Control (RLC) Protocol Specification	
RP-000358	25.322	066		3.3.0	R99	Editorial changes to RLC	approved	F	3.4.0	Radio Link Control (RLC) Protocol Specification	
RP-000358	25.322	067	4	3.3.0	R99	Correction to RLC window size range	approved	F	3.4.0	Radio Link Control (RLC) Protocol Specification	
RP-000358	25.322	068	2	3.3.0	R99	Window based polling	approved	F	3.4.0	Radio Link Control (RLC) Protocol Specification	
RP-000358	25.322	070	2	3.3.0	R99	General corrections to RLC	approved	F	3.4.0	Radio Link Control (RLC) Protocol Specification	
RP-000358	25.322	071		3.3.0	R99	State Transition in RLC Acknowledged Mode	approved	F	3.4.0	Radio Link Control (RLC) Protocol Specification	
RP-000358	25.322	073		3.3.0	R99	Clarification of the Length Indicators	approved	F	3.4.0	Radio Link Control (RLC) Protocol Specification	

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RP-000358	25.322	076	1	3.3.0	R99	RLC corrections	approved	F	3.4.0	Radio Link Control (RLC) Protocol Specification	
RP-000358	25.322	077	1	3.3.0	R99	Corrections to reset procedure and length indicator definitions	approved	F	3.4.0	Radio Link Control (RLC) Protocol Specification	
RP-000358	25.322	078		3.3.0	R99	RLC Modes for SHCCH	approved	F	3.4.0	Radio Link Control (RLC) Protocol Specification	
RP-000358	25.322	079		3.3.0	R99	CCCH in UM RLC	approved	F	3.4.0	Radio Link Control (RLC) Protocol Specification	
RP-000359	25.323	009	3	3.2.0	R99	Clarification of PDCP Sequence Numbering	approved	F	3.3.0	Packet Data Convergence Protocol (PDCP) protocol	
RP-000359	25.323	011		3.2.0	R99	Clarification on how to handle invalid PDUs	approved	F	3.3.0	Packet Data Convergence Protocol (PDCP) protocol	
RP-000359	25.323	012	2	3.2.0	R99	Primitives required for SRNS relocation	approved	F	3.3.0	Packet Data Convergence Protocol (PDCP) protocol	
RP-000359	25.323	015		3.2.0	R99	Handling of invalid PDCP PDU sequence number	approved	F	3.3.0	Packet Data Convergence Protocol (PDCP) protocol	
RP-000360	25.324	005		3.1.0	R99	Corrections	approved	F	3.2.0	Radio Interface for Broadcast/Multicast Services	
RP-000361	25.331	356	3	3.3.0	R99	Clarification on multiplicity of PCH and PICH and S-CCPCH selection	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000361	25.331	403	3	3.3.0	R99	Parameters to be stored in the USIM	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000361	25.331	413	3	3.3.0	R99	Optimisation of Inter-system handover message	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000361	25.331	416	2	3.3.0	R99	Timing Advance in Handover Procedures	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000361	25.331	417	2	3.3.0	R99	Synchronisation of Timing Advance and Timing Deviation Measurement	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000361	25.331	418		3.3.0	R99	Downlink Physical Channels Per Timeslot	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000361	25.331	419		3.3.0	R99	TDD Mode DCH Reception in Cell DCH State	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000361	25.331	420	2	3.3.0	R99	Downlink Power Control During DTX in TDD Mode	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000361	25.331	421	1	3.3.0	R99	Paging Indicator Length Definition	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000361	25.331	422		3.3.0	R99	Updating & alignment of RRC containers & handover to UTRAN information transfer	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000361	25.331	424		3.3.0	R99	Default values for UE timers and counters	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000361	25.331	425	1	3.3.0	R99	Security mode control	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000361	25.331	426	1	3.3.0	R99	Corrections and Editorial updates to chapter 8	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000361	25.331	427		3.3.0	R99	Corrections and editorial updates to chapter 10	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000361	25.331	428		3.3.0	R99	Transition from CELL_DCH to CELL_PCH and URA_PCH state	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	

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RP-000361	25.331	430		3.3.0	R99	Assisted GPS Messaging and Procedures	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000361	25.331	431	2	3.3.0	R99	Corrections to Activation Time use	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000361	25.331	432		3.3.0	R99	Editorial Corrections to measurement reporting range	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000361	25.331	434	4	3.3.0	R99	Default DPCH offset value and DPCH offset	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000361	25.331	435	3	3.3.0	R99	RLC info	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000362	25.331	437		3.3.0	R99	Clarification of the description of IE semantics in "RB with PDCP information"	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000362	25.331	438	1	3.3.0	R99	Editorial corrections on security	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000362	25.331	439		3.3.0	R99	Editorial correction to RB mapping info	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000362	25.331	440	1	3.3.0	R99	Compressed mode configuration failure	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000362	25.331	441		3.3.0	R99	Gain factors for TDD	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000362	25.331	442		3.3.0	R99	Introduction of Default DPCH Offset Value in TDD	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000362	25.331	444	1	3.3.0	R99	Optimisation of handover to UTRAN command	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000362	25.331	445		3.3.0	R99	Editorial corrections	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000362	25.331	448	1	3.3.0	R99	Mapping of channelisation code	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000362	25.331	449	2	3.3.0	R99	DL TFCS Limitation	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000362	25.331	450		3.3.0	R99	SIB offset	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000362	25.331	451		3.3.0	R99	RRC CONNECTION RELEASE cause	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000362	25.331	452		3.3.0	R99	Addition of RACH TFCS	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000362	25.331	453	2	3.3.0	R99	Cell Identity	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000362	25.331	454		3.3.0	R99	Editorial Modifications	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000362	25.331	455	1	3.3.0	R99	TDD PRACH Power Control for Spreading Factor 8/16	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000362	25.331	456		3.3.0	R99	TDD CCTrCH Repetition Length Definition	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000362	25.331	457	1	3.3.0	R99	Reporting threshold of traffic volume measurements	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000362	25.331	459	2	3.3.0	R99	LCS GPS assistance data for SIB	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	

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RP-000362	25.331	461	1	3.3.0	R99	Support of cell update confirm on CCCH	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000363	25.331	462	1	3.3.0	R99	Max Window Size in RLC capabilities	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000363	25.331	463	3	3.3.0	R99	UE handling of CFN	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000363	25.331	464	1	3.3.0	R99	Correction of padding description in clause 12	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000363	25.331	465	1	3.3.0	R99	Window size in RLC info	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000363	25.331	466	1	3.3.0	R99	TFC Control Duration	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000363	25.331	467		3.3.0	R99	System Information Block Tabular Information	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000363	25.331	469	1	3.3.0	R99	Frequency encoding in inter-system handover messages	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000363	25.331	470		3.3.0	R99	RRC message size optimisation regarding TFS parameters	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000363	25.331	471	2	3.3.0	R99	RACH selection	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000363	25.331	472		3.3.0	R99	DRX cycle lower limit	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000363	25.331	474		3.3.0	R99	Rx window size in RLC info	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000363	25.331	476	1	3.3.0	R99	Corrections & optimisations regarding system information blocks of length 215..221	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000363	25.331	477	1	3.3.0	R99	Corrections on 8.1.1 resulting from RRC review at R2#14	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000363	25.331	478	1	3.3.0	R99	Corrections to the RRC connection release procedure	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000363	25.331	479	1	3.3.0	R99	New release cause for signalling connection re-establishment	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000363	25.331	480	1	3.3.0	R99	Correction to IE midamble shift and burst type	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000363	25.331	481	1	3.3.0	R99	Correction in RLC info	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000363	25.331	483		3.3.0	R99	Description of CTCH occasions	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000363	25.331	485	1	3.3.0	R99	TDD CCTrCH UL/DL Pairing for Inner Loop Power Control	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000363	25.331	486	1	3.3.0	R99	DCCH and BCCH Signaling of TDD UL OL PC Information	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000364	25.331	487	1	3.3.0	R99	Broadcast SIBs for TDD UL OL PC Information	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000364	25.331	490	1	3.3.0	R99	CPCH corrections	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000364	25.331	492	3	3.3.0	R99	Corrections to Security IEs	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	

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RP-000364	25.331	494	1	3.3.0	R99	Corrections to parameters to be stored in the USIM	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000364	25.331	496		3.3.0	R99	Editorial corrections	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000364	25.331	497	2	3.3.0	R99	Physical Shared Channel Allocation procedure	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000364	25.331	498		3.3.0	R99	Correction to Transport Format Combination Control Message	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000364	25.331	499	1	3.3.0	R99	Usage of Cell Parameter ID	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000364	25.331	500		3.3.0	R99	RB description for SHCCH	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000364	25.331	501	1	3.3.0	R99	Use of LI in UM	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000364	25.331	502	1	3.3.0	R99	Minor Corrections to RRC Protocol Specification	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000364	25.331	503	1	3.3.0	R99	Correction to Cell Update Cause	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000364	25.331	504		3.3.0	R99	Correction on T307 definition	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000364	25.331	505		3.3.0	R99	Corrections to relative priorities in RRC Protocol	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000364	25.331	506		3.3.0	R99	Unification of Reconfiguration Procedures	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000364	25.331	507	1	3.3.0	R99	Changes to section 8.2 proposed at Paris RRC Ad Hoc	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000364	25.331	508		3.3.0	R99	Establishment Cause	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000364	25.331	509	1	3.3.0	R99	PRACH partitioning	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000364	25.331	510		3.3.0	R99	Editorial Correction on Active Set Update	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000364	25.331	511		3.3.0	R99	Editorial Correction regarding system information	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000365	25.331	512	1	3.3.0	R99	Clarification on Reporting Cell Status	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000365	25.331	513	1	3.3.0	R99	Editorial corrections on RRC Connection Establishment and Release procedures	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000365	25.331	514		3.3.0	R99	Gated Transmission Control Info	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000365	25.331	515	1	3.3.0	R99	Cell selection/reselection parameters for SIB 3/4	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000365	25.331	516		3.3.0	R99	Implementation of Ec/N0 parameters and optimisation of SIB 11/12	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000365	25.331	517		3.3.0	R99	PRACH Info	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000365	25.331	518	1	3.3.0	R99	Uplink DPCH power control info	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	

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RP-000365	25.331	519		3.3.0	R99	AICH power offset value range	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000365	25.331	520	2	3.3.0	R99	Direct paging of RRC connected UE in CELL_PCH/URA_PCH	postponed	F		Radio Resource Control (RRC) Protocol Specification	
RP-000365	25.331	521		3.3.0	R99	Corrections to Sections 1-7	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000365	25.331	522		3.3.0	R99	Error handling for Uplink Physical Channel Control procedure	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000365	25.331	523		3.3.0	R99	Corrections to downlink outer loop power control in compressed mode	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000365	25.331	524	1	3.3.0	R99	Clarification on measurement procedure using compressed mode	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000365	25.331	525	1	3.3.0	R99	Updates to cell and URA update procedures based on RRC Ad Hoc	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000365	25.331	526	1	3.3.0	R99	Updates to RNTI allocation procedure based on RRC Ad Hoc	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000365	25.331	528		3.3.0	R99	PRACH constant value	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000365	25.331	530		3.3.0	R99	Corrections to the paging procedure	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000365	25.331	532	1	3.3.0	R99	Miscellaneous corrections and moving of text from 3G TS 25.304	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000365	25.331	533	1	3.3.0	R99	Message extensibility	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000365	25.331	534	1	3.3.0	R99	Additions to "State of RRC Procedure" in RRC Initialisation information, source RNC to target RNC	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000365	25.331	535	1	3.3.0	R99	Support of codec negotiation	approved	F	3.4.0	Radio Resource Control (RRC) Protocol Specification	
RP-000370	25.401	013	3	3.3.0	R99	Principles for functional distribution between SRNC and CRNC	approved	F	3.4.0	UTRAN Overall Description	
RP-000370	25.401	014		3.3.0	R99	Removal of UTRAN Identifier definition and reference made to TS 23.003	approved	F	3.4.0	UTRAN Overall Description	
RP-000370	25.401	015	1	3.3.0	R99	Delay performance requirements	approved	F	3.4.0	UTRAN Overall Description	
RP-000370	25.401	016		3.3.0	R99	Alignment of list of functions and cleaning of editorial notes	approved	F	3.4.0	UTRAN Overall Description	
RP-000370	25.401	017	1	3.3.0	R99	Layered architecture view	approved	F	3.4.0	UTRAN Overall Description	
RP-000371	25.402	007	1	3.2.0	R99	Corrections to the UE state in section 9	approved	F	3.3.0	Synchronisation in UTRAN Stage 2	
RP-000371	25.402	008	2	3.2.0	R99	Introduction of DOFF in TDD and CFN handling during hard handover	approved	F	3.3.0	Synchronisation in UTRAN Stage 2	
RP-000371	25.402	009	2	3.2.0	R99	TDD intercell synchronisation	approved	F	3.3.0	Synchronisation in UTRAN Stage 2	
RP-000372	25.412	005		3.4.0	R99	Updating RFC 1483 to RFC 2684	approved	F	3.5.0	UTRAN Iu interface signalling transport	
RP-000373	25.413	124	1	3.2.0	R99	Only resources related to Iu need to be released	approved	F	3.3.0	UTRAN Iu interface RANAP signalling	
RP-000373	25.413	125	1	3.2.0	R99	Values for paging cause need to be aligned with 25.331	approved	F	3.3.0	UTRAN Iu interface RANAP signalling	
RP-000373	25.413	126	1	3.2.0	R99	No new RABs at reconfiguration	approved	F	3.3.0	UTRAN Iu interface RANAP signalling	
RP-000373	25.413	127	1	3.2.0	R99	Faulty condition for SDU Error Ratio	approved	F	3.3.0	UTRAN Iu interface RANAP signalling	
RP-000373	25.413	128	1	3.2.0	R99	Clarification for mapping between RABs and DCH/DSCH/USCH.	approved	F	3.3.0	UTRAN Iu interface RANAP signalling	

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RP-000373	25.413	129	2	3.2.0	R99	Cause value needed for relocation because of resource optimisation	approved	F	3.3.0	UTRAN Iu interface RANAP signalling	
RP-000373	25.413	130	1	3.2.0	R99	Handling of IEs marked with "Ignore and Notify" in RANAP Class 2 Procedures	approved	F	3.3.0	UTRAN Iu interface RANAP signalling	
RP-000373	25.413	131		3.2.0	R99	SAI in Direct transfer	approved	F	3.3.0	UTRAN Iu interface RANAP signalling	
RP-000373	25.413	132	1	3.2.0	R99	Correcting the presentation in RANAP to follow Specification Notation	approved	F	3.3.0	UTRAN Iu interface RANAP signalling	
RP-000373	25.413	133	2	3.2.0	R99	Correcting the references in RANAP	approved	F	3.3.0	UTRAN Iu interface RANAP signalling	
RP-000373	25.413	134	2	3.2.0	R99	Clarification of LAI and RAC setting in Initial UE message and UL Direct Transfer	approved	F	3.3.0	UTRAN Iu interface RANAP signalling	
RP-000373	25.413	135	1	3.2.0	R99	Correcting the conditions for GTP PDU sequence numbers	approved	F	3.3.0	UTRAN Iu interface RANAP signalling	
RP-000373	25.413	136	3	3.2.0	R99	Rules for RANAP on how IEs become known and clarification on EP knowledge	approved	F	3.3.0	UTRAN Iu interface RANAP signalling	
RP-000373	25.413	138		3.2.0	R99	object identifier value for RANAP	approved	F	3.3.0	UTRAN Iu interface RANAP signalling	
RP-000373	25.413	168	3	3.2.0	R99	Cause value needed for relocation	approved	F	3.3.0	UTRAN Iu interface RANAP signalling	
RP-000373	25.413	169		3.2.0	R99	User data before RAB ASSIGNMENT RESPONSE	approved	F	3.3.0	UTRAN Iu interface RANAP signalling	
RP-000373	25.413	170		3.2.0	R99	Clarification on re-assignment of Iu-signalling connection after Reset Resource procedure	approved	F	3.3.0	UTRAN Iu interface RANAP signalling	
RP-000373	25.413	171		3.2.0	R99	Clarification on list of Iu signalling connection identifiers within RESET RESOURCE ACKNOWLEDGE message	approved	F	3.3.0	UTRAN Iu interface RANAP signalling	
RP-000373	25.413	173		3.2.0	R99	Overlapping CN Broadcast Areas	approved	F	3.3.0	UTRAN Iu interface RANAP signalling	
RP-000373	25.413	174	1	3.2.0	R99	Usage of DRX Cycle Length Coefficient is missing	approved	F	3.3.0	UTRAN Iu interface RANAP signalling	
RP-000374	25.413	175	1	3.2.0	R99	Usage of Subflow SDU size	approved	F	3.3.0	UTRAN Iu interface RANAP signalling	
RP-000374	25.413	177	1	3.2.0	R99	Correction of SAPI values in RANAP ASN.1 code	approved	F	3.3.0	UTRAN Iu interface RANAP signalling	
RP-000374	25.413	178		3.2.0	R99	Wrong implementation of CR123 in 25.413 v 3.2.0	approved	F	3.3.0	UTRAN Iu interface RANAP signalling	
RP-000374	25.413	179	1	3.2.0	R99	Reference between unsuccessful Location Report and Location Reporting Control	approved	F	3.3.0	UTRAN Iu interface RANAP signalling	
RP-000374	25.413	181	1	3.2.0	R99	Handling of the situation when Relocation is not supported by target.	approved	F	3.3.0	UTRAN Iu interface RANAP signalling	
RP-000374	25.413	182		3.2.0	R99	Correction to range of repetition indicator	approved	F	3.3.0	UTRAN Iu interface RANAP signalling	
RP-000374	25.413	183		3.2.0	R99	New Abstract syntax error for wrong order or number or IEs	approved	F	3.3.0	UTRAN Iu interface RANAP signalling	
RP-000374	25.413	184		3.2.0	R99	Combined ASN.1 definition based on agreed CRs.	approved	F	3.3.0	UTRAN Iu interface RANAP signalling	
RP-000375	25.414	018	1	3.4.0	R99	UDP port number over Iu	approved	F	3.5.0	UTRAN Iu interface data transport & transport signalling	
RP-000375	25.414	020		3.4.0	R99	Addition of reference for usages of MTP3b on Iu	approved	F	3.5.0	UTRAN Iu interface data transport & transport signalling	
RP-000376	25.415	028		3.3.0	R99	Correction of Cause Indicator	approved	F	3.4.0	UTRAN Iu interface user plane protocols	
RP-000376	25.415	029	1	3.3.0	R99	Subflow SDUs in Payload fields	approved	F	3.4.0	UTRAN Iu interface user plane protocols	
RP-000376	25.415	030	2	3.3.0	R99	Selection of user data PDU type	approved	F	3.4.0	UTRAN Iu interface user plane protocols	
RP-000376	25.415	032	1	3.3.0	R99	Editorial correction of reference No	approved	D	3.4.0	UTRAN Iu interface user plane protocols	
RP-000376	25.415	034		3.3.0	R99	Value range of PDU type	approved	F	3.4.0	UTRAN Iu interface user plane protocols	
RP-000376	25.415	035		3.3.0	R99	Delivery of erroneous SDUs value alignment	approved	F	3.4.0	UTRAN Iu interface user plane protocols	
RP-000377	25.419	011		3.1.0	R99	Handling of Presence field	approved	F	3.2.0	UTRAN Iu interface: Cell broadcast protocols between SMS-CBC and RNC	
RP-000377	25.419	012	1	3.1.0	R99	Handling of IEs marked with "Ignore and Notify" in SABP Class 2 Procedures	approved	F	3.2.0	UTRAN Iu interface: Cell broadcast protocols between SMS-CBC and RNC	

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RP-000377	25.419	014	1	3.1.0	R99	Criticality in tabular format of 25.419	approved	F	3.2.0	UTRAN Iu interface: Cell broadcast protocols between SMS-CBC and RNC	
RP-000377	25.419	015		3.1.0	R99	object identifier value for SBAP	approved	F	3.2.0	UTRAN Iu interface: Cell broadcast protocols between SMS-CBC and RNC	
RP-000377	25.419	016	3	3.1.0	R99	Clarification of Message Identifier	approved	F	3.2.0	UTRAN Iu interface: Cell broadcast protocols between SMS-CBC and RNC	
RP-000377	25.419	017	2	3.1.0	R99	Rules for SABP on how IEs become known and clarification on EP	approved	F	3.2.0	UTRAN Iu interface: Cell broadcast protocols between SMS-CBC and RNC	
RP-000377	25.419	018	2	3.1.0	R99	Correcting the references in SABP & other minor corrections.	approved	D	3.2.0	UTRAN Iu interface: Cell broadcast protocols between SMS-CBC and RNC	
RP-000377	25.419	019	1	3.1.0	R99	Editorial Corrections in the presentation of SABP as per Specification Notation.	approved	D	3.2.0	UTRAN Iu interface: Cell broadcast protocols between SMS-CBC and RNC	
RP-000377	25.419	020	2	3.1.0	R99	Clarification of the description and usage of Elementary Procedures.	approved	F	3.2.0	UTRAN Iu interface: Cell broadcast protocols between SMS-CBC and RNC	
RP-000377	25.419	021		3.1.0	R99	Correction to range of repetition indicator	approved	F	3.2.0	UTRAN Iu interface: Cell broadcast protocols between SMS-CBC and RNC	
RP-000377	25.419	022	1	3.1.0	R99	New Abstract syntax error for wrong order or number or IEs	approved	F	3.2.0	UTRAN Iu interface: Cell broadcast protocols between SMS-CBC and RNC	
RP-000377	25.419	023		3.1.0	R99	Combined ASN.1 definition based on agreed CRs.	approved	F	3.2.0	UTRAN Iu interface: Cell broadcast protocols between SMS-CBC and RNC	
RP-000378	25.420	008	1	3.1.0	R99	Bi-directional dedicated transport channels	approved	F	3.2.0	UTRAN Iur Interface: General Aspects and Principles	
RP-000379	25.423	145	2	3.2.0	R99	Clarification for Multi-DPCH cases	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000379	25.423	146	3	3.2.0	R99	Need to disable Timing advance	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000379	25.423	147	1	3.2.0	R99	Shared Channel Signalling correction	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000379	25.423	148	1	3.2.0	R99	UE Capabilities transfer SRNC to DRNC	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000379	25.423	149	2	3.2.0	R99	Alignment of DPCH parameters with WG1/WG2 in TDD	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000379	25.423	151	3	3.2.0	R99	Rules for RNSAP on how IEs become known and clarification on EP knowledge	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000379	25.423	152	1	3.2.0	R99	Maximum/minimum DL power settings	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000379	25.423	153	2	3.2.0	R99	UL/DL SIR target corrections	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000379	25.423	154	1	3.2.0	R99	Power reference point	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000379	25.423	156	2	3.2.0	R99	Introduction of DL Codes Not Supported cause value	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000379	25.423	157	1	3.2.0	R99	Introduction of a temporary failure: not expired CFN	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000379	25.423	158	1	3.2.0	R99	Maximum number of TBs in a TTI	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000379	25.423	159	1	3.2.0	R99	Handling of IEs marked with "Ignore and Notify" in class 2 procs	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000379	25.423	160	1	3.2.0	R99	Corrections of diversity information	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000379	25.423	161	2	3.2.0	R99	Editorial Correction RNSAP	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000379	25.423	162	1	3.2.0	R99	Correction the value range of IB_SG_REP in RNSAP	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000379	25.423	163	1	3.2.0	R99	Clarification to the RL failure procedure	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000379	25.423	164	2	3.2.0	R99	Renaming UL interference	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000379	25.423	166	1	3.2.0	R99	compress mode	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000379	25.423	167		3.2.0	R99	object identifier value for RNSAP	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000380	25.423	168		3.2.0	R99	correction of errors in the ASN.1 part of RNSAP	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000380	25.423	169	2	3.2.0	R99	Correction to Burst Type IE and Midamble Shift IE in TDD messages	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	

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RP-000380	25.423	171	1	3.2.0	R99	BER at Uplink DTX for TDD	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000380	25.423	173	1	3.2.0	R99	TDD CCTrCH power control ambiguity	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000380	25.423	174		3.2.0	R99	Renaming of Timeslot ISCP	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000380	25.423	176	1	3.2.0	R99	Correction to FDD DL Channelisation Code Number IE definition	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000380	25.423	178	1	3.2.0	R99	Initial DL transmission power allocation in DRNC	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000380	25.423	179	1	3.2.0	R99	Introduction of SRNC-Id in the RL SETUP REQUEST Message	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000380	25.423	180	1	3.2.0	R99	Missing Choice Tag in the RL RECONFIGURATION FAILURE Message	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000380	25.423	183	1	3.2.0	R99	Measurement alignment	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000380	25.423	184		3.2.0	R99	Clarification of usage of reporting objects in the RL restoration procedure	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000380	25.423	185	3	3.2.0	R99	Non-core Features in RNSAP	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000380	25.423	186	1	3.2.0	R99	Correction to RL Addition, Transmit Diversity Indicator	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000380	25.423	187		3.2.0	R99	Limited power increase chapter	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000380	25.423	188		3.2.0	R99	Measurement Grouping in the DRNC	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000380	25.423	189	1	3.2.0	R99	Remove Unnecessary use of the Protocol IE-Container	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000380	25.423	190	1	3.2.0	R99	Correction to Compressed Mode	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000380	25.423	191	1	3.2.0	R99	Procedure Rejection in RNSAP due to Lack of Support on NBAP	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000380	25.423	192	1	3.2.0	R99	Support for CELL_FACH to CELL_DCH state transition	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000380	25.423	193		3.2.0	R99	RNSAP Support for switching from Cell_DCH to URA_PCH State	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000381	25.423	194		3.2.0	R99	Correction to range of repetition indicator	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000381	25.423	195		3.2.0	R99	New Abstract syntax error for wrong order or number or IEs	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000381	25.423	196	2	3.2.0	R99	RNSAP Common IEs	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000381	25.423	197	1	3.2.0	R99	Extensability RNSAP FDD IEs	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000381	25.423	198	1	3.2.0	R99	RNSAP TDD IEs	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000381	25.423	199		3.2.0	R99	Procedure Rejection in RNSAP due to Unknown Procedure ID	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000381	25.423	200	1	3.2.0	R99	Combined ASN.1 definition based on agreed CRs	approved	F	3.3.0	UTRAN Iur interface RNSAP signalling	
RP-000382	25.424	005		3.3.0	R99	Remove Draft in the title of the reference Q.2630.1 in 25.424	approved	F	3.4.0	UTRAN Iur interface data transport & transport signalling for CCH data streams	
RP-000383	25.426	003	1	3.3.0	R99	AAL2 switching possibility	approved	F	3.4.0	UTRAN Iur and Iub interface data transport & transport signalling for DCH data streams	
RP-000383	25.426	004		3.3.0	R99	Remove Draft in the title of the reference Q.2630.1 and Q.2150.2 in 25.426	approved	F	3.4.0	UTRAN Iur and Iub interface data transport & transport signalling for DCH data streams	
RP-000383	25.426	006		3.3.0	R99	Addition of reference for usage of MTP3b on Iur	approved	F	3.4.0	UTRAN Iur and Iub interface data transport & transport signalling for DCH data streams	
RP-000384	25.427	026	1	3.3.0	R99	Timing Deviation and Timing Adjustment Synchronisation	approved	F	3.4.0	UTRAN Iur and Iub interface user plane protocols for DCH data streams	

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RP-000384	25.427	028	1	3.3.0	R99	Reserved TFI bits	approved	F	3.4.0	UTRAN Iur and Iub interface user plane protocols for DCH data streams	
RP-000384	25.427	029	1	3.3.0	R99	Transport connection synchronisation	approved	F	3.4.0	UTRAN Iur and Iub interface user plane protocols for DCH data streams	
RP-000384	25.427	031		3.3.0	R99	DSCH Corrections	approved	F	3.4.0	UTRAN Iur and Iub interface user plane protocols for DCH data streams	
RP-000384	25.427	032	1	3.3.0	R99	BER at Uplink DTX for TDD	approved	F	3.4.0	UTRAN Iur and Iub interface user plane protocols for DCH data streams	
RP-000384	25.427	033	1	3.3.0	R99	Node B knowledge of timing advance	approved	F	3.4.0	UTRAN Iur and Iub interface user plane protocols for DCH data streams	
RP-000384	25.427	034	1	3.3.0	R99	CRCI octet when number of TBs is equal to zero	approved	F	3.4.0	UTRAN Iur and Iub interface user plane protocols for DCH data streams	
RP-000384	25.427	035	3	3.3.0	R99	Editorial modification of 25.427	approved	F	3.4.0	UTRAN Iur and Iub interface user plane protocols for DCH data streams	
RP-000385	25.430	011	1	3.2.0	R99	Bi-directional dedicated transport channels	approved	F	3.3.0	UTRAN Iub Interface: General Aspects and Principles	
RP-000386	25.433	165	4	3.2.0	R99	Changes to NBAP to support the signaling of the 'DSCH DL signaling frame' from the CRNC to the Node B	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000386	25.433	168	2	3.2.0	R99	Clarification for Multi-DPCH cases	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000386	25.433	169	3	3.2.0	R99	Alignment of DPCH parameters with WG1/WG2 in TDD	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000386	25.433	170	1	3.2.0	R99	Node B communication context ID IE in Radio Link Setup Failure message	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000386	25.433	173	1	3.2.0	R99	Correction of Tabular Formats and Information Element definitions	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000386	25.433	174	1	3.2.0	R99	Corrections to RL Setup Failure description	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000386	25.433	175	3	3.2.0	R99	Rules for NBAP on how IEs become known and clarification on EP knowledge	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000386	25.433	176	1	3.2.0	R99	Maximum/minimum DL power settings	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000386	25.433	177	3	3.2.0	R99	Minimum power level	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000386	25.433	178	1	3.2.0	R99	Power reference point	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000386	25.433	180	2	3.2.0	R99	Introduction of DL Codes Not Supported cause value	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000386	25.433	181	1	3.2.0	R99	Power offset for PICH and AICH in Common Transport Channel Setup	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000386	25.433	182	1	3.2.0	R99	Ambiguous Resource Status Indication and consequences for Audit response	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000386	25.433	183	1	3.2.0	R99	Handling of two non supported non core functionalities	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000386	25.433	184	1	3.2.0	R99	Removal of paging procedure from NBAP	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000386	25.433	185	2	3.2.0	R99	Alignment to RRC CRs 363 and 362	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000386	25.433	186	1	3.2.0	R99	Introduction of a temporary failure: not expired CFN	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000386	25.433	187	3	3.2.0	R99	NBAP Reset procedure	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000386	25.433	188	1	3.2.0	R99	Maximum number of TBs in a TTI	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000386	25.433	189	1	3.2.0	R99	Handling of IEs marked with "Ignore and Notify" in class 2 procs	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000387	25.433	190	3	3.2.0	R99	Iub Admission Control	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000387	25.433	191	1	3.2.0	R99	Corrections of diversity information	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000387	25.433	192	1	3.2.0	R99	Editorial Correction NBAP	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000387	25.433	193		3.2.0	R99	Minor CPCH correction	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	

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RP-000387	25.433	194	2	3.2.0	R99	Renaming UL interference	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000387	25.433	195	1	3.2.0	R99	compress mode	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000387	25.433	196	1	3.2.0	R99	Clarification to the RL Failure procedure	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000387	25.433	197		3.2.0	R99	object identifier value for NBAP	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000387	25.433	198		3.2.0	R99	correction of errors and misalignments in the ASN.1 part of NBAP	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000387	25.433	199	2	3.2.0	R99	Correction of Burst Type IE and Midamble Shift IE in TDD messages	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000387	25.433	200	1	3.2.0	R99	DSCH Corrections	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000387	25.433	203	1	3.2.0	R99	BER at Uplink DTX for TDD	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000387	25.433	205	2	3.2.0	R99	Correction to RL Addition, RL Reconfiguration Prepare, and RL Configuration Request Transmit Diversity parameters	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000387	25.433	207	1	3.2.0	R99	TDD CCTrCH power control ambiguity	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000387	25.433	208		3.2.0	R99	Renaming of Timeslot ISCP	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000387	25.433	211	1	3.2.0	R99	Correction to FDD DL Channelisation Code Number IE definition	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000387	25.433	214	1	3.2.0	R99	Resource status indication clarification	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000387	25.433	218	1	3.2.0	R99	Editorial Correction in Tabular format for CPCH	approved	D	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000387	25.433	219		3.2.0	R99	Correction in Common measurement report message for CPCH	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000387	25.433	220	1	3.2.0	R99	Power Offset for AP-AICH, CD/CA-ICH and CSICH	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000388	25.433	221		3.2.0	R99	RACH Transport format Correction in TDD	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000388	25.433	222	1	3.2.0	R99	Measurement alignment	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000388	25.433	224	2	3.2.0	R99	Non-core Features in NBAP	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000388	25.433	225		3.2.0	R99	Limited power increase chapter	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000388	25.433	226	1	3.2.0	R99	Correction of UL-FP mode and Measurement filter coefficient ranges in tabular format	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000388	25.433	227		3.2.0	R99	Remove Unnecessary use of the Protocol IE-Container	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000388	25.433	228		3.2.0	R99	Correction to Compressed Mode	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000388	25.433	233		3.2.0	R99	Editorial Correction - Min SF	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000388	25.433	234	3	3.2.0	R99	Update of RL-SETUP procedure text, addressing optional IE's.	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000388	25.433	235	1	3.2.0	R99	Physical Shared Channel procedure clarifications	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000388	25.433	236		3.2.0	R99	Clarification of the Resource Status Indication procedure text	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000388	25.433	237	1	3.2.0	R99	RL addition procedure text update.	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000388	25.433	238		3.2.0	R99	Procedure text proposal for optional IE in common transport channels	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000388	25.433	239		3.2.0	R99	New Abstract syntax error for wrong order or number or IEs	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000388	25.433	240	4	3.2.0	R99	NBAP Common IEs extensibility corrections	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000388	25.433	241	1	3.2.0	R99	NBAP FDD IE's extension capability	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000388	25.433	242	2	3.2.0	R99	Extensibility for NBAP-TDD-Ies	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000388	25.433	243	3	3.2.0	R99	Updated NBAP Sync RL Reconfiguration Procedure (Optional IEs	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000388	25.433	244		3.2.0	R99	procedure rejection in NBAP due to unknown procedure ID	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	

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RP-000388	25.433	246		3.2.0	R99	Correction to range of repetition indicator	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000389	25.433	247	3	3.2.0	R99	Updated NBAP UnSync RL Reconfiguration Procedure (Optional IEs)	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000389	25.433	248	1	3.2.0	R99	Combined ASN.1 definition based on agreed CRs	approved	F	3.3.0	UTRAN Iub interface NBAP signalling	
RP-000390	25.434	003		3.2.0	R99	Remove Draft in the title of the reference Q.2630.1 and Q.2150.2 in 25.434	approved	F	3.3.0	UTRAN Iub interface data transport & transport signalling for CCH data streams	
RP-000391	25.435	022	3	3.3.0	R99	Changes to 25.435 required to support the signaling of the 'DSCH DL signaling frame' from the CRNC to the Node B	approved	F	3.4.0	UTRAN Iub interface user plane protocols for CCH data streams	
RP-000391	25.435	026	1	3.3.0	R99	Reserved TFI bits	approved	F	3.4.0	UTRAN Iub interface user plane protocols for CCH data streams	
RP-000391	25.435	027		3.3.0	R99	DSCH Corrections	approved	F	3.4.0	UTRAN Iub interface user plane protocols for CCH data streams	
RP-000391	25.435	028	2	3.3.0	R99	BER at Uplink DTX for TDD	approved	F	3.4.0	UTRAN Iub interface user plane protocols for CCH data streams	
RP-000391	25.435	029	3	3.3.0	R99	Node B knowledge of timing advance	approved	F	3.4.0	UTRAN Iub interface user plane protocols for CCH data streams	
RP-000391	25.435	030	2	3.3.0	R99	Pilot bit sending when unknown TFCI	approved	F	3.4.0	UTRAN Iub interface user plane protocols for CCH data streams	
RP-000366	25.922	004	2	3.2.0	R99	Clarification on RRC security and capability information transfer during handover to UTRAN	approved	F	3.3.0	Radio Resource Management Strategies	
RP-000366	25.922	006		3.2.0	R99	Variable Rate Transmission	approved	F	3.3.0	Radio Resource Management Strategies	
RP-000367	25.925	003		3.1.0	R99	Corrections	approved	F	3.2.0	Radio Interface for Broadcast/Multicast Services	
RP-000368	25.926	010	1	3.1.0	R99	TDD DL Physical Channel Capability per Timeslot	approved	F	3.2.0	UE Radio Access capabilities definition	
RP-000368	25.926	012		3.1.0	R99	Change to UE Capability definition	approved	F	3.2.0	UE Radio Access capabilities definition	
RP-000368	25.926	013		3.1.0	R99	Physical parameter changes	approved	F	3.2.0	UE Radio Access capabilities definition	
RP-000392	25.931	001	1	3.0.0	R99	Corrections to a minor mistake present in the spec.	approved	F	3.1.0	UTRAN Functions, examples on signalling procedures	
RP-000392	25.931	002	1	3.0.0	R99	Introduction of new scenarios related to channel switching over Iur	approved	F	3.1.0	UTRAN Functions, examples on signalling procedures	
RP-000392	25.931	003	1	3.0.0	R99	Correction of timing and message name	approved	F	3.1.0	UTRAN Functions, examples on signalling procedures	
RP-000349	25.944	002	2	3.1.0	R99	TDD related changes for TR25.944	approved	F	3.2.0	Channel coding and multiplexing examples	
SP-000395	26.110	001		3.0.1	rel-4	CS Multimedia Codec specification for real time text conversation	approved	B	4.0.0	Codec for Circuit switched Multimedia Telephony Service; General Description	
SP-000396	26.111	006		3.2.0	R99	MPEG-4 interface to multiplex	approved	F	3.3.0	Codec for Circuit switched Multimedia Telephony Service; Modifications to H.324	
SP-000397	26.132	001		3.0.0	R99	Handheld hands-free Test Setup	approved	F	3.1.0	Narrow Band (3,1kHz) Speech & Video Telephony Terminal Acoustic Test Specification.	
NP-000540	27.001	024	1	4.0.0	rel-4	UMTS clean-up	approved	A	4.1.0	General on Terminal Adaptation Functions (TAF) for Mobile Stations (MS)	
NP-000540	27.001	025		3.5.0	R99	Relevance of GSM specific BC-IE parameters for negotiating RLP version in UMTS	approved	F	3.6.0	General on Terminal Adaptation Functions (TAF) for Mobile Stations (MS)	
NP-000543	27.001	026		3.5.0	R99	Cleanup of RAB parameter setting	approved	F	3.6.0	General on Terminal Adaptation Functions (TAF) for Mobile Stations (MS)	

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NP-000543	27.001	027		4.0.0	rel-4	Cleanup of RAB parameter setting	approved	A	4.1.0	General on Terminal Adaptation Functions (TAF) for Mobile Stations (MS)	
NP-000540	27.001	028		4.0.0	rel-4	Relevance of GSM specific BC-IE parameters for negotiating RLP version in UMTS	approved	A	4.1.0	General on Terminal Adaptation Functions (TAF) for Mobile Stations (MS)	
NP-000475	27.001	029		3.5.0	R99	Deletion of UMTS NT-RT FAX from R'99	approved	F	3.6.0	General on Terminal Adaptation Functions (TAF) for Mobile Stations (MS)	
NP-000540	27.001	030	1	3.5.0	R99	UMTS clean-up	approved	F	3.6.0	General on Terminal Adaptation Functions (TAF) for Mobile Stations (MS)	
NP-000551	27.001	031		3.5.0	R99	32kbit/s UDI/RDI multimedia	approved	F	3.6.0	General on Terminal Adaptation Functions (TAF) for Mobile Stations (MS)	
NP-000551	27.001	032		4.0.0	rel-4	32kbit/s UDI/RDI multimedia	approved	A	4.1.0	General on Terminal Adaptation Functions (TAF) for Mobile Stations (MS)	
NP-000542	27.001	034		4.0.0	rel-4	3.1kHz multimedia at 33.6kbit/s	approved	A	4.1.0	General on Terminal Adaptation Functions (TAF) for Mobile Stations (MS)	
NP-000543	27.001	035		3.5.0	R99	Delivery of erroneous SDUs parameter value	approved	F	3.6.0	General on Terminal Adaptation Functions (TAF) for Mobile Stations (MS)	
NP-000540	27.001	036		4.0.0	rel-4	Clarification related to RCR	approved	D	4.1.0	General on Terminal Adaptation Functions (TAF) for Mobile Stations (MS)	
NP-000552	27.001	037		3.5.0	R99	Modification from V.25bis to V.250	approved	F	3.6.0	General on Terminal Adaptation Functions (TAF) for Mobile Stations (MS)	
NP-000552	27.001	038		4.0.0	rel-4	Modification from V.25bis to V.250	approved	A	4.1.0	General on Terminal Adaptation Functions (TAF) for Mobile Stations (MS)	
NP-000542	27.001	039		3.5.0	R99	3.1kHz multimedia at 33.6kbit/s	approved	F	3.6.0	General on Terminal Adaptation Functions (TAF) for Mobile Stations (MS)	
NP-000543	27.001	040		4.0.0	rel-4	Delivery of erroneous SDUs parameter value	approved	A	4.1.0	General on Terminal Adaptation Functions (TAF) for Mobile Stations (MS)	
NP-000475	27.002	005		3.4.0	R99	Deletion of UMTS NT-RT FAX from R'99	approved	F	3.5.0	Terminal Adaptation Functions (TAF) for services using Asynchronous bearer capabilities	
NP-000552	27.002	006		3.4.0	R99	Modification from V.25bis to V.250	approved	F	3.5.0	Terminal Adaptation Functions (TAF) for services using Asynchronous bearer capabilities	
NP-000552	27.002	007		3.4.0	rel-4	Modification from V.25bis to V.250	approved	A	4.0.0	Terminal Adaptation Functions (TAF) for services using Asynchronous bearer capabilities	
NP-000552	27.003	006		3.4.0	R99	Modification from V.25bis to V.250	approved	F	3.5.0	Terminal Adaptation Functions (TAF) for services using Synchronous bearer capabilities	
TP-000143	27.007	041		3.5.0	R99	TE software implementations must take account of extra parameters	approved	F	3.6.0	AT command set for 3G User Equipment (UE)	
TP-000143	27.007	042		3.5.0	R99	APN presentation	approved	F	3.6.0	AT command set for 3G User Equipment (UE)	
TP-000144	27.007	043		3.5.0	rel-4	Introduction of a new AT command +CUUS1 to manage User-to-User Information element	approved	B	4.0.0	AT command set for 3G User Equipment (UE)	
TP-000144	27.007	044		3.5.0	rel-4	Indication of priority and/or sub-address in the unsolicited result code CCWA	approved	B	4.0.0	AT command set for 3G User Equipment (UE)	
TP-000144	27.007	045		3.5.0	rel-4	eMLPP SIM Commands	approved	B	4.0.0	AT command set for 3G User Equipment (UE)	

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TP-000144	27.007	046		3.5.0	rel-4	VBS, VGCS SIM Commands	approved	B	4.0.0	AT command set for 3G User Equipment (UE)	
TP-000144	27.007	047		3.5.0	rel-4	Extension of dial command for VBS and VGCS	approved	B	4.0.0	AT command set for 3G User Equipment (UE)	
TP-000144	27.007	048		3.5.0	rel-4	Introduction of a new AT command +COTDI to manage Originator-to-dispatcher information element	approved	B	4.0.0	AT command set for 3G User Equipment (UE)	
TP-000143	27.103	001	1	3.0.0	R99	Introduction of PUSH and TARGET	approved	F	3.1.0	Wide Area Network Synchronisation	
NP-000497	29.002	151		3.5.0	R99	AUTN and AUTS parameter length	approved	F	3.6.0	Mobile Application Part (MAP)	
NP-000485	29.002	152	1	3.5.1	R99	Clarifications for secure MAP transport	approved	F	3.6.0	Mobile Application Part (MAP)	
NP-000545	29.002	153	1	4.0.1	rel-4	Generalization of version handling text in subclause 18.2.4	approved	D	4.1.0	Mobile Application Part (MAP)	
NP-000497	29.002	154	3	3.5.2	R99	Clarification on Authentication Failure Report ack	approved	F	3.6.0	Mobile Application Part (MAP)	
Np-000490	29.002	156		3.5.1	R99	Aligning 29.002 with 25.413 (UTRAN Iu Interface RANAP Signalling)	approved	F	3.6.0	Mobile Application Part (MAP)	
NP-000499	29.002	157		3.5.1	R99	Deletion of Annex C	approved	A	3.6.0	Mobile Application Part (MAP)	
NP-000491	29.002	159		4.0.1	rel-4	Aligning 29.002 with 25.413 (UTRAN Iu Interface RANAP Signalling)	approved	A	4.1.0	Mobile Application Part (MAP)	
NP-000498	29.002	160		4.0.1	rel-4	AUTN and AUTS parameter length	approved	A	4.1.0	Mobile Application Part (MAP)	
NP-000498	29.002	161	2	4.0.1	rel-4	Clarification on Authentication Failure Report ack	approved	A	4.1.0	Mobile Application Part (MAP)	
NP-000483	29.002	162	1	3.5.1	R99	Correction on Location Information	approved	F	3.6.0	Mobile Application Part (MAP)	
NP-000484	29.002	163	1	4.0.1	rel-4	Correction on Location Information	approved	A	4.1.0	Mobile Application Part (MAP)	
NP-000483	29.002	165		3.5.1	R99	Removal of LSAIdentity from NoteMM-EventArg	approved	F	3.6.0	Mobile Application Part (MAP)	
NP-000483	29.002	173	2	3.5.1	R99	Optionality of parameters in GPRS-CSI	approved	F	3.6.0	Mobile Application Part (MAP)	
NP-000484	29.002	174	2	4.0.1	rel-4	Optionality of parameters in GPRS-CSI	approved	A	4.1.0	Mobile Application Part (MAP)	
NP-000492	29.002	175	1	3.5.1	R99	Correction to QoS indication	approved	A	3.6.0	Mobile Application Part (MAP)	
NP-000493	29.002	176	1	4.0.1	rel-4	Correction to QoS indication	approved	A	4.1.0	Mobile Application Part (MAP)	
NP-000490	29.002	177	1	3.5.1	R99	Clarification of use of Radio Resource Information	approved	F	3.6.0	Mobile Application Part (MAP)	
NP-000491	29.002	178	1	4.0.1	rel-4	Clarification of use of Radio Resource Information	approved	A	4.1.0	Mobile Application Part (MAP)	
NP-000556	29.002	179	1	3.5.1	R99	Correction to MSC-A handover SDLs	approved	D	3.6.0	Mobile Application Part (MAP)	
NP-000557	29.002	180	1	4.0.1	rel-4	Correction to MSC-A handover SDLs	approved	D	4.1.0	Mobile Application Part (MAP)	
NP-000557	29.002	180	2	4.0.1	rel-4	Correction to MSC-A handover SDLs	approved	D	4.1.0	Mobile Application Part (MAP)	
NP-000484	29.002	182		4.0.1	rel-4	Removal of LSAIdentity from NoteMM-EventArg	approved	A	4.1.0	Mobile Application Part (MAP)	
NP-000492	29.002	183		3.5.1	R99	LCS Support for CAMEL Phase 3	approved	F	3.6.0	Mobile Application Part (MAP)	
NP-000493	29.002	184		4.0.1	rel-4	LCS Support for CAMEL Phase 3	approved	A	4.1.0	Mobile Application Part (MAP)	
NP-000500	29.002	185		3.5.1	R99	Correction to MSC-A handover SDLs	revised	D		Mobile Application Part (MAP)	
NP-000556	29.002	185	1	3.5.1	R99	Correction to MSC-A handover SDLs	approved	D	3.6.0	Mobile Application Part (MAP)	
NP-000501	29.002	186		4.0.1	rel-4	Correction to MSC-A handover SDLs	revised	D		Mobile Application Part (MAP)	
NP-000557	29.002	186	1	4.0.1	rel-4	Correction to MSC-A handover SDLs	approved	D	4.1.0	Mobile Application Part (MAP)	
NP-000483	29.002	187		3.5.1	R99	Clarification for segmentation of D-CSI and SMS-CSI	approved	F	3.6.0	Mobile Application Part (MAP)	
NP-000484	29.002	188		4.0.1	rel-4	Clarification for segmentation of D-CSI and SMS-CSI	approved	A	4.1.0	Mobile Application Part (MAP)	
NP-000468	29.007	022		3.5.0	rel-4	Transparent 32kbit/s data rate with I.460 rate adaptation	approved	A	4.0.0	General requirements on Interworking between the PLMN and the ISDN or PSTN	
NP-000475	29.007	023		3.5.0	R99	Deletion of UMTS NT-RT FAX from R'99	approved	F	3.6.0	General requirements on Interworking between the PLMN and the ISDN or PSTN	
NP-000468	29.007	024		3.5.0	R99	Transparent 32kbit/s data rate with I.460 rate adaptation	approved	F	3.6.0	General requirements on Interworking between the PLMN and the ISDN or PSTN	

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NP-000476	29.007	025		3.5.0	rel-4	Correction of incomplete part related to introduction of UMTS NT-RT FAX	approved	F	4.0.0	General requirements on Interworking between the PLMN and the ISDN or PSTN	
NP-000540	29.007	028		3.5.0	rel-4	Clarification related to RCR	approved	D	4.0.0	General requirements on Interworking between the PLMN and the ISDN or PSTN	
NP-000551	29.007	029		3.5.0	rel-4	32kbit/s UDI/RDI multimedia	approved	A	4.0.0	General requirements on Interworking between the PLMN and the ISDN or PSTN	
NP-000551	29.007	030		3.5.0	R99	32kbit/s UDI/RDI multimedia	approved	F	3.6.0	General requirements on Interworking between the PLMN and the ISDN or PSTN	
NP-000490	29.010	006	1	3.2.0	R99	Clarification of use of Radio Resource Information	approved	F	3.3.0	Information Element Mapping between Mobile Station - Base Station System (MS - BSS) and Base Station System - Mobile-services Switching Centre (BSS - MCS) Signalling Procedures and the Mobile Application Part (MAP)	
NP-000499	29.010	007	1	3.2.0	R99	Corrections and updates to align with current R99 specs	approved	F	3.3.0	Information Element Mapping between Mobile Station - Base Station System (MS - BSS) and Base Station System - Mobile-services Switching Centre (BSS - MCS) Signalling Procedures and the Mobile Application Part (MAP)	
NP-000441	29.016	004	1	3.0.0	R99	Different SSNs for SGSN and VLR	approved	F	3.1.0	Serving GPRS Support Mode SGSN - Visitors Location Register (VLR); Gs Interface Network Service Specification	
NP-000441	29.018	010		3.3.0	R99	Reject cause in case of expiry of T6-1	approved	F	3.4.0	Serving GPRS Support Mode SGSN - Visitors Location Register (VLR); Gs Interface Layer 3 Specification	
NP-000489	29.060	105	1	3.5.0	R99	Race Conditions Avoidance	approved	F	3.6.0	GPRS Tunnelling protocol (GTP) across the Gn and Gp interface	
NP-000536	29.060	121		3.5.0	R99	Definition of TEID value in GTP-U header	approved	D	3.6.0	GPRS Tunnelling protocol (GTP) across the Gn and Gp interface	
NP-000489	29.060	122	3	3.5.0	R99	Solution for race condition of GTP procedures	approved	F	3.6.0	GPRS Tunnelling protocol (GTP) across the Gn and Gp interface	
NP-000489	29.060	123	1	3.5.0	R99	Clarifications concerning the use of TEID in the Control Plane	approved	F	3.6.0	GPRS Tunnelling protocol (GTP) across the Gn and Gp interface	
NP-000489	29.060	124	1	3.5.0	R99	Editorial modifications concerning TEID Control Plane and TEID Data	approved	D	3.6.0	GPRS Tunnelling protocol (GTP) across the Gn and Gp interface	
NP-000489	29.060	126	2	3.5.0	R99	Sequence number in signalling messages	approved	F	3.6.0	GPRS Tunnelling protocol (GTP) across the Gn and Gp interface	
NP-000489	29.060	127		3.5.0	R99	Clarification of the conditional information elements	approved	D	3.6.0	GPRS Tunnelling protocol (GTP) across the Gn and Gp interface	
NP-000489	29.060	128	1	3.5.0	R99	Enhancement of MS Network capability and GPRS Ciphering Algorithm	approved	F	3.6.0	GPRS Tunnelling protocol (GTP) across the Gn and Gp interface	
NP-000536	29.060	129		3.5.0	R99	IPv6 support for Charging Gateway Address	approved	F	3.6.0	GPRS Tunnelling protocol (GTP) across the Gn and Gp interface	
NP-000536	29.060	130		3.5.0	R99	Signalling messages in GTP	approved	F	3.6.0	GPRS Tunnelling protocol (GTP) across the Gn and Gp interface	

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NP-000536	29.060	131	1	3.5.0	R99	Security parameter transport in case of 2G-3G interworking	approved	F	3.6.0	GPRS Tunnelling protocol (GTP) across the Gn and Gp interface	
NP-000536	29.060	132	1	3.5.0	R99	Encoding of IMSI	approved	A	3.6.0	GPRS Tunnelling protocol (GTP) across the Gn and Gp interface	
NP-000536	29.060	133		3.5.0	R99	Removal of IHOSS from GTP	approved	A	3.6.0	GPRS Tunnelling protocol (GTP) across the Gn and Gp interface	
NP-000536	29.060	135		3.5.0	R99	Addition of MS Not Reachable Reason to Send Routing Information For GPRS Response	approved	F	3.6.0	GPRS Tunnelling protocol (GTP) across the Gn and Gp interface	
NP-000536	29.060	138	1	3.5.0	R99	Coding of TI in PDP Context	approved	A	3.6.0	GPRS Tunnelling protocol (GTP) across the Gn and Gp interface	
NP-000489	29.060	139	1	3.5.0	R99	Clarifications on the use of TEID in the Control Plane	approved	F	3.6.0	GPRS Tunnelling protocol (GTP) across the Gn and Gp interface	
NP-000489	29.060	140		3.5.0	R99	Correction on the handling of the PDP Context at unsuccessful PDP Context modification	approved	F	3.6.0	GPRS Tunnelling protocol (GTP) across the Gn and Gp interface	
NP-000536	29.060	141	2	3.5.0	R99	Categorize Error indication as the GTP-U message	approved	F	3.6.0	GPRS Tunnelling protocol (GTP) across the Gn and Gp interface	
NP-000489	29.060	142		3.5.0	R99	Clarifications on the presence condition of TLLI/P-TMSI in SGSN Context request	approved	F	3.6.0	GPRS Tunnelling protocol (GTP) across the Gn and Gp interface	
NP-000489	29.060	143	2	3.5.0	R99	Correction on Reliable transmission of signalling messages	approved	F	3.6.0	GPRS Tunnelling protocol (GTP) across the Gn and Gp interface	
NP-000489	29.060	144		3.5.0	R99	Alignment of the description of tables for Identification Request and SGSN Context Request	approved	F	3.6.0	GPRS Tunnelling protocol (GTP) across the Gn and Gp interface	
NP-000489	29.060	145	1	3.5.0	R99	Correction to the SGSN Context transfer Request and response messages	approved	F	3.6.0	GPRS Tunnelling protocol (GTP) across the Gn and Gp interface	
NP-000489	29.060	146	2	3.5.0	R99	Correction to the SGSN Forward relocation Request and Response messages	approved	F	3.6.0	GPRS Tunnelling protocol (GTP) across the Gn and Gp interface	
NP-000489	29.060	147		3.5.0	R99	Clarification on the handling of response messages	approved	F	3.6.0	GPRS Tunnelling protocol (GTP) across the Gn and Gp interface	
NP-000489	29.060	148		3.5.0	R99	Clarification on SGSN context acknowledge message	approved	F	3.6.0	GPRS Tunnelling protocol (GTP) across the Gn and Gp interface	
NP-000472	29.061	014		3.3.0	R99	GPRS Mobile IP interworking	approved	F	3.4.0	General Packet Radio Service (GPRS); Interworking between the Public Land Mobile Network (PLMN) supporting GPRS and Packet	
NP-000459	29.078	099	3	3.4.1	R99	Indication of Network requested PDP Context in Initial DP GPRS message	approved	F	3.5.0	CAMEL; Stage 3	
NP-000458	29.078	101		3.4.1	R99	CAP-GPRS-ReferenceNumber ASN.1 correction	approved	F	3.5.0	CAMEL; Stage 3	
NP-000458	29.078	102		3.4.0	R99	Removal of duplicate SGSN address/number from IDP-GPRS	approved	F	3.5.0	CAMEL; Stage 3	
NP-000458	29.078	103	2	3.4.1	R99	Comments on 'Introduction of GPRS reference in TCAP dialogue portion'	approved	F	3.5.0	CAMEL; Stage 3	
NP-000458	29.078	104	1	3.4.0	R99	Revised GPRS TCAP reference in TCAP dialogue portion	approved	F	3.5.0	CAMEL; Stage 3	
NP-000458	29.078	106	3	3.4.1	R99	Location Number GPRS	approved	F	3.5.0	CAMEL; Stage 3	
NP-000458	29.078	108		3.4.0	R99	Move of processing rules for GPRS context.	approved	D	3.5.0	CAMEL; Stage 3	
NP-000458	29.078	109		3.4.0	R99	Correction to GPRS CONTRACT	approved	F	3.5.0	CAMEL; Stage 3	
NP-000458	29.078	111	1	3.4.0	R99	Replacing 'NetworkSpecificBoundSet' by CapSpecificBoundSet	approved	F	3.5.0	CAMEL; Stage 3	
NP-000458	29.078	112	1	3.4.0	R99	Renumbering of GPRS specific Error codes	approved	F	3.5.0	CAMEL; Stage 3	

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NP-000458	29.078	113		3.4.0	R99	Correction of CAMEL-SCIBillingChargingCharacteristics	approved	F	3.5.0	CAMEL; Stage 3	
NP-000458	29.078	114	1	3.4.1	R99	Clarification on GPRS dialogue handling in case of TCAP error/abort	approved	F	3.5.0	CAMEL; Stage 3	
NP-000458	29.078	115	1	3.4.1	R99	GPRS location information in GPRSEventSpecificInformation	approved	F	3.5.0	CAMEL; Stage 3	
NP-000458	29.078	116	1	3.4.1	R99	Corrections on cause definitions	approved	F	3.5.0	CAMEL; Stage 3	
NP-000486	29.120	001		3.0.0	R99	Changes to support Authentication Failure Report for GLR	revised	B		Mobile Application Part (MAP) specification for Gateway Location Register (GLR); stage 3	
NP-000558	29.120	001	1	3.0.0	R99	Changes to support Authentication Failure Report for GLR	approved	F	3.1.0	Mobile Application Part (MAP) specification for Gateway Location Register (GLR); stage 3	
NP-000494	29.120	002		3.0.0	rel-4	Changes to support secure transport MAP for GLR	approved	B	4.0.0	Mobile Application Part (MAP) specification for Gateway Location Register (GLR); stage 3	
NP-000519	29.198	001	1	3.0.0	R99	Improvement of User Interaction STDs	approved	F	3.1.0	Open Services Architecture API part 1	
NP-000519	29.198	003	2	3.0.0	R99	Correction of numbering in TpResultInfo	approved	F	3.1.0	Open Services Architecture API part 1	
NP-000519	29.198	004	1	3.0.0	R99	Remove of E.164 Mobile and correction of numbering in TpAddressPlan	approved	F	3.1.0	Open Services Architecture API part 1	
NP-000519	29.198	005		3.0.0	R99	Common IDL interfaces for Generic Call Control and Generic User Interaction between 3GPP, ETSI SPAN3 and Parlay	approved	F	3.1.0	Open Services Architecture API part 1	
NP-000519	29.198	006		3.0.0	R99	Correction to table with overview of IDL files	approved	F	3.1.0	Open Services Architecture API part 1	
NP-000519	29.198	007		3.0.0	R99	Reduction in name scoping in IDL for createUICall operation on IpUICall interface	approved	F	3.1.0	Open Services Architecture API part 1	
NP-000519	29.198	008	2	3.0.0	R99	Alignment of Framework with Parlay 2.1, improvement on business entity identification	approved	F	3.1.0	Open Services Architecture API part 1	
NP-000519	29.198	009	2	3.0.0	R99	Alignment of Framework with Parlay 2.1, correction of missing service token	approved	F	3.1.0	Open Services Architecture API part 1	
NP-000519	29.198	010	2	3.0.0	R99	Alignment of Framework with Parlay 2.1, parameter name and data-type alignments	approved	F	3.1.0	Open Services Architecture API part 1	
NP-000519	29.198	011	1	3.0.0	R99	Alignment of Framework with Parlay 2.1, one interface per application correction	approved	F	3.1.0	Open Services Architecture API part 1	
NP-000519	29.198	012	1	3.0.0	R99	Alignment of Framework with Parlay 2.1, only one error returned in load manager query	approved	F	3.1.0	Open Services Architecture API part 1	
NP-000519	29.198	013	1	3.0.0	R99	Alignment of Framework with Parlay 2.1, missing operation fwUnavailableInd in IpAppFaultManager.	approved	F	3.1.0	Open Services Architecture API part 1	
NP-000520	29.198	014	1	3.0.0	R99	Alignment of Framework with Parlay 2.1, missing service properties parameter in getServiceManager() operation of IpSvcFactory.	approved	F	3.1.0	Open Services Architecture API part 1	
NP-000520	29.198	015	1	3.0.0	R99	Alignment of Framework with Parlay 2.1 undefined datatype in endaccess operation of IpAccess.	approved	F	3.1.0	Open Services Architecture API part 1	
NP-000520	29.198	016	1	3.0.0	R99	Alignment of Framework with Parlay 2.1, service and interface naming correction.	approved	F	3.1.0	Open Services Architecture API part 1	
NP-000520	29.198	017	1	3.0.0	R99	Alignment of Framework with Parlay 2.1, renaming of TpPropertyStruct to TpServiceTypeProperty	approved	F	3.1.0	Open Services Architecture API part 1	
NP-000520	29.198	018	1	3.0.0	R99	Alignment of Framework with Parlay 2.1 addition of DES 128 bit authentication.	approved	F	3.1.0	Open Services Architecture API part 1	

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NP-000520	29.198	019	2	3.0.0	R99	Alignment of Framework with Parlay 2.1, improvement of load statistic data-types.	approved	F	3.1.0	Open Services Architecture API part 1	
NP-000520	29.198	020	1	3.0.0	R99	Correction in descriptive text for Call STD regarding user interaction in 2 Parties in Call State.	approved	F	3.1.0	Open Services Architecture API part 1	
NP-000520	29.198	021		3.0.0	R99	"Removal of double description of the type TpCallServiceCode".	approved	F	3.1.0	Open Services Architecture API part 1	
NP-000520	29.198	022	1	3.0.0	R99	"Removal of unused types TpUIMessageCriteria, TpEntOpID and TpEntOpIDList".	approved	F	3.1.0	Open Services Architecture API part 1	
NP-000520	29.198	023		3.0.0	R99	Alignment of Framework with Parlay 2.1, addition of setCallbackWithSessionID operation to IpService.	approved	F	3.1.0	Open Services Architecture API part 1	
NP-000520	29.198	024		3.0.0	R99	Clarification of life time of parameters in TpAuthDomain	approved	F	3.1.0	Open Services Architecture API part 1	
NP-000521	29.998	001	2	3.0.0	R99	Mapping of CallNotification interrupted CallNotification continue methods.	approved	F	3.1.0	Open Services Architecture API part 2	
NP-000521	29.998	002		3.0.0	R99	callEnded method mapping correction	approved	F	3.1.0	Open Services Architecture API part 2	
NP-000521	29.998	003		3.0.0	R99	Mapping of userInteractionNotificationInterrupted and userInteractionNotificationContinued methods	approved	f	3.1.0	Open Services Architecture API part 2	
NP-000545	30.802	A004	1		rel-4	The handling of application layer errors in MAP	approved	C	4.0.0	Project plan on Bearer Services and QoS	
TP-000151	31.101	023		3.2.0	R99	Replacement of the technical contents with a reference to TS 102 221.	approved	F	3.3.0	UICC-terminal interface; Physical and logical characteristics	
TP-000176	31.102	030		3.2.0	R99	PLMN Selection additions	approved	F	3.3.0	Characteristics of the USIM Application	
TP-000176	31.102	036		3.2.0	R99	Alignment to GSM 11.11 regarding Terminology	approved	F	3.3.0	Characteristics of the USIM Application	
TP-000152	31.102	044	1	3.2.0	R99	Correction to call information access conditions and correction of DF_GSM file IDs	approved	F	3.3.0	Characteristics of the USIM Application	
TP-000152	31.102	045		3.2.0	R99	Clarification of the type 3 links of the phonebook	approved	F	3.3.0	Characteristics of the USIM Application	
TP-000152	31.102	046		3.2.0	R99	Alignment of EF(CCP2) with EF(ECCP)	approved	F	3.3.0	Characteristics of the USIM Application	
TP-000152	31.102	047	1	3.2.0	R99	Correction of record length, editorial errors, missing FID	approved	F	3.3.0	Characteristics of the USIM Application	
TP-000152	31.102	048		3.2.0	R99	APN Control List coding	approved	F	3.3.0	Characteristics of the USIM Application	
TP-000152	31.102	049		3.2.0	R99	Alignment with TS 33.102 regarding authentication Sequence Numbers	approved	F	3.3.0	Characteristics of the USIM Application	
TP-000152	31.102	050		3.2.0	R99	Preferred language selection	approved	F	3.3.0	Characteristics of the USIM Application	
TP-000152	31.102	051		3.2.0	R99	Application Selection by partial AID	approved	F	3.3.0	Characteristics of the USIM Application	
TP-000152	31.102	052		3.2.0	R99	Addition of warning regarding network selection with access technology	withdrawn	F		Characteristics of the USIM Application	
TP-000152	31.102	053		3.2.0	R99	Phone book clarifications	approved	F	3.3.0	Characteristics of the USIM Application	
TP-000182	31.102	054		3.2.0	R99	Update condition for OPLMN Selector list	approved	F	3.3.0	Characteristics of the USIM Application	
TP-000153	31.110	003	1	3.1.0	R99	Reservation of TAR values	approved	F	3.2.0	Numbering system for telecommunication IC card applications	
TP-000154	31.111	005		3.1.0	R99	Correction of Profile Download regarding USAT service table	approved	F	3.2.0	USIM Application Toolkit (USAT)	
TP-000154	31.111	006		3.1.0	rel-4	Modification of GET INKEY	approved	C	4.0.0	USIM Application Toolkit (USAT)	
TP-000154	31.111	007		3.1.0	rel-4	DTMF issues	approved	C	4.0.0	USIM Application Toolkit (USAT)	
TP-000154	31.111	008		3.1.0	R99	correction to GET INPUT regarding number of response string variables	approved	F	3.2.0	USIM Application Toolkit (USAT)	
TP-000154	31.111	009		3.1.0	R99	Clarification for Alpha Identifier in PLAY TONE	approved	F	3.2.0	USIM Application Toolkit (USAT)	
TP-000154	31.111	010		3.1.0	R99	EVENT DOWNLOAD-MT call : correction of the sub-address description	approved	F	3.2.0	USIM Application Toolkit (USAT)	

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TP-000154	31.111	011		3.1.0	rel-4	Addition of a Technology Indicator Tag in a Terminal Response message	approved	F	4.0.0	USIM Application Toolkit (USAT)	
SP-000433	32.015	010		3.2.0	R99	Clarifications to chapter 7 characteristics per PDP context	approved	F	3.3.0	Telecommunications Management; Charging and billing; GSM call and event data for the Packet Switched (PS) domain	
SP-000433	32.015	011		3.2.0	R99	Clarifications and corrections characteristics per PDP context	approved	F	3.3.0	Telecommunications Management; Charging and billing; GSM call and event data for the Packet Switched (PS) domain	
SP-000433	32.015	012		3.2.0	R99	Clarification for QoS parameter characteristics per PDP context	approved	F	3.3.0	Telecommunications Management; Charging and billing; GSM call and event data for the Packet Switched (PS) domain	
SP-000434	32.104	007		3.2.0	R99	Clarification of the table oriented structure of the file format, and addition of ASN.1 example, according to annex D	approved	F	3.3.0	3G Performance Management	
SP-000435	32.106-3	001		3.1.0	R99	Add pragma statement to Notification IRP IDL	rejected	F		Telecommunication Management; Configuration Management; Part 3: Notification Integration Reference Point; CORBA solution set version 1:1	
SP-000437	32.111-1	001		3.1.0	R99	Clarification On Mediation Function Algorithms	approved	F	3.2.0	Telecommunication Management; Fault Management; Part 1: 3G fault management requirements	
SP-000437	32.111-1	002		3.1.0	R99	Clarification On Clear Alarm Suppression	approved	F	3.2.0	Telecommunication Management; Fault Management; Part 1: 3G fault management requirements	
SP-000438	32.111-2	001		3.1.1	R99	Correction of qualifier for SystemDN	approved	F	3.2.0	Telecommunication Management; Fault Management; Part 2: Alarm Integration Reference Point: Information Service	
SP-000438	32.111-2	002		3.1.1	R99	Addition of a missing constraint in acknowledgeAlarm operation	approved	F	3.2.0	Telecommunication Management; Fault Management; Part 2: Alarm Integration Reference Point: Information Service	
SP-000439	32.111-3	001		3.1.0	R99	Update TS 32.111-3 Iterator	rejected	D	3.2.0	Telecommunication Management; Fault Management; Part 3: Alarm Integration Reference Point: CORBA solution set version 1:1	
SP-000439	32.111-3	002		3.1.0	R99	Clarification On Filterable Body Fields	rejected	D	3.2.0	Telecommunication Management; Fault Management; Part 3: Alarm Integration Reference Point: CORBA solution set version 1:1	
SP-000439	32.111-3	003		3.1.0	R99	Correct push_structured_event of push_structured_events	approved	F	3.2.0	Telecommunication Management; Fault Management; Part 3: Alarm Integration Reference Point: CORBA solution set version 1:1	
SP-000439	32.111-3	004		3.1.0	R99	Remove the use of interface to encapsulate const strings	approved	F	3.2.0	Telecommunication Management; Fault Management; Part 3: Alarm Integration Reference Point: CORBA solution set version 1:1	
SP-000442	33.102	095	2	3.5.0	R99	Handling of emergency call	approved	F	3.6.0	Security Architecture	

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SP-000411	33.102	104	1	3.5.0	R99	Re-transmission of authentication request using the same quintet	approved	F	3.6.0	Security Architecture	
SP-000442	33.102	105		3.5.0	R99	Length of CFN	approved	F	3.6.0	Security Architecture	
SP-000442	33.102	106		3.5.0	R99	Clarification on Sequence Numbers (SQN - SEQ)	approved	F	3.6.0	Security Architecture	
SP-000442	33.102	107		3.5.0	R99	Replace IMUI and TMUI with IMSI and TMSI	approved	F	3.6.0	Security Architecture	
SP-000442	33.102	108		3.5.0	R99	Replace Quintuplet by Quintet	approved	F	3.6.0	Security Architecture	
SP-000442	33.102	109		3.5.0	R99	Conversion function c2	approved	F	3.6.0	Security Architecture	
SP-000442	33.102	110		3.5.0	R99	Update terminology regarding VLR/SGSN	approved	F	3.6.0	Security Architecture	
SP-000442	33.102	111		3.5.0	R99	Start of ciphering	approved	F	3.6.0	Security Architecture	
SP-000442	33.102	112		3.5.0	R99	Removal of ME triggered authentication during RRC connection	approved	F	3.6.0	Security Architecture	
SP-000442	33.102	113		3.5.0	R99	Removal of EUIC	approved	F	3.6.0	Security Architecture	
SP-000442	33.102	114		3.5.0	R99	Removal of duplicate text on USIM toolkit secure messaging and addition of a reference to 02.48 and 03.48 instead.	approved	F	3.6.0	Security Architecture	
SP-000442	33.102	115		3.5.0	R99	Removal of secure authentication mechanism negotiation.	approved	F	3.6.0	Security Architecture	
SP-000442	33.102	116		3.5.0	R99	Removal of HE control of some aspects of security configuration	approved	F	3.6.0	Security Architecture	
SP-000442	33.102	117		3.5.0	R99	Specification of authentication vector handling in serving network nodes.	approved	F	3.6.0	Security Architecture	
SP-000442	33.102	118		3.5.0	R99	Update of References	approved	F	3.6.0	Security Architecture	
SP-000412	33.102	119		3.5.0	R99	Profiles for sequence number management	approved	C	3.6.0	Security Architecture	
SP-000442	33.102	120		3.5.0	R99	Change of parameter value x regarding the capability of the USIM to store information on past successful authentication events	approved	F	3.6.0	Security Architecture	
SP-000442	33.102	121		3.5.0	R99	Clarifications on integrity and ciphering of radio bearers.	approved	F	3.6.0	Security Architecture	
SP-000445	33.102	122		3.5.0	R99	Change of computation of the anonymity key in the re-synchronisation procedure	approved	F	3.6.0	Security Architecture	
SP-000442	33.102	123		3.5.0	R99	Clarification on condition on rejecting keys CK and IK	approved	F	3.6.0	Security Architecture	
SP-000442	33.102	124		3.5.0	R99	Clarifications on the START parameter handling	approved	F	3.6.0	Security Architecture	
SP-000442	33.102	125		3.5.0	R99	New FRESH at SRNC relocation	approved	F	3.6.0	Security Architecture	
SP-000442	33.102	126		3.5.0	R99	Addition of authentication parameter lengths	approved	F	3.6.0	Security Architecture	
SP-000442	33.102	127		3.5.0	R99	Clarifications on the COUNT parameters	approved	F	3.6.0	Security Architecture	
SP-000442	33.102	128		3.5.0	R99	Minor editorial changes	approved	F	3.6.0	Security Architecture	
SP-000443	33.103	010		3.3.0	R99	Removal of Network Wide Confidentiality for R99 (clause 6)	approved	F	3.4.0	Security Integration Guidelines	
SP-000446	33.103	011		3.3.0	R99	Correction to BEARER definition	approved	F	3.4.0	Security Integration Guidelines	
SP-000445	33.103	012		3.3.0	R99	Computation of the anonymity key for re-synchronisation	approved	F	3.4.0	Security Integration Guidelines	
SP-000445	33.105	012		3.4.0	R99	Calculation of AK in re-synchronisation	approved	F	3.5.0	Cryptographic Algorithm requirements	
SP-000444	33.105	013		3.4.0	R99	Deletion of eUIC	approved	F	3.5.0	Cryptographic Algorithm requirements	
SP-000445	33.105	014		3.4.0	R99	Anonymity key computation during re-synchronisation	approved	F	3.5.0	Cryptographic Algorithm requirements	
TP-000131	34.108	001		3.0.1	R99	RRC Message Contents: RLCSIZE	approved	C	3.1.0	Common Test Environments for User Equipment (UE) Conformance Testing	
TP-000131	34.108	002		3.0.1	R99	RRC Message Contents: RLCPARAM	approved	C	3.1.0	Common Test Environments for User Equipment (UE) Conformance Testing	
TP-000131	34.108	003		3.0.1	R99	RRC Message Contents: PCPreamble	approved	C	3.1.0	Common Test Environments for User Equipment (UE) Conformance Testing	

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TP-000131	34.108	004		3.0.1	R99	RRC Message Contents: RBIdentity	approved	C	3.1.0	Common Test Environments for User Equipment (UE) Conformance Testing	
TP-000131	34.108	005		3.0.1	R99	RRC Message Contents: TrCHParam	approved	C	3.1.0	Common Test Environments for User Equipment (UE) Conformance Testing	
TP-000131	34.108	006		3.0.1	R99	RRC Message Contents: UECapability	approved	C	3.1.0	Common Test Environments for User Equipment (UE) Conformance Testing	
TP-000131	34.108	007		3.0.1	R99	RRC Message Contents: RBMapping	approved	C	3.1.0	Common Test Environments for User Equipment (UE) Conformance Testing	
TP-000131	34.108	008		3.0.1	R99	RRC Message Contents: PagingCause	approved	C	3.1.0	Common Test Environments for User Equipment (UE) Conformance Testing	
TP-000131	34.108	009		3.0.1	R99	RRC Message Contents: CipheringAndIntegrity	approved	C	3.1.0	Common Test Environments for User Equipment (UE) Conformance Testing	
TP-000131	34.108	010		3.0.1	R99	RRC Message Contents: RLCInfo	approved	C	3.1.0	Common Test Environments for User Equipment (UE) Conformance Testing	
TP-000131	34.108	011		3.0.1	R99	RRC Message Contents: CompressedMode	approved	C	3.1.0	Common Test Environments for User Equipment (UE) Conformance Testing	
TP-000131	34.108	012		3.0.1	R99	RRC Message Contents: SIB	approved	C	3.1.0	Common Test Environments for User Equipment (UE) Conformance Testing	
TP-000131	34.108	013		3.0.1	R99	RRC Message Contents: PhyCH	approved	D	3.1.0	Common Test Environments for User Equipment (UE) Conformance Testing	
TP-000131	34.108	014		3.0.1	R99	RRC Message Contents: Measurement	approved	C	3.1.0	Common Test Environments for User Equipment (UE) Conformance Testing	
TP-000131	34.108	015		3.0.1	R99	RRC Message Contents: TFCS	approved	C	3.1.0	Common Test Environments for User Equipment (UE) Conformance Testing	
TP-000131	34.108	016		3.0.1	R99	RRC Message Contents: DPCHFrameOffset	approved	C	3.1.0	Common Test Environments for User Equipment (UE) Conformance Testing	
TP-000131	34.108	017		3.0.1	R99	Test USIM Parameters	approved	F	3.1.0	Common Test Environments for User Equipment (UE) Conformance Testing	
TP-000131	34.108	018		3.0.1	R99	Correction to definition of the test algorithm for authentication (clause 8.1.2)	approved	F	3.1.0	Common Test Environments for User Equipment (UE) Conformance Testing	
TP-000131	34.108	019		3.0.1	R99	Reference Radio Bearer Configurations	approved	F	3.1.0	Common Test Environments for User Equipment (UE) Conformance Testing	
TP-000131	34.108	020		3.0.1	R99	TDD Single mode	approved	F	3.1.0	Common Test Environments for User Equipment (UE) Conformance Testing	
TP-000162	34.109	001		3.0.0	R99	Clarification of UE test loop mode 2 loop back scheme	approved	C	3.1.0	Logical Test Interface (TDD and FDD)	
TP-000162	34.109	002		3.0.0	R99	Clarification of loopback delay requirement	approved	F	3.1.0	Logical Test Interface (TDD and FDD)	
TP-000162	34.109	003		3.0.0	R99	Change Request about specification TS 34.109	approved	F	3.1.0	Logical Test Interface (TDD and FDD)	
TP-000162	34.109	004		3.0.0	R99	UE test loop mode 1, loopback of PDCP SDUs	approved	C	3.1.0	Logical Test Interface (TDD and FDD)	
TP-000163	34.121	019		3.1.0	R99	Editorial corrections for References and Frequency Stability (2, 5.2, 5.3)	approved	F	3.2.0	Terminal Conformance Specification, Radio Transmission and Reception (FDD)	
TP-000163	34.121	020		3.1.0	R99	Corrections for Output Power Dynamics in the Uplink (5.4)	approved	F	3.2.0	Terminal Conformance Specification, Radio Transmission and Reception (FDD)	
TP-000163	34.121	021		3.1.0	R99	Transients for uplink inner loop power control (5.4.2.4.2)	approved	F	3.2.0	Terminal Conformance Specification, Radio Transmission and Reception (FDD)	
TP-000163	34.121	022		3.1.0	R99	Transmit On/Off power (5.5.2.4.2)	approved	F	3.2.0	Terminal Conformance Specification, Radio Transmission and Reception (FDD)	
TP-000163	34.121	023		3.1.0	R99	Change of TFC (5.6.4.2)	approved	F	3.2.0	Terminal Conformance Specification, Radio Transmission and Reception (FDD)	

Report of TSG SA meeting #9

version 1.0.0

TSG Doc	SPEC	CR	rev	Current version	Phase	SUBJECT	TSG status	Cat	New version	Specification Title	WG Responsible
TP-000163	34.121	024		3.1.0	R99	Clarification of the definition on Peak Code Domain Error (5.13.2.1)	approved	F	3.2.0	Terminal Conformance Specification, Radio Transmission and Reception (FDD)	
TP-000163	34.121	025		3.1.0	R99	UE interfering signal definition (6.3, 6.4, 6.5, 6.7)	approved	F	3.2.0	Terminal Conformance Specification, Radio Transmission and Reception (FDD)	
TP-000163	34.121	026		3.1.0	R99	Performance requirements (7.1, 7.2, 7.3, 7.4, 7.5)	approved	F	3.2.0	Terminal Conformance Specification, Radio Transmission and Reception (FDD)	
TP-000163	34.121	027		3.1.0	R99	CR on clause 7.6 and 7.7 in TS34.121 (7.6, 7.7)	approved	F	3.2.0	Terminal Conformance Specification, Radio Transmission and Reception (FDD)	
TP-000163	34.121	028		3.1.0	R99	Performance requirements (7.9, 7.10, 7.11)	approved	F	3.2.0	Terminal Conformance Specification, Radio Transmission and Reception (FDD)	
TP-000163	34.121	029		3.1.0	R99	Corrections for Annex D (Annex-D)	approved	F	3.2.0	Terminal Conformance Specification, Radio Transmission and Reception (FDD)	
TP-000163	34.121	030		3.1.0	R99	Corrections for Annex E (Annex-E)	approved	F	3.2.0	Terminal Conformance Specification, Radio Transmission and Reception (FDD)	
TP-000163	34.121	031		3.1.0	R99	Corrections for Transmit ON/OFF Power, Change of TFC and Power setting in uplink compressed mode (5.5, 5.6, 5.7)	approved	F	3.2.0	Terminal Conformance Specification, Radio Transmission and Reception (FDD)	
TP-000163	34.121	032		3.1.0	R99	Corrections for power setting in uplink compressed mode (5.7)	approved	F	3.2.0	Terminal Conformance Specification, Radio Transmission and Reception (FDD)	
TP-000163	34.121	033		3.1.0	R99	CR for subclause 7.8: Power control in downlink (7.8)	approved	B	3.2.0	Terminal Conformance Specification, Radio Transmission and Reception (FDD)	
TP-000163	34.121	034		3.1.0	R99	Corrections to clause 5.8, 5.9, 5.10, 5.11 and 5.12	approved	F	3.2.0	Terminal Conformance Specification, Radio Transmission and Reception (FDD)	
TP-000163	34.121	035		3.1.0	R99	Corrections to EVM and PCDE formulae (B.2.7.1, B2.7.2)	approved	F	3.2.0	Terminal Conformance Specification, Radio Transmission and Reception (FDD)	
TP-000163	34.121	036		3.1.0	R99	New initial conditions for Spurious emission test case (6.8.4.1)	approved	F	3.2.0	Terminal Conformance Specification, Radio Transmission and Reception (FDD)	
TP-000163	34.121	037		3.1.0	R99	C.4.1 UL reference measurement channel for BTDF performance requirement (C.4.1)	approved	F	3.2.0	Terminal Conformance Specification, Radio Transmission and Reception (FDD)	
TP-000134	34.122	001		3.0.0	R99	Corrections to EVM and PCDE formulae (B.2.7.1, B2.7.2)	approved	F	3.1.0	Terminal Conformance Specification, Radio Transmission and Reception (TDD)	
TP-000135	34.123-1	001		3.0.0	R99	Idle mode test cases	approved	F	3.1.0	UE Conformance Specification, Part 1 – Conformance specification	
TP-000135	34.123-1	002		3.0.0	R99	Section 8, RRC Tests: RLCSIZE	approved	C	3.1.0	UE Conformance Specification, Part 1 – Conformance specification	
TP-000135	34.123-1	003		3.0.0	R99	Section 8, RRC Tests: HFN	approved	C	3.1.0	UE Conformance Specification, Part 1 – Conformance specification	
TP-000135	34.123-1	004		3.0.0	R99	Section 8, RRC Tests: RLCPARAM	approved	C	3.1.0	UE Conformance Specification, Part 1 – Conformance specification	
TP-000135	34.123-1	005		3.0.0	R99	Section 8, RRC Tests: RBIDENTITY	approved	C	3.1.0	UE Conformance Specification, Part 1 – Conformance specification	
TP-000135	34.123-1	006		3.0.0	R99	Section 8, RRC Tests: TRCHPARAM	approved	C	3.1.0	UE Conformance Specification, Part 1 – Conformance specification	
TP-000135	34.123-1	007		3.0.0	R99	Section 8, RRC Tests: UECAPABILITY	approved	C	3.1.0	UE Conformance Specification, Part 1 – Conformance specification	
TP-000135	34.123-1	008		3.0.0	R99	Section 8, RRC Tests: RBMAPING	approved	C	3.1.0	UE Conformance Specification, Part 1 – Conformance specification	

Report of TSG SA meeting #9

version 1.0.0

TSG Doc	SPEC	CR	rev	Current version	Phase	SUBJECT	TSG status	Cat	New version	Specification Title	WG Responsible
TP-000135	34.123-1	009		3.0.0	R99	Section 8, RRC Tests: PagingCause	approved	C	3.1.0	UE Conformance Specification, Part 1 – Conformance specification	
TP-000135	34.123-1	010		3.0.0	R99	Section 8, RRC Tests: RRCCConnRelease-TM	approved	B	3.1.0	UE Conformance Specification, Part 1 – Conformance specification	
TP-000135	34.123-1	011		3.0.0	R99	Section 8, RRC Tests: SignallingRelease	approved	B	3.1.0	UE Conformance Specification, Part 1 – Conformance specification	
TP-000135	34.123-1	012		3.0.0	R99	Section 8, RRC Tests: CipheringAndIntegrity	approved	C	3.1.0	UE Conformance Specification, Part 1 – Conformance specification	
TP-000135	34.123-1	013		3.0.0	R99	Section 8, RRC Tests: Countercheck_rev	approved	B	3.1.0	UE Conformance Specification, Part 1 – Conformance specification	
TP-000135	34.123-1	014		3.0.0	R99	Section 8, RRC Tests: RLCInfo	approved	C	3.1.0	UE Conformance Specification, Part 1 – Conformance specification	
TP-000135	34.123-1	015		3.0.0	R99	Section 8, RRC Tests: CompressedMode	approved	C	3.1.0	UE Conformance Specification, Part 1 – Conformance specification	
TP-000135	34.123-1	016		3.0.0	R99	Section 8, RRC Tests: SIB	approved	F	3.1.0	UE Conformance Specification, Part 1 – Conformance specification	
TP-000135	34.123-1	017		3.0.0	R99	Section 8, RRC Tests: PhyCH	approved	D	3.1.0	UE Conformance Specification, Part 1 – Conformance specification	
TP-000135	34.123-1	018		3.0.0	R99	Section 8, RRC Tests: Measurement	approved	C	3.1.0	UE Conformance Specification, Part 1 – Conformance specification	
TP-000135	34.123-1	019		3.0.0	R99	Section 8, RRC Tests: FailureCases	approved	C	3.1.0	UE Conformance Specification, Part 1 – Conformance specification	
TP-000135	34.123-1	020		3.0.0	R99	Section 8, RRC Tests: TFCS	approved	C	3.1.0	UE Conformance Specification, Part 1 – Conformance specification	
TP-000135	34.123-1	021		3.0.0	R99	Section 8, RRC Tests: DPCHFrameOffset	approved	C	3.1.0	UE Conformance Specification, Part 1 – Conformance specification	
TP-000135	34.123-1	022		3.0.0	R99	Section 8, RRC Tests: ReEstablishmentTimer	approved	C	3.1.0	UE Conformance Specification, Part 1 – Conformance specification	
TP-000135	34.123-1	023		3.0.0	R99	Section 8, RRC Tests: InterFrequencyHardHandOver	approved	F	3.1.0	UE Conformance Specification, Part 1 – Conformance specification	
TP-000135	34.123-1	024		3.0.0	R99	clause 12.4.1.5 "Routing area updating / abnormal cases / attempt counter check / miscellaneous reject causes"	approved	C	3.1.0	UE Conformance Specification, Part 1 – Conformance specification	
TP-000135	34.123-1	025		3.0.0	R99	SM test cases	approved	C	3.1.0	UE Conformance Specification, Part 1 – Conformance specification	
TP-000135	34.123-1	026		3.0.0	R99	MM : Authentication	approved	F	3.1.0	UE Conformance Specification, Part 1 – Conformance specification	
TP-000135	34.123-1	027		3.0.0	R99	Update of radio bearer test cases (aligned to GSMA ISG version 1.3)	approved	F	3.1.0	UE Conformance Specification, Part 1 – Conformance specification	
TP-000135	34.123-1	028		3.0.0	R99	MAC tests	approved	B	3.1.0	UE Conformance Specification, Part 1 – Conformance specification	
TP-000135	34.123-1	029		3.0.0	R99	PDCCP tests	approved	B	3.1.0	UE Conformance Specification, Part 1 – Conformance specification	
TP-000135	34.123-1	030		3.0.0	R99	BMC tests	approved	B	3.1.0	UE Conformance Specification, Part 1 – Conformance specification	
TP-000135	34.123-1	031		3.0.0	R99	RRC updates	approved	F	3.1.0	UE Conformance Specification, Part 1 – Conformance specification	
TP-000135	34.123-1	032		3.0.0	R99	clause 12.6.1.2 "Authentication rejected"	approved	F	3.1.0	UE Conformance Specification, Part 1 – Conformance specification	

Report of TSG SA meeting #9

version 1.0.0

TSG Doc	SPEC	CR	rev	Current version	Phase	SUBJECT	TSG status	Cat	New version	Specification Title	WG Responsible
TP-000135	34.123-1	033		3.0.0	R99	clause 12.6 "PS authentication and ciphering"	approved	C	3.1.0	UE Conformance Specification, Part 1 – Conformance specification	
TP-000136	34.124	001		3.0.0	R99	Idle mode conditions and test loops	approved	F	3.1.0	Electro-Magnetic Compatibility (EMC) for Terminal equipment - stage 1	
TP-000136	34.124	002		3.0.0	R99	Adding End- user data besides BER and BLER for EMC data testing	approved	F	3.1.0	Electro-Magnetic Compatibility (EMC) for Terminal equipment - stage 1	
TP-000136	34.124	003		3.0.0	R99	Editorial modifications for purposes of clarification	approved	D	3.1.0	Electro-Magnetic Compatibility (EMC) for Terminal equipment - stage 1	
NP-000449	43.068	001		4.0.0	rel-4	Uplink Release dataFlow correction	approved	F	4.1.0	Voice Group Call Service (VGCS); Stage 2	
NP-000449	43.068	002		4.0.0	rel-4	Correction in the Notification procedure	approved	F	4.1.0	Voice Group Call Service (VGCS); Stage 2	
NP-000449	43.068	003		4.0.0	rel-4	Identification of Group ID - The longest GID has to be matched	approved	B	4.1.0	Voice Group Call Service (VGCS); Stage 2	
NP-000449	43.069	001		4.0.0	rel-4	Correction in the Notification procedure	approved	F	4.1.0	Voice Broadcast service (VBS); Stage 2	
NP-000449	43.069	002	1	4.0.0	rel-4	Identification of Group ID - The longest GID has to be matched	approved	B	4.1.0	Voice Broadcast service (VBS); Stage 2	
NP-000449	44.068	001	1	4.0.0	rel-4	The repetition of the priority in the Call Reference IE in the SETUP message	approved	C	4.1.0	Group Call Control (GCC) Protocol	
NP-000449	44.069	001	1	4.0.0	rel-4	The repetition of the priority in the Call Reference IE in the SETUP message	approved	C	4.1.0	Broadcast Call Control (BCC) protocol	

APPENDIX B

Source: Secretary TSG-Terminals, Adrian ZOICAS (3GPP support, ETSI MCC)
Title: Report from TSG-T#4 meeting

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1 Opening of the meeting

57 delegates attended the 4th meeting of 3GPP TSG-Terminals (TSG-T#4) from 17-18 June 1999, held at the Wyndham Miami-Biscayne Bay Hotel in downtown Miami just 15 minutes from the Miami International Airport. The meeting was co-hosted by BellSouth, Conexant, Ericsson, Lucent, Motorola Satellite Communications, Nokia, Nortel Networks, Omnipoint Communications Services, Pacific Bell Wireless and Siemens.

The meeting was chaired by Sang-Keun PARK (Samsung), TSG-T Chairman, assisted by the two TSG-T Vice Chairmen Ed EHRLICH (Nokia) and Kevin HOLLEY (BT), and the TSG-T Secretary, Adrian ZOICAS (3GPP support group, ETSI MCC).

Ed EHRLICH (Nokia) addressed a welcome message to Miami on behalf of the hosting organisations and T1.

2 Approval of Agenda & Registration of documents

The draft agenda (**TP-99105**) was approved without modification and together with the list of meeting documents can be found in annex. All the meeting documents are available on the 3GPP server at ftp://ftp.3gpp.org/TSG_T/TSG_T/TSGT_04/Docs/

3 Report of TSG-T#3 Yokohama

The draft report of the previous meeting, TSG-T#3 held in Yokohama, was approved (**TP-99100**). The progress report of the TSG—T Chairman to TSG-SA#3, held subsequently in Yokohama, was noted (**TP-99102, TP-99103**). The approved report can be found at ftp://ftp.3gpp.org/TSG_T/TSG_T/TSGT_03/Report/

4 Chairman's report and objectives for meeting#4

4.1 PCG activity

The Chairman informed from the 3GPP Organizational Partners' meeting#1, hosted by TTA in Seoul/KOREA on 27-28 May 1999 (**TP-99144**).

- **China Wireless Telecommunication Standardization Group (CWTS)** was accepted as an Organizational Partner in 3GPP.
- **GSM Association** was accepted as a Market Representation Partner in 3GPP.
- **Telecommunications Standards Advisory Council of Canada (TSACC)** was accepted as an Observer in 3GPP.
- **Work items which fall outside of the scope of 3GPP**
ARIB asked what process should be followed were work is proposed in 3GPP which is outside of the 3GPP scope. The OP meeting approved a text which defines the process to be followed:

"3GPP should define whether the proposed technical item is out of scope of 3GPP and justify its decision.

If the work item is outside of the scope of 3GPP, and where a common global solution is desired, 3GPP should recommend how that should can be achieved.

If the proposed technical item has no impact on global roaming and circulation of terminals, or has no adverse impact on the future development of the standard, such a technical item can be defined by the interested SDO not by 3GPP.

The above definitions should be applied by the 3GPP TSGs on a case by case basis."

TSG-T could not agree with the OP meeting's decision and sent an LS to OP with copy to PCG, requiring clarification on "global roaming" and "global circulation" (TP-99139).

- **Terminology and Terms of Reference**

TSG-T had submitted revised ToR for approval by the Organizational Partners. The following points were discussed:

- the definition of the term "USIM" is inconsistent with the definition used by the remaining TSGs.
- the use of the terms "User", "User Equipment", "Terminal" and "Terminal Equipment" is inconsistent throughout the Terms of Reference for the TSGs.

TSG-SA should co-ordinate the consistent use of these definitions.

- **Ciphering algorithm for 3G & funding of work to be subcontracted (i.e. ETSI STF-like)**

TSG-SA had proposed a process for developing a ciphering algorithm for 3rd Generation mobile systems. The proposed process involved the use of ETSI SAGE to prepare the algorithm with participation from Individual Members from other Partners. A cost estimate had been provided for the development of the algorithm, and emphasis placed on the urgent need for this work to commence. This proposal was discussed at length with a number of concerns being raised on the need for the final product to be exportable worldwide. The proposal was also made the algorithm could be prepared in exactly the same way as for the GSM algorithm since that method was well known and proven. This would mean that the algorithm could be financed and prepared by ETSI and that the results would be licensed by ETSI to the remaining Partners. The ownership of the final result was also debated in conjunction with the method for funding this work. In conclusion, the urgent need for this work to be undertaken was fully endorsed. However, SA3 were requested to provide more details on the requirements for the algorithm together with an assessment of the export difficulties, which could be encountered. SA3 should also provide more details on how the algorithm would be developed.

PCG needs to consider further the funding issues for this work based on the cost estimates that had already been provided. The PCG was requested to take care of this subject during their next meeting, which will take place on 6-7 July 1999.

- **Liaising with the ITU**

A reply in response to the LS that ITU-R had sent to 3GPP Organizational Partners had been formulated by TSG-RAN and had been submitted to ITU-R in the name of ARIB. This response raised the question of whether TSGs were permitted to liaise directly with the ITU and confirmation was given that under the current 3GPP working procedures, direct liaison with the ITU was not permitted.

The OP meeting decided that due to the difficult nature of the discussions and the considerable time that had been consumed, TSGs should refrain from preparing draft responses to liaison statements received from the ITU. Individual Members, who are also members of the ITU, should formulate responses.

- **Ownership and Copyright of 3GPP specifications**

It was noted that 3GPP would not publish any results but that the results would be published by each Organizational Partner. The choice for reference or inclusion still remained. The following text was agreed as a response to ITU-R, to be presented at the next meeting of ITU-R TG8/1:

"The SDOs participating in 3GPP have joint ownership of the Technical Specifications and Technical Reports developed within 3GPP. They are ready to grant licenses including copyright, free of charge to ITU, to include SDOs deliverables in whole or in part into ITU Recommendations on a reciprocal basis. The participating SDOs will retain the right to maintain their deliverables.

3GPP, which is not a legal entity, does not publish its Technical Specifications and Technical Reports. 3GPP products will be transposed into SDO deliverables exclusively by the participating SDOs. Each participating SDO determines the publication and distribution policy of its transposed deliverables."

4.2 Objectives for meeting#4

The Chairman pointed out that the prime objectives of this meeting were:

- The approval of deliverables (TS/TR) as required by the tight schedule of the 3GPP members; and
- Discussions and endorsement of requests for funding of work to be subcontracted (ETSI STF-like).

5 Letters and reports from other groups

5.1 Other TSGs

TSG-T noted the LS from N3 to N1 (cc: S1, S2, T) on “UMTS Call Control and Session Management” (TP-99141).

TSG-T noted the LS from S1 containing the “Revised v.0.0.2 of TS 3G Security; Integration Guidelines” (TP-99143).

TSG-T endorsed the “Proposal for 3G and SMG Specification Handling” from Ian DOIG (3GPP support team) contained in TP-99145. Approval of this proposal will be sought next week from TSG-SA and SMG.

To avoid divergence of the 3G and GSM specifications, the responsibility for maintenance (technical corrections) of earlier GSM Releases and the future GSM evolution of those specifications affected should be the prime responsibility of one Technical Body.

To avoid duplication of work, further GSM evolution (GSM R99 onwards) should be incorporated into the 3rd Generation Core Network specifications as GSM specific parts if necessary. Note that the evolution of the GSM Radio access specifications, MS test specifications and BSS test specifications, are for the most part, unaffected by the 3rd Generation evolution. These principles apply after SMG#29 (if SMG#29 and TSG#4 agree) and following GSM R98.

5.2 Outside 3GPP

TSG-T noted TP-99142, the “ETSI Guide EG 201 399 v1.1.1 to the production of candidate Harmonized Standards (HS) for application under the EU Radio Equipment and Telecommunications Terminal Equipment Directive (R&TTED) Directive”. There will be HS adopted under the R&TTED which will also apply to the type approval of 3G Terminal Equipment in the European Union / European Economic Area (EU/EEA) regulatory regime.

This ETSI Guide has been produced by ETSI OCG TG6 and will be provided to the European Radiocommunications Committee ERC (Administrations of the CEPT countries) for their consideration and to the European Commission for their legal scrutiny. This Guide is to be submitted for the ETSI Standards Membership Approval Procedure (MAP).

The status of this ETSI Guide is not final. It is expected that changes will need to be made to reflect comments received from bodies external to ETSI, and to keep the guidance to ETSI in line with the deliberations of TCAM, the Telecommunication Conformity Assessment and Market Surveillance committee (R&TTED Articles 13, 14, 15).

As part of its objective, this ETSI Guide gives guidance on the general background to, and contents of, the R&TTED, which may be of value to regulators, operators, manufacturers, users, and other interested parties.

In this context, a Harmonized Standard is a European Norm (EN) produced by ETSI, under a mandate from the European Commission. HS is comprising only essential requirements as given in Article 3 of the R&TTED, and the reference of which is intended to be published in the Official Journal of the European Communities (OJEC) to establish a presumption of conformity with the essential requirements of the R&TTED.

6 WG T1 Mobile Terminal Conformance Testing

(TP-99110) Progress report from WG T1 was introduced by Bjarke NIELSEN (SONY), T1 Chairman, assisted by Peter GEORGE (ANRITSU), T1 Vice-Chairman and Lidia SALMERÓN (ETSI MCC), T1 Secretary.

- T1 feel that their work could benefit from more American involvement.
- T1 request for guidance on Harmonised Regulatory Standards for 3GPP Terminals (see **TP-99138**). This request has been refined and sent as LS from TSG-T to TSG-SA next week's meeting as SP-99279.

6.1 SWG T1/Signalling (Convenor: Daniel FOX, ANRITSU)

The conformance test specifications – to be produced by T1 - shall satisfy global regulatory requirements. These requirements may differ from one region to another. A justification is needed for the test cases elaborated by T1. Three categories of test cases are considered for:

- regulatory requirements;
- global compatibility of the terminals;
- voluntary testing for some supplementary features.

The three categories of test cases (regulatory, interoperability, voluntary certification) will be included in separate deliverables.

T1 is requesting funds for the development of 3GPP TTCN specifications (TP-99111). Funding of **6.5 man-years** should be used for setting up a Specialist Task Force (STF) to develop the protocol conformance tests in Tree and Tabular Combined Notation (TTCN) for the MS interoperability. This request has been refined, endorsed and sent as LS from TSG-T to TSG-SA next week's meeting (see **TP-99137** / SP-99278). Supporting 3GPP Members are: Anritsu, SONY, Ericsson, NOKIA, etc.

NOTE: Some manufacturers will produce 3GPP test equipment. The interface between the test specification and the TTCN-test equipment should be standardised.

6.2 SWG T1/EMC (Chairman: John FENN, SAMSUNG)

John FENN (SAMSUNG / ETSI) was elected Chairman of SWG T1/EMC.

It was decided to have two stages on the specifications:

- stage 1: EMC requirements region by region;
- stage 2: global EMC requirements.

The SWG Chairman will send out the LS to CISPR on "EMC requirements above 1 GHz".

6.3 SWG T1/RF (Chairman: Mitsuru YOKOYAMA, HP)

Logical Test Interface

- **TS 34.109** v0.2.0 - Logical Test Interface (FDD): cannot be updated to v1.0.0 due to inconclusive BER/FER issue issues, which need to be discussed with RAN4.
- Logical Test Interface (TDD) v0.2.0: no contributions and missing progress were reported. FDD and TDD to be merged in July 1999.

Measurement Procedure

- **TS 34.121** v1.0.0 - Measurement Procedure (FDD): the title has been changed to "Terminal Conformance Specification, Radio Transmission and Reception (FDD)". This TS is based on GSM 11.10 and the core specification is being drafted by RAN4. **TP-99113** was introduced by Mitsuru YOKOYAMA and upgraded from v0.2.0 to v1.0.0.
- **TS 34.122** v0.2.0 - Measurement Procedure (TDD): the title has been changed to "Terminal Conformance Specification, Radio Transmission and Reception (TDD)". Cannot be upgraded to v1.0.0 due to lack of contributions.

NOTE: If the related RAN4 document is not stable by October, the RF specifications cannot be finalised by end 1999.

6.4 TSG-T1 Meeting Calendar

Meeting	Date	Location	Host
TSG T1/EMC#8	30 July 1999	QUEENSFERRY (GB)	
TSG T1/EMC#9	6 September 1999	Makuhari (Japan) + RAN4	
TSG T1/RF#6	13-14 September	Kobe (Japan)	HP
TSG T1/Sig#4	13-14 September	Kobe (Japan)	HP
TSG T1#4	16-17 September	Kobe (Japan)	HP
TSG T1#5	9-10 December	Sophia Antipolis (France)	ETSI

7 WG T2 Mobile Terminal Services and Capability

(TP-99120, TP-99121) Progress report from WG T2 was introduced by Kevin HOLLEY (BT), T2 Chairman, and Friedhelm RODERMUND (ETSI MCC), T2 Secretary.

The updated work programme is presented in TP-99117. Six change requests presented in (TP-99124) were approved. Below there is a short summary of the results for each sub-working group.

7.1 SWG1 Execution Environment (Chairman: Mark CATALDO, Motorola)

SWG1 Execution Environment (Chairman: Mark CATALDO, Motorola) develops specifications for a terminal execution environment using wireless, fixed, and cordless access.

MExE R98 GSM 03.57 was finalised and will be presented for approval to SMG#29 in Miami, June 1999.

- presented as TS 23.057 v.1.1.0 to TSG-T for information because it is the basis of the new MExE release (TP-99116).
- work on this new release will start as soon as Stage 1 for MExE R99 is approved at SMG#29.

7.2 SWG2 Terminal Interfaces (Chairman: Lars NOVAK, Ericsson)

SWG2 Terminal Interfaces (Chairman: Lars NOVAK, Ericsson) develops specifications relating to external interfaces to terminals, and for the development of AT commands and alternatives to AT commands.

- Some progress was reported on the discussion on whether the physical connector of the terminal should be standardised or not. T2 presented a draft LS on terminology (TP-99115), which has been sent by TSG-T to the 3GPP Organisational Partners (OP) and PCG, asking for clarification of the term "global circulation" (TP-99139).
- On the topic "Synchronisation and Object exchange" a report is expected at the next TSG-T meeting.
- No contributions were received so far on the "Alternatives to AT commands".
- There might be some input on the coding of additional language characters in SMS text strings and phonebook (Japanese, Korean, Chinese etc.).
- TSG-T approved three TS 27.005, 27.007, 27.010 as v.3.0.0 plus 4 CRs (3 on 27.007 and 1 on 27.010)

TP-99129	TS 27.005	Use of Data Terminal Equipment - Data Circuit terminating; Equipment (DTE-DCE) interface for Short Message Service (SMS) and Cell Broadcast Service (CBS)

TP-99118	TS 27.007	AT command set for 3GPP User Equipment (UE)
TP-99119	TS 27.010	Terminal Equipment to Mobile Station (TE-MS) multiplexer protocol

7.3 SWG3 Messaging (Chairman: Arthur GIDLOW, One2One)

SWG3 Messaging (Chairman: Arthur GIDLOW, One2One) defines UMTS-specific messaging applications to allow non-real time multimedia messaging, a Short Message Service, and Cell Broadcast Services.

- S1 decided that T2 should produce **Stage 1** for the **Multimedia Messaging Service (MMS)**. A first draft was discussed by T2.
- So far, there was no input regarding an “**Enhanced Cell Broadcast Service**”. Interested companies are encouraged to contribute.
- TSG-T approved four **TS 23.038, 23.039, 23.040, 23.042** as v.3.0.0 plus 2 CRs (**TS 23.038, 23.040**).

TP-99127	TS 23.038	Alphabets and language-specific information
TP-99128	TS 23.039	Interface protocols for the connection of Short Message Service Centres (SMSCs) to Short Message Entities (SMEs)
TP-99126	TS 23.040	Technical realization of the Short Message Service (SMS); Point-to-Point (PP)
TP-99125	TS 23.042	Compression algorithm for text messaging services

7.4 SWG4 Services End to End Interworking

SWG4 Services End to End Interworking has currently no chairman and no activity. It will meet on an ad hoc basis as the need arises.

7.5 SWG5 Multi-mode Terminals (Chairperson: Sofi PERSSON, Telia)

SWG5 Multi-mode Terminals (Chairperson: Sofi PERSSON, Telia) considers other systems and their multi-mode coexistence with UMTS from a terminal and service point of view.

- identifies issues that need additional treatment in order to make implementation and usage of multi-mode terminals efficient.
- is progressing the TR (v.0.2.0) on “Multi-mode terminal issues” - to be completed (v.3.0.0) at TSG-T#5 in October 1999.

7.6 SWG6 Terminal Features and Performance (Chairman: Kazuya HASHIMOTO, NEC)

SWG6 Terminal Features and Performance (new Chairman: Kazuya HASHIMOTO, NEC / ETSI) covers aspects as terminal safety and environmental requirements. In addition, SWG6 works on general features, reviewing all terminal features and identifying a minimum set of features required to support a given application.

- Kiyohito NAGATA, DoCoMo, resigned** as SWG6 chairman due to change of responsibility (promotion) inside his organisation. TSG-T warmly thanked Kiyohito NAGATA for his very active role and excellent results achieved as chairman of T2/SWG6 and in liaising with the other TSGs.
- TSG-T approved **TR 34.925** (v.3.0.0) on “Specific Absorption Rate (SAR) requirements and regulations” (**TP-99122**).
- TSG-T noted **TR 34.907** (v.1.0.0) on “Electrical safety requirements and regulations” submitted for information in **TP-99123**.

- **TR 21.904** (v.0.0.3) on “Terminal Capability requirements” is planned for submission for information (v.1.0.0) to TSG-T#5 in October 1999.
SWG T1 is discussing how the work on terminal capabilities in T2 should be used (e.g. for ICS).
The former LS to other WGs on service capabilities has been refined and will be re-issued (**TP-99114**).
One co-ordinator for each WG has been assigned to monitor the progress on baseline and service capability issues.

7.7 TSG-T2 Meeting Calendar

Meeting	Date	Location	Host
T2 SWG1	15-16 July 1999	Tampere, Finland	Nokia
T2 SWG5	Last week in July 1999		
SMG4 / T2#5	6-9 Sept 1999	Finland	Sonera
T2#6	4-6 Oct 1999	Korea	Samsung
T2#7	22-26 Nov 1999		
SMG4/T2#8	31 Jan – 3 Feb 2000		
SMG4/T2#9	17-20 April 2000		
T2#10	10-13 July 2000		

8 WG T3 USIM

Klaus VEDDER (Giesecke & Devrient), T3 Chairman, and Michael SANDERS (ETSI MCC), T3 Secretary, presented the progress of WG T3 (**TP-99083**). The updated T3 Work Items are given in (**TP-99084**).

8.1 Progress of work

- **TS 21.111** (v.3.0.0) “USIM and IC Card Requirements” - no changes.

It was noted that the original T3 work plan required that **31.101** and **31.102** should be submitted to TSG-T#4 for information (v.1.0.0). Due to the fact that substantial changes were likely to be made - particularly relating to security issues and the phone book concept - it would be better to wait until TSG-T #5 in October 1999.

- **TS 31.101** (v.0.5.0) “UICC physical and logical characteristics”;
- **TS 31.102** (v.0.5.0) “USIM characteristics”.

8.2 Major Open Issues

8.2.1 **Phonebook** / Abbreviated Dialling Number (ADN)

- more complex than GSM ADNs (e.g. second names, fax numbers imply linked records);
- 3 different proposals are currently under evaluation and the decision should be taken at the next T3 meeting.

8.2.2 **Allocation of Application Identifiers (AIDs)**

USIM application(s) require IDs on the UICC. Three scenarios for their management were identified (**TP-99131**):

- one of the 3GPP OPs applies for a RID (Registered Application Provider Identifier) and administers the list of AIDs for 3GPP (possibly ETSI which already has a RID);
- 3GPP as an organisation in its own right applies for a RID, and 3GPP or one of the partners maintains the list of AIDs for 3GPP;
- each partner independently applies for a RID and T3 specifies the structure of the PIX (Proprietary application identifier extension) in a 3GPP document, which applies to all Partners.

TSG-T considers the **second option as the most suitable and asks TSG-SA/PCG for endorsement.**

3GPP would create a document similar to the ETSI Guide EG 201 220 for the structure and maintenance of AIDs.

Background

In a multi-application environment, a flexible application selection method is an obvious requirement. ISO/IEC 7816-5 specifies application identifiers (AIDs) and the registration of such identifiers.

These identifiers allow each application and each application provider to be uniquely identified.

The AID is used to explicitly select an application in a multi-application smart card, e.g. a specific USIM application (there may be more than one) or a GSM application on the same card. An AID consists of a RID (Registered Application Provider Identifier) and a PIX (Proprietary application identifier extension).

As an example, in the case of telecommunications cards issued by ETSI, the RID is the unique ETSI RID issued by ISO/IEC followed by the PIX which identifies the application and the application issuer. Currently, two ETSI applications have been defined (GSM and SIM Application Toolkit). Details of the process and the precise format of the ETSI-AIDs are specified in the ETSI Guide EG 201 220.

AIDs need to be managed for 3GPP applications. There are some issues, which need to be resolved.

3GPP AID Administration

Administration means obtaining a RID from ISO/IEC, and issuing and maintaining the list of AIDs.

Issue and maintenance of the AIDs consists of assigning and registering a unique identifier to an application upon request by the appropriate 3GPP committee.

The PIX could be structured in such a way that there is no need for any further action by the administration authority as it has been achieved in EG 201 220 (e.g. there is no need to assign identifiers to issuers or maintain a list of issuers).

TSG-T believes that 3GPP as “an international organisation in charge of specification of IC card applications” (ISO/IEC 7816-5) could apply for a RID from ISO/IEC and administer AIDs. The charged fee by the ISO/IEC registration authority (Tele Denmark) to issue a RID is less than USD 100.

8.3 Liaison Statements from T3 to other groups

- multiple USIM in a UICC (to SA1 - see T3-99154);
- implications of GSM-UTRAN handover - parameters & identities (to SA1, SA2, T2 – see T3-99158);
- network related parameters to be stored in the USIM (to CN1, SA2 – see T3-99159);
- clarification of requirements for USIM-Terminal lock (to SA1, SA3 – see T3-99180).

8.4 Transfer of GSM specifications to 3GPP

8.4.1 GSM 11.14 SIM Application Toolkit

It is seen of major importance for development of operator specific services. Two major problems were identified:

- use of toolkit applications on UICCs with more than one USIM;
- restructuring of document (resource problem).

8.4.2 GSM 11.17 SIM Conformance Test Specification

It is an optional GSM Phase 2+ specification:

- needs to be rewritten due to (some) different requirements;
- considered of secondary importance w.r.t. testing;
- *urgent requirement for “transforming” section 27 of GSM 11.10 into a test specification for the UICC-Terminal interface.*

T3 has currently no resources to do either task.

NOTE: this is not TTCN code (see in section 6.1 above the T1 request **SP-99278**/ TP-99137).

TSG-T endorsed the **Request for funding of USIM testing** (see **SP-99277**/ TP-99136).). Supporting 3GPP Members are: Giesecke & Devrient, Motorola, T-Mobil, Ericsson, NOKIA, etc.

8.5 TSG-T3 Meeting Calendar

Meeting	Date	Location	Host
TSG-T3 #7	05 - 07 July 1999	Lund (Sweden)	Ericsson
TSG-T3 editing meeting	24 - 26 August 1999	Bonn	T-Mobil
TSG-T3 #8	04 - 06 October	Korea	Samsung et al.
TSG-T3 #9	02 - 04 November 1999	Austin, Texas, USA	Schlumberger
TSG-T3 #10	08 - 10 December 1999	Sophia Antipolis, FR	ETSI
TSG-T3 #11	early February 2000	Japan	tba

9 TSG-T Work Plan/ Co-ordination with TSG-SA

([TP-990106/107/108/140](#)) contain for information a snapshot of the 3GPP TSG-T Work Programme database. As this information is continuously changing, it should be consulted on-line at <http://www.etsi.org/EWPWeb/> by selecting in the "QUERY FORM" the "Technical Body" as e.g. "3GPP T".

The work programme should regularly be reviewed/updated by SWG/WG and the changes should be submitted to TSG-T for approval. This should provide visibility to 3GPP Members and should be instrumental in the successful overall technical co-ordination in 3GPP.

10 Liaison Statements to other TSGs and outside 3GPP

10.1 Liaison Statements to other TSGs

Document		Title / Subject
	based on	
TP-99136	TP-99132	LS from T to SA on "Request for funding of USIM testing" (SP-99277)
TP-99137	TP-99111	LS from T to SA on "Funding for development of 3GPP TTCN specifications" (SP-99278)
TP-99138	--	LS from T to SA on "Request for guidance on Harmonised Regulatory Standards for 3GPP Terminals" (SP-99279)
TP-99139	TP-99115	LS from T to OP/PCG on "Clarification required for "global roaming" and "global circulation"

The report from TSG-T to TSG-SA#4 can be found in annex to this document ([SP-99280](#), [SP-99281](#)).

10.2 Liaison Statements outside 3GPP

No issue was dealt with under this agenda item.

11 Future meeting schedule

Meeting	Date	Location	Host
TSG-T#5	7-8 October 1999	Korea	TTA
TSG-T#6	13-15 December 1999	Sophia Antipolis / France	ETSI
TSG-T#7	13-15 March 2000 (TBC)	Madrid/ Spain	Telefonica
TSG-T#8	5-7 June 2000 (TBC)	Berlin /Germany	Mannesmann
TSG-T#9	25-27 September 2000	Host required	
TSG-T#10	11-13 December 2000	Host required	

On-line consultation of 3GPP meeting calendar

The centralised 3GPP meeting calendar may be consulted on-line at:
<http://www.etsi.org/MeetingsCalendar/ViewMeetings.asp>
by selecting in the "QUERY FORM" the
"Technical Body" as e.g.
"3GPP", "SMG" or "UMTS"
and by ticking the box
"Include Sub. TBs".

After each and every meeting, Secretaries of 3GPP TSG/WG/SWG should send - without fail - the meeting calendar information to the 3GPP-support group Emanuelle.Wurfell@etsi.fr.

12 Any Other Business

12.1 Operators' Harmonization Group (OHG)

TSG-T noted **TP-99135**: "Harmonized Global 3G (G3G) Technical Framework for ITU IMT-2000 CDMA Proposal". The Operators' Harmonization Group (OHG) Technical Framework document outlines the key technical parameters which can meet the requirements of commercial wireless operators from around the world, who desire a common global specification for 3G CDMA systems. The harmonization framework draws heavily on the Wideband Code Division Multiple Access (WCDMA) and cdma2000 submissions made to ITU for IMT-2000. The majority of operators and manufacturers worldwide support this goal. The technical framework proposed for achieving a common global specification seeks to:

- Provide the foundation for accelerated growth in the mobile industry in the 3G millennium **and to create a single integrated 3G CDMA specification** and process from the separate WCDMA and cdma2000 proposals being developed by 3GPP and 3GPP2.

This OHG technical proposal should allow operators the choice of implementing a subset of a harmonized global specification depending on their market and business needs. This document specifies several key radio parameters, which form the basis for a harmonized Global 3G CDMA standard. The operators are interested in having a harmonized Global 3G CDMA standard consisting of three modes: Multi Carrier (MC), Direct Spread (DS) and Time Division Duplex (TDD). The operators recommend timing goals for the availability of the Harmonized Global CDMA 3G standard based on the current market needs. Operators want to ensure that their recommendations are implemented in 3GPP and 3GPP2.

OHG also feels that for complete harmonization, 3GPP and 3GPP2 should consider merging into a single body no later than December 2000. This merger will provide focus in developing a unified core network for the future as well as ensuring that Air Interfaces and the associated protocol layers in the future will be completely harmonized.

- Kevin HOLLEY, T2 Chairman, observed that the OHG document was only dealing with Radio Access Harmonization and does not mention Harmonization of Services. How will this effect the work on Services? Kevin HOLLEY recommended that TSG-T should express concern and ask OHG whether services had been taken into account.
- Klaus VEDDER, T3 Chairman, pointed out that for T3 the date for merging of 3GPP and 3GPP2 was too late and proposed that at least for specific issues – like USIM – the joint work should start earlier.
- Mitsuru YOKOYAMA, T1/RF Chairman, considered that also from the T1/RF perspective the date for merging of 3GPP and 3GPP2 was too late.

TSG-T noted **TP-99134**: "Impact of OHG harmonization recommendation on UTRA/FDD and UTRA/TD" authored by a long list of manufacturers and operators.

The OHG has recommended a harmonization of the two main CDMA-based 3G concepts, UTRA and cdma2000, into a common concept based on three modes: Direct-spread/FDD (DS), Multi-carrier FDD (MC) and TDD. The OHG recommendation includes specific proposals regarding chip rate, pilot, and synchronization for the DS mode. These proposals imply the modifications to the physical layer of UTRA/FDD. The authors of **TP-99134** support these proposals and recommend that TSG-SA WG1 should, without delay, initiate studies how the modifications can be incorporated in the 3GPP specifications.

12.2 Electronic meetings

During the present meeting TSG-T have used electronic document distribution with very good results.

Kevin HOLLEY (BT), TSG-T Vice- Chairman, who initiated the “electronic meetings ”, presented Host and User requirements in **TP-99112**.

The use of a meeting network has beside the saving of paper and photocopying costs several more significant benefits: Document distribution goes much quicker. Delays in discussing certain documents are avoided since it’s not necessary to wait for the paper copies. Revised documents are available very quick. Delegates don’t have to collect piles of paper but can access the documents easily at the server. This all has a good effect on the progress of a meeting.

TSG-T decided to continue this good experience at future meetings.

13 Close of the meeting

The Chairman, Sang-Keun PARK (Samsung), warmly thanked the hosting organisations for the good meeting facilities, the TSG-T WGs for the good progress made, the participants for their contributions and closed the meeting.

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TP-99108	T2 work programme BEFORE meeting T#4, June 1999	T Secretary	7.4
TP-99109	T3 work programme BEFORE meeting T#4, June 1999	T Secretary	8.4
TP-99110	DRAFT Report from T1 Plenary Meeting #3, Miami 14-16 June 1999	T1	6
TP-99111	Funding for development of 3GPP TTCN specifications	T1	6
TP-99112	Local Network for 3GPP Meeting	T2	6
TP-99113	TS 34.121 V1.0.0 "Technical Conformance specification, Radio Transmission and Reception (FDD)	T1	
TP-99114	Proposed outline Liaison statement to other WGs on Service Capabilities	T2 WG6	6
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TP-99116	3G TS 23.057 V1.1.0 - Mobile Station Application Execution Environment (MEExE); Functional description; Stage 2	T2	6
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TP-99125	3G TS 23.042 V2.0.0 - Compression algorithm for text messaging services	T2	7
TP-99126	3G TS 23.040 V2.0.0 - Technical realization of the Short Message Service (SMS); Point-to-Point (PP)	T2	7
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TP-99139	LS to 3GPP Organisational Partners (OP) on Clarification required for "global roaming" and "global circulation"	T	
TP-99140	SMG work items transferred to T2 at TSG SA#3	T Secretary	7.4
TP-99141	LS from N3 to N1 on "UMTS Call Control and Session Management"	N3	5.1
TP-99142	A Guide to the production of candidate Harmonized Standards for application under the R&TTE Directive	ETSI TC ERM	5.2
TP-99143	Revised version of 3G Security: Integration Guidelines	SA3	5.1
TP-99144	Draft summary minutes, decisions and actions from 3GPP Organizational Partners Meeting#1, Seoul, 27-28 May 1999	Chairman	4
TP-99145	Proposal for 3G and SMG Specification Handling	3GPP support	

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Status of TSG-T Specifications after TSG#4

Reference	Title	Status	Target v.3.0.0	Rapporteur
T 1/Signalling (Convenor: Daniel FOX, ANRITSU)				
DTS/TSGT-01MS-ICS_U	Mobile Station (MS) Protocol/RF/EMC conformance specification; Part 2: Implementation Conformance Statement (ICS) proforma specification (3G TS 11.110-2)	v.0.0.1	17-12-1999	Shicheng HU
DTS/TSGT-01MS-ATS_U	Mobile Station (MS) protocol conformance specification; Part 3: Abstract Test Suites (ATS)	v.0.0.0	24-12-2001	Shicheng HU
DTS/TSGT-01MS-CS_U	Mobile Station (MS) protocol conformance specification; Part 1: Protocol conformance specification	v.0.0.0	01-04-2000	Lidia SALMERON
T 1/EMC (Chairman: John FENN, SAMSUNG)				
DTR/TSGT-01EMC_U	Electro-Magnetic Compatibility (EMC) for terminal equipment	v.0.0.1	17-12-1999	Kiyohito NAGATA
T 1/RF (Chairman: Mitsuru YOKOYAMA, HP)				
TS 34.109	Logical Test Interface (FDD) Note: inconclusive BER/FER issues to be discussed with RAN4	v0.2.0	17-12-1999	Mitsuru YOKOYAMA
DTS/TSGT-01LTIT_U	Logical Test Interface (TDD) Note: FDD & TDD to be merged in July 99.	v0.2.0	17-12-1999	Mitsuru YOKOYAMA
TS 34.121	Terminal Conformance Specification, Radio Transmission and Reception (FDD)	v1.0.0	17-12-1999	Mitsuru YOKOYAMA
TS 34.122	Terminal Conformance Specification, Radio Transmission and Reception (TDD)	v0.0.0	17-12-1999	Mitsuru YOKOYAMA
T 2/ SWG1 Execution Environment (Chairman: Mark CATALDO, Motorola)				
TS 23.057	MEExE R98 GSM 03.57	v.1.1.0	??-??-????	Mark CATALDO
T 2/ SWG2 Terminal Interfaces (Chairman: Lars NOVAK, Ericsson)				
TS 27.005	Use of Data Terminal Equipment - Data Circuit terminating; Equipment (DTE-DCE) interface for Short Message Service (SMS) and Cell Broadcast Service (CBS)	V3.0.0		Friedhelm RODERMUND
TS 27.007	AT command set for 3GPP User Equipment (UE)	V3.1.0		Friedhelm RODERMUND
TS 27.010	Terminal Equipment to Mobile Station (TE-MS) multiplexer protocol	V3.1.0		Friedhelm RODERMUND
T 2/ SWG3 Messaging (Chairman: Arthur GIDLOW, One2One)				
TS 23.038	Alphabets and language-specific information	V3.1.0		
TS 23.039	Interface protocols for the connection of Short Message Service Centres (SMSCs) to Short Message Entities (SMEs)	V3.0.0		
TS 23.040	Technical realization of the Short Message Service (SMS); Point-to-Point (PP)	V3.1.0		
TS 23.042	Compression algorithm for text messaging services	V3.0.0		
T 2/ SWG4 Services End to End Interworking				
T 2/ SWG5 Multi-mode Terminals (Chairperson: Sofi PERSSON, Telia)				
DTR/TSGT-02MmT1U	Multi-mode terminal issues	v.0.2.0	08-10-1999	Sofi PERSSON
T 2/ SWG6 Terminal Features and Performance (Chairman: Kazuya HASHIMOTO, NEC)				
TR 34.925	Specific Absorption Rate (SAR)	v.3.0.0		Sven JOHNSON
TR 34.907	Electrical safety requirements and regulations	v.1.0.0	17-12-1999	Eiji IIMORI
TR 21.904	Terminal Capability requirements	v.0.0.3	17-12-1999	
T 3/ USIM (Chairman: Klaus VEDDER, Giesecke & Devrient)				
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TS 31.101	UICC physical and logical characteristics	v.0.5.0	08-10-1999	Rune LINDHOLM
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APPENDIX C

3G TS 23.040 V3.5.0 (2000-07)

Technical Specification

3rd Generation Partnership Project; Technical Specification Group Terminals; Technical realization of the Short Message Service (SMS); (Release 1999)



The present document has been developed within the 3rd Generation Partnership Project (3GPPTM) and may be further elaborated for the purposes of 3GPP.

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Foreword

This Technical Specification (TS) has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

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Introduction

The Short Message Service (SMS) provides a means of sending messages of limited size to and from GSM/UMTS mobiles. The provision of SMS makes use of a Service Centre, which acts as a store and forward centre for short messages. Thus a GSM/UMTS PLMN needs to support the transfer of short messages between Service Centres and mobiles.

Mobile originated messages shall be transported from an MS to a Service Centre. These may be destined for other mobile users, or for subscribers on a fixed network. Mobile terminated messages shall be transported from a Service Centre to an MS. These may be input to the Service Centre by other mobile users (via a mobile originated short message) or by a variety of other sources, e.g. speech, telex, or facsimile.

1 Scope

The present document describes the Short Message Service (SMS) for GSM/UMTS networks. It defines:

- the services and service elements;
- the network architecture;
- the Service Centre functionality;
- the MSC functionality (with regard to the SMS);
- the SGSN functionality (with regard to the SMS);
- the routing requirements;
- the protocols and protocol layering;

for the Teleservice Short Message Service, as specified in the GSM TS 02.03 [2] and 3G TS 22.105 [32].

The use of radio resources for the transfer of short messages between the MS and the MSC or the SGSN is described in 3G TS 24.011 [13] "Short Message Service Support on Mobile Radio Interface", and is dealt with in that specification.

The network aspects of Short Message Service provision are outside the scope of the present document (i.e. the provision of network connectivity between the PLMN subsystems). There is no technical restriction within the present document for the transfer of short messages between different PLMN's. Any such restriction is likely to be subject to commercial arrangements and PLMN operators must make their own provision for interworking or for preventing interworking with other PLMN's as they see fit.

The required and assumed network service offered to the higher layers is defined in the present document.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

- [1] GSM 01.04: "Digital cellular telecommunication system (Phase 2+); Abbreviations and acronyms".
- [2] GSM 02.03: "Digital cellular telecommunication system (Phase 2+); Teleservices supported by a GSM Public Land Mobile Network (PLMN)".
- [3] 3G TS 22.004: "General on supplementary services".
- [4] 3G TS 22.041: "Operator determined barring".
- [5] GSM 03.02: "Digital cellular telecommunication system (Phase 2+); Network architecture".
- [6] 3G TS 23.008: "Organization of subscriber data".
- [7] 3G TS 23.011: "Technical realization of supplementary services - General Aspects".
- [8] 3G TS 23.015: "Technical realisation of Operator Determined Barring (ODB)".
- [9] 3G TS 23.038: "Alphabets and language-specific information".

- [10] 3G TS 23.041: "Technical realization of Cell Broadcast Service (CBS)".
- [11] GSM 03.47 (ETR 354): "Digital cellular telecommunication system; Example protocol stacks for interconnecting Service Centre(s) (SC) and Mobile-services Switching Centre(s) (MSC)".
- [12] GSM 04.08: "Digital cellular telecommunication system (Phase 2+); Mobile radio interface layer 3 specification".
- [13] 3G TS 24.011: "Short Message Service (SMS) support on mobile radio interface".
- [14] 3G TS 27.005: "Use of Data Terminal Equipment - Data Circuit terminating Equipment (DTE - DCE) interface for Short Message Service (SMS) and Cell Broadcast Service (CBS)".
- [15] 3G TS 29.002: "Mobile Application Part (MAP) specification".
- [16] GSM 11.11: "Digital cellular telecommunication system (Phase 2+); Specification of the Subscriber Identity Module - Mobile Equipment (SIM- ME) interface".
- [17] CCITT Recommendation E.164 (Blue Book): "Numbering plan for the ISDN era".
- [18] CCITT Recommendation E.163 (Blue Book): "Numbering plan for the international telephone service".
- [19] CCITT Recommendation Q.771: "Specifications of Signalling System No.7; Functional description of transaction capabilities".
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- [21] CCITT Recommendation T.101 (Blue Book): "International interworking for videotex services".
- [22] CCITT Recommendation X.121 (Blue Book): "International numbering plan for public data networks".
- [23] CCITT Recommendation X.400 (Blue Book): "Message handling system and service overview".
- [24] ISO/IEC10646: "Universal Multiple-Octet Coded Character Set (USC); UCS2, 16 bit coding".
- [25] 3G TS 22.022: "Personalisation of GSM ME Mobile functionality specification - Stage 1".
- [26] 3G TS 23.042: "Compression Algorithm for Text Messaging Services".
- [27] 3G TS 23.060: "General Packet Radio Service (GPRS); Service description; Stage 2".
- [28] GSM 03.48: "Digital cellular telecommunications system (Phase 2+); Security Mechanisms for the SIM application toolkit; Stage 2".
- [29] 3G TR 21.905: "3G Vocabulary".
- [30] 3G TS 31.102: "Characteristics of the USIM application".
- [31] 3G TS 31.101: "UICC – Terminal interface; Physical and logical characteristics".
- [32] 3G TS 22.105: "Services and Service Capabilities".
- [33] Infrared Data Association. Specifications for Ir Mobile Communications (IrMC). iMelody.
- [34] IETF RFC 822: "Standard for the format of ARPA Internet text messages".

2.1 Definitions and abbreviations

2.1.1 Definitions

NOTE: The term ‘mobile station’ (MS) in the present document is synonymous with the term ‘user equipment’ (UE) in UMTS terminology as defined in 3G TR 21.905 [29].

active MS: A switched-on mobile station with a SIM / UICC see 3G TS 31.101 [31] module attached.

alert-SC: Service element provided by a GSM/UMTS PLMN to inform an SC which has previously initiated unsuccessful short message delivery attempt(s) to a specific MS, that the MS is now recognized by the PLMN to have recovered operation.

status report: SC informing the originating MS of the outcome of a short message submitted to an SME.

Gateway MSC For Short Message Service (SMS-GMSC): A function of an MSC capable of receiving a short message from an SC, interrogating an HLR for routing information and SMS info, and delivering the short message to the VMSC or the SGSN of the recipient MS.

Interworking MSC For Short Message Service (SMS-IWMSC): A function of an MSC capable of receiving a short message from within the PLMN and submitting it to the recipient SC.

Messages-Waiting (MW): Service element that makes a PLMN store information (Messages-Waiting-Indication), listing those SCs that have made unsuccessful short message delivery attempts to MSs in that PLMN.

Messages-Waiting-Indication (MWI): Data to be stored in the HLR and VLR with which an MS is associated, indicating that there is one or more messages waiting in a set of SCs to be delivered to the MS (due to unsuccessful delivery attempt(s)).

Messages-Waiting-Data (MWD): A part of the MWI to be stored in the HLR. MWD consists of an address list of the SCs which have messages waiting to be delivered to the MS.

Mobile-services Switching Centre (MSC): The Mobile-services Switching Centre is an exchange which performs switching functions for mobile stations located in a geographical area designated as the MSC area.

Mobile-Station-Memory-Capacity-Exceeded-Flag (MCEF): A part of the MWI to be stored in the HLR. MCEF is a Boolean parameter indicating if the address list of MWD contains one or more entries because an attempt to deliver a short message to an MS has failed with a cause of MS Memory Capacity Exceeded.

Mobile-Station-Not-Reachable-Flag (MNRF): The part of the MWI to be stored in the VLR and the HLR. MNRF is a Boolean parameter indicating if the address list of MWD contains one or more entries because an attempt to deliver a short message to an MS has failed with a cause of Absent Subscriber.

Mobile-station-Not-Reachable-for-GPRS (MNRG): The part of the MWI to be stored in the SGSN and the HLR. MNRG is a Boolean parameter indicating if the address list of MWD contains one or more entries because an attempt to deliver a short message to an MS has failed with a cause of Absent Subscriber.

Mobile-Station-Not-Reachable-Reason (MNRR): The part of the MWI in the HLR which stores the reason for an MS being absent when an attempt to deliver a short message to an MS fails at the MSC with a cause of Absent Subscriber.

More-Messages-To-Send (MMS): Information element offering an MS receiving a short message from an SC the information whether there are still more messages waiting to be sent from that SC to the MS. The TP-MMS element (conveyed in the Transfer layer) is copied into the RP-MMS element (conveyed in the Relay layer). It is possible with Phase 2 and later versions of MAP (3G TS 29.002 [15]) for the RP-MMS element to keep an SM transaction open between the GMSC and the MS in the case where there are more-messages-to-send. Earlier versions of MAP support the transport of the TP-MMS element.

priority: Service element enabling the SC or SME to request a short message delivery attempt to an MS irrespective of whether or not the MS has been identified as temporarily absent.

protocol-identifier: Information element by which the originator of a short message (either an SC or an MS) may refer to a higher layer protocol.

reply path procedure: A mechanism which allows an SME to request that an SC should be permitted to handle a reply sent in response to a message previously sent from that SME to another SME. This may happen even though the SC may be unknown to the SME which received the initial message.

report: Response from either the network or the recipient upon a short message being sent from either an SC or an MS. A report may be a delivery report, which confirms the delivery of the short message to the recipient, or it may be a failure report, which informs the originator that the short message was never delivered and the reason why.

When issued by the Service Centre, the delivery report confirms the reception of the Short Message by the SC, and not the delivery of the Short Message to the SME.

When issued by the Mobile Station, the delivery report confirms the reception of the Short Message by the Mobile Station, and not the delivery of the Short Message to the user.

replace short message type: A range of values in the Protocol Identifier which allows an indication to be sent with a short message (MT or MO) that the short message is of a particular type allowing the receiving MS or the SC to replace an existing message of the same type held in the SC, the ME or on the SIM / UICC, provided it comes:

- in MT cases: from the same SC and originating address;
- in MO cases: from the same MS.

Service Centre (SC): Function responsible for the relaying and store-and-forwarding of a short message between an SME and an MS. The SC is not a part of the GSM/UMTS PLMN, however MSC and SC may be integrated.

Serving GPRS Support Node (SGSN): The Serving GPRS Support Node is an exchange which performs packet switching functions for mobile stations located in a geographical area designated as the SGSN area.

short message: Information that may be conveyed by means of the Short Message Service described in the present document.

Short Message Entity (SME): An entity which may send or receive Short Messages. The SME may be located in a fixed network, an MS, or an SC.

SMS-STATUS-REPORT: Short message transfer protocol data unit informing the receiving MS of the status of a mobile originated short message previously submitted by the MS, i.e. whether the SC was able to forward the message or not, or whether the message was stored in the SC for later delivery.

SMS-COMMAND: Short message transfer protocol data unit which enables an MS to invoke an operation at the SC. An MS may then, for example, delete a short message, cancel a TP-Status-Report-Request, enquire about the status of a short message or request another function to be performed by the SC.

The type of operation is indicated by the TP-Command-Type and the particular SM to operate on is indicated by the TP-Message-Number and the TP-Destination-Address. Receipt of an SMS-COMMAND is confirmed by an RP-ACK or RP-ERROR. In the case of certain SMS-COMMANDs, an SMS-STATUS-REPORT may be sent, where the outcome of the SMS-COMMAND is passed in its TP-Status field.

SMS-DELIVER: Short message transfer protocol data unit containing user data (the short message), being sent from an SC to an MS.

SMS-SUBMIT: Short message transfer protocol data unit containing user data (the short message), being sent from an MS to an SC.

Service-Centre-Time-Stamp (SCTS): Information element offering the recipient of a short message the information of when the message arrived at the SM-TL entity of the SC. The time of arrival comprises the year, month, day, hour, minute, second and time zone.

Validity-Period (VP): Information element enabling the originator MS to indicate the time period during which the originator considers the short message to be valid.

2.1.2 Abbreviations

For the purposes of the present document, the following abbreviations apply

ACSE	Association Control Service Element
E.163	CCITT Rec. E.163 (Blue Book)
E.164	CCITT Rec. E.164 (Blue Book)
SM MT	Short Message Mobile Terminated
SM MO	Short Message Mobile Originated
SM-AL	Short Message Application Layer
SM-TL	Short Message Transfer Layer
SM-RL	Short Message Relay Layer
SM-LL	Short Message Lower Layers
SM-TP	Short Message Transfer Layer Protocol
SM-RP	Short Message Relay Layer Protocol
SM-TS	Short Message Transfer Service
SM-RS	Short Message Relay Service
T.100	CCITT Rec. T.100 (Blue Book)
T.101	CCITT Rec. T.101 (Blue Book)
TPDU	Transfer protocol data unit
X.121	CCITT Rec. X.121 (Blue Book)
X.400	CCITT Rec. X.400 (Blue Book)

In addition to those above, definitions used in the present document are listed in GSM TR 01.04 [1] / 3G TR 21.905 [29].

3 Services and service elements

The SMS provides a means to transfer short messages between a GSM/UMTS MS and an SME via an SC. The SC serves as an interworking and relaying function of the message transfer between the MS and the SME.

The present document describes only the short message services between the MS and SC. It may, however, refer to possible higher layer applications.

3.1 Basic services

The Short Message Service comprise two basic services:

- SM MT (Short Message Mobile Terminated);
- SM MO (Short Message Mobile Originated).

SM MT denotes the capability of the GSM/UMTS system to transfer a short message submitted from the SC to one MS, and to provide information about the delivery of the short message either by a delivery report or a failure report with a specific mechanism for later delivery; see figure 1.

SM MO denotes the capability of the GSM/UMTS system to transfer a short message submitted by the MS to one SME via an SC, and to provide information about the delivery of the short message either by a delivery report or a failure report. The message must include the address of that SME to which the SC shall eventually attempt to relay the short message; see figure 2.

The text messages to be transferred by means of the SM MT or SM MO contain up to 140 octets.

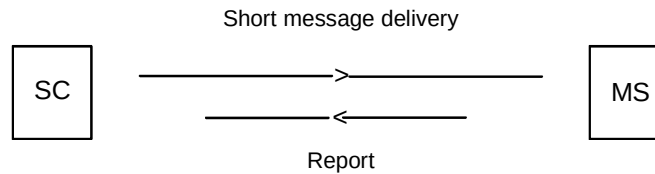


Figure 1: The Short Message Service mobile terminated

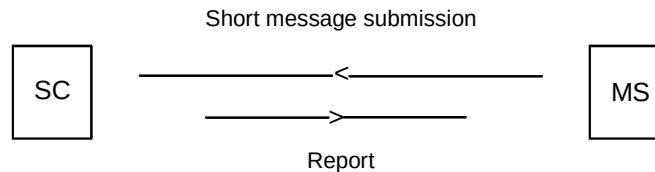


Figure 2: The Short Message Service mobile originated

An active MS shall be able to receive a short message TPDU (SMS-DELIVER) at any time, independently of whether or not there is a speech or data call in progress. A report shall always be returned to the SC; either confirming that the MS has received the short message, or informing the SC that it was impossible to deliver the short message TPDU to the MS, including the reason why.

An active MS shall be able to submit a short message TPDU (SMS-SUBMIT) at any time, independently of whether or not there is a speech or data call in progress. A report shall always be returned to the MS; either confirming that the SC has received the short message TPDU, or informing the MS that it was impossible to deliver the short message TPDU to the SC, including the reason why.

NOTE: When the transmission or reception of a short message coincide with a change of state in the MS, i.e. from busy to idle or from idle to busy, or during a handover, the short message transfer might be aborted.

It is also possible for two short messages to be received in sequence having the same originating address and identification, i.e. message reference number (MO) or SC Timestamp (MT). Such a situation may be due to errors at the RP or CP layers (e.g. during inter MSC handover) where it may be a duplicated message or otherwise it may be a valid new message.

The receiving entity should therefore make provision to check other parameters contained in the short message to decide whether the second short message is to be discarded.

3.2 Short Message Service elements

The SMS comprises 7 elements particular to the submission and reception of messages:

- Validity-Period;
- Service-Centre-Time-Stamp;
- Protocol-Identifier;
- More-Messages-to-Send;
- Priority;
- Messages-Waiting;
- Alert-SC.

3.2.1 Validity-Period

The Validity-Period is the information element which gives an MS submitting an SMS-SUBMIT to the SC the possibility to include a specific time period value in the short message (TP-Validity-Period field, see clause 9). The TP-Validity-Period parameter value indicates the time period for which the short message is valid, i.e. for how long the SC shall guarantee its existence in the SC memory before delivery to the recipient has been carried out.

3.2.2 Service-Centre-Time-Stamp

The Service-Centre-Time-Stamp is the information element by which the SC informs the recipient MS about the time of arrival of the short message at the SM-TL entity of the SC. The time value is included in every SMS-DELIVER (TP-Service-Centre-Time-Stamp field, see clause 9) being delivered to the MS.

3.2.3 Protocol-Identifier

The Protocol-Identifier is the information element by which the SM-TL either refers to the higher layer protocol being used, or indicates interworking with a certain type of telematic device.

The Protocol-Identifier information element makes use of a particular field in the message types SMS-SUBMIT, SMS-SUBMIT-REPORT for RP-ACK, SMS-DELIVER DELIVER, SMS-DELIVER-REPORT for RP-ACK, SMS_STATUS_REPORT and SMS-COMMAND TP-Protocol-Identifier (TP-PID).

3.2.4 More-Messages-to-Send

The More-Messages-to-Send is the information element by which the SC informs the MS that there is one or more messages waiting in that SC to be delivered to the MS. The More-Messages-to-Send information element makes use of a Boolean parameter in the message SMS-DELIVER, TP-More-Messages-to-Send (TP-MMS).

3.2.5 Delivery of Priority and non-Priority Messages

Priority is the information element provided by an SC or SME to indicate to the PLMN whether or not a message is a priority message.

Delivery of a non-priority message shall not be attempted if the MS has been identified as temporarily absent (see subclause 3.2.6).

Delivery of a non-priority message shall be attempted if the MS has not been identified as temporarily absent irrespective of whether the MS has been identified as having no free memory capacity (see subclause 3.2.6).

Delivery of a priority message shall be attempted irrespective of whether or not the MS has been identified as temporarily absent, or having no free memory capacity.

3.2.6 Messages-Waiting

The Messages-Waiting is the service element that enables the PLMN to provide the HLR, SGSN and VLR with which the recipient MS is associated with the information that there is a message in the originating SC waiting to be delivered to the MS. The service element is only used in case of previous unsuccessful delivery attempt(s) due to temporarily absent mobile or MS memory capacity exceeded. This information, denoted the Messages-Waiting-Indication (MWI), consists of Messages-Waiting-Data (MWD), the Mobile-station-Not-Reachable-for-GPRS (MNRG), the Mobile-Station-Not-Reachable-Flag (MNRG), the Mobile-Not-Reachable-Reason (MNRG) and the Mobile-Station-Memory-Capacity-Exceeded-Flag (MCEF) located in the HLR; the Mobile-station-Not Reachable-for-GPRS (MNRG) located in the SGSN, and the Mobile-Station-Not-Reachable-Flag (MNRG) located in the VLR. figure 3 shows an example.

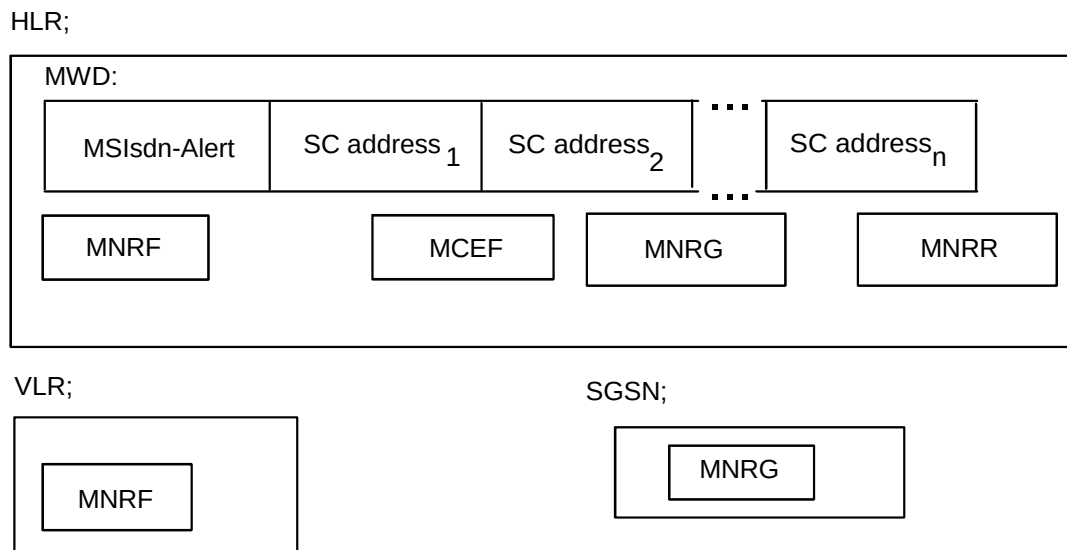


Figure 3: Example of how information on one MS can be put in relation to SC(s) in order to fulfil the requirement of Alert-SC mechanism

The MWD shall contain a list of addresses (SC-Addr) of SCs which have made previous unsuccessful delivery attempts of a message (see clause 5). In order to be able to send alert messages to every SC which has made unsuccessful delivery attempts to an MS, the HLR shall store the MSIsdn-Alert (see subclause 3.2.7) together with references to the SC addresses. The requirements placed upon the HLR are specified in GSM TS 03.08 [6]. The description of how the HLR is provided with SC and MS address information is given in 3G TS 29.002 [15].

The Mobile-Station-Memory-Capacity-Exceeded-Flag (MCEF) within the HLR is a Boolean parameter with the value TRUE an attempt to deliver a short message to an MS has failed with a cause of MS Memory Capacity Exceeded, and with the value FALSE otherwise.

The Mobile-station-Not Reachable-for-GPRS (MNRG) within the HLR and the SGSN is a Boolean parameter with the value TRUE when an attempt to deliver a short message to an MS has failed with a cause of Absent Subscriber, and with the value FALSE otherwise (except as described in note 1 below).

The Mobile-Station-Not-Reachable-Flag (MNRF) within the HLR and the VLR is a Boolean parameter with the value TRUE when the list MWD contains one or more list elements because an attempt to deliver a short message to an MS has failed with a cause of Absent Subscriber, and with the value FALSE otherwise.

The Mobile-Station-Not-Reachable-Reason (MNRR) within the HLR stores the reason for the MS being absent when an attempt to deliver a short message to an MS fails at the MSC, SGSN or both with the cause Absent Subscriber. The HLR updates the MNRR with the reason for absence when an absent subscriber diagnostic information is received from the GMSC and the MNRF, MNRG or both are set. The HLR clears the MNRR when the MNRF and MNRG are cleared. If the MNRF is set due to a failure at the MSC with cause Absent Subscriber and information pertaining to the absence of the MS is not available from the GMSC, the MNRR shall remain in a cleared state. Also, if the MNRG is set due to a failure at the SGSN with cause Absent Subscriber and information pertaining to the absence of the MS is not available from the GMSC, the MNRR shall remain in a cleared state. The MNRR shall either be in a cleared state or contain one of the following reasons:

- No Paging Response via the MSC;
- No Paging Response via the SGSN;
- IMSI Detached;
- GPRS Detached.

NOTE 1: The MNRG can also be set in the HLR and in the SGSN after an unsuccessful attempt to invoke the network requested PDP-Context Activation procedure. In this case, no SC address is stored in MWD list (see 3G TS 23.060 [27]).

NOTE 2: When a short message delivery attempt fails at the HLR due to Roaming being Restricted, the MS being deregistered in HLR or the MS being Purged the absent subscriber diagnostic reason is returned to the SC, however the reason is not stored in the MNRR.

The MWD, MCEF, MNRR, MNRG and MNRF are updated in the following way:

- 1a) When a mobile terminated short message delivery fails due to the MS being temporarily absent (i.e. either IMSI DETACH flag is set or there is no response from the MS to a paging request via the MSC), the SC address is inserted into the MWD list (if it is not already present), the MNRF is set (if it is not already set) and the MNRR via the MSC is updated (if the information is available), as described in clause 10.
- 1b) When a mobile terminated short message delivery fails due to the MS being temporarily absent (i.e. either GPRS DETACH flag is set or there is no response from the MS to a paging request via the SGSN), the SC address is inserted into the MWD list (if it is not already present), the MNRG is set (if it is not already set) and the MNRR via the SGSN is updated (if the information is available), as described in clause 10.
- 1c) When a mobile terminated short message delivery fails due to the MS memory capacity via the MSC being exceeded, the SC address is inserted into the MWD list (if it is not already present), the MCEF is set (if it is not already set), the MNRF is cleared and the MNRR via the MSC is updated as described in clause 10.
- 1d) When a mobile terminated short message delivery fails due to the MS memory capacity via the SGSN being exceeded, the SC address is inserted into the MWD list (if it is not already present), the MCEF is set (if it is not already set), the MNRG is cleared and the MNRR via the SGSN is updated as described in clause 10.
- 1e) If the MSIsdn used by the SC to address the recipient MS for alerting purposes is different from the MSIsdn-Alert of the MS (see subclause 3.2.7), the HLR returns the MSIsdn-Alert to the SC within the failure report, see "1c Failure report" in figures 15 and 16.
- 2a) When either the HLR or VLR detects that the MS (with a non-empty MWD and the MCEF clear in the HLR and the MNRF set in the VLR) has recovered operation (e.g. has responded to a paging request over MSC), the HLR directly or on request of the VLR shall invoke operations to alert the SCs within the MWD (see subclause 3.2.7 and clause 10). Once the Alert SC operations have been invoked, the MNRF and MNRR via the MSC are cleared. After each SC is alerted by the HLR, the address for that SC is deleted from the MWD. If the MCEF is set in the HLR, the HLR clears the MNRF and MNRR via the MSC, but does not invoke operations to alert the SCs within the MWD and data are not cleared from the MWD.
- 2b) When either the HLR or SGSN detects that the MS (with a non-empty MWD and the MCEF clear in the HLR and the MNRG set in the SGSN) has recovered operation (e.g. has responded to a paging request via the SGSN), the HLR directly or on request of the SGSN shall invoke operations to alert the SCs within the MWD (see subclause 3.2.7 and clause 10). Once the Alert SC operations have been invoked, the MNRG and MNRR via the SGSN are cleared. After each SC is alerted by the HLR, the address for that SC is deleted from the MWD. If the MCEF is set in the HLR, the HLR clears the MNRG and MNRR via the SGSN, but does not invoke operations to alert the SCs within the MWD and data are not cleared from the MWD.
- 2c) When the HLR receives (via the MSC and the VLR) a notification that the MS (with a non-empty MWD and the MCEF set in the HLR) has memory capacity available to receive one or more short messages, the HLR shall invoke operations to alert the SCs within the MWD (see subclause 3.2.7 and clause 10). Once the Alert SC operations have been invoked, the MNRF is cleared in the VLR and the MCEF, MNRF and MNRR via the MSC are cleared in the HLR. After each SC is alerted by the HLR, the address for that SC is deleted from the MWD.
- 2d) When the HLR receives (via the SGSN) a notification that the MS (with a non-empty MWD and the MCEF set in the HLR) has memory capacity available to receive one or more short messages, the HLR shall invoke operations to alert the SCs within the MWD (see subclause 3.2.7 and clause 10). Once the Alert SC operations have been invoked, the MNRG is cleared in the SGSN and the MCEF, MNRG and MNRR via the SGSN are cleared in the HLR. After each SC is alerted by the HLR, the address for that SC is deleted from the MWD.
- 2e) When the HLR receives from the SMS-GMSC a notification that a short message has been successfully delivered from an SC to an MS via the MSC for which the MCEF is set and the MWD are not empty, the HLR shall invoke operations to alert other SCs within the MWD (see subclause 3.2.7 and clause 10). Once the Alert SC operations have been invoked, the MCEF, MNRF and MNRR via the MSC are cleared in the HLR. After each SC is alerted by the HLR, the address for that SC is deleted from the MWD. The SC which successfully delivered the message is also deleted from the MWD, if present.

2f) When the HLR receives from the SMS-GMSC a notification that a short message has been successfully delivered from an SC to an MS via the SGSN for which the MCEF is set and the MWD are not empty, the HLR shall invoke operations to alert other SCs within the MWD (see subclause 3.2.7 and clause 10). Once the Alert SC operations have been invoked, the MCEF, MNRG and MNRR via the SGSN are cleared in the HLR. After each SC is alerted by the HLR, the address for that SC is deleted from the MWD. The SC which successfully delivered the message is also deleted from the MWD, if present.

2g) When the HLR receives (via the MSC and the VLR, or the SGSN) a notification that the MS has memory capacity available to receive one or more short messages but the MCEF is not set and the MWD are empty, the HLR acknowledges the notification but does not alert any service centre.

NOTE 3: The HLR can be in a situation where the MWD list is empty but where either MNRF or MNRG (with the related MNRR) is still set. This enables the HLR to return the correct address (MSC or SGSN address) at the next Send Routing Information Request from the SMS-GMSC.

NOTE 4: If the SMS delivery failed on first attempt via the MSC or the SGSN (see cases 1a for IMSI Detach and 1b for GPRS Detach), and is successful on the second attempt (see cases 2e and 2f), the SC address shall not be inserted into the MWD list

3.2.7 Alert-SC

The Alert-SC is the service element, which may be provided by some GSM/UMTS PLMNs, to inform the SC that an MS

1) to which a delivery attempt has failed because the MS is not reachable or because the MS memory capacity was exceeded;

and

2) which is now recognized by the PLMN:

a) to have resumed operation (e.g. to have responded to a paging request); or

b) to have memory newly available (which implies that the mobile is reachable).

is again ready to receive one or more short messages. The SC may - on reception of an Alert-SC - initiate the delivery attempt procedure for the queued messages destined for this MS.

To each MS there may be allocated several MSIsdns. When the HLR is to alert an SC that an MS is again attainable it shall use a specific MSIsdn value for this purpose; in the present document called MSIsdn-Alert.

NOTE 5: Repeated delivery attempts from the SC may be of two types:

i) A repeated delivery attempt because the SC has been informed that the MS is active and available to receive short messages.

ii) An autonomous repeated delivery attempt by the SC.

The application of these two options is defined by the providers of the SC and the network.

3.2.8 Options concerning MNRG, MNRF, MNRR, MCEF and MWD

Setting the Mobile-Station-Not-Reachable-Flag (MNRF) in the VLR is mandatory. Setting the Mobile-station-Not-Reachable-for-GPRS (MNRG) in the SGSN is mandatory. It is mandatory for the VLR or the SGSN to send the "MS Reachable" message (see clause 10) to the HLR when the MS has been detected as becoming active and then to clear MNRF in the VLR or the MNRG in SGSN.

The Messages-Waiting-Data (MWD), the Mobile-Station-Not-Reachable-Flag (MNRF), the Mobile-station-Not-Reachable-for-GPRS (MNRG), the Mobile-Station-Not-Reachable-Reason (MNRR) and the Mobile-Station-Memory-Capacity-Exceeded-Flag (MCEF) within the HLR are optional, but if one is implemented all must be implemented (except MNRG if the HLR does not support GPRS). This is linked to the transmission of the "Alert SC" message.

The following describes what happens when a delivery fails.

Case 1: MWD, MNRF, MNRG, MNRR and MCEF are implemented in the HLR

In the case of a delivery failure (to an MS) with cause Absent Subscriber, the SMS-GMSC requests the HLR to add, if needed, a new entry in the MWD with cause Absent Subscriber. This new entry contains the SC address. The HLR sets its copy of the MNRF, MNRG or both and updates the MNRR (if the information is available). The SC is notified of the failure, the reason for the MS being absent and also of the MWD setting in the HLR within the Report message (see clause 10).

In the case of a delivery failure (to an MS) with cause Mobile Station Memory Capacity Exceeded via the SGSN or the MSC, the SMS-GMSC requests the HLR to add, if needed, a new entry in the MWD with cause Mobile Station Memory Capacity Exceeded. This new entry contains the SC address. The HLR sets the MCEF and reset MNRF or MNRG. The SC is notified of the failure and also of the MWD setting in the HLR within the Report message (see clause 10).

If the HLR indicates that it is able to store the SC address, then the SC shall receive an Alert SC message when the MS becomes active.

If the HLR indicates that it is unable to store the SC address (e.g. because MWD is full), then the only way to ensure delivery is for the SC to try to retransmit the message periodically.

When the HLR receives the MS Reachable message, if the MCEF is clear it sends an Alert SC message to the concerned SC, updates MWD and clears MNRF (if the MS is reachable via the MSC) or MNRG (if the MS is reachable via the SGSN).

When the HLR receives the MS Memory Capacity Available message, it sends an Alert SC message to the concerned SC, updates MWD, clears the MCEF and clears MNRF (if the MS is reachable via the MSC) or MNRG (if the MS is reachable via the SGSN).

Case 2: MWD, MNRF, MNRG, MNRR and MCEF are not implemented in the HLR

In the case of a delivery failure, the SC is notified that the HLR is unable to store its address in the MWD. In case of a delivery failure (to a MS) with cause Absent Subscriber, the SC is notified of the reason for the MS being absent (if the information is available). The SC must retransmit the short message periodically in order to ensure delivery.

The HLR discards the MS Reachable message received from the VLR or SGSN without any failure or error report.

The HLR discards the MS Memory Capacity Available message received from the MS via the MSC and the VLR or SGSN without any failure or error report.

3.2.9 Status report capabilities

The SMS also offers to the SC the capabilities of informing the MS of the status of a previously sent mobile originated short message. The status of the message can be:

- Successfully delivered to the SME;
- The SC was not able to forward the message to the SME. The reason can be an error of permanent or temporary nature. Permanent errors can be e.g. validity period expired, invalid SME address. Errors of temporary nature can be e.g. SC-SME connection being down, SME temporarily unavailable.

This is achieved by the SC returning a status report TPDU (SMS-STATUS-REPORT) to the originating MS when the SC has concluded the status of the short message. The status report may be initiated by a status report request within the mobile originated short message. The status report TPDU is treated as an SMS-DELIVER TPDU by the SC when it comes to delivery procedures e.g. the alerting mechanism.

The SC may also return to a non-MS SME the status of a mobile terminated short message. This is however outside the scope of the present document.

The status report capabilities of the SMS are optional, i.e. the choice of whether to offer status report or not is left to the SC operator.

For reasons of resilience and/or load sharing architecture of SMSC's by network operators, the SMSC address (the RP-OA) used by the SMSC to send the Status Report to the MS cannot be guaranteed to be the same SMSC address (RP-

DA) used by the MS to submit the SM to which the Status Report refers. Where an MS wishes to implement a check that these addresses correlate, a means of disabling the correlation check shall be provided at the MS through MMI.

3.2.10 Reply Path

Reply Path specified in the present document provides a way of both requesting and indicating a service centre's commitment to deliver a reply from the replying MS to the originating SME.

Annex D deals with MS procedures, which in general are outside the scope of GSM/UMTS specifications. However, for advanced use of the SMS, including both application level protocols and human responses, it is of vital importance to guarantee that a reply-supporting MS is able to reply on every SM, to every SME capable of receiving such reply short messages.

3.3 Unsuccessful short message TPDU transfer SC -> MS

Unsuccessful message transfer SC -> MS may be caused by a variety of different errors. The description of the occurrence of the different errors and how to handle and transfer the error indications is given in GSM 04.08 [12], 3G TS 24.011 [13] and 3G TS 29.002 [15].

The different error indications which the SMS-GMSC shall be capable of returning to the SC following an unsuccessful short message TPDU transfer SC -> MS, are given in table 1. In some cases, additional diagnostic information may be provided.

3.3.1 Errors occurring during transfer of TPDU to MS

These errors are generally due to barring or unsupported service in the PLMN or MS. An error indication is returned to the SC from the SMS-GMSC, but further diagnostic information from the MS shall not be available.

3.3.2 Errors occurring after TPDU arrives at MS

These errors may occur due to the MS not supporting optional short message service features, or in connection with a short message application. An error indication shall be returned to the SC from the SMS-GMSC. Additionally, a TPDU (SMS-DELIVER-REPORT) containing diagnostic information may be conveyed from the MS to the originating SC, transparently through the PLMN, by means defined in 3G TS 24.011 [13] and 3G TS 29.002 [15]. The sending of the diagnostic information is optional at the MS, but when it is sent, the PLMN shall convey the information to the SC, and the SC shall support reception of the information.

Table 1: Error indications related to mobile terminated short message transfer which may be transferred to the originating SC

Error indication	S ¹⁾	Meaning
Unknown subscriber	P	The PLMN rejects the short message TPDU because there is not allocated an IMSI or a directory number for the mobile subscriber in the HLR (see 3G TS 29.002 [15]).
Teleservice not provisioned	P	The PLMN rejects the short message TPDU because the recipient MS has no SMS subscription (see 3G TS 29.002 [15]).
Call barred	T	The PLMN rejects the short message TPDU due to barring of the MS (see 3G TS 29.002 [15], description of the Barring supplementary service, 3G TS 22.004 [3] and 3G TS 23.011[7]), description of Call barred due to Unauthorised Message Originator, 3G TS 29.002 [15], and description of Operator Determined Barring, 3G TS 22.041 [4] and 3G TS 23.015 [8]).
Facility not supported	T	The VPLMN rejects the short message TPDU due to no provision of the SMS in the VPLMN (see 3G TS 29.002 [15]).
Absent subscriber	T	The PLMN rejects the short message TPDU because - there was no paging response via the SGSN, MSC or both, (see GSM 04.08 [12] & 3G TS 29.002 [15]) - the IMSI GPRS or both records are marked detached (see 3G TS 29.002 [15]), - the MS is subject to roaming restrictions (see "Roaming not allowed", 3G TS 29.002 [15]). - deregistered in the HLR. The HLR does not have an MSC, SGSN or both numbers stored for the target MS, (see 3G TS 29.002 [15]) - Unidentified subscriber (see 3G TS 29.002 [15]) - MS purged, (see 3G TS 29.002 [15]) (The reasons for absence are assigned integer values in table 1a. The appropriate integer value is sent with the absent subscriber error indication as defined in 3G TS 29.002 [15])
MS busy for MT SMS	T	The PLMN rejects the short message TPDU because of congestion encountered at the visited MSC or the SGSN. Possible reasons include any of the following events in progress: - short message delivery from another SC; - IMSI or GPRS detach - Location Update or Inter SGSN Routing Area Update; - paging; - emergency call; - call setup.
SMS lower layers not provisioned	capabilities T	The PLMN rejects the short message TPDU due to MS not being able to support the Short Message Service. The short message transfer attempt is rejected either due to information contained in the class-mark, or the MSC not being able to establish connection at SAPI = 3 (see GSM 04.08 [12] and 3G TS 29.002 [15]).
Error in MS	T	The PLMN rejects the short message TPDU due to an error occurring within the MS at reception of a short message, e.g. lack of free memory capacity or protocol error.
Illegal Subscriber	P	The PLMN rejects the short message TPDU because the MS failed authentication
Illegal Equipment	P	The PLMN rejects the short message TPDU because the IMEI of the MS was black-listed in the EIR
System failure	T	The PLMN rejects the short message TPDU due to network or protocol failure others than those listed above (see 3G TS 29.002 [15])
Memory Capacity Exceeded	T	The MS rejects the short message since it has no memory capacity available to store the message

1) : Status (Permanent or Temporary)

The relation between the two sets of error indications is given in the table 1. Each error is classified as either "Temporary" or "Permanent". This classification gives an indication of whether or not it is probable that the MS becomes attainable within a reasonable period, and so provides the recommended action to be taken by the SC, i.e. either to store the message for later transfer, or to discard it.

Table 1a: Assignment of values to reasons for absence (values must be in the range of 0 to 255, see 3G TS 29.002 [15])

Values	Reason for absence
0	- no paging response via the MSC
1	- IMSI detached
2	- roaming restriction
3	- deregistered in the HLR for non GPRS
4	- MS purged for non GPRS
5	- no paging response via the SGSN
6	- GPRS detached
7	- deregistered in the HLR for GPRS
8	- MS purged for GPRS
9	- Unidentified subscriber via the MSC
10	- Unidentified subscriber via the SGSN
All 'non GPRS' reasons (except for roaming restriction) can be combined with all 'GPRS' reasons and vice-versa	
All other integer values are reserved.	

3.4 Unsuccessful short message TPDU transfer MS -> SC

The error indications related to mobile originated short message transfer which may be transferred to the originating MS are given in 3G TS 24.011 [13]. In some cases, additional diagnostic information may be provided.

3.4.1 Errors occurring during transfer of TPDU to SC

These errors are generally due to barring or unsupported service in the PLMN. An error indication is returned to the MS from the MSC or the SGSN, but further diagnostic information from the SC shall not be available.

3.4.2 Errors occurring after TPDU arrives at SC

These errors may occur due to the SC not supporting optional short message service features, or in connection with a short message application. An error indication shall be returned to the MS from the MSC or from the SGSN. Additionally, a TPDU (SMS-SUBMIT-REPORT) containing diagnostic information may be conveyed from the SC to the originating MS, transparently through the PLMN, as defined in 3G TS 29.002 [15] and 3G TS 24.011 [13]. The sending of the diagnostic information is optional at the SC, but when it is sent, the PLMN shall convey the information to the MS, and the MS shall support reception of the information.

NOTE: The SMS-SUBMIT-REPORT is part of the negative acknowledgement to the mobile originated short message, and is not part of the status report capabilities described in subclause 3.2.9.

3.5 Use of Supplementary Services in combination with the Short Message Service

Only a sub-set of the Supplementary Services defined in 3G TS 22.004 [3] and 3G TS 23.011 [7] may be used in combination with the Short Message Service. This sub-set comprises the following Supplementary Services:

All the 5 Barring services.

3.6 Applicability of Operator Determined Barring to the Short Message Service

The network feature Operator Determined Barring (see 3G TS 22.041 [4]) applies to the Short Message Service.

If a short message fails due to operator determined barring then an appropriate error cause is returned to the originator.

3.7 Multiple short message transfer

To avoid the need for a mobile to be paged, authenticated etc. for each message waiting in the Service Centre, the SC may indicate to the SMS-GMSC that there are more messages to send. When this indication is given, MAP procedures are invoked such that this indication is passed to the VMSC, and the VMSC does not release the MS until all short messages waiting in the SC have been transferred.

3.8 SMS and Internet Electronic Mail interworking

The interworking between Internet electronic mail and SMS is offered in both directions which enables new and old mobiles to send/receive Internet electronic mails via SMS. The interworking is according to the following procedures:

- An SMS message which is required to interwork with Internet email may have its TP-PID value set for Internet electronic mail;

NOTE: There is an alternative mechanism described in 9.2.3.24 providing full RFC 822 [34] internet electronic mail interworking.

- Either single or concatenated SMS can be used to transport the email;
- Concatenation may be achieved by the TPUDH mechanism or text-based means described below;
- Email cc fields are not supported;
- Where multiple fields are present, additional spaces may be inserted by the sender to improve presentation of the message. Spaces may not be inserted into the actual email address (e.g. user@domain1.domain2).

3.8.1 Basic Format

The basic format for transferring email in either direction consists of the following:

MT SMS:

[<from-address><space>]<message>

MO SMS:

[<to-address><space>]<message>

where [] denote optional fields and <> delimit fields.

The to-address or from address may take the form

user@domain1.domain2

or

User Name <user@domain1.domain2>

In the latter case the angle brackets <> are part of the address and are actually transmitted.

Depending on the nature of the gateway, the destination/origination address is either derived from the content of the SMS TP-OA or TP-DA field, or the TP-OA/TP-DA field contains a generic gateway address and the to/from address is added at the beginning as shown above.

Multiple addresses may be identified in MO messages by separating each address by a comma like this:

address1,address2,address3<space><message>

It is optional for the receiving gateway to support this. If the receiving gateway does not support multiple messages then it shall reject the original message by returning an appropriate error in a text message.

3.8.2 Optional Fields

The following further optional fields are supported. An email <-> SMS gateway may insert additional spaces in the MT message for presentation to the user, and must accept additional spaces in the MO message from the user.

3.8.2.1 Subject

The subject is placed between the address and the message, delimited by round brackets () or preceded by ##, for example:

```
[<to-address>](<subject>)<message>
```

or

```
[<to-address>]##<subject>#<message>
```

An MO message may contain either format. An MT message may contain either format. Developers must ensure that both forms are supported for full compatibility.

3.8.2.2 Real Name

The Real Name field contains the real name of the sender and is used only in MO messages. The SC or email gateway shall generate an email message according to standard email procedures containing Real Name <user@domain1.domain2> (the angle brackets being part of the address and hence transmitted). If a subject is to be included with the Real Name then only the ## prefix is used.

The syntax is:

```
[<to-address>]#<real-name>[##<subject>]#<message>
```

3.8.2.3 Optional Control Flag

An optional control flag may be added to the start of the message in MO messages only. This consists of a single character <CF> following a # symbol as follows:

```
[#<CF>#][<to-address>]<space><message>
```

This may also be used in combination with the above fields. It is intended for use where a particular SC or email gateway specific function is required to be invoked. For example, the control flag #A# might add a particular (pre-stored) signature to the end of the message or #R# might change the from-address to a pre-stored value or #5# might add the text "Please phone me at the office". All of these functions are open for definition by Service Centre or email gateway operators.

3.8.3 Text concatenation

If the concatenation mechanism described in 9.2.3.24.1 is not supported by the transmitting or receiving entity, the following textual concatenation mechanism may be used. The first message is ended with a + sign, and each subsequent message start and end with + signs until the final message which starts with a + sign but does not end with a + sign.

```
<message1>+
```

```
+<message2>+
```

```
+<message3>
```

Any header fields placed on the front of an MO or MT message are not added to the second and subsequent messages.

This provides a simple mechanism which is completely backward compatible. There is no indication of the number of messages and should a message be lost by the system or arrive out of sequence then the original message cannot be reconstructed. Therefore, wherever possible the concatenation mechanism specified in 9.2.3.24.1 should be used instead.

3.8.4 Alternative characters for Internet email addresses in MO SMS.

It is difficult or impossible to generate some characters on a mobile phone and so the following alternatives may be used:

@ may be replaced by *

_ (underscore) may be replaced by \$

3.9 SMS COMPRESSION

Short Messages may be compressed in accordance with the compression algorithm described in 3G TS 23.042 [26].

Compression and Decompression may take place between SME's or between an SME and the SC.

The compression only applies to the TP-User-Data part of the TPDU and excludes any TP-User-Data-Header which may be present. The Compression Header (see 3G TS 23.042 [26]) must commence at the first octet of the TP-User-Data field immediately following any TP-User-Data-Header field which may be present.

The TP-UDL value must be set in accordance with that value defined for the compressed TP-User-Data case in subclause 9.2.3.16.

The TP-DCS parameter indicates whether or not a short message is compressed. If the TP-DCS parameter indicates that the short message is compressed then the alphabet encoding values (bits 2 and 3 in 3G TS 23.038 [9]) must be ignored by the receiving entity.

In the case where a short message after compression is greater than 140 octets (including the Compression Header and Footer (see 3G TS 23.042 [26]) and any TP-User-Data-Header which may be present) then the sending entity must concatenate the short message in the normal way as described in subclause 9.2.3.24.1 if it wishes to continue to send the short message. Only the first segment of the concatenated short message must contain the Compression Header defined in 3G TS 23.042 [26]. All segments other than the final segment must be 140 octets in length. Only the final segment contains the Compression Footer (see 3G TS 23.042 [26]).

For mobile terminated compressed messages, where the MMI or the Message Class indicated in the TP-DCS requires the message to be stored in the MS then the MS shall store the compressed message as received. In the case where the MS is capable of decompression then the MS may display the decompressed message. Such an MS may optionally store the message in decompressed form subject to the MS being configured to do this via MMI. However, prior to storing the message in decompressed form, the MS may have to create a concatenated SM and carry out component modification on the TP-UDL and TP-DCS values to indicate the correct length values and that the message is no longer compressed. Transfer of messages direct from the radio interface or those stored in the MS to a TE is according to the procedure defined in 3G TS 27.005 [14] and is independent of whether the message is compressed or uncompressed.

For mobile originated compressed messages, an MS capable of compression may compress a short message generated within the MS itself prior to sending it to the radio interface. An MS capable of compression may optionally compress an uncompressed message received from a TE subject to the MS being configured to do this via MMI. In such a case the MS would have to carry out component modification on the TP-UDL and TP-DCS values to indicate the correct length values and that the message is compressed. A TE may send a message (compressed or uncompressed) to the MS using the procedures defined in 3G TS 27.005 [14]. The MS shall store the compressed message as received and/or transfer it directly to the radio interface.

3.10 Enhanced Messaging Service

The Enhanced Messaging Service (EMS) is based upon the standard SMS, but with formatting added to the text. The formatting permits the message to contain simple animations, small pictures, small melodies and formatting of the text, everything mixed together into one message. This section lists the supported features. The coding mechanisms and formats are specified in subclause 9.2.3.24.10

3.10.1 Text formatting

The following text formatting features are supported:

Alignment

- Left (default)
- Centre
- Right

Font size

- Normal (default)
- Large
- Small

Style

- Normal (default)
- **Bold**
- *Italic*
- Underlined
- ~~Strikethrough~~

3.10.2 Pictures

It is possible to include either a small (16*16 pixels), large (32*32 pixels) or pictures of variable size. These pictures have neither animation nor grey scales, it is plain black and white. All pictures are user defined. If multiple pictures are received side by side, then they will be stitched together with no inter-character spacing. If a <CR> is inserted in the middle of multiple pictures, then the left margin of the pictures are vertically aligned. If two pictures that are of the same size are logically separate, they should be separated by a space or other characters. Maximum recommended pictures size usage of this technique: 96x64 (6 large pictures, with a CR in the middle). This unified picture is then formatted as one.

3.10.3 Animations

Predefined

There are number of predefined animations. These animations are not sent as animation over the air interface, only the identification of them. As soon as the position of the animation in the SM data is reached, the animation corresponding to the received number shall be displayed in a manner which is manufacturer specific.

User Defined

The user-defined animations consist of 4 pictures and there are two different sizes of these animations. The picture size of the small animations are 8*8 pixels and the large 16*16 pixels. These animations are sent over the air interface.

3.10.4 Sound

Predefined

There are a number of predefined sounds. These sounds are not transferred over the air interface, only the identification of them. There are 10 different sounds that can be added in the message, and as soon as the sound mark is in focus (on the display), the sound will be played.

User Defined

The sender can define own melodies according to the iMelody format [33]. These melodies are transferred in the SM and can take up to 128 bytes.

4 Network architecture

4.1 Basic network structure

The exchange of messages between an MS and an SME involves the entities shown in figure 4.

The basic network structure of the SMS is depicted in figure 5.

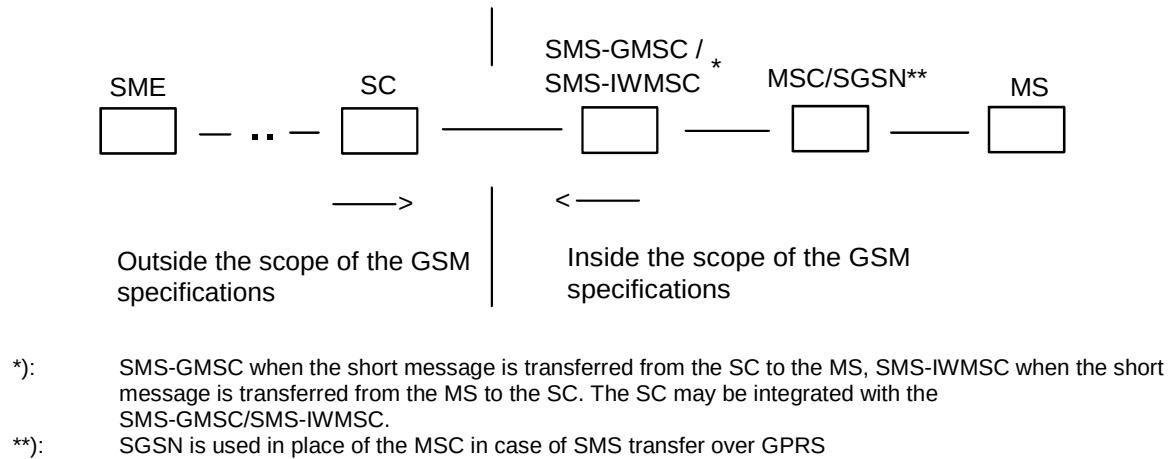
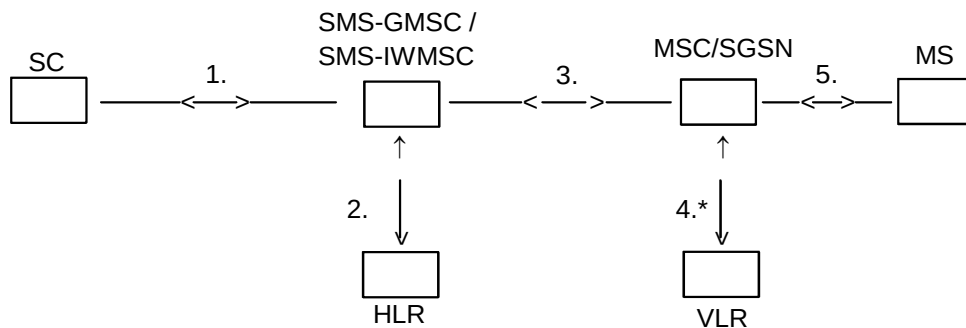


Figure 4: Entities involved in the provision of SM MT and SM MO: SC, SMS-GMSC/SMS-IWMSC, SGSN, MSC and MS

The links of figure 5 support the short message transfer in the following way:

- message transfer on link 1 is described in clause 5;
- the operations performed on links 2 and 4 is described in 3G TS 29.002 [15];
- message transfer on link 3 is described in subclause 4.2;
- message transfer on link 5 is supported by protocol described in 3G TS 24.011 [13].



- *) : This interface is not used in case of SMS transfer via the SGSN

Figure 5: The main network structure serving as a basis for the short message transfer

4.2 Transfer on link 3

The link 3 is used to support communications between MSC, SMS-GMSC and SMS-IW MSC, or between SGSN, SMS-GMSC and SMS-IW MSC. Two cases can be distinguished according to whether or not the MSC, SMS-GMSC, SMS-IW MSC and SGSN are located in the same PLMN.

In the first case, the link definition is left to the operators. For example, this link may use:

- PSPDN; or
- CCITT SS no 7 (according to 3G TS 29.002 [15]).

In the second case, CCITT SS no 7 shall be used over link 3 according to 3G TS 29.002 [15], unless otherwise bilaterally agreed.

5 Service Centre and PLMN interconnection

The present document deals with the SC only with regard to the interchange of messages between SC and MS. Only the requirements put upon the SC by the SMS functionality are specified in the present document.

5.1 Service centre connection

One SC may be connected to several PLMNs, and may be connected to several MSCs (SMS-GMSCs or SMS-IW MSCs) within one and the same PLMN.

The SC is addressed from the mobile by an E.164 [17] number in the numbering plan of the PLMN to which the SC is connected. This E.164 [17] number shall uniquely identify the SC to that PLMN.

There may be an intermediate network between the PLMN and the SC; in this case the PLMN must autonomously make a connection to the SC using the SC address in this intermediate network.

No mandatory protocol between the SC and the MSC below the transfer layer is specified by GSM/UMTS; this is a matter for agreement between SC and PLMN operators. However, annex A provides an example protocol stack which could be used.

5.2 Routing requirements

5.2.1 Mobile terminated short message

The SC sends the short message to the SMS-GMSC. The SMS-GMSC interrogates the HLR to retrieve routing information necessary to forward the short message, and then sends the message to the relevant MSC or SGSN, transiting other networks if necessary. The MSC or SGSN then sends the short message to the MS.

5.2.2 Mobile originated short message

The MS sends the short message to the MSC or the SGSN. The MS shall always address the required SC by an E.164 [17] address. The visited PLMN shall route the message to the appropriate SMS-IW MSC in the SC's PLMN, transiting other networks if necessary.

6 Service Centre functionality

In the present document, only the SC functionality related to the short message service between the SC and the MS is specified.

6.1 Service Centre capabilities

The SC should be capable of:

- submitting a short message to an MS, retaining the responsibility of the message until
 - 1) the report has been received; or
 - 2) the Validity-Period expires.
- receiving a report from the PLMN;
- receiving a short message from an MS;
- returning a report to the PLMN for a previously received short message.

6.2 SC functional requirements

The detailed functionality of the SC is outside the scope of the present document, and is for the SC operator to define. However, the following functional requirements are mandatory for all SCs in order to support the SM-TP (see clause 9) towards the PLMN:

- 1) To identify each SMS-DELIVER sent to an MS in a unique way, a time stamp value is included in the field TP-Service-Centre-Time-Stamp, TP-SCTS, of the SMS-DELIVER. The time stamp gives the time when the message arrived at the SC with the accuracy of a second. If two or more messages to the same MS arrive at the SC within one second, the SC shall modify the time stamp of those messages in such a way that:
 - a) all messages to the MS contain different time stamps;
 - b) the modification of the time stamps is kept to a minimum.
- 2) The SC is only allowed to have one outstanding SMS-DELIVER (i.e. a message for which a report has not been received) to a specific MS at a given time.
- 3) The SC shall be able to initiate overwriting of short messages previously received by the SC if requested by the same originating address (MS or any other source) by use of the same message type.

7 MS functionality

In the present document, only the MS functionality related to the short message service between the SC and the MS is specified.

7.1 MS capabilities

The MS, when equipped for SMS, should be capable of:

- submitting a short message TPDU to an SC, retaining the responsibility of the message until:
 - 1) the report arrives from the network; or
 - 2) a timer expires.
- receiving a short message TPDU from an SC;
- returning a delivery report to the network for a previously received short message;
- receiving a report from the network;
- notifying the network when it has memory capacity available to receive one or more short messages when it has previously rejected a short message because its memory capacity was exceeded;

- notifying the SC when a short message is intended to replace a short message the MS has previously submitted to the same destination address.

It is recommended that an MS supporting both replying and automatic SC selection (as specified in clause D.2 of annex D) follows procedures specified in annex D when replying to MT short messages with MO short messages.

It is recommended that an MS supporting a capability for requesting a reply path follows procedures specified in annex D.

7.2 MS configuration

The reference configuration is assumed as in figure 6, i.e. only the case where the terminal is integrated in the MS is considered.

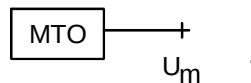


Figure 6: Reference configuration of the MS which apply to the SMS

NOTE: It is foreseen that a terminal interface may be offered, e.g. for higher layer protocols, memory capacity reasons or to be able to type in mobile originated messages. This terminal interface is regarded as an implementation option, although, where offered, it must be based upon an R- or S-reference point. 3G TS 27.005 [14] provides an example based on the R reference point.

8 Node functionality

The overall requirements to the MSC, SMS-GMSC, SMS-IWMSC and SGSN with respect to handling of the Short Message Service is to cater for the routing and necessary intermediate buffering of the short messages.

8.1 Node functionality related to SM MT

8.1.1 Functionality of the SMS-GMSC

When receiving a short message TPDU from the SC, the SMS-GMSC is responsible for the following operations:

- reception of the short message TPDU;
- inspection of the parameters.

NOTE 1: The SMS-GMSC may be identical to the MSC.

if parameters are incorrect:

- returning the appropriate error information to the SC in a failure report (see clauses 9 and 10);

if errors are not found within parameters:

- interrogating the HLR ("sendRoutingInfoForShortMsg", see clause 10); retrieving routing information or possible error information;

if HLR is returning error information:

- returning the appropriate error information to the SC in a failure report (see clauses 9 and 10);

if no errors are indicated by the HLR:

- transferring the short message TPDU to the MSC or SGSN using the routing information obtained from the HLR ("forwardShortMessage", see clause 10).

NOTE 2: In case where two addresses (SGSN and MSC) are received from HLR, the SMS-GMSC may choose (operator dependant) via which nodes (SGSN or MSC) the SMS is first to be sent. The SMS delivery via the SGSN is normally more radio resource efficient than the SMS delivery via the MSC.

if one address (SGSN or MSC) is received from HLR:

- When receiving the report associated with the short message from the MSC or SGSN (positive or negative outcome of "forwardShortMessage", see clause 10), the SMS-GMSC is responsible for the following operations:

if the report indicates successful delivery:

- notifying the HLR of the successful delivery via the MSC or the SGSN, which shall cause the HLR to alert any service centres whose addresses are stored in the MWD for the MS;
- creating and sending the successful report to the SC;

if the report is a failure report indicating "absent subscriber" via the MSC or the SGSN (see subclause 3.3):

- requesting the HLR to insert the address of the originating SC into the MWD (if implemented) with cause Absent Subscriber ("SM_DeliveryReportStatus", see clauses 9 and 10);
- informing the HLR of the reason for the MS being absent via the MSC or the SGSN (if this information is available);
- establishing, where necessary, a link with the addressed SC (see clause 5);
- creating and sending the negative report to the SC which should include the reason for the MS being absent (if this information is available) so that the SC may adjust any retry algorithm appropriately (see clauses 9 and 10);

if the report is a failure report indicating "MS memory capacity exceeded" via the MSC or the SGSN (see subclause 3.3):

- requesting the HLR to insert the address of the originating SC into the MWD (if implemented) with cause MS Memory Capacity Exceeded via the MSC or the SGSN ("SM_DeliveryReportStatus" , see clauses 9 and 10);
- establishing, where necessary, a link with the addressed SC (see clause 5);
- creating and sending the report to the SC (see clauses 9 and 10).

if two addresses (SGSN and MSC) are received from HLR:

- When receiving the first report associated with the short message from the MSC or SGSN (positive or negative outcome of "forwardShortMessage", see clause 10), the SMS-GMSC is responsible for the following operations:

if the first report indicates successful delivery:

- notifying the HLR of the successful delivery via the MSC or the SGSN, which shall cause the HLR to alert any service centres whose addresses are stored in the MWD for the MS;
- creating and sending the successful report to the SC;

if the first report is a failure report indicating:

- Unidentified subscriber;
- Facility not supported;
- Absent subscriber with indication: GPRS or IMSI Detach;
- System failure;
- Unexpected data value;
- Data missing;

- GPRS connection suspended (see TS 3G TS 29.002 [15]);
- transferring the short message TPDU to the second path using the routing information obtained from HLR.

if the second report indicates successful delivery:

- notifying the HLR of the successful delivery of the second transfer via the MSC or SGSN, which shall cause the HLR to alert any service centres whose addresses are stored in the MWD for the MS;
- notifying the HLR of the unsuccessful delivery at first transfer only with cause "absent subscriber";
- notifying the HLR of the reason for the MS being absent via the MSC or the SGSN (if this information is available);
- establishing, when necessary, a link with the addressed SC (see clause 5);
- creating and sending the successful report to the SC;

if the second report is a failure report:

- requesting the HLR to insert the address of the originating SC into the MWD (if implemented) only if at least one of the first or second report failed due to "MS Memory Capacity Exceeded" or "Absent Subscriber" ("SM_DeliveryReportStatus", see clauses 9 and 10);
- notifying the HLR only with the causes "Absent Subscriber", "Memory Capacity Exceeded" via the MSC or the SGSN, or both;
- notifying the HLR of the reason for the MS being absent via the MSC, SGSN or both (if this information is available);
- establishing, where necessary, a link with the addressed SC (see clause 5);
- creating and sending the negative report to the SC with errors from first and second path (see clauses 9 and 10);

8.1.2 Functionality of the MSC

When receiving a short message TPDU from the SMS-GMSC ("forwardShortMessage", see clause 10), the MSC is responsible for the following operations:

- reception of the short message TPDU;
- retrieving information from the VLR ("sendInfoFor-MT-SMS", see clause 10); location area address and, when appropriate, error information;

if errors are indicated by the VLR:

- returning the appropriate error information to the SMS-GMSC in a failure report (negative outcome of "forwardShortMessage" see clauses 10 and 11);

if no errors are indicated by the VLR:

- transferring the short message to the MS (see 3G TS 24.011 [13]).

When receiving a confirmation that the message is received by the MS (see 3G TS 24.011 [13]):

- relaying the delivery confirmation to the SMS-GMSC in a delivery report (positive outcome of "forwardShortMessage", see clauses 10 and 11).

When receiving a failure report of the short message transfer to the MS (see 3G TS 24.011 [13]):

- returning the appropriate error information to the SMS-GMSC in a failure report (negative outcome of "forwardShortMessage", see clause 10).

When receiving a notification from the MS that it has memory available to receive one or more short messages (see 3G TS 24.011 [13]):

- relaying the notification to the VLR ("mSMemoryCapacityAvailable", see clause 10);

if errors are indicated by the VLR:

- returning the appropriate error information to the MS in a failure report (negative outcome of "ReadyForSM", see clauses 10 and 11).

When there is an ongoing MT-SMS transfer to the MS (see 3G TS 24.011 [13]), or other busy condition for MT-SMS, the MSC has the option to store the TPDU in a queue for a short time (which must be shorter than the supervision timer defined in 3G TS 29.002 [15]). The maximum time that a message may be queued is related to the permitted delay for the MSC to respond to the SMS-GMSC. When the MS becomes available for MT-SMS transfer, the stored TPDU's are delivered to the MS on a first-in first-out basis. If a message is not successfully transferred to the MS within the permitted time, the MSC returns an appropriate error to the SMS-GMSC.

8.1.3 Functionality of the SGSN

When receiving a short message TPDU from the SMS-GMSC ("forwardShortMessage", see clause 10), the SGSN is responsible for the following operations:

- reception of the short message TPDU;

if errors are detected by the SGSN:

- returning the appropriate error information to the SMS-GMSC in a failure report (negative outcome of "forwardShortMessage" see clauses 10 and 11);

if no errors are detected by the SGSN:

- transferring the short message to the MS (see 3G TS 24.011 [13]).

When receiving a confirmation that the message is received by the MS (see 3G TS 24.011 [13]):

- relaying the delivery confirmation to the SMS-GMSC in a delivery report (positive outcome of "forwardShortMessage", see clauses 10 and 11).

When receiving a failure report of the short message transfer to the MS (see 3G TS 24.011 [13]):

- returning the appropriate error information to the SMS-GMSC in a failure report (negative outcome of "forwardShortMessage", see clause 10).

When receiving a notification from the MS that it has memory available to receive one or more short messages (see 3G TS 24.011 [13]):

if errors are detected by the SGSN:

- returning the appropriate error information to the MS in a failure report (negative outcome of "ReadyForSM", see clauses 10 and 11).

if no errors are detected by the SGSN:

- notifying the HLR of memory available in the MS via the SGSN with "ReadyForSM" (see clauses 10 and 11).

When the MS is becoming reachable again (see GSM 04.08 [12]):

- notifying the HLR of MS being reachable via the SGSN (and via the MSC if any) with "ReadyForSM" (see clauses 10).

When there is an ongoing MT-SMS transfer to the MS (see 3G TS 24.011 [13]), or other busy condition for MT-SMS, the SGSN has the option to store the TPDU in a queue for a short time (which must be shorter than the supervision timer defined in 3G TS 29.002 [15]). The maximum time that a message may be queued is related to the permitted delay for the SGSN to respond to the SMS-GMSC. When the MS becomes available for MT-SMS transfer, the stored TPDU's are delivered to the MS on a first-in first-out basis. If a message is not successfully transferred to the MS within the permitted time, the SGSN returns an appropriate error to the SMS-GMSC.

8.2 Node functionality related to SM MO

8.2.1 Functionality of the MSC

When receiving a short message TPDU from the MS, the MSC is responsible for the following operations:

- reception of the short message TPDU (see 3G TS 24.011 [13]);
- retrieving information from the VLR ("sendInfoForMO-SMS", see clause 10); the MSISDN of the MS and, when appropriate, error information. The retrieval of information from the VLR is followed by the VLR investigating the MNRF (to be used in the alerting procedure, see clause 10)

if errors are indicated by the VLR:

- returning the appropriate error information to the MS in a failure report (negative outcome of "sendInfoForMO-SMS" see clauses 10 and 11);

if no errors are indicated by the VLR:

- inspection of the RP-DA parameter;

if parameters are incorrect:

- returning the appropriate error information to the MS in a failure report (see 3G TS 24.011 [13]);

if no parameter errors are found:

NOTE: The SMS-IWMSM may be identical to the MSC.

- transferring the short message TPDU to the SMS-IWMSM ("forwardShortMessage", see clause 10).

When receiving the report of the short message from the SMS-IWMSM (positive or negative outcome of the "forwardShortMessage", see clause 10), the MSC is responsible for the following operations:

- relaying the report to the MS (see 3G TS 24.011 [13]).

8.2.2 Functionality of the SMS-IWMSM

When receiving a short message TPDU from the MSC or SGSN ("forwardShortMessage", see clause 10), the SMS-IWMSM is responsible for the following operations:

- reception of the short message TPDU;
- establishing, where necessary, a link with the addressed SC (see clause 5);
- transferring the short message TPDU to the SC (if the address is valid).

If a report associated with the short message is received from the SC, the SMS-IWMSM is responsible for the following operations:

- relaying of the report to the MSC or SGSN (positive or negative outcome of "forwardShortMessage", see clause 10).

If a report associated with the short message is not received from the SC before a timer expires or if the SC address is invalid, the SMS-IWMSM is responsible for the following operations:

- returning the appropriate error information to the MSC or SGSN in a failure report (negative outcome of "forwardShortMessage", see clause 10).

The value of the timer is dependent on the protocol between the SC and the SMS-IWMSM.

8.2.3 Functionality of the SGSN

When receiving a short message TPDU from the MS, the SGSN is responsible for the following operations:

- reception of the short message TPDU (see 3G TS 24.011 [13]);
- inspection of the RP-DA parameter;

if parameters are incorrect:

- returning the appropriate error information to the MS in a failure report (see 3G TS 24.011 [13]);

if no parameter errors are found:

- transferring the short message TPDU to the SMS-IW MSC ("forwardShortMessage", see clause 10).

When receiving the report of the short message from the SMS-IW MSC (positive or negative outcome of the "forwardShortMessage", see clause 10), the SGSN is responsible for the following operations:

- relaying the report to the MS (see 3G TS 24.011 [13]).

8.3 SMS-IW MSC functionality related to alerting

When receiving an alert from the HLR ("alertServiceCentre", see clause 10), the SMS-IW MSC is responsible for the following operations:

- inspect the SC address;
- generate an RP-Alert-SC (see clause 9);
- transferring the RP-Alert-SC to the SC.

NOTE: If the SC address is not valid, then no further action shall be taken.

9 Protocols and protocol architecture

The protocol layers of the SMS are structured as shown in figure 7.

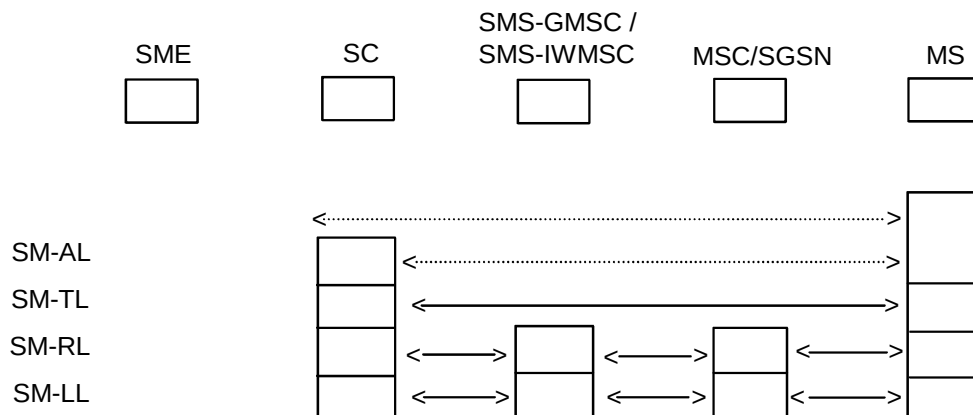


Figure 7: Protocol layer overview for the Short Message Service

The present document specifies the protocol at the SM-TL, the service offered by the SM-TL at the MS and the SC, and the service offered by the SM-RL at the SC.

9.1 Protocol element features

9.1.1 Octet and Bit transmission order

The octets are transmitted according to their individual numbering; the octet with the lowest number being transmitted first. The bits within each octet are transmitted according to their individual numbering also; the bits with the lowest internal number being transmitted first.

9.1.2 Numeric and alphanumeric representation

For parameters within the TPDUs, there are four ways of numeric representation: Integer representation, octet, semi-octet and alphanumeric representation.

9.1.2.1 Integer representation

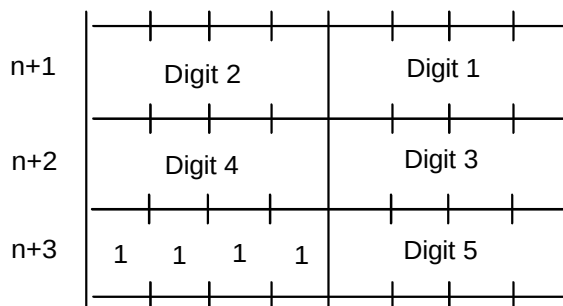
Wherever the bits from a number of octets, complete or in fractions, are to represent an integer, the interpretation shall be according to the following:

- 1) Between octets: The octets with the lowest octet numbers shall contain the most significant bits.
- 2) Within an octet: The bits with the highest bit numbers shall be the most significant.

Below is given an example of octet and bit representation and transmission order of an integer represented field.

Let the 2 rightmost bits of octet no 5, the complete octet no 6 and 7, and the 3 leftmost bits of octet no 8 represent an integer, as shown in figure 8.

Octet no:



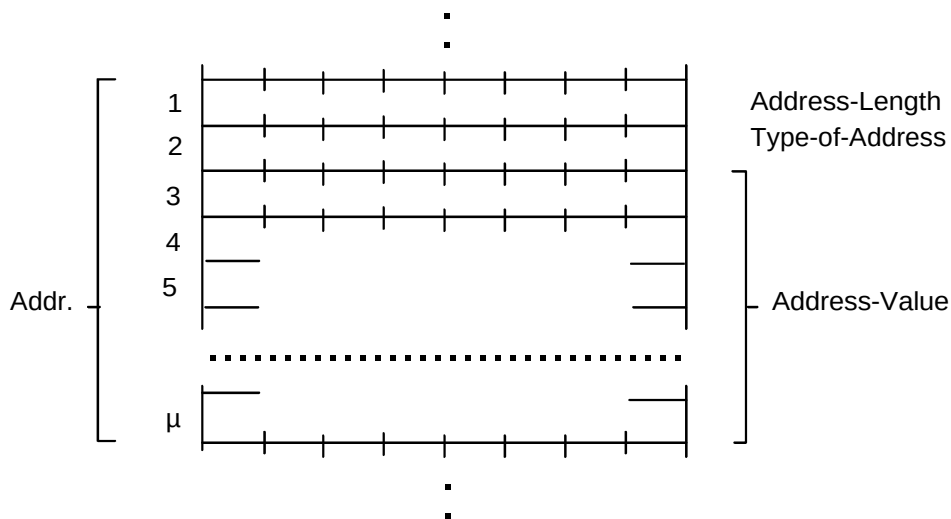
9.1.2.4 Alphanumeric representation

A field which uses alphanumeric representation shall consist of a number of 7-bit characters represented as the default alphabet defined in 3G TS 23.038 [9].

9.1.2.5 Address fields

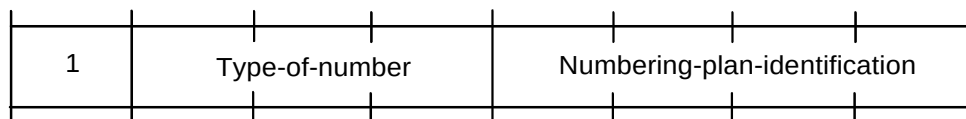
Address fields used by SM-RL are specified in 3G TS 24.011 [13] and 3G TS 29.002 [15].

Each address field of the SM-TL consists of the following sub-fields: An Address-Length field of one octet, a Type-of-Address field of one octet, and one Address-Value field of variable length; as shown below:



The Address-Length field is an integer representation of the number of useful semi-octets within the Address-Value field, i.e. excludes any semi octet containing only fill bits.

The Type-of-Address field format is as follows:



Type-of-number:
Bits 6 5 4

0 0 0	Unknown ¹⁾
0 0 1	International number ²⁾
0 1 0	National number ³⁾
0 1 1	Network specific number ⁴⁾
1 0 0	Subscriber number ⁵⁾
1 0 1	Alphanumeric, (coded according to 3G TS 23.038 [9] GSM 7-bit default alphabet)
1 1 0	Abbreviated number
1 1 1	Reserved for extension

The MS shall interpret reserved values as "Unknown" but shall store them exactly as received.

The SC may reject messages with a type of number containing a reserved value or one which is not supported.

- 1) "Unknown" is used when the user or network has no a priori information about the numbering plan. In this case, the Address-Value field is organized according to the network dialling plan, e.g. prefix or escape digits might be present.
- 2) The international format shall be accepted also when the message is destined to a recipient in the same country as the MSC or as the SGSN.
- 3) Prefix or escape digits shall not be included.
- 4) "Network specific number" is used to indicate administration/service number specific to the serving network, e.g. used to access an operator.
- 5) "Subscriber number" is used when a specific short number representation is stored in one or more SCs as part of a higher layer application. (Note that "Subscriber number" shall only be used in connection with the proper PID referring to this application).

Numbering-plan-identification (applies for Type-of-number = 000,001,010)

Bits	3	2	1	0	
0 0 0 0					Unknown
0 0 0 1					ISDN/telephone numbering plan (E.164 [17]/E.163[18])
0 0 1 1					Data numbering plan (X.121)
0 1 0 0					Telex numbering plan
1 0 0 0					National numbering plan
1 0 0 1					Private numbering plan
1 0 1 0					ERMES numbering plan (ETSI DE/PS 3 01-3)
1 1 1 1					Reserved for extension
All other values are reserved.					

For Type-of-number = 101 bits 3,2,1,0 are reserved and shall be transmitted as 0000. Note that for addressing any of the entities SC, MSC, SGSN or MS, Numbering-plan-identification = 0001 shall always be used. However, for addressing the SME, any specified Numbering-plan-identification value may be used.

The MS shall interpret reserved values as "Unknown" but shall store them exactly as received.

The SC may reject messages with a type of number containing a reserved value or one which is not supported.

Within the Address-Value field, either a semi-octet or an alphanumeric¹⁾ representation applies.

The maximum length of the full address field (Address-Length, Type-of-Address and Address-Value) is 12 octets.

- 1) Applies only to addressing at the SM-TL.

9.2 Service provided by the SM-TL

9.2.1 General

The Short Message Transfer Layer (SM-TL) provides a service to the Short Message Application Layer (SM-AL). This service enables the SM-AL to transfer short messages to its peer entity, receive short messages from its peer entity and receive reports about earlier requests for short messages to be transferred.

In order to keep track of messages and reports about those messages, primitives between the SM-AL and SM-TL contain a Short Message Identifier (SMI), which is a reference number for the message associated with the primitive. This Short Message Identifier is mapped to and from the Short Message Identifier used between the SM-TL and the Short Message Relay Layer (SM-RL). The Short Message Identifier is not carried between entities and therefore a given message may have different SMIs at the MS and SC sides (see subclause 9.3.1 below).

The SM-TL communicates with its peer entity by the protocol described in the following subclauses.

9.2.2 PDU Type repertoire at SM-TL

The SM-TL comprises the following six PDUs:

SMS-DELIVER, conveying a short message from the SC to the MS;

SMS-DELIVER-REPORT, conveying

- a) a failure cause (if necessary);
- b) information as part of a positive or negative acknowledgement to an SMS-DELIVER or SMS-STATUS-REPORT

SMS-SUBMIT, conveying a short message from the MS to the SC;

SMS-SUBMIT-REPORT, conveying

- a) a failure cause (if necessary);
- b) information as part of a positive or negative acknowledgement to an SMS-SUBMIT or SMS-COMMAND

SMS-STATUS-REPORT, conveying a status report from the SC to the MS;

SMS-COMMAND, conveying a command from the MS to the SC.

9.2.2.1 SMS-DELIVER type

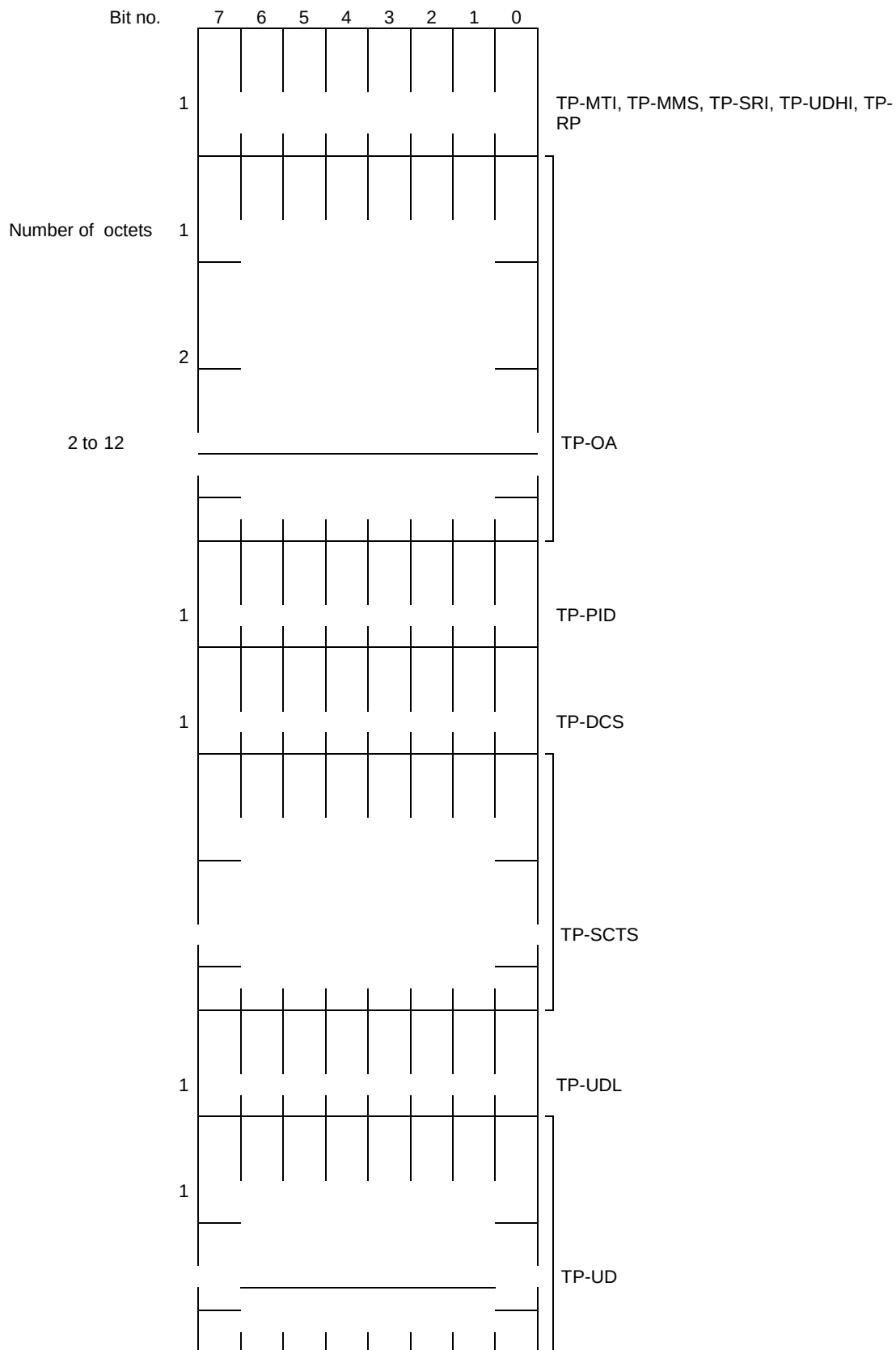
Basic elements of the SMS-DELIVER type:

Abbr.	Reference	P1)	P2)	Description
TP-MTI	TP-Message-Type-Indicator	M	2b	Parameter describing the message type.
TP-MMS	TP-More-Messages-to-Send	M	b	Parameter indicating whether or not there are more messages to send
TP-RP	TP-Reply-Path	M	b	Parameter indicating that Reply Path exists.
TP-UDHI	TP-User-Data-Header-Indicator	O	b	Parameter indicating that the TP-UD field contains a Header
TP-SRI	TP-Status-Report-Indication	O	b	Parameter indicating if the SME has requested a status report.
TP-OA	TP-Originating-Address	M	2-12o	Address of the originating SME.
TP-PID	TP-Protocol-Identifier	M	o	Parameter identifying the above layer protocol, if any.

TP-DCS	TP-Data-Coding-Scheme	M	o	Parameter identifying the coding scheme within the TP-User-Data.
TP-SCTS	TP-Service-Centre-Time-Stamp	M	7o	Parameter identifying time when the SC received the message.
TP-UDL	TP-User-Data-Length	M	I	Parameter indicating the length of the TP-User-Data field to follow.
TP-UD	TP-User-Data	O	3)	

- 1) Provision; Mandatory (M) or Optional (O).
- 2) Representation; Integer (I), bit (b), 2 bits (2b), Octet (o), 7 octets (7o), 2-12 octets (2-12o).
- 3) Dependent on the TP-DCS.

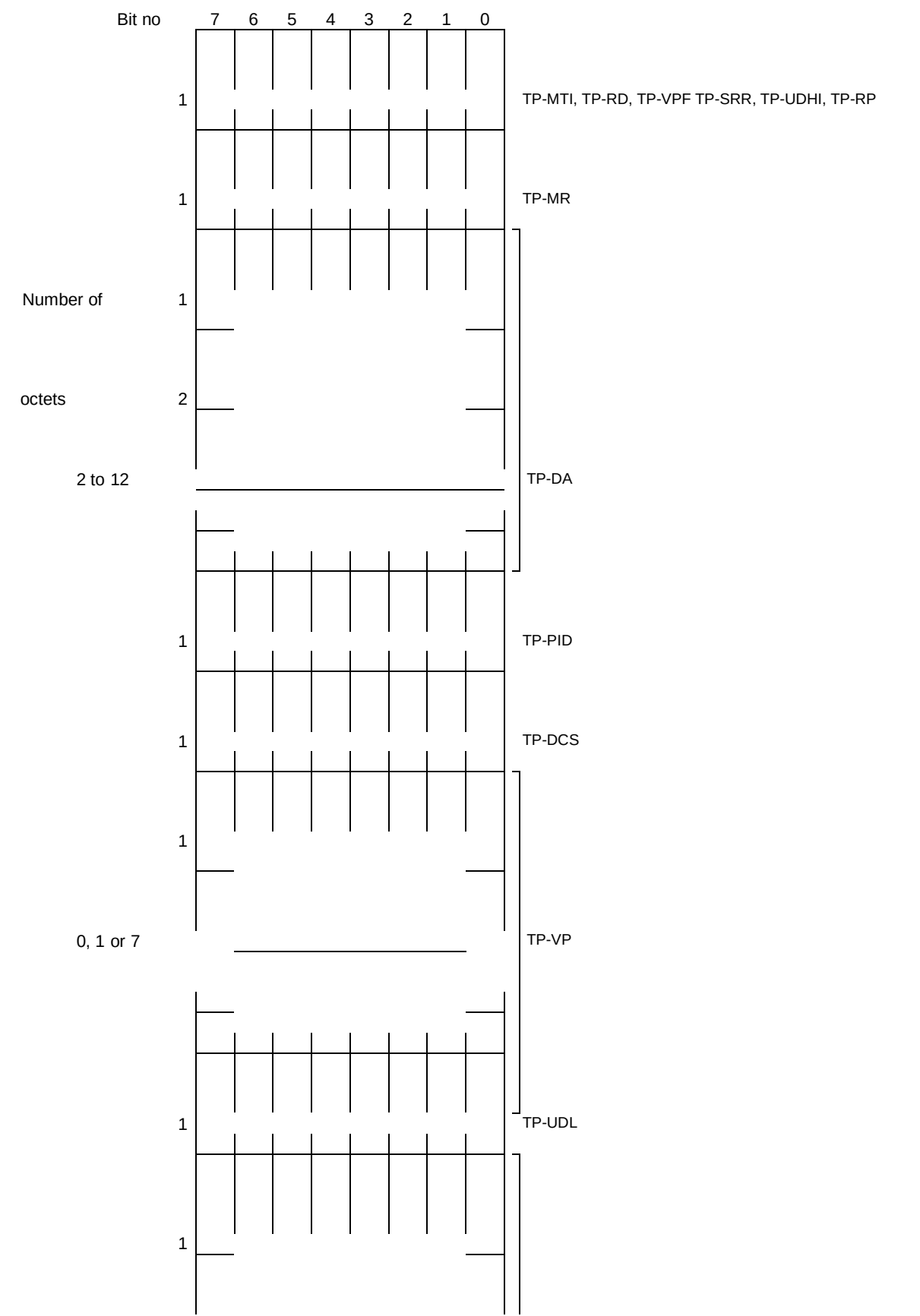
Layout of SMS-DELIVER:

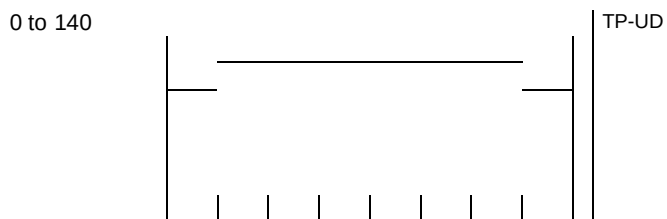


Abbr.	Reference	p1)	p2)	Description
				SM from the same OA
TP-VPF	TP-Validity-Period-Format	M	2b	Parameter indicating whether or not the TP-VP field is present.
TP-RP	TP-Reply-Path	M	b	Parameter indicating the request for Reply Path.
TP-UDHI	TP-User-Data-Header-Indicator	O	b	Parameter indicating that the TP-UD field contains a Header.
TP-SRR	TP-Status-Report-Request	O	b	Parameter indicating if the MS is requesting a status report.
TP-MR	TP-Message-Reference	M	I	Parameter identifying the SMS-SUBMIT.
TP-DA	TP-Destination-Address	M	2-12o	Address of the destination SME.
TP-PID	TP-Protocol-Identifier	M	o	Parameter identifying the above layer protocol, if any.
TP-DCS	TP-Data-Coding-Scheme	M	o	Parameter identifying the coding scheme within the TP-User-Data.
TP-VP	TP-Validity-Period	O	o/7o	Parameter identifying the time from where the message is no longer valid.
TP-UDL	TP-User-Data-Length	M	I	Parameter indicating the length of the TP-User-Data field to follow.
TP-UD	TP-User-Data	O	3)	

- 1) Provision; Mandatory (M) or Optional (O).
- 2) Representation; Integer (I), bit (b), 2 bits (2b), Octet (o), 7 octets (7o), 2-12 octets (2-12o).
- 3) Dependent on the TP-DCS.

Layout of SMS-SUBMIT:





NOTE: Any unused bits shall be set to zero by the sending entity and shall be ignored by the receiving entity.

9.2.2.2a SMS-SUBMIT-REPORT type

An SMS-SUBMIT-REPORT TPDU is carried as a RP-User-Data element within an RP-ERROR PDU and is part of the negative acknowledgement to an SMS-SUBMIT or SMS-COMMAND.

An SMS-SUBMIT-REPORT TPDU is also carried as a RP-User-Data element with an RP-ACK PDU and is part of a positive acknowledgement to a SMS-SUBMIT or SMS-COMMAND.

(i) SMS-SUBMIT-REPORT for RP-ERROR

Basic elements of the SMS-SUBMIT-REPORT type:

Abbr.	Reference	p1)	p2)	Description
TP-MTI	TP-Message-Type-Indicator	M	2b	Parameter describing the message type
TP-UDHI	TP-User-Data-Header-Indication	O	b	Parameter indicating that the TP-UD field contains a Header
TP-FCS	TP-Failure-Cause	M	I	Parameter indicating the reason for SMS-SUBMIT failure
TP-PI	TP-Parameter-Indicator	M	o	Parameter indicating the presence of any of the optional parameters which follow
TP-SCTS	TP-Service-Centre-Time-Stamp	M	7o 5)	Parameter identifying the time when the SC received the SMS-SUBMIT See subclause 9.2.3.11
TP-PID	TP-Protocol-Identifier	O	o	See subclause 9.2.3.9
TP-DCS	TP-Data-Coding-Scheme	O	o	see subclause 9.2.3.10
TP-UDL	TP-User-Data-Length	O	o	see subclause 9.2.3.16
TP-UD	TP-User-Data	O	3) 4)	see subclause 9.2.3.24

1) Provision: Mandatory (M) or Optional (O).

2) Representation: Integer (I), bit (b), 2bits (2b), octet (o).

3) Dependent upon the TP-DCS.

4) The TP-User-Data field in the SMS-SUBMIT-REPORT is only available for use by the SC.

5) This same time value shall also be carried in the SMS-STATUS-REPORT relating to a particular SM. See subclause 9.2.2.3. This shall allow the submitting SME to associate a particular SMS-SUBMIT with a subsequent SMS-STATUS-REPORT by correlating the TP-SCTS values.

Layout of SMS-SUBMIT-REPORT:

		Bit Number								
Number of Octets		7	6	5	4	3	2	1	0	
1										TP-MTI, TP-UDHI
1										TP-FCS
1										TP-PI
7										TP-SCTS
0,1										TP-PID
0,1										TP-DCS
0,1										TP-UDL
0 to 151										TP-UD

Bits 7 and 5 - 2 in octet 1 are presently unused and the sender shall set them to zero. If any of these bits is non-zero, the receiver shall not examine the other field and shall treat the TP-Failure-Cause as "Unspecified error cause".

(ii) SMS-SUBMIT-REPORT for RP-ACK

Basic elements of the SMS-SUBMIT_REPORT type:

Abbr	Reference	p1)	p2)	Description
TP-MTI	TP-Message Type-Indicator	M	2b	Parameter describing the message type
TP-UDHI	TP-User-Data-Header-Indication	O	b	Parameter indicating that the TP-UD field contains a Header
TP-PI	TP-Parameter-Indicator	M	o	Parameter indicating the presence of any of the optional parameters which follow
TP-SCTS	TP-Service-Centre-Time-Stamp	M	7o 5)	Parameter identifying the time when the SC received the SMS-SUBMIT See subclause 9.2.3.11
TP-PID	TP-Protocol-Identifier	O	o	See subclause 9.2.3.9
TP-DCS	TP-Data-Coding-Scheme	O	o	see subclause 9.2.3.10
TP-UDL	TP-User-Data-Length	O	o	see subclause 9.2.3.16
TP-UD	TP-User-Data	O	3) 4)	see subclause 9.2.3.24

1) Provision: Mandatory (M) or Optional (O).

2) Representation: Integer (I), Bit (B), 2bits (2b), octet (o).

3) Dependent upon the TP-DCS.

4) The TP-User-Data field in the SMS-SUBMIT-REPORT is only available for use by the SC.

5) This same time value shall also be carried in the SMS-STATUS-REPORT relating to a particular SM. See subclause 9.2.2.3. This shall allow the submitting SME to associate a particular SMS-SUBMIT with a subsequent SMS-STATUS-REPORT by correlating the TP-SCTS values.

Layout of SMS-SUBMIT REPORT

Bit Number

Number of Octets	7	6	5	4	3	2	1	0	
1									TP-MTI, TP-UDHI
1									TP-PI
7									TP-SCTS
0,1									TP-PID
0,1									TP-DCS
0,1									TP-UDL
0 to 152									TP-UD

Bits 7 and 5 - 2 in octet 1 are presently unused in the SMS-SUBMIT-REPORT and the sender shall set them to zero. If any of these bits is non-zero, the receiver shall ignore them.

9.2.2.3 SMS-STATUS-REPORT type

Basic elements of the SMS-STATUS-REPORT type:

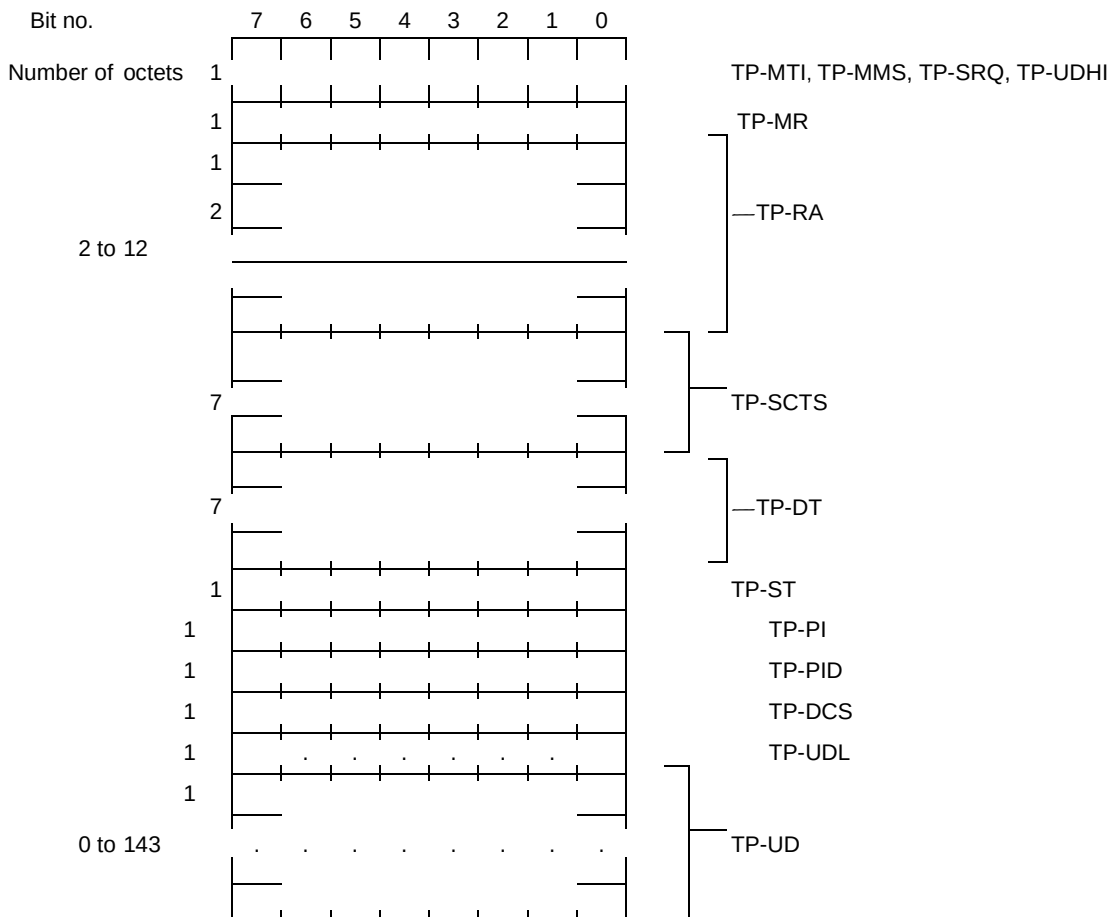
Abbr.	Reference	p1)	R2)	Description
TP-MTI	TP-Message-Type-Indicator	M	2b	Parameter describing the message type
TP-UDHI	TP-User-Data-Header-Indication	O	b	Parameter indicating that the TP-UD field contains a Header
TP-MMS	TP-More-Messages-to-Send	M	b	Parameter indicating whether or not there are more messages to send
TP-SRQ	TP-Status-Report-Qualifier	M	b	Parameter indicating whether the previously submitted TPDU was an SMS-SUBMIT or an SMS-COMMAND
TP-MR	TP-Message-Reference ³⁾	M	I	Parameter identifying the previously submitted SMS-SUBMIT or SMS-COMMAND
TP-RA	TP-Recipient-Address	M	2-12o	Address of the recipient of the previously submitted mobile originated short message
TP-SCTS	TP-Service-Centre-Time-Stamp	M	7o	Parameter identifying time when the SC received the previously sent SMS-SUBMIT
TP-DT	TP-Discharge-Time	M	7o	Parameter identifying the time associated with a particular TP-ST outcome
TP-ST	TP-Status	M	o	Parameter identifying the status of the previously sent mobile originated short message
TP-PI	TP-Parameter-Indicator	O 4)	o	Parameter indicating the presence of any of the optional parameters which follow
TP-PID	TP-Protocol-Identifier	O	o	see subclause 9.2.3.9. TP-PID of original SMS-SUBMIT
TP-DCS	TP-Data-Coding-Scheme	O	o	see subclause 9.2.3.10
TP-UDL	TP-User-Data-Length	O	o	see subclause 9.2.3.16
TP-UD	TP-User-Data	O	5)	see subclause 9.2.3.24

1) Provision: Mandatory (M) or Optional (O).

2) Representation: Integer (I), bit (b), 2 bits (2b), Octet (o), 7 octets (7o), 2-12 octets (2-12o).

- 3) Where the SMS-STATUS-REPORT is the result of an SMS-COMMAND and the TP-Command-Type was an Enquiry, the TP-MR returned in the SMS-STATUS-REPORT shall be the TP-MN which was sent in the SMS-COMMAND (i.e. the TP-MR of the previously submitted SM to which the Enquiry refers).
- 4) Mandatory if any of the optional parameters following TP-PI is present, otherwise optional.
- 5) TP-UD contains information related to a SMS-DELIVER; can contain information transported in the TP-UD of SMS-DELIVER-REPORT, and information inserted by the SMSC. The length of the TP-UD field is limited and might not be long enough to fit information both from the original receiving terminal (as included into the SMS-DELIVER-REPORT) and information added by the SMSC. In these cases the former information has higher priority, and the latter shall be truncated.

Layout of SMS-STATUS-REPORT:



NOTE: Any unused bits shall be set to zero by the sending entity and shall be ignored by the receiving entity.

The maximum guaranteed length of TP-UD is 131 octets. In order to achieve the maximum stated above (143 octets), the TP-RA field must have a length of 2 octets and TP-PID and TP-DCS must not be present.

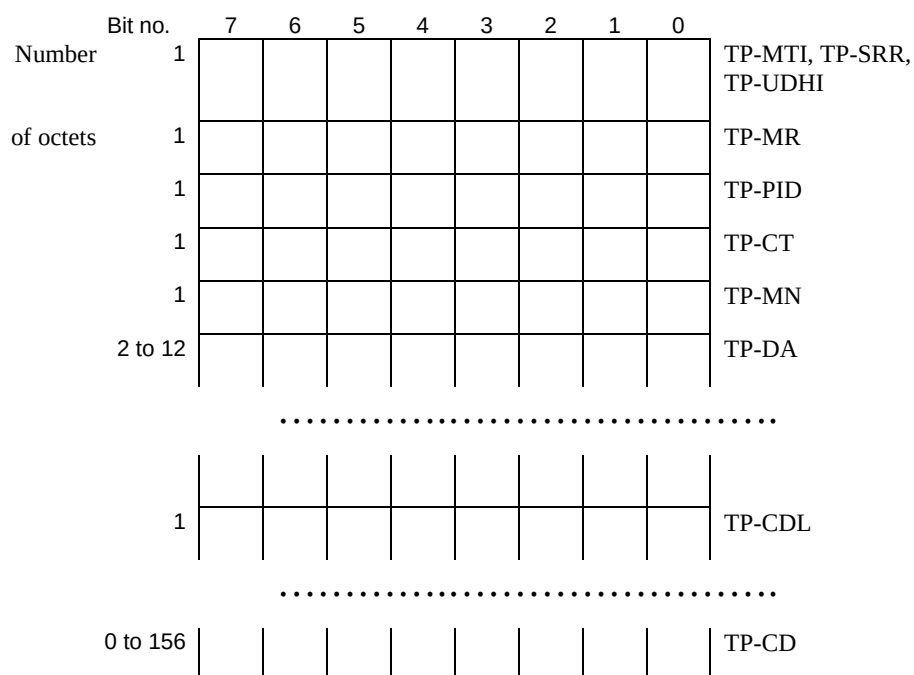
9.2.2.4 SMS-COMMAND type

Basic elements of the SMS-COMMAND type:

Abbr.	Reference	P ¹⁾	R ²⁾	Description
TP-MTI	TP-Message-Type-Indicator	M	2b	Parameter describing the type
TP-UDHI	TP-User-Data-Header-Indication	O	b	Parameter indicating that the TP-CD field contains a Header
TP-SRR	TP-Status-Report- Request	O	b	Parameter indicating if the SMS Command is requesting a status report.
TP-MR	TP-Message Reference	M	I	Parameter identifying the SMS-COMMAND
TP-PID	TP-Protocol- Identifier	M	o	Parameter identifying the above layer protocol, if any
TP-CT	TP-Command-Type	M	o	Parameter specifying which operation is to be performed on a SM
TP-MN	TP-Message-Number	M ³⁾	o	Parameter indicating which SM in the SC to operate on
TP-DA	TP-Destination-Address	M ⁴⁾	2-12o	Parameter indicating the Destination Address to which the TP-Command refers
TP-CDL	TP-Command-Data-Length	M	o	Parameter indicating the length of the TP-CD field in octets
TP-CD	TP-Command-Data	O	o	Parameter containing user data

- 1) Provision: Mandatory (M) or Optional (O).
- 2) Representation: Integer (I), bit (b), 2bits (2b), octet (o).
- 3) For TP-Command-Types which are not for a specific SM this field shall be ignored when received. Its value is of no concern but the field must be present to maintain the structure.
- 4) For certain TP-Command-Types which operate on a specific SM (e.g. Enquire, Delete etc.) the full TP-DA must be specified. For TP-Command-Types which do not operate on a specific SM, the address length must be set to zero indicating that the Address-Value fields are not present. The Type-of-Address field must be present (see 9.1.2.5) and shall be set to zero and ignored.

Layout of SMS-COMMAND:



NOTE: The maximum guaranteed length of TP-CD is 146 octets. In order to achieve the maximum stated above (156 octets), the TP-DA field must have a length of 2 octets.

9.2.3 Definition of the TPDU parameters

9.2.3.1 TP-Message-Type-Indicator (TP-MTI)

The TP-Message-Type-Indicator is a 2-bit field, located within bits no 0 and 1 of the first octet of all PDUs which can be given the following values:

bit1	bit0	Message type
0	0	SMS-DELIVER (in the direction SC to MS)
0	0	SMS-DELIVER REPORT (in the direction MS to SC)
1	0	SMS-STATUS-REPORT (in the direction SC to MS)
1	0	SMS-COMMAND (in the direction MS to SC)
0	1	SMS-SUBMIT (in the direction MS to SC)
0	1	SMS-SUBMIT-REPORT (in the direction SC to MS)
1	1	Reserved

If an MS receives a TPDU with a "Reserved" value in the TP-MTI it shall process the message as if it were an "SMS-DELIVER" but store the message exactly as received.

9.2.3.2 TP-More-Messages-to-Send (TP-MMS)

The TP-More-Messages-to-Send is a 1-bit field, located within bit no 2 of the first octet of SMS-DELIVER and SMS-STATUS-REPORT, and to be given the following values:

Bit no 2:	0	More messages are waiting for the MS in this SC
	1	No more messages are waiting for the MS in this SC

NOTE: In the case of SMS-STATUS-REPORT this parameter refers to messages waiting for the mobile to which the status report is sent. The term message in this context refers to SMS-messages or status reports.

9.2.3.3 TP-Validity-Period-Format (TP-VPF)

The TP-Validity-Period-Format is a 2-bit field, located within bit no 3 and 4 of the first octet of SMS-SUBMIT, and to be given the following values:

bit4	bit3	
0	0	TP-VP field not present
1	0	TP-VP field present - relative format
0	1	TP-VP field present - enhanced format
1	1	TP-VP field present - absolute format

Any unsupported value may be rejected by the SC by returning the 'TP-VPF not supported' TP-FCS value in the SMS Submit Report for RP-Error.

9.2.3.4 TP-Status-Report-Indication (TP-SRI)

The TP-Status-Report-Indication is a 1-bit field, located within bit no. 5 of the first octet of SMS-DELIVER, and to be given the following values:

Bit no. 5: 0	A status report shall not be returned to the SME
1	A status report shall be returned to the SME

9.2.3.5 TP-Status-Report-Request (TP-SRR)

The TP-Status-Report-Request is a 1-bit field, located within bit no. 5 of the first octet of SMS-SUBMIT and SMS-COMMAND, and to be given the following values:

Bit no. 5: 0	A status report is not requested
1	A status report is requested

9.2.3.6 TP-Message-Reference (TP-MR)

The TP-Message-Reference field gives an integer representation of a reference number of the SMS-SUBMIT or SMS-COMMAND submitted to the SC by the MS. The MS increments TP-Message-Reference by 1 for each SMS-SUBMIT or SMS-COMMAND being submitted. The value to be used for each SMS-SUBMIT is obtained by reading the Last-Used-TP-MR value from the SMS Status data field in the (U)SIM (see GSM TS 11.11 [16] and 3G TS 31.102 [30]) and incrementing this value by 1. After each SMS-SUBMIT has been submitted to the network, the Last-Used-TP-MR value in the (U)SIM is updated with the TP-MR that was used in the SMS-SUBMIT operation. The reference number may possess values in the range 0 to 255. The value in the TP-MR assigned by the MS is the same value which is received at the SC.

In the case where no response or an RP-Error is received in response to an SMS-SUBMIT or SMS-COMMAND, then the MS shall automatically repeat the SMS-SUBMIT or SMS-COMMAND but must use the same TP-MR value and set the TP-RD bit to 1 (see 9.2.3.25). The number of times the MS automatically repeats the SMS-SUBMIT or SMS-COMMAND shall be in the range 1 to 3 but the precise number is an implementation matter. The automatic repeat mechanism should be capable of being disabled through MMI.

If all automatic attempts fail (or in the case of no automatic attempts the first attempt fails), the user shall be informed. The failed message shall be stored in the mobile in such a way that the user can request a retransmission using the same TP-MR value, without the need to re-enter any information. Such storage need only be provided for a single failed message, i.e. the one most recently attempted.

The SC should discard an SMS-SUBMIT or SMS-COMMAND which has the TP-RD bit set to a 1 and which has the same TP-MR value as the previous SMS-SUBMIT or SMS-COMMAND received from the same originating address. The SC shall send an RP-ACK in response to the discarded SMS-SUBMIT or SMS-COMMAND.

The SMS-STATUS-REPORT also contains a TP-Message-Reference field. The value sent to the MS shall be the same as the TP-Message-Reference value generated by the MS in the earlier SMS-SUBMIT or SMS-COMMAND to which the status report relates.

9.2.3.7 TP-Originating-Address (TP-OA)

The TP-Originating-Address field is formatted according to the formatting rules of address fields.

9.2.3.8 TP-Destination-Address (TP-DA)

The TP-Destination-Address field is formatted according to the formatting rules of address fields.

9.2.3.9 TP-Protocol-Identifier (TP-PID)

The TP-Protocol-Identifier parameter serves the purposes indicated in subclause 3.2.3. It consists of one octet, and the bits in the octet are used as follows:

The MS shall interpret reserved or unsupported values as the value 00000000 but shall store them exactly as received.

The SC may reject messages with a TP-Protocol-Identifier containing a reserved value or one which is not supported.

bits	usage
7 6	
0 0	Assigns bits 0..5 as defined below
0 1	Assigns bits 0..5 as defined below
1 0	reserved
1 1	Assigns bits 0-5 for SC specific use

In the case where bit 7 = 0 and bit 6 = 0,

bit 5 indicates telematic interworking:

value = 0 : no interworking, but SME-to-SME protocol

value = 1 : telematic interworking

In the case of telematic interworking, the following five bit patterns in bits 4..0 are used to indicate different types of telematic devices:

4.. 0	
00000	implicit - device type is specific to this SC, or can be concluded on the basis of the address
00001	telex (or teletex reduced to telex format)
00010	group 3 telefax
00011	group 4 telefax
00100	voice telephone (i.e. conversion to speech)
00101	ERMES (European Radio Messaging System)
00110	National Paging system (known to the SC)
00111	Videotex (T.100 [20] /T.101 [21])
01000	teletex, carrier unspecified
01001	teletex, in PSPDN
01010	teletex, in CSPDN
01011	teletex, in analog PSTN
01100	teletex, in digital ISDN
01101	UCI (Universal Computer Interface, ETSI DE/PS 3 01-3)
01110..01111	(reserved, 2 combinations)
10000	a message handling facility (known to the SC)
10001	any public X.400-based message handling system
10010	Internet Electronic Mail
10011..10111	(reserved, 5 combinations)
11000..11110	values specific to each SC, usage based on mutual agreement between the SME and the SC (7 combinations available for each SC)
11111	A GSM/UMTS mobile station. The SC converts the SM from the received TP-Data-Coding-Scheme to any data coding scheme supported by that MS (e.g. the default).

If bit 5 has value 1 in an SMS-SUBMIT PDU, it indicates that the SME is a telematic device of a type which is indicated in bits 4..0, and requests the SC to convert the SM into a form suited for that device type. If the destination network is ISDN, the SC must also select the proper service indicators for connecting to a device of that type.

If bit 5 has value 1 in an SMS-DELIVER PDU, it indicates that the SME is a telematic device of a type which is indicated in bits 4..0.

If bit 5 has value 0 in an SMS-DELIVER PDU, the value in bits 4..0 identifies the SM-AL protocol being used between the SME and the MS.

Note that for the straightforward case of simple MS-to-SC short message transfer the Protocol Identifier is set to the value 0.

In the case where bit 7 = 0, bit 6 = 1, bits 5..0 are used as defined below

5 .. .0	
000000	Short Message Type 0
000001	Replace Short Message Type 1
000010	Replace Short Message Type 2
000011	Replace Short Message Type 3
000100	Replace Short Message Type 4
000101	Replace Short Message Type 5
000110	Replace Short Message Type 6
000111	Replace Short Message Type 7
001000..011101	Reserved
011110	Enhanced Message Service (EMS. Refer subclause 3.10)
001000..011110	Reserved
011111	Return Call Message
100000..111011	Reserved
111100	ANSI-136 R-DATA
111101	ME Data download
111110	ME De-personalization Short Message
111111	(U)SIM Data download

A short message type 0 indicates that the ME must acknowledge receipt of the short message but may discard its contents.

The Replace Short Message feature is optional for the ME and the (U)SIM but if implemented it shall be performed as described here.

For MT short messages, on receipt of a short message from the SC, the MS shall check to see if the associated Protocol Identifier contains a Replace Short Message Type code.

If such a code is present, then the MS shall check the originating address and replace any existing stored message having the same Protocol Identifier code and originating address with the new short message and other parameter values. If there is no message to be replaced, the MS shall store the message in the normal way. The MS may also check the SC address as well as the Originating Address. However, in a network which has multiple SCs, it is possible for a Replace Message type for a SM to be sent via different SCs and so it is recommended that the SC address should not be checked by the MS unless the application specifically requires such a check.

If a Replace Short Message Type code is not present then the MS shall store the message in the normal way.

In MO short messages the SC reacts similarly but only the address of the originating MS or any other source is checked.

The Enhanced Message Service PID value shall be set in a MO enhanced short message unless there is a need to set the PID to any other value (e.g. for telematic interworking). In the event where the message contains one or more IE that could not be understood by the receiving SME, this PID value may be used to assist the receiving SME and/or the SMSC to identify such a message (e.g. for diagnostic purposes). It is not a mandatory requirement for the SMSC or receiving SME to process this PID value or for the SMSC to pass the value to the receiving SME.

A Return Call Message indicates to the MS to inform the user that a call (e.g. a telephone call) can be established to the address specified within the TP-OA. The RP-OA contains the address of the SC as usual. The message content (if present) gives displayable information (e.g. the number of waiting voice messages). The message is handled in the same way as all other messages of the Replace Short Message Types.

The ME De-personalization Short Message is a ME-specific message which instructs the ME to de-personalities the ME (see 3G TS 22.022 [25]). The TP-DCS shall be set to Uncompressed, Default Alphabet, and Message Class 1 (ME-specific), which corresponds to a bit coding of 00010001. The TP-UD field contains de-personalization information coded according to 3G TS 22.022 [25]. This information shall not be displayed by an ME which supports the scheme. The acknowledgement to this message is a SMS-DELIVER-REPORT for RP-ACK in which the TP-User-Data shall be coded according to 3G TS 22.022 [25].

(U)SIM Data download is a facility whereby the ME must pass the short message in its entirety including all SMS elements contained in the SMS deliver to the (U)SIM using the mechanism described in GSM TS 11.11 [16] and 3G TS 31.102 [30]. The DCS shall be set to 8 bit message class 2 (either bit coding 1111 0110 or 00010110). The entire user data field is available for (U)SIM Data download. If the DCS is not set to 8-bit message class 2 then the message shall be handled in the normal way by the ME.

ME Data download is a facility whereby the ME shall process the short message in its entirety including all SMS elements contained in the SMS deliver to the ME. The DCS should normally be set to message class 1. If the DCS is set to message class 1 and no application in the ME exists, which is able to process the short message, the ME may discard the short message. The entire user data field is available for ME data download. The TPDU parameters required for the SMS-DELIVER should be passed transparently by all involved SCs, so no TPDU parameter in the entire short message is modified, other than the changes required to convert an SMS-SUBMIT into an SMS-DELIVER.

ANSI-136 R-DATA is a facility whereby the ME must pass the short message in its entirety, including all elements contained in the SMS DELIVER, to the (U)SIM using the mechanism described in GSM TS 11.14 [16] and 3G TS 31.102 [30]. The DCS shall be set to 8-bit message class 2 (either bit coding 11110110 or 00010110). If the DCS is not set to 8-bit message class 2 then the message shall be handled in the normal way by the ME.

9.2.3.10 TP-Data-Coding-Scheme (TP-DCS)

The TP-Data-Coding-Scheme is defined in 3G TS 23.038 [9].

9.2.3.11 TP-Service-Centre-Time-Stamp (TP-SCTS)

The TP-Service-Centre-Time-Stamp field is given in semi-octet representation, and represents the local time in the following way:

	Year:	Month:	Day:	Hour:	Minute:	Second:	Time Zone
Digits: (Semi-octets)	2	2	2	2	2	2	2

The Time Zone indicates the difference, expressed in quarters of an hour, between the local time and GMT. In the first of the two semi-octets, the first bit (bit 3 of the seventh octet of the TP-Service-Centre-Time-Stamp field) represents the algebraic sign of this difference (0: positive, 1: negative).

The Service-Centre-Time-Stamp, and any other times coded in this format that are defined in the present document, represent the time local to the sending entity.

If the MS has knowledge of the local time zone, then any time received (e.g. Service-Centre-Time-Stamp) at the MS may be displayed in the local time rather than the time local to the sending entity. Messages shall be stored as received without change to any time contained therein.

The Time Zone code enables the receiver to calculate the equivalent time in GMT from the other semi-octets in the Service-Centre-Time-Stamp, or indicate the time zone (GMT, GMT+1H etc.), or perform other similar calculations as required by the implementation. The value contained in the Time Zone field must take into account daylight saving time, such that when the sending entity changes from regular (winter) time to daylight saving (summer) time, there is a change to the value in the Time Zone field, for example in the UK the winter setting is 00000000 and the summer setting is 01000000.

If the MS receives a non-integer value in the SCTS, it shall assume that the digit is set to 0 but shall store the entire field exactly as received.

9.2.3.12 TP-Validity-Period (TP-VP)

9.2.3.12.1 TP-VP (Relative format)

The TP-Validity-Period comprises 1 octet in integer representation, giving the length of the validity period, counted from when the SMS-SUBMIT is received by the SC.

The representation of time is as follows:

TP-VP value	Validity period value
0 to 143	(TP-VP + 1) x 5 minutes (i.e. 5 minutes intervals up to 12 hours)
144 to 167	12 hours + ((TP-VP - 143) x 30 minutes)
168 to 196	(TP-VP - 166) x 1 day
197 to 255	(TP-VP - 192) x 1 week

9.2.3.12.2 TP-VP (Absolute format)

The TP-Validity Period comprises 7 octets in semi octet representation giving the absolute time of the validity period termination.

The representation of time is identical to the representation of the TP-Service-Centre-Time-Stamp.

9.2.3.12.3 TP-VP (Enhanced format)

The TP-Validity Period comprises 7 octets. The presence of all octets is mandatory although they may not all be used. The first octet indicates the way in which the following 6 octets are used. Any reserved/unused bits or octets must be set to zero.

Octet 1 TP-VP functionality indicator

bit 7 Extension bit

Set to 1 if the TP-VP functionality indicator is to be extended to another octet. A setting of 0 indicates that there are no more TP-VP functionality indicator extension octets to follow.

Any such extension octet shall immediately follow the previous TP-VP functionality indicator.

bit 6 Single shot SM.

Set to 1 if the SC is required to make up to one delivery attempt. The TP-Validity Period, where present, shall be applicable to the Single shot SM.

bits 5, 4, 3 Reserved

bits 2, 1, 0 Validity Period Format.

Value bits	2	1	0	
	0	0	0	No Validity Period specified
	0	0	1	Validity Period is as specified for the relative case. The following octet contains the TP-VP value as described in 9.2.3.12.1
	0	1	0	Validity period is relative in integer representation and the following octet contains the TP-VP value in the range 0 to 255 representing 0 to 255 seconds. A TP-VP value of zero is undefined and reserved for future use.
	0	1	1	Validity period is relative in semi-octet representation. The following 3 octets contain the relative time in Hours, Minutes and Seconds giving the length of the validity period counted from when the SMS-SUBMIT is received by the SC. The representation of time uses the same representation as the Hours, Minutes and Seconds in the TP-Service-Centre-Time-Stamp.
	1	0	0	Reserved
	1	0	1	Reserved
	1	1	0	Reserved
	1	1	1	Reserved

The SC shall reject any Unsupported/ Reserved values received by returning the 'TP-VP not supported' TP-FCS value in the Submit SM Report for RP-Error.

9.2.3.13 TP-Discharge-Time (TP-DT)

The TP-Discharge-Time field indicates the time at which a previously submitted SMS-SUBMIT was successfully delivered to or attempted to deliver to the recipient SME or disposed of by the SC.

In the case of "transaction completed" the time shall be the time of the completion of the transaction. In the case of "SC still trying to transfer SM" the time shall be the time of the last transfer attempt. In the case of "permanent or temporary error - SC not making any more transfer attempts" the time shall be the time of either the last transfer attempt or the time at which the SC disposed of the SM according to the Status outcome in TP-ST.

The TP-Discharge-Time is given in semi-octet representation in a format identical to the TP-SCTS.

9.2.3.14 TP-Recipient-Address (TP-RA)

The TP-Recipient-Address field indicates the address of the SME that was the destination of the previously submitted mobile originated short message being subject to the status report. The field is formatted according to the formatting rules of address fields.

9.2.3.15 TP-Status (TP-ST)

The TP-Status field indicates the status of a previously submitted SMS-SUBMIT and certain SMS COMMANDS for which a Status -Report has been requested. It consists of one octet and the bits in the octet are used as follows:

The MS shall interpret any reserved values as "Service Rejected" (01100011) but shall store them exactly as received.

bits	value/usage
7	0 Bits 0..6 as defined below:
6....0	Indicate whether the previously submitted short message was successfully forwarded to the SME, or whether an error condition has been encountered, as follows:
	Short message transaction completed
	0000000 Short message received by the SME
	0000001 Short message forwarded by the SC to the SME but the SC is unable to confirm delivery
	0000010 Short message replaced by the SC
	Reserved values

0000011..0001111	Reserved
0010000..0011111	Values specific to each SC

Temporary error, SC still trying to transfer SM

0100000	Congestion
0100001	SME busy
0100010	No response from SME
0100011	Service rejected
0100100	Quality of service not available
0100101	Error in SME
0100110..0101111	Reserved
0110000..0111111	Values specific to each SC

Permanent error, SC is not making any more transfer attempts

1000000	Remote procedure error
1000001	Incompatible destination
1000010	Connection rejected by SME
1000011	Not obtainable
1000100	Quality of service not available
1000101	No interworking available
1000110	SM Validity Period Expired
1000111	SM Deleted by originating SME
1001000	SM Deleted by SC Administration
1001001	SM does not exist (The SM may have previously existed in the SC but the SC no longer has knowledge of it or the SM may never have previously existed in the SC)
1001010..1001111	Reserved
1010000..1011111	Values specific to each SC

Temporary error, SC is not making any more transfer attempts

1100000	Congestion
1100001	SME busy
1100010	No response from SME
1100011	Service rejected
1100100	Quality of service not available
1100101	Error in SME
1100110..1101001	Reserved
1101010..1101111	Reserved
1110000..1111111	Values specific to each SC

bits	value/usage

7	1	Bits 0..6	reserved

9.2.3.16 TP-User-Data-Length (TP-UDL)

If the TP-User-Data is coded using the GSM 7 bit default alphabet, the TP-User-Data-Length field gives an integer representation of the number of septets within the TP-User-Data field to follow. If the 7bit default-alphabet extension mechanism is used within the TP-User-Data (see 3G TS 23.038 [9]), the actual number of characters in the message shall be less than the number of septets. If a TP-User-Data-Header field is present, then the TP-User-Data-Length value is the sum of the number of septets in the TP-User-Data-Header field (including any padding) and the number of septets in the TP-User-Data field which follows. See figure 9.2.3.24 (a). If the TP-User-Data is coded using 8-bit data, the TP-User-Data-Length field gives an integer representation of the number of octets within the TP-User-Data field to follow. If a TP-User-Data-Header field is present, then the TP-User-Data-Length value is the sum of the number of octets in the TP-User-Data-Header field and the number of octets in the TP-User-Data field which follows. See figure 9.2.3.24 (b).

If the TP-User-Data is coded using UCS2 [24] data, the TP-User-Data-Length field gives an integer representation of the number of octets within the TP-User-Data field to follow. If a TP-User-Data-Header field is present, then the

TP-User-Data-Length value is the sum of the number of octets in the TP-User-Data-Header field and the number of octets in the TP-User-Data field which follows. See figure 9.2.3.24 (b).

If the TP-User-Data is coded using compressed GSM 7 bit default alphabet or compressed 8 bit data or compressed UCS2 [24] data, the TP-User-Data-Length field gives an integer representation of the number of octets after compression within the TP-User-Data field to follow. If a TP-User-Data-Header field is present, then the TP-User-Data-Length value is the sum of the number of uncompressed octets in the TP-User-Data-Header field and the number of octets in the compressed TP-User-Data field which follows. See figure 9.2.3.24 (c)

For other Data Coding Schemes, see 3G TS 23.038 [9]. If this field is zero, the TP-User-Data field shall not be present.

9.2.3.17 TP-Reply-Path (TP-RP)

The TP-Reply-Path is a 1-bit field, located within bit no 7 of the first octet of both SMS-DELIVER and SMS-SUBMIT, and to be given the following values:

Bit no 7:	0	TP-Reply-Path parameter is not set in this SMS-SUBMIT/DELIVER
	1	TP-Reply-Path parameter is set in this SMS-SUBMIT/DELIVER

Please refer to annex D for details about the Reply procedures.

9.2.3.18 TP-Message-Number (TP-MN)

The TP-Message-Number is an 8-bit field allowing an MS to refer uniquely to an SM in the SC which that MS has previously submitted. The TP-MN value is the TP-MR value of a previously submitted SM.

9.2.3.19 TP-Command-Type (TP-CT)

The TP-Command-Type is an 8-bit field specifying the type of operation that the SC is to perform. It has the following values:

Value (bit 7 .. 0)	Command Description	Status Report Request Value
00000000	Enquiry relating to previously submitted short message	1
00000001	Cancel Status Report Request relating to previously submitted short message	0
00000010	Delete previously submitted Short Message	0
00000011	Enable Status Report Request relating to previously submitted short message	0
00000100..00011111	Reserved	unspecified
11100000..11111111	Values specific for each SC	1 or 0

The SC shall return an RP-Error with an appropriate TP-Failure-Cause for any TP-Command value which is reserved, unsupported or invalid or the actioning of the command has failed.

The SC shall return an RP-ACK if the actioning of the Command has succeeded.

A successful Enquiry shall result in the SC sending a SMS-STATUS-REPORT for the SM to which the Enquiry refers. In the case where the SC has a number of SMs which have the same TP-MR, the same TP-DA and have come from the same originating address the SC shall send a SMS-STATUS-REPORT for each SM.

In the case where a TP-Command is to Delete a previously submitted short message, the SC shall send a Status Report indicating that the SM has been deleted if the original Submit SM request requested a status Report.

9.2.3.20 TP-Command-Data-Length (TP-CDL)

The TP-Command-Data-Length field is used to indicate the number of octets contained within the TP-Command-Data-field. If this field is set to zero, the TP-Command-Data field shall not be present.

9.2.3.21 TP-Command-Data (TP-CD)

The TP-Command-Data field contains data relating to the operation requested by the MS which is to be performed at the SC. The maximum length of this field is 157 octets. The usage and provision of the optional TP-Command-Data field shall be determined by the function selected by the TP-Command-Type field.

9.2.3.22 TP-Failure-Cause (TP-FCS)

The TP-Failure-Cause field is used to report the reason for failure to transfer or process a short message. It consists of a single octet used as follows:

TP-FCS Value (Hex)	Meaning	When used	
		MO	MT
00 - 7F	Reserved		
80 - 8F	TP-PID errors		
80	Telematic interworking not supported	x	
81	Short message Type 0 not supported	x	x
82	Cannot replace short message	x	x
83 - 8E	Reserved		
8F	Unspecified TP-PID error	x	x
90 - 9F	TP-DCS errors		
90	Data coding scheme (alphabet) not supported	x	
91	Message class not supported		x
92 - 9E	Reserved		
9F	Unspecified TP-DCS error	x	x
A0 - AF	TP-Command Errors		
A0	Command cannot be actioned	x	
A1	Command unsupported	x	
A2 - AE	Reserved		
AF	Unspecified TP-Command error	x	
B0	TPDU not supported	x	x
B1 - BF	Reserved		
C0	SC busy	x	
C1	No SC subscription	x	
C2	SC system failure	x	
C3	Invalid SME address	x	
C4	Destination SME barred	x	
C5	SM Rejected-Duplicate SM	x	
C6	TP-VPF not supported	x	
C7	TP-VP not supported	x	
C8 - CF	Reserved		
D0	(U)SIM SMS storage full		x
D1	No SMS storage capability in (U)SIM		x
D2	Error in MS		x
D3	Memory Capacity Exceeded		x
D4	(U)SIM Application Toolkit Busy		x
D5	(U)SIM data download error		x
D6 - DF	Reserved		
E0 - FE	Values specific to an application	x	x
FF	Unspecified error cause	x	x

NOTE: Any reserved codes which are received should be treated as an unspecified error cause.
MT and MO refer to the overall mobile terminated and mobile originated services; not the direction of transmission of TP-FCS.

9.2.3.23 TP-User-Data-Header-Indicator (TP-UDHI)

The TP-User-Data-Header-Indicator is a 1 bit field within bit 6 of the first octet of the following six PDUs:

- SMS-SUBMIT,
- SMS-SUBMIT-REPORT,
- SMS-DELIVER,
- SMS-DELIVER-REPORT,
- SMS-STATUS-REPORT,
- SMS-COMMAND.

TP-UDHI has the following values.

Bit no. 6	0	The TP-UD field contains only the short message
	1	The beginning of the TP-UD field contains a Header in addition to the short message

9.2.3.24 TP-User Data (TP-UD)

The length of the TP-User-Data field is defined in the PDU's of the SM-TL (see subclause 9.2.2).

The TP-User-Data field may comprise just the short message itself or a Header in addition to the short message depending upon the setting of TP-UDHI.

Where the TP-UDHI value is set to 0 the TP-User-Data field comprises the short message only, where the user data can be 7 bit (default alphabet) data, 8 bit data, or 16 bit (UCS2 [24]) data.

Where the TP-UDHI value is set to 1 the first octets of the TP-User-Data field contains a Header in the following order starting at the first octet of the TP-User-Data field.

Irrespective of whether any part of the User Data Header is ignored or discarded, the MS shall always store the entire TPDU exactly as received.

FIELD	LENGTH
Length of User Data Header	1 octet
Information-Element-Identifier "A"	1 octet
Length of Information-Element "A"	1 octet
Information-Element "A" Data	1 to "n" octets
Information-Element-Identifier "B"	1 octet
Length of Information-Element "B"	1 octet
Information-Element "B" Data	1 to "n" octets
Information-Element-Identifier "n"	1 octet
Length of Information-Element "n"	1 octet
Information-Element "n" Data	1 to "n" octets

The diagram below shows the layout of the TP-User-Data-Length and the TP-User-Data for uncompressed GSM 7 bit default alphabet data. The UDHL field is the first octet of the TP-User-Data content of the Short Message.

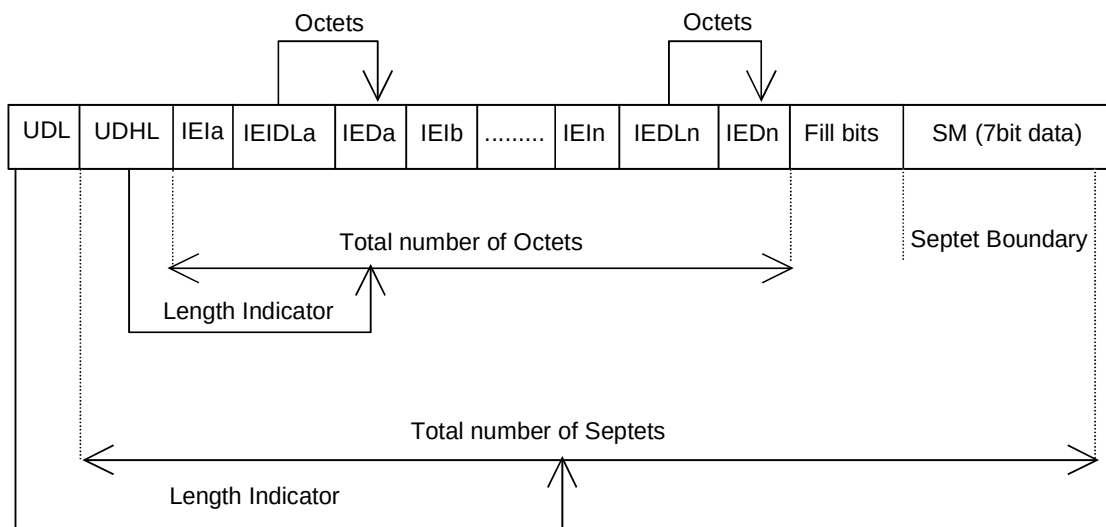


Figure 9.2.3.24 (a)

The diagram below shows the layout of the TP-User-Data-Length and the TP-User-Data for uncompressed 8 bit data or uncompressed UCS2 data. The UDHL field is the first octet of the TP-User-Data content of the Short Message.

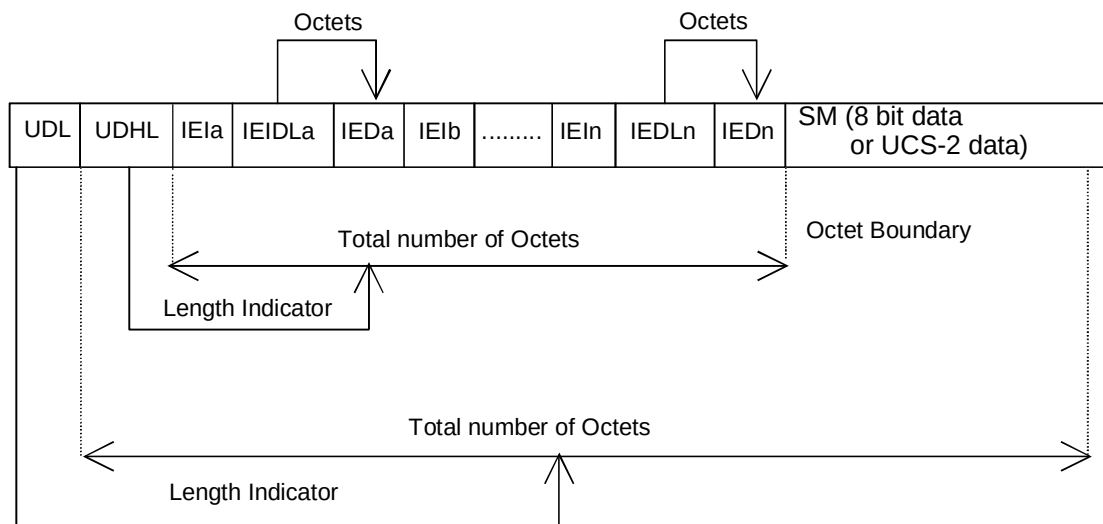


Figure 9.2.3.24 (b)

The diagram below shows the layout of the TP-User-Data-Length and the TP-User-Data for compressed GSM 7 bit default alphabet data, compressed 8 bit data or compressed UCS2 data. The UDHL field is the first octet of the TP-User-Data content of the Short Message.

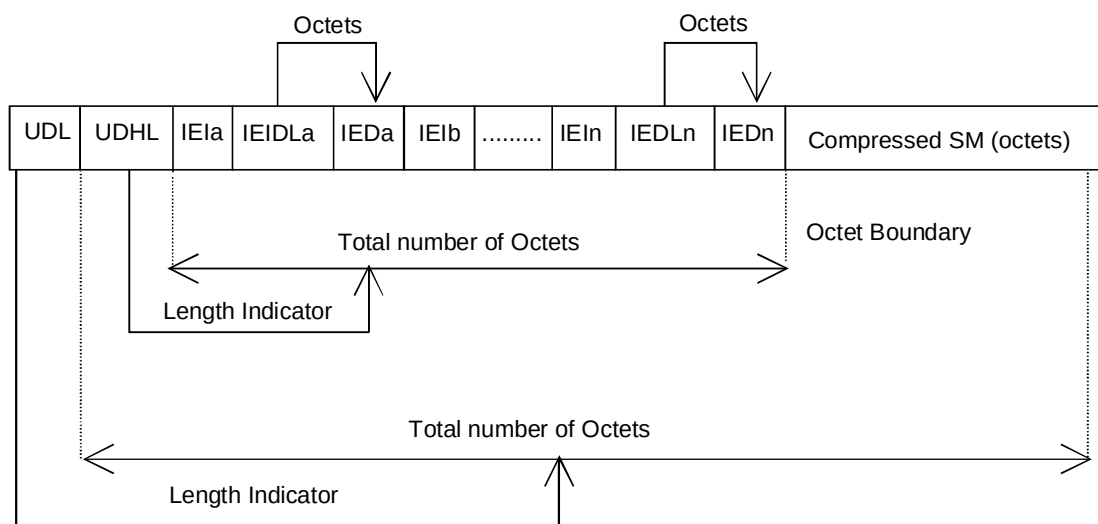


Figure 9.2.3.24 (c)

The definition of the TP-User-Data-Length field which immediately precedes the "Length of User Data Header" is unchanged and shall therefore be the total length of the TP-User-Data field including the Header, if present. (see 9.2.3.16)

The "Length-of-Information-Element" fields shall be the integer representation of the number of octets within its associated "Information-Element-Data" field which follows and shall not include itself in its count value.

The "Length-of-User-Data-Header" field shall be the integer representation of the number of octets within the "User-Data-Header" information fields which follow and shall not include itself in its count or any fill bits which may be present (see text below).

Information Elements may appear in any order and need not necessarily follow the order used in the present document.

In the case where there are no multiple instances of any Information Element type: If Information Elements are duplicated (either with the same or different content), within one single SM or within one segment of a concatenated message then the contents of the last occurrence of the Information Element shall be used.

In the case where there are multiple instances of any Information Element type: If certain types of Information Elements are duplicated (either with the same or different content) within one single SM or within one segment of a concatenated message and there is a contradiction in meaning (e.g. more than one Special Message Indication for voice) or there is a contradiction of Information Element types (e.g. an 8bit port address and a 16bit port address), then the contents of the last occurrence of the Information Element shall be used. Other types of Information Elements may occur more than once when there is additional information of the same type to be conveyed. The individual specifications for each Information Element will state if multiple use is permitted and in such a case will also indicate the maximum number of occurrences within one User Data Header.

If the length of the User Data Header overall is such that there appear to be too few or too many octets in the final Information Element then the whole User Data Header shall be ignored.

If any reserved values are received within the content of any Information Element then that part of the Information Element shall be ignored.

The Information Element Identifier octet shall be coded as follows:

VALUE (hex)	MEANING
00	Concatenated short messages, 8-bit reference number
01	Special SMS Message Indication
02	Reserved
03	Value not used to avoid misinterpretation as <LF> character
04	Application port addressing scheme, 8 bit address
05	Application port addressing scheme, 16 bit address
06	SMSC Control Parameters
07	UDH Source Indicator
08	Concatenated short message, 16-bit reference number
09	Wireless Control Message Protocol
0A	Text Formatting
0B	Predefined Sound
0C	User Defined Sound (iMelody max 128 bytes)
0D	Predefined Animation
0E	Large Animation (16*16 times 4 = 32*4 =128 bytes)
0F	Small Animation (8*8 times 4 = 8*4 =32 bytes)
10	Large Picture (32*32 = 128 bytes)
11	Small Picture (16*16 = 32 bytes)
12	Variable Picture
13-1F	Reserved for future EMS features (see subclause 3.10)
20	RFC 822 E-Mail Header
21-6F	Reserved for future use
70 – 7F	(U)SIM Toolkit Security Headers
80 – 9F	SME to SME specific use
A0 – BF	Reserved for future use
C0 – DF	SC specific use
E0 – FF	Reserved for future use

A receiving entity shall ignore (i.e. skip over and commence processing at the next information element) any information element where the IEI is Reserved or not supported. The receiving entity calculates the start of the next information element by looking at the length of the current information element and skipping that number of octets.

The SM itself may be coded as 7, 8 or 16 bit data.

If 7 bit data is used and the TP-UD-Header does not finish on a septet boundary then fill bits are inserted after the last Information Element Data octet up to the next septet boundary so that there is an integral number of septets for the entire TP-UD header. This is to ensure that the SM itself starts on an septet boundary so that an earlier Phase mobile shall be capable of displaying the SM itself although the TP-UD Header in the TP-UD field may not be understood.

It is optional to make the first character of the SM itself a Carriage Return character encoded according to the default 7 bit alphabet so that earlier Phase mobiles, which do not understand the TP-UD-Header, shall over-write the displayed TP-UD-Header with the SM itself.

If 16 bit (USC2) data is used then padding octets are not necessary. The SM itself shall start on an octet boundary.

If 8 bit data is used then padding is not necessary. An earlier Phase mobile shall be able to display the SM itself although the TP-UD header may not be understood.

It is also possible for mobiles not wishing to support the TP-UD header to check the value of the TP-UDHI bit in the SMS-Deliver PDU and the first octet of the TP-UD field and skip to the start of the SM and ignore the TP-UD header.

9.2.3.24.1 Concatenated Short Messages

This facility allows short messages to be concatenated to form a longer message.

In the case of uncompressed 8-bit data, the maximum length of the short message within the TP-UD field is 134 (140-6) octets.

In the case of uncompressed GSM 7 bit default alphabet data, the maximum length of the short message within the TP-UD field is 153 (160-7) characters.

In the case of 16 bit uncompressed USC2 data, the maximum length of the short message within the TP-UD field is 67 $((140-6)/2)$ characters. A UCS2 character must not be split in the middle; if the length of the User Data Header is odd, the maximum length of the whole TP-UD field is 139 octets.

In the case of compressed GSM 7 bit default alphabet data, 8 bit data or UCS2 the maximum length of the compressed short message within the TP-UD field is 134 $(140-6)$ octets including the Compression Header and Compression Footer, both or either of which may be present (see subclause 3.9).

The maximum length of an uncompressed concatenated short message is 39015 $(255*153)$ default alphabet characters, 34170 $(255*134)$ octets or 17085 $(255*67)$ UCS2 characters.

The maximum length of a compressed concatenated message is 34170 $(255*134)$ octets including the Compression Header and Compression Footer (see subclause 3.9 and figure 9.2.3.24.1(a) below).

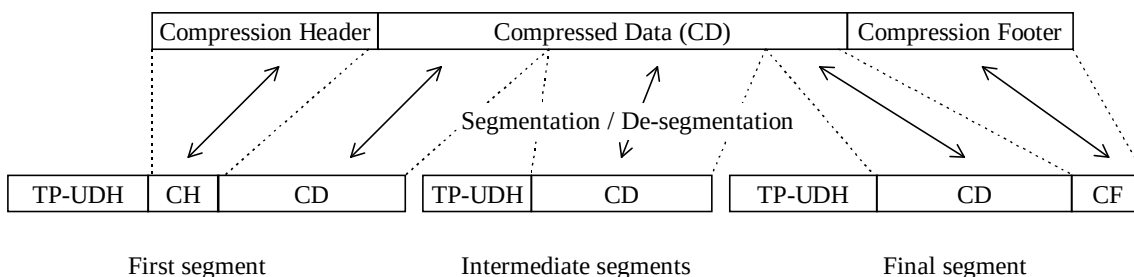


Figure 9.2.3.24.1 (a): Concatenation of a Compressed short message

The Information-Element-Data field contains information set by the application in the SMS-SUBMIT so that the receiving entity is able to re-assemble the short messages in the correct order. Each concatenated short message contains a reference number which together with the originating address and Service Centre address allows the receiving entity to discriminate between concatenated short messages sent from different originating SMEs and/or SCs. In a network which has multiple SCs, it is possible for different segments of a concatenated SM to be sent via different SCs and so it is recommended that the SC address should not be checked by the MS unless the application specifically requires such a check.

The TP elements in the SMS-SUBMIT PDU, apart from TP-MR, TP-SRR, TP-UDL and TP-UD, should remain unchanged for each SM which forms part of a concatenated SM, otherwise this may lead to irrational behaviour. TP-MR must be incremented for every segment of a concatenated message as defined in subclause 9.2.3.6. A SC shall handle segments of a concatenated message like any other short message. The relation between segments of a concatenated message is made only at the originator, where the message is segmented, and at the recipient, where the message is reassembled. SMS-COMMANDs identify messages by TP-MR and therefore apply to only one segment of a concatenated message. It is up to the originating SME to issue SMS-COMMANDs for all the required segments of a concatenated message.

The Information-Element-Data octets shall be coded as follows.

Octet 1 Concatenated short message reference number

This octet shall contain a modulo 256 counter indicating the reference number for a particular concatenated short message. This reference number shall remain constant for every short message which makes up a particular concatenated short message.

Octet 2 Maximum number of short messages in the concatenated short message.

This octet shall contain a value in the range 0 to 255 indicating the total number of short messages within the concatenated short message. The value shall start at 1 and remain constant for every short message which makes up the concatenated short message. If the value is zero then the receiving entity shall ignore the whole Information Element.

Octet 3 Sequence number of the current short message.

This octet shall contain a value in the range 0 to 255 indicating the sequence number of a particular short message within the concatenated short message. The value shall start at 1 and increment by one for every short message sent within the concatenated short message. If the value is zero or the value is greater than the value in octet 2 then the receiving entity shall ignore the whole Information Element.

The IEI and associated IEI length and IEI data shall be present in every segment of the concatenated SM.

9.2.3.24.2 Special SMS Message Indication

There are three levels of "Message Waiting" indication provided within the present document. The first level is to set the Protocol Identifier to "Return Call message", which indicates that a message is waiting and relies on the text of the message to supply the detail. The second level uses the Data Coding Scheme with or without Return Call Message (see 3G TS 23.038 [9]) to indicate the type of message waiting and whether there are some messages or no messages. The third level is described here, and provides the maximum detail level for analysis by the mobile, i.e. an indication of the number and type of messages waiting in systems connected to the PLMN. This third level is provided for future flexibility, as it cannot immediately be used without compatibility problems with the earliest Phase mobiles. It is envisaged that this scheme can start to be used once mobiles supporting TP-UDH become widely available.

This information may be stored by the MS in a form other than an SMS message, for example an indicator may be shown if the number of messages is non-zero or removed if the number of messages is zero. The MS may also store actual number of messages waiting and provide some other MMI to access this information. Text may be included by the SMS Service Centre for backward compatibility with the earliest Phase mobiles and the Data Coding Scheme may also be used to convey this information in parallel for backward compatibility with "middle" Phase mobiles (which support the use of Data Coding Scheme for Message Waiting Indication but not the use of TP-UDH for Message Waiting Indication).

The information-Element octets shall be coded as follows:

Octet 1 Message Indication type and Storage

Bit 7 Indicates whether or not the message shall be stored.

Bit 7

0 Discard message after updating indication

1 Store message

In the event of a conflict between this setting and the setting of the Data Coding Scheme (see 3G TS 23.038 [9]) then the message shall be stored if either the DCS indicates this, or Octet 1 above indicates this.

Bits 6..0 show the message indication type

000 0000	Voice Message Waiting
000 0001	Fax Message Waiting
000 0010	Electronic Mail Message Waiting
000 0011	Other Message Waiting (see 3G TS 23.038 [9] for definition of "other")

Other values are reserved for future use.

Octet 2 Message Count

This octet shall contain a value in the range 0 to 255 indicating the number of messages of the type specified in Octet 1 waiting. The value 255 shall be taken to mean 255 or greater. In the event of a conflict between this setting and the setting of the Data Coding Scheme (see 3G TS 23.038 [9]) then the Message Count in the TP-UDH shall override the indication in the TP-DCS.

If more than one type of message is required to be indicated within one SMS message, then further octets must be used, as in the following example:

- [00] TP-UDL [1E] (30 decimal septets)
- [01] Length of TP-UDH [08]
- [02] IEI = Special SMS Message Indication [01]
- [03] Length = 02
- [04] Octet 1 = Voice Mail, do not store [00]
- [05] Octet 2 = 04 Messages
- [06] IEI = Special SMS Message Indication [01]
- [07] Length = 02
- [08] Octet 1 = Fax Mail, Store [81]
- [09] Octet 2 = 02 Messages

+ 5 Fill bits

+ 19 seven-bit character message text

The Total number of bits is 210.

In the case where this IEI is to be used in a concatenated SM then the IEI, its associated IEI length and IEI data shall be contained in the first segment of the concatenated SM. The IEI, its associated IEI length and IEI data should also be contained in every subsequent segment of the concatenated SM although this is not mandatory. However, in the case where these elements are not contained in every subsequent segment of the concatenated SM and where an out of sequence segment delivery occurs or where the first segment is not delivered then processing difficulties may arise at the receiving entity which may result in the concatenated SM being totally or partially discarded.

9.2.3.24.3 Application Port Addressing 8 bit address

This facility allows short messages to be routed to one of multiple applications in the TE (terminal equipment), using a method similar to TCP/UDP ports in a TCP/IP network. An application entity is uniquely identified by the pair of TP-DA/TP-OA and the port address. The port addressing is transparent to the transport, and also useful in Status Reports.

The total length of the IE is 2 octets

octet 1 Destination port

This octet contains a number indicating the receiving port, i.e. application, in the receiving device.

octet 2 Originator port

This octet contains a number indicating the sending port, i.e. application, in the sending device.

The port range is up to 255 using 8 bit addressing space. The Integer value of the port number is presented as in 3G TS 23.040 subclause 9.1.2.1.

VALUE (port number)	MEANING
0 - 239	Reserved
240 - 255	Available for allocation by applications

A receiving entity shall ignore (i.e. skip over and commence processing at the next information element) any information element where the value of the Information-Element-Data is Reserved or not supported.

In the case where this IE is to be used in a concatenated SM then the IEI, its associated IEI length and IEI data shall be contained in the first segment of the concatenated SM. The IEI, its associated IEI length and IEI data shall also be contained in every subsequent segment of the concatenated SM.

9.2.3.24.4 Application Port Addressing 16 bit address

This facility allows short messages to be routed to one of multiple applications in the TE (terminal equipment), using a method similar to TCP/UDP ports in a TCP/IP network. An application entity is uniquely identified by the pair of TP-DA/TP-OA and the port address. The port addressing is transparent to the transport, and also useful in Status Reports.

The total length of the IE is 4 octets

octet 1,2 Destination port

These octets contain a number indicating the receiving port, i.e. application, in the receiving device.

octet 3,4 Originator port

These octets contain a number indicating the sending port, i.e. application, in the sending device.

The port range is up to 65535 using 16 bit addressing space. The Integer value of the port number is presented as in 3G TS 23.040 subclause 9.1.2.1.

VALUE (port number)	MEANING
0 - 15999	As allocated by IANA (http://www.IANA.com/)
16000 - 16999	Available for allocation by applications
17000 - 65535	Reserved

A receiving entity shall ignore (i.e. skip over and commence processing at the next information element) any information element where the value of the Information-Element-Data is Reserved or not supported.

In the case where this IE is to be used in a concatenated SM then the IEI, its associated IEI length and IEI data shall be contained in the first segment of the concatenated SM. The IEI, its associated IEI length and IEI data shall also be contained in every subsequent segment of the concatenated SM.

9.2.3.24.5 SMSC Control Parameters

The facility enables the SMS protocol headers to be expanded using a flexible method. It may be used to control the SMSC, but is also passed transparently to the receiving mobile. The Information Element must be present in every short message affected by it, i.e. in every short message in a concatenated message.

The Information Element data octets shall be coded as follows:

octet 1 Selective Status Report

This facility is used to control the creation of Status Reports, depending on the error code of the particular message. It is also used by the sending entity to request inclusion of the original UDH into the Status Report. In this case the original UDH must be separated from the rest of the UDH using the Source Indicator. The TP-SRR must be set in order for the Selective Status Report to be enabled. The bits are defined as follows:

bit 0

- 0 No Status Report for short message transaction completed
- 1 Status Report for short message transaction completed

bit 1

- 0 No Status Report for permanent error when SC is not making any more transfer attempts
- 1 Status Report for permanent error when SC is not making any more transfer attempts

bit 2

- 0 No Status Report for temporary error when SC is not making any more transfer attempts
- 1 Status Report for temporary error when SC is not making any more transfer attempts

bit 3

- 0 No Status Report for temporary error when SC is still trying to transfer SM
- 1 Status Report for temporary error when SC is still trying to transfer SM

bits 4 and 5

reserved for future use.

bit 6

- 0 No activation
- 1 A Status Report generated by this Short Message, due to a permanent error or last temporary error, cancels the SRR of the rest of the Short Messages in a concatenated message. This feature can only be used where a SC is aware of the segmentation of a concatenated SM and is therefore an implementation matter.

bit 7

- 0 Do not include original UDH into the Status Report
- 1 Include original UDH into the Status Report

9.2.3.24.6 UDH Source Indicator

The facility is used to separate the UDH of the original message, a UDH created by the SMSC, and a UDH provided by the original receiving entity. The Source Indicator is placed in front of the content inserted by the source. The indicated content (one or more Information-Elements) ends at the next UDH-Source-Indicator, or at the end of the UDH. The Separator is intended to be used especially in Status Reports, but can also be used by the SMSC to add information into Short Message (for example Message waiting). The default content for a UDH in a SMS-DELIVERY is the headers inserted by the sending device, and the default content for a UDH in a SMS-STATUS-REPORT is the headers copied from the SMS-DELIVERY-REPORT.

Values of octet:

- 01 The following part of the UDH is created by the original sender (valid in case of Status Report)
- 02 The following part of the UDH is created by the original receiver (valid in case of Status Report)
- 03 The following part of the UDH is created by the SMSC (can occur in any message or report)

In the case where this IEI is to be used in a concatenated SM then the IEI, its associated IEI length and IEI data shall be contained in the first segment of the concatenated SM. The IEI, its associated IEI length and IEI data should also be contained in every subsequent segment of the concatenated SM although this is not mandatory. However, in the case where these elements are not contained in every subsequent segment of the concatenated SM and where an out of sequence segment delivery occurs or where the first segment is not delivered then processing difficulties may arise at the receiving entity which may result in the concatenated SM being totally or partially discarded.

9.2.3.24.7 (U)SIM Toolkit Security Headers

There are no IEI data values associated with these IEI values and so the associated Length of Information element field is present but set to zero.

These IEI values implicitly define that a Security Header is always present at the start of the TP-User-Data field which immediately follows the TP-User-Data-Header. Details of the Security Header will be found in GSM TS 03.48 [28].

In the case where a concatenated message contains a Security Header then the Security Header will only be present in the first segment of a concatenated message.

In the case where SMS compression is applied to a TP-User-Data field which contains a Security Header then the SMS compression header (3G TS 23.042 [26]) shall immediately precede the Security Header.

9.2.3.24.8 Concatenated short messages, 16-bit reference number

This facility is an enhanced variant of the Concatenated Short Message facility (see subclause 9.2.3.24.1). The enhancement is a 16-bit reference number, instead of the short 8-bit reference number. The larger reference number reduces the probability that two different concatenated messages are mistakenly sent with identical reference numbers to a receiver. Except for the size of the reference number this facility is identical to the Concatenated Short Message facility (see subclause 9.2.3.24.1).

In the case of uncompressed 8-bit data, the maximum length of the short message within the TP-UD field is 133 (140-7) octets.

In the case of uncompressed GSM 7 bit default alphabet data, the maximum length of the short message within the TP-UD field is 151 (160-9) characters.

In the case of 16 bit uncompressed USC2 data, the maximum length of the short message within the TP-UD field is 66 ((140-7)/2) characters. A UCS2 character must not be split in the middle; if the length of the User Data Header is odd, the maximum length of the whole TP-UD field is 139 octets.

In the case of compressed GSM 7 bit default alphabet data, 8 bit data or UCS2 the maximum length of the compressed short message within the TP-UD field is 133 (140-7) octets including the Compression Header and Compression Footer, both or either of which may be present (see subclause 3.9).

The relation between compression and concatenation is the same as for Concatenated Short Messages (see subclause 9.2.3.24.1).

The Information-Element-Data field contains information set by the application in the SMS-SUBMIT so that the receiving entity is able to re-assemble the short messages in the correct order. Each concatenated short message contains a reference number which together with the originating address and Service Centre address allows the receiving entity to discriminate between concatenated short messages sent from different originating SMEs and/or SCs. In a network which has multiple SCs, it is possible for different segments of a concatenated SM to be sent via different SCs and so it is recommended that the SC address should not be checked by the MS unless the application specifically requires such a check.

The TP elements in the SMS-SUBMIT PDU, apart from TP-MR, TP-UDL and TP-UD, should remain unchanged for each SM which forms part of a concatenated SM, otherwise this may lead to irrational behaviour. TP-MR must be incremented for every segment of a concatenated message as defined in subclause 9.2.3.6. A SC shall handle segments of concatenated message like any other short message. The relation between segments of a concatenated message is made at the originator, where the message is segmented, and at the recipient, where the message is reassembled. SMS-COMMANDs identify messages by TP-MR and therefore apply to only one segment of a concatenated message. It is up to the originating SME to issue SMS-COMMANDs for all the required segments of a concatenated message.

The Information-Element-Data octets shall be coded as follows.

Octet 1-2 Concatenated short messages, 16-bit reference number

This octet shall contain a modulo 65536 counter indicating the reference number for a particular enhanced concatenated short message. This reference number shall remain constant for every short message which makes up a particular enhanced concatenated short message.

Octet 3 Maximum number of short messages in the enhanced concatenated short message.

This octet shall contain a value in the range 0 to 255 indicating the total number of short messages within the concatenated short message. The value shall start at 1 and remain constant for every short message which makes up the enhanced concatenated short message. If the value is zero then the receiving entity shall ignore the whole Information Element.

Octet 4 Sequence number of the current short message.

This octet shall contain a value in the range 0 to 255 indicating the sequence number of a particular short message within the concatenated short message. The value shall start at 1 and increment by one for every short message sent within the concatenated short message. If the value is zero or the value is greater than the value in octet 3 then the receiving entity shall ignore the whole Information Element.

The IEI and associated IEI length and IEI data shall be present in every segment of the concatenated SM.

9.2.3.24.9 Wireless Control Message Protocol

The Wireless Control Message Protocol (WCMP) is part of the WAP suite of protocols; an open standard specified by the WAP Forum Ltd.

The protocol specifies a set of messages that can be used by the receiver to notify the sender if an error occurs. This can be due to routing problems, no application listening at the destination port number, or due to insufficient buffer capacity. The error messages can be used by the sender to avoid retransmitting packets, that can not be properly handled at the receiver. WCMP can also be used for diagnostics and informational purposes. WCMP messages are usually generated by a datagram transport layer or a management entity.

The Information-Element-Data octet(s) shall be coded as follows:

Octet 1-n Protocol Data Unit of WCMP

This octet(s) shall contain a WCMP protocol data unit.

In the case where this IE is to be used in a concatenated SM then the IEI, its associated IEI length and IEI data shall be contained in the first segment of the concatenated SM. The IEI, its associated IEI length and IEI data shall also be contained in every subsequent segment of the concatenated SM.

9.2.3.24.10 Enhanced Messaging Service

9.2.3.24.10.1 EMS Coding

Enhanced Messaging is based on standard mechanism in GSM SMS messaging. The first mechanism is called **user data header** (TP-UDH), which makes it possible to include binary data in a normal SM prior the text message itself (subclause 9.2.3.24). The binary data is in the TP-UD field (message), which means that it steals a part of the 140 bytes. Each object within the SM shall be identified by a IE in the TP-UD Header. The IE will contain a **octet** (refer to subclause 9.2.3.24.10.1) that identifies the absolute position of the object within and from the beginning of the SM data. In case of formatting text, an additional octet will give the number of characters for which the formatting applies. Next mechanism that is used is **concatenation**, see subclause 9.2.3.24.1. This mechanism permits longer messages than 140 bytes, in fact 255 messages a 140 bytes each can be concatenated to one message up to about 38k bytes.

EMS IEs of the same type may occur more than once in a single message or one segment of a concatenated SM.

9.2.3.24.10.1.1 Text Formatting

The Information-Element-Data octet(s) shall be coded as follows.

Octet 1 Start position of the text formatting. Set to the number of characters after the formatting shall be applied from the beginning of the SM data.

This octet shall be coded as an integer value in the range 0 (beginning of the SM data) to the maximum number of characters included in the SM data of one single SM or one segment of a concatenated SM.

Octet 2 Text formatting length. Gives the number of formatted characters

This octet shall be coded as an integer value in the range 1 to the maximum number of characters for which the formatting applies in one single SM or one segment of a concatenated SM.

Octet 3 formatting mode value coded as following:

Octet 3:		Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Bit 1	Bit 0	*Alignment							
0	0	Left							
0	1	Center							
1	0	Right							
1	1	Language dependent (default)							

*in case formatting text is inserted on the same line as previous non formatting text or with a different mode value, the alignment value shall be set to the same value as the previous formatted predefined object.

Bit 3	Bit 2	Font Size
0	0	Normal (default)
0	1	Large
1	0	Small
1	1	<i>reserved</i>
Bit 4		Style bold
1		Bold on
0		Bold off
Bit 5		Style <i>Italic</i>
1		Italic on
0		Italic off
Bit 6		Style <u>Underlined</u>
1		Underlined on
0		Underlined off
Bit 7		Style ~~Strikethrough~~
1		Strikethrough on
0		Strikethrough off

If bit 4,5,6 and 7 are set to 0, it will mean normal style (default).

9.2.3.24.10.1.2 Predefined Sound

The Information-Element-Data octet(s) shall be coded as follows.

Octet 1 position indicating in the SM data the instant after which the sound shall be played. It will be set to the number of characters from the beginning of the SM data after which the sound shall be played.

This octet shall be coded as an integer value in the range 0 (beginning of the SM data) to the maximum number of characters included in the SM data of one single SM or one segment of a concatenated SM

Octet 2 sound number. Shall be encoded as a integer value.

9.2.3.24.10.1.3 User Defined Sound

The Information-Element-Data octet(s) shall be coded as follows.

Octet 1 position indicating in the SM data the instant the after which the sound shall be played (refer to subclause 9.2.3.24.10.1.2).

Octet 2-n Protocol Data Unit as described in subclause 9.2.3.24.10.3.1.

This octet(s) shall contain a User Defined Sound.

9.2.3.24.10.1.4 Predefined Animation

The Information-Element-Data octet(s) shall be coded as follows.

Octet 1 position indicating in the SM data the instant the animation shall be displayed. Set to the number of characters from the beginning of the SM data after which the animation shall be displayed.

This octet shall be coded as an integer value in the range 0 (beginning of the SM data) to the maximum number of characters included in the SM data of one single SM or one segment of a concatenated SM

Octet 2 animation number. Shall be encoded as an integer value.

9.2.3.24.10.1.5 Large Animation

The Information-Element-Data octet(s) shall be coded as follows:

Octet 1 position indicating the instant the animation shall be displayed in the SM data (refer subclause 9.2.3.24.10.1.4).

Octet 2-n Protocol Data Unit as described in subclause 9.2.3.24.10.3.3.

This octet(s) shall contain a Large Animation.

9.2.3.24.10.1.6 Small Animation

The Information-Element-Data octet(s) shall be coded as follows:

Octet 1 position indicating the instant the animation shall be displayed in the SM data (refer subclause 9.2.3.24.10.1.4).

Octet 2-n Protocol Data Unit as described in subclause 9.2.3.24.10.3.3.

This octet(s) shall contain a Small Animation.

9.2.3.24.10.1.7 Large Picture

The Information-Element-Data octet(s) shall be coded as follows:

Octet 1 position indicating in the SM data the instant the picture shall be displayed. Set to the number of characters from the beginning of the SM data after which the picture shall be displayed. This octet shall be coded as an integer value in the range 0 (beginning of the SM data) to the maximum number of characters included in the SM data of one single SM or one segment of a concatenated SM

Octet 2-n Protocol Data Unit as described in 9.2.3.24.10.3.2.

This octet(s) shall contain a Large Picture.

9.2.3.24.10.1.8 Small Picture

The Information-Element-Data octet(s) shall be coded as follows:

Octet 1 position indicating in the SM data the instant the picture shall be displayed in the SM data (refer subclause 9.2.3.24.10.1.7).

Octet 2-n Protocol Data Unit as described in subclause 9.2.3.24.10.3.2.

This octet(s) shall contain a Small Picture.

9.2.3.24.10.1.9 Variable Picture

The Information-Element-Data octet(s) shall be coded as follows:

Octet 1 position indicating in the SM data the instant the picture shall be displayed in the SM data (refer subclause 9.2.3.24.10.1.7).

Octet 2 Horizontal dimension of the picture.

This octet shall contain the horizontal number of 8 pixels i.e. this value shall be multiplied by 8 to get the whole number of horizontal pixels.

Octet 3 Vertical dimension of the picture.

This octet shall contain the vertical number of pixels.

Octet 4-n Protocol Data Unit as described in subclause 9.2.3.24.10.3.2.

This octet(s) shall contain a Variable Picture line by line from top left to bottom right.

The values of the horizontal and vertical dimensions must be chosen properly by the sending entity. If the calculated size of this IE exceeds the limits of a single SM or segment it shall be discarded by the receiving entity.

Examples of EMS coding

All IE values in the TP-UD are hexadecimal values.

9.2.3.24.10.2.1 Example of Basic text formatting and predefined EMS coding

An example of the basic concept of coding is given as follows:

TP-UDHI=1

SMS User Data Header: UDHL=05, IEI=0A, IEDL=03, IED₁=0F, IED₂=12, IED₃=10

SMS User Data: This is a text with bold option on following with normal text.

Should be displayed as:

This is a text **with bold option on** following with normal text.

It is also possible to add predefined sounds in the message.

Example:

TP-UDHI=1

SMS User Data Header: UDHL=08, IEI=0B, IEDL=02, IED₁=09,<sound5>, IEI=0B, IEDL=2, IED₁=1C,<sound7>

SMS User Data: This is a message with two different sounds

The sound nr5 shall be played after the 9th received character ("a") and sound nr7 shall be played after the 28th received character ("e").

9.2.3.24.10.2.2 Example of User defined Objects EMS coding

Example of a message including one small picture is coded as follows:

TP UDHI=1

SMS User Data Header: UDHL=24, IEI=11, IEIDL=22, IED₁=08, < 0/o (small picture 32bytes)>

SMS User Data: Hello!<CR><LF><CR><LF>One small picture in here

Should be displayed as:

Hello!

0/o

One small picture in here

If the message starts with <CR>, then the "unreadable" data in an old terminal will be overwritten by the text, and the user will not see any strange characters. It is possible to insert the same picture several times in the same message. In that case, the TP-UD header shall contain as many IE as the number of occurrences contained in the SM or one segment of a concatenated message. Using defined elements will normally imply that more than one SM is required and therefore concatenation is required.

9.2.3.24.10.2.3 Concatenation of SMS messages

Concatenated messages are required in most cases required when using several types of EMS elements, since it is only possible to send one large picture/large animation/melody in one single SM. After including either of these elements, there are only 4 (or 9 if no concatenation is used) characters left to the text part, and this is usually too little.

If one or more objects are embedded in one segment of a concatenated message, the IE octet indicating its/their position within the SM data cannot be set to a value that would refer to a position in the next segment(s) so that received segments should be processed before all of them have been received. It means that a formatting text that could not be conveyed in one segment shall be split in as many segments as necessary. In that case, the IE relating to the formatting shall be repeated in all the segments in which it will apply.

Example of a message including 2 Large Pictures, 4 Small animations and 2 User defined Melodies together with some text.

The EMS message: <Large Picture1> <User Defined Melody 1> Hello All, This is a real Enhanced Message <Small Animation 1>. I can send <Small Animation 2> and receive <Small Animation 3> really advanced EMS messages <Animation 4> Isn't it impressive? /Lars <User Defined Melody2> <Large Picture 2>

This EMS message has to use concatenated messages and the SM will typically contain the following data:

SM	User Data Header	User Data
1	IEI=10 (Large Picture) IED ₁ =00 (beginning of the SM) <Large Picture 1 (128 bytes)>	[<CR><LF>]
2	IEI=0C (User Defined Sound) IED ₁ =00 (beginning of the SM) <User Melody 1 (129bytes max)>	Hello
3	IEI=0F (Small Animation) IED ₁ =24 (36 th position) <Small Animation 1 (32 bytes)> IEI=0F (Small Animation) IED ₁ =2F (47 th position) <Small Animation 2 (32 bytes)>	All, This is a real Enhanced Message. I can send and
4	IEI=0F (Small Animation) IED ₁ =07 (7 th position) <Small Animation 3 (32 bytes)> IEI=0F (Small Animation) IED ₁ =25 (37 th position) <Small Animation 4 (32 bytes)>	receive really advanced EMS messages. Isn't it impressive? /Lars.
5	IEI=0C (User Defined Sound) IED ₁ =00 (beginning of the SM) <User Melody 1 (128 bytes max)>	[<CR><LF>]
6	IEI=10 (Large Picture) IED ₁ =00 (beginning of the SM) <Large Picture 2 (128 bytes)>	

9.2.3.24.10.3 EMS Formats

9.2.3.24.10.3.1 Sounds

Predefined Sounds

There are a number of fixed predefined sounds. Each sound nr corresponds to a specific sound according to the table below. The presentations of these sounds are manufacturer specific.

Sound nr	Description
0	Chimes high
1	Chimes low
2	Ding
3	TaDa
4	Notify
5	Drum
6	Claps
7	FanFar
8	Chord high
9	Chord low

User defined sounds

The user defined sounds are coded according to the iMelody format[33]. The maximum length of a sound is 128 bytes.

9.2.3.24.10.3.2 Pictures

Pictures are coded from upper left to lower right and in each byte the most significant bit represent the pixel at the left. The pictures are plain black and white, no colours or grey scales are supported. The bitvalue "0" represents a white pixel and the bitvalue "1" represents a black pixel.

Example 16*16 picture

Byte 1	Byte 2
Byte 3	Byte 4
...	...
...	...
Byte 31	Byte 32

9.2.3.24.10.3.3 Animation

Predefined

There are a number of predefined animations. Each animation nr corresponds to a specific animation according to the table below. The way of displaying the animation is manufacturer specific.

Animation nr	Description
0	I am ironic, flirty
1	I am glad
2	I am sceptic
3	I am sad
4	WOW!
5	I am crying

User Defined

Animations are coded as 4 sequential pictures, with the first picture sent first.

9.2.3.24.11 RFC 822 E-Mail Header

This information element is used to indicate the existence of an RFC 822 Internet electronic mail in the data part of the short message. Both, E-Mail Header and (optional) E-Mail Body shall be parts of the SM's data and shall be compliant with the syntax specified in RFC 822 [34]. The character set used for encoding of E-Mail Header and E-Mail body, however, shall be according to 3G TS 23.038 [9]. Encoding of E-Mail Header and E-Mail Body shall be done using the same character set.

In compliance with RFC 822 [34] the E-Mail Header shall always be located at the very beginning of the SM's data part. It shall always be present in the "unfolded" format as it is specified in RFC 822 [34]. Not the <CRLF> character defined in RFC 822 [34] but the <LF> character according to 3G TS 23.038 [9] shall be used for the separation of different E-Mail Header fields.

If an RFC 822 E-Mail Body exists, it shall immediately follow the E-Mail Header in the SM's data part.

NOTE 1: The null line defined in RFC 822 for the separation of E-Mail Header and E-Mail Body may be discarded.

NOTE 2: The sending of extended SMTP headers is allowed and the MS should not reject the message if there are header fields in the email header part that are not specified in RFC 822.

In case of an RFC 822 E-Mail Header exceeding the data part of a single SM, concatenation shall be used. In this case the E-Mail Header starts in the first segment of a concatenated SM and continues in one or several subsequent segments. The RFC 822 E-Mail Body shall immediately follow the final fraction of the RFC 822 E-Mail Header and may also be spread over several segments of the concatenated SM.

In case where this IEI is to be used in a concatenated SM then the IEI, its associated IEDL, and IED fields shall be contained in the first segment of the concatenated SM and shall also be contained in every subsequent segment of the concatenated SM.

The Information-Element-Data octet shall be coded as follows:

Octet 1 RFC 822 E-Mail Header length indicator

This octet shall indicate the length of the RFC 822 E-Mail Header that is located at the beginning of the data part of the SM. In case of an E-Mail Header exceeding the data part of a single SM, this octet shall indicate the length of that fraction of the RFC 822 E-Mail Header that is located at the beginning of the data part of the current segment of the concatenated SM.

If the user data is coded using the GSM 7 bit default alphabet, this IED octet shall give an integer representation of the number of septets within (that fraction of) the RFC 822 E-Mail Header that is located at the beginning of the data part of the current (segment of the concatenated) SM. See figure 9.2.3.24.11 (a).

If the user data is coded using 8-bit data, this IED octet shall give an integer representation of the number of octets within (that fraction of) the RFC 822 E-Mail Header that is located at the beginning of the data part of the current (segment of the concatenated) SM. See figure 9.2.3.24.11 (b).

If the user data is coded using UCS2 [24] data, this IED octet shall give an integer representation of the number of UCS2 characters (consisting of 2 octets) within (that fraction of) the RFC 822 E-Mail Header that is located at the beginning of the data part of the current (segment of the concatenated) SM. See figure 9.2.3.24.11 (c).

NOTE 3: If the user data is coded using compressed GSM 7 bit default alphabet or compressed 8 bit data or compressed UCS2 [24] data the RFC 822 E-Mail Header length indicator's value shall be based on the amount of uncompressed data, i.e. before compression is performed.

The diagram below shows the layout of the IED for GSM 7 bit default alphabet data.

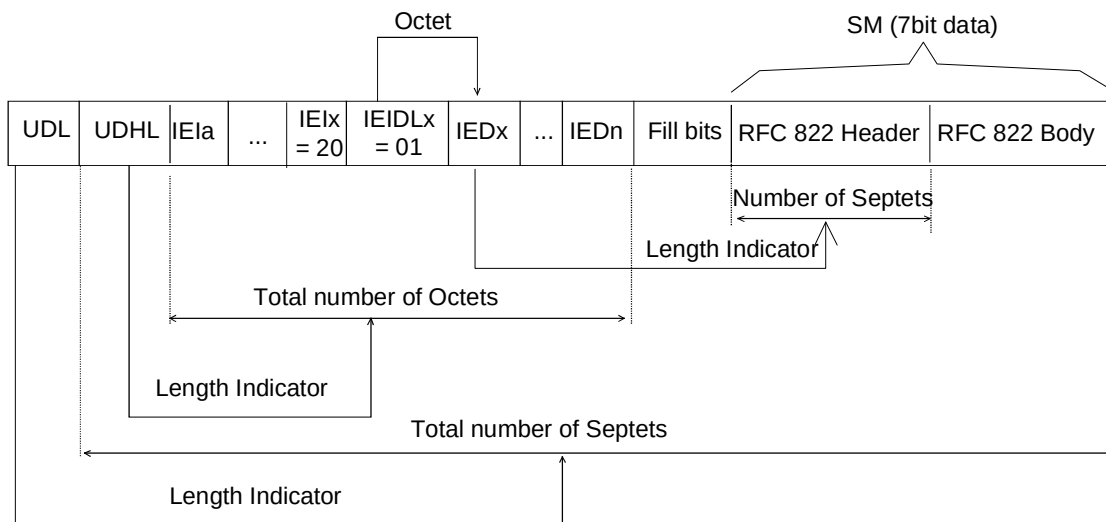


Figure 9.2.3.24.11 (a)

The diagram below shows the layout of the IED for 8 bit data.

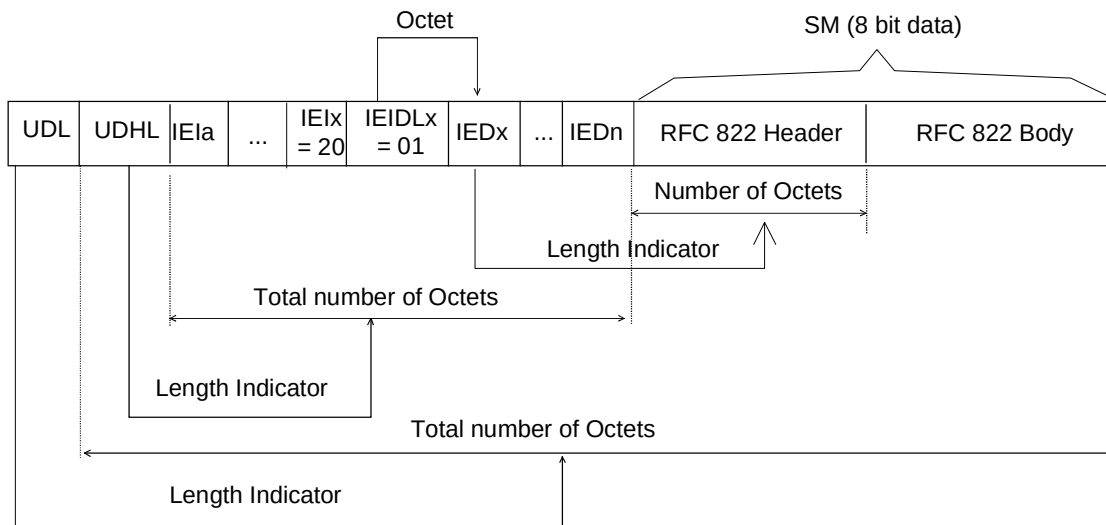


Figure 9.2.3.24.11 (b)

The diagram below shows the layout of the IED for UCS2 data.

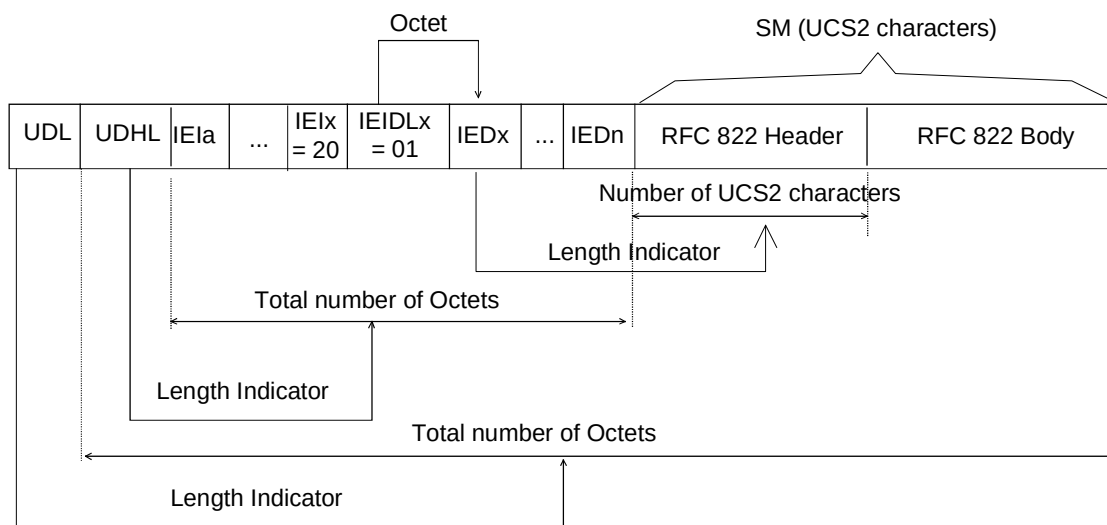


Figure 9.2.3.24.11 (c)

9.2.3.25 TP-Reject-Duplicates (TP-RD)

The TP-Reject-Duplicates is a 1 bit field located within bit 2 of the first octet of SMS-SUBMIT and has the following values.

Bit no. 2:	0	Instruct the SC to accept an SMS-SUBMIT for an SM still held in the SC which has the same TP-MR and the same TP-DA as a previously submitted SM from the same OA.
	1	Instruct the SC to reject an SMS-SUBMIT for an SM still held in the SC which has the same TP-MR and the same TP-DA as the previously submitted SM from the same OA. In this case an appropriate TP-FCS value shall be returned in the SMS-SUBMIT-REPORT.

9.2.3.26 TP-Status-Report-Qualifier (TP-SRQ)

The TP-Status-Report-Qualifier is a 1 bit field located within bit 5 of the first octet of SMS-STATUS-REPORT and has the following values

Bit no. 5:	0	The SMS-STATUS-REPORT is the result of a SMS-SUBMIT.
	1	The SMS-STATUS-REPORT is the result of an SMS-COMMAND e.g. an Enquiry.

9.2.3.27 TP-Parameter-Indicator (TP-PI)

The TP-Parameter-Indicator comprises a number of octets between 1 and n where each bit when set to a 1 indicates that a particular optional parameter is present in the fields which follow. The TP-PI is present as part of the RP-User-Data in the RP-ACK for both the SMS-DELIVER TPDU and the SMS-SUBMIT TPDU.

The structure of the TP-PI is as follows:

Octet 1

bit 7	bit 6	bit 5	bit 4	bit 3	bit 2	bit 1	bit 0
Extension bit	Reserved	Reserved	Reserved	Reserved	TP-UDL	TP-DCS	TP-PID

The most significant bit in octet 1 and any other TP-PI octets which may be added later is reserved as an extension bit which when set to a 1 shall indicate that another TP-PI octet follows immediately afterwards.

If the TP-UDL bit is set to zero then by definition then neither the TP-UDL field or the TP-UD field can be present.

If a Reserved bit is set to "1" then the receiving entity shall ignore the setting. The setting of this bit shall mean that additional information will follow the TP-User-Data, so a receiving entity shall discard any octets following the TP-User-Data.

9.3 Service provided by the SM-RL

9.3.1 General

The Short Message Relay Layer (SM-RL) provides a service to the Short Message Transfer Layer (SM-TL). This service enables the SM-TL to send Transfer Protocol Data Units (TPDUs) to its peer entity, receive TPDUs from its peer entity and receive reports about earlier requests for TPDUs to be transferred.

In order to keep track of TPDUs and reports about those TPDUs, primitives between the SM-TL and SM-RL contain a Short Message Identifier (SMI), which is a reference number for the TPDU associated with the primitive. This Short Message Identifier is not carried via the SM-RL protocol of subclause 9.3.2. It is carried via the relay layer service between the SC and GMSC. It is also carried by SM-RL of 3G TS 24.011 [13], between the visited MSC and MS. The parameter is not carried by MAP but is mapped to and from the TCAP dialogue Identifier (see CCITT Recommendation Q.771, "Blue Book" [19]) at the GMSC and the visited MSC (therefore the Message Identifier at the SC/GMSC interface is not the same as at the visited MSC/MS interface).

The SM-RL communicates with its peer entity by the protocol described in the following subclauses.

9.3.2 Protocol element repertoire at SM-RL

Different protocols are required between different pairs of SM-RL entities. Those are described in other GSM/UMTS specifications. This subclause gives a survey of the different information elements which have to be conveyed between those entities. (Note that the notation of the protocol and information elements may vary between different GSM/UMTS specifications).

The SM-RL comprises the following 6 protocol elements:

RP-MO-DATA	for transferring a TPDU from MS to SC
RP-MT-DATA	for transferring a TPDU from SC to MS
RP-ACK	for acknowledging an RP-MO-DATA, an RP-MT-DATA or an RP-SM-MEMORY-AVAILABLE
RP-ERROR	for informing of an unsuccessful RP-MO-DATA or an RP-MT-DATA transfer attempt
RP-ALERT-SC	for alerting the SC that the MS has recovered operation (information sent from the HLR to the SC)
RP-SM-MEMORY-AVAILABLE	for notifying the network that the MS has memory available to accept one or more short messages (information sent from the MS to the HLR)

9.3.2.1 RP-MO-DATA

Basic elements of the RP-MO-DATA type.

Abbr.	Reference	p1)	Description
RP-OA	RP-Originating-Address	++-	Address of the originating MS.
RP-DA	RP-Destination-Address	--+	Address of the destination SC.
RP-UD	RP-User-Data	+++	Parameter containing the TPDU

- 1) Provision on the links SC<->MSC, MSC<->MSC or MSC<->SGSN, and MSC<->MS or SGSN<->MS indicated by "xxx", where x may be either "+" or "-", dependent on whether the parameter is mandatory or not on the respective link.

9.3.2.2 RP-MT-DATA

Basic elements of the RP-MT-DATA type.

Abbr.	Reference	p1)	Description
RP-PRI	RP-Priority-Request	+-	Parameter indicating whether or not the short message transfer should be stopped if the originator SC address is already contained in the MWD.
RP-MMS	RP-More-Messages-To-Send	OO-	Parameter indicating that there are more messages waiting in the SC
RP-OA	RP-Originating-Address	+++	Address of the originating SC.
RP-DA	RP-Destination-Address	++-	Address of the destination MS.
RP-UD	RP-User-Data	+++	Parameter containing the TPDU
RP-MTI	RP-Message Type Indicator	O--	Parameter indicating if the TPDU is a SMS Deliver or a SMS Status Report ²⁾
RP-SMEA	RP-originating SME-Address	O--	Address of the originating SME ²⁾

- 1) Provision on the links SC<->MSC, MSC<->MSC or MSC<->SGSN, and MSC<->MS or SGSN<->MS indicated by "xxx", where x may be "+", "-" or "O", dependent on whether the parameter is mandatory, not present or optional on the respective link.
- 2) These information elements may be included in the "Send Routing Information for SM" sent by the SMS-GMSC to the HLR.

When transmitted, the RP-SMEA shall take the TP-OA value.

When transmitted, the RP-MTI shall be given the following values:

0	SMS Deliver
1	SMS Status Report.

This may be used by the HLR to distinguish the two cases in order not to apply any filtering mechanism based on the RP-SMEA value in case of a SMS-Status Report transmission.

9.3.2.3 RP-ACK

The RP-ACK contains the RP-User-Data which is a parameter containing the TPDU (see 9.2.2.1a and 9.2.2.2a).

9.3.2.4 RP-ERROR

Basic elements of the RP-ERROR type.

Abbr.	Reference	p1)	Description
RP-MSI	RP-MW-Set-Indication	+-	Parameter indicating whether or not the MWI has been up-dated. ²⁾
RP-CS	RP-Cause	+++	Parameter identifying the error type. The RP-Cause parameter gives the reason why a short message transfer attempt fails. In practice three relay layer protocols are used - SC to GMSC/IW MSC (see GSM TS 03.47 [11]), MAP (see 3G TS 29.002 [15]) and via the radio interface (see 3G TS 24.011 [13])
RP-MSIsdn	RP-international--MS-ISDN-number	+-	MSIsdn-Alert of the MS, see subclause 3.2.7 ³⁾
RP-UD	RP-User-Data	OO O	Parameter containing a TPDU

- 1) Provision on the links SC<->MSC, MSC<->MSC or MSC<->SGSN, and MSC<->MS or SGSN<->MS indicated by "xxx", where x may be "+", "-" or "O" dependent on whether the parameter is mandatory, not present or optional on the respective link.
- 2) Only present when the RP-ERROR is transferred from the SMS-GMSC to the SC.

- 3) Only present when the RP-MT-DATA transfer attempt failed because the MS is not reachable or because the MS memory capacity was exceeded and the MSISdn-Alert is different from the MSISdn used by the SC to address the recipient MS.

9.3.2.5 RP-ALERT-SC

Basic elements of the RP-ALERT-SC type:

Abbr.	Reference	p1)	Description
RP-MSISdn	RP-International-MS-ISDN-Number	M	MSISdn of the MS.

- 1) Provision; Mandatory (M).

9.3.2.6 RP-SM-MEMORY-AVAILABLE

Basic elements of the RP-SM-MEMORY-AVAILABLE type:

Abbr.	Reference	p1)	Description
RP-IMSI	RP-International-Mobile-Subscriber-Identity	++-	IMSI of the MS.

- 1) Provision on the links HLR<->VLR or HLR<->SGSN, VLR<->MSC and MSC<->MS or SGSN<->MS indicated by "xxx", where x may be either "+" or "-", dependent on whether the parameter is mandatory or not present on the respective link.

10 Fundamental procedures within SMS

The SMS comprises 3 fundamental procedures:

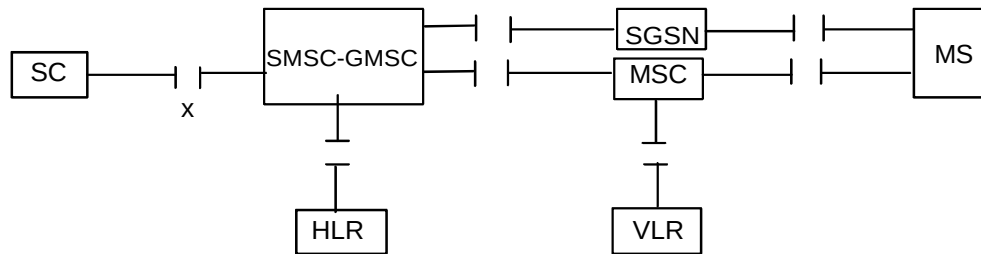
- 1) Short message mobile terminated. This procedure consists of all necessary operations to:
 - a) transfer a short message or status report from the SC to the MS;
 - b) return a report to the SC, containing the result of the message transfer attempt.
- 2) Short message mobile originated. This procedure consists of all necessary operations to:
 - a) transfer a short message from the MS to the SC;
 - b) return a report to the MS, containing the result of the message transfer attempt.
- 3) Transfer of an Alert. This procedure consists of all necessary operations for an HLR or a VLR to initiate a transfer of an Alert to a specific SC, informing the SC that the MS has recovered operation.

3G TS 29.002 [15] defines operations necessary for the provision of the Short Message Service. The operations defined in clause 10 describe the requirement that the Short Message Service puts upon the network functionality. If discrepancies exist in nomenclature, it is the 3G TS 29.002 [15] that shall be the reference.

Annex C indicates the flow of primitives and parameters during the short message transfer between the SC and the MS. Both the Mobile terminated and the Mobile originated cases are covered.

10.1 Short message mobile terminated

The entities involved in this procedure are depicted in figure 14.



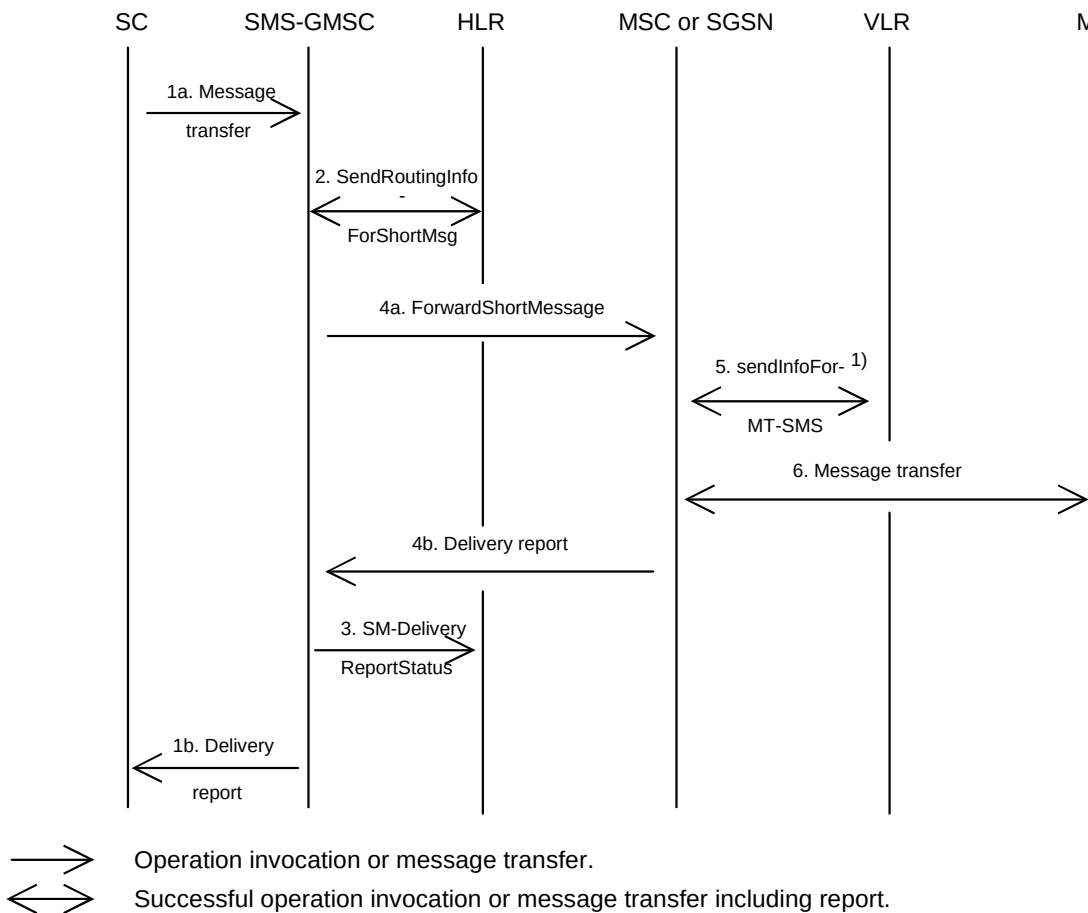
NOTE: Since the short message mobile terminated procedure covers the functionality required at SM-RL for transferring TPDUs from SC to MS, the procedure described covers both short message (SMS-DELIVER) and status report (SMS-STATUS-REPORT) transfer. The term "short message transfer" therefore, in this clause, covers both cases.

**Figure 14: Interfaces involved in the Short message mobile terminated procedure. GSM TS 03.02 [5].
X is the interface between an MSC and an SC as defined in clause 5**

In figure 15, sequence diagrams are shown for the following basic situations of short message mobile terminated transfer attempt:

- Successful short message transfer via the MSC or the SGSN;
- Short message transfer attempt failing due to error at the SMS-GMSC;
- Short message transfer attempt failing due to negative outcome of HLR information retrieval;
- Short message transfer attempt failing due to error at the MSC or SGSN;
- Short message transfer attempt failing due to negative outcome of VLR information retrieval;
- Short message transfer attempt failing due to erroneous message transfer on the radio path;
- Short message transfer attempt failing over the first path (e.g. SGSN) and succeeding over the second path (e.g. MSC);
- Short message transfer attempt failing over the first path (e.g. SGSN) and over the second path (e.g. MSC).

References to the relevant specifications of the different operations are given in clause 4.



NOTE 1): This operation is not used by the SGSN.

Figure 15a): Successful short message transfer attempt via the MSC or the SGSN

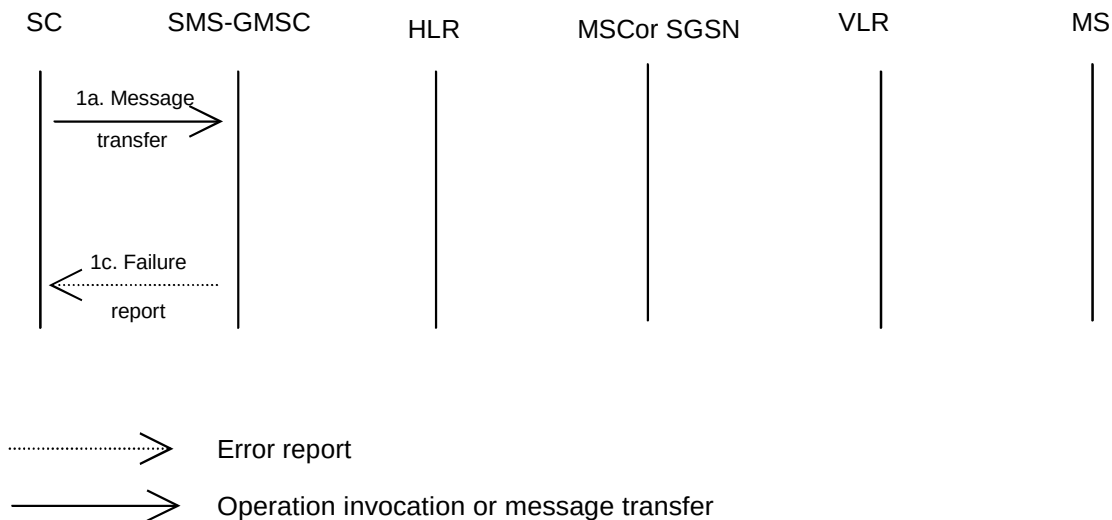


Figure 15b): Short message transfer attempt failing due to error at the SMS-GMSC

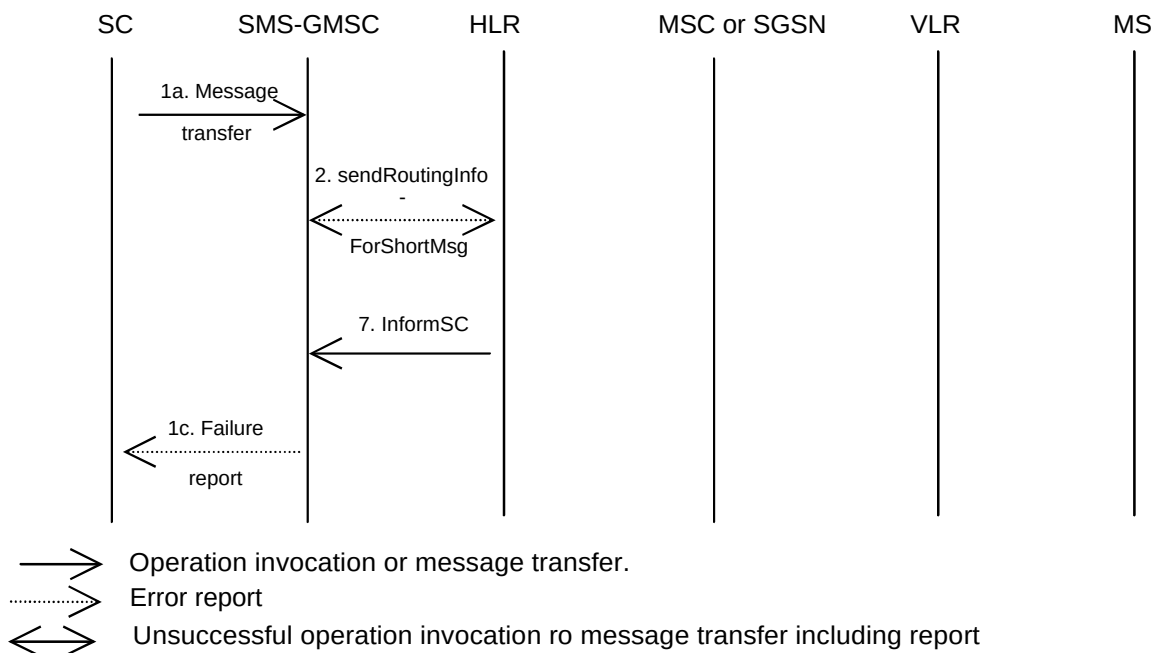


Figure 15c): Short message transfer attempt failing due to negative outcome of HLR information retrieval

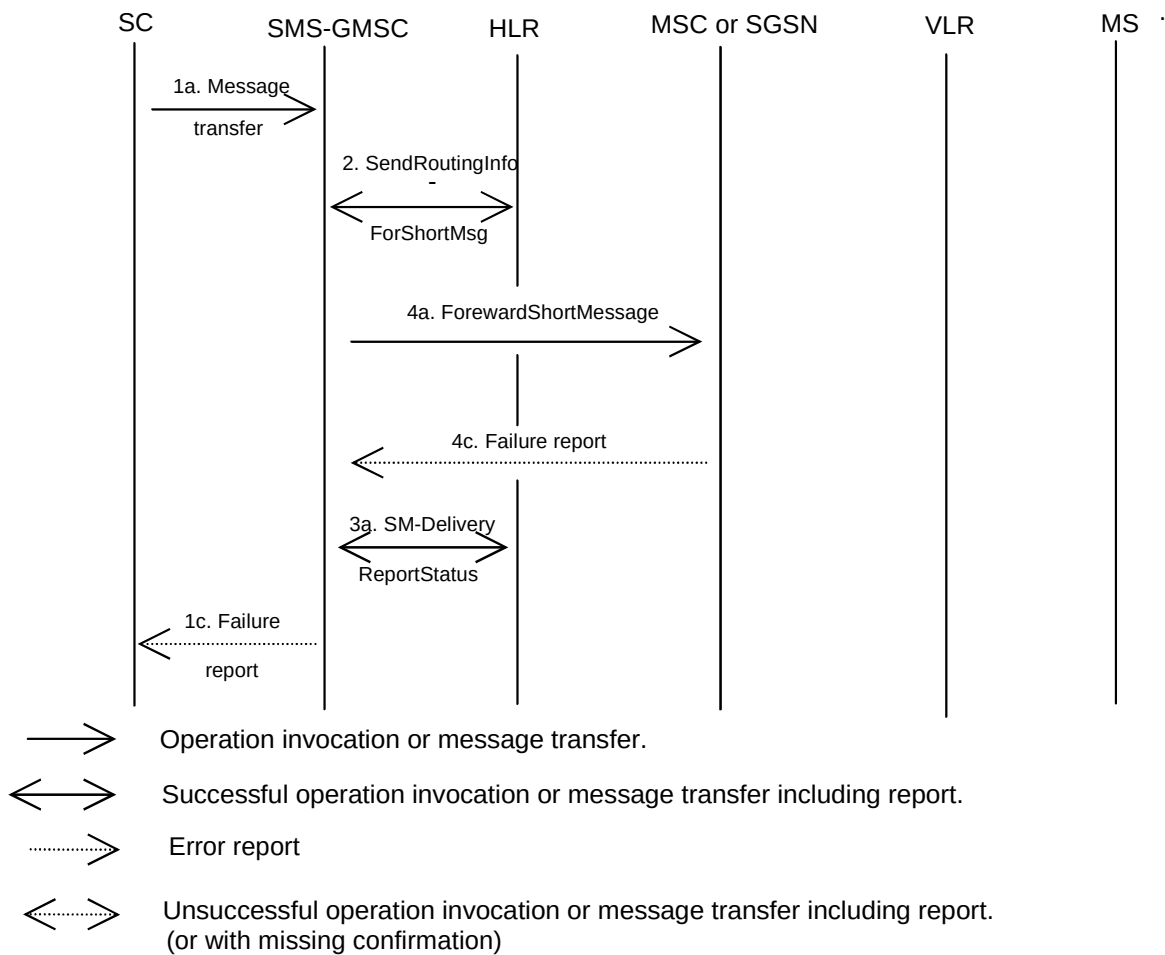


Figure 15d): Short message transfer attempt failing due to error at the MSC or SGSN

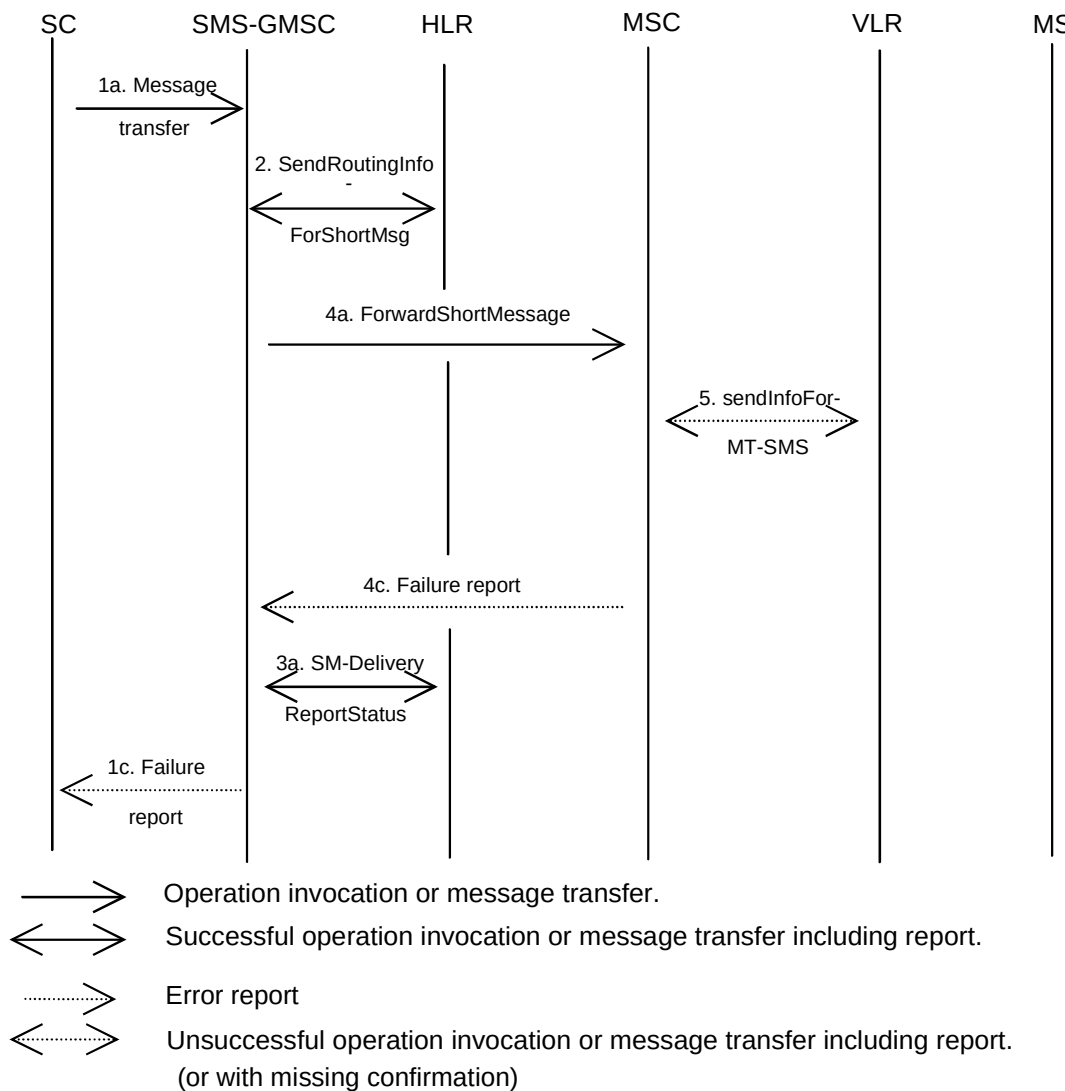
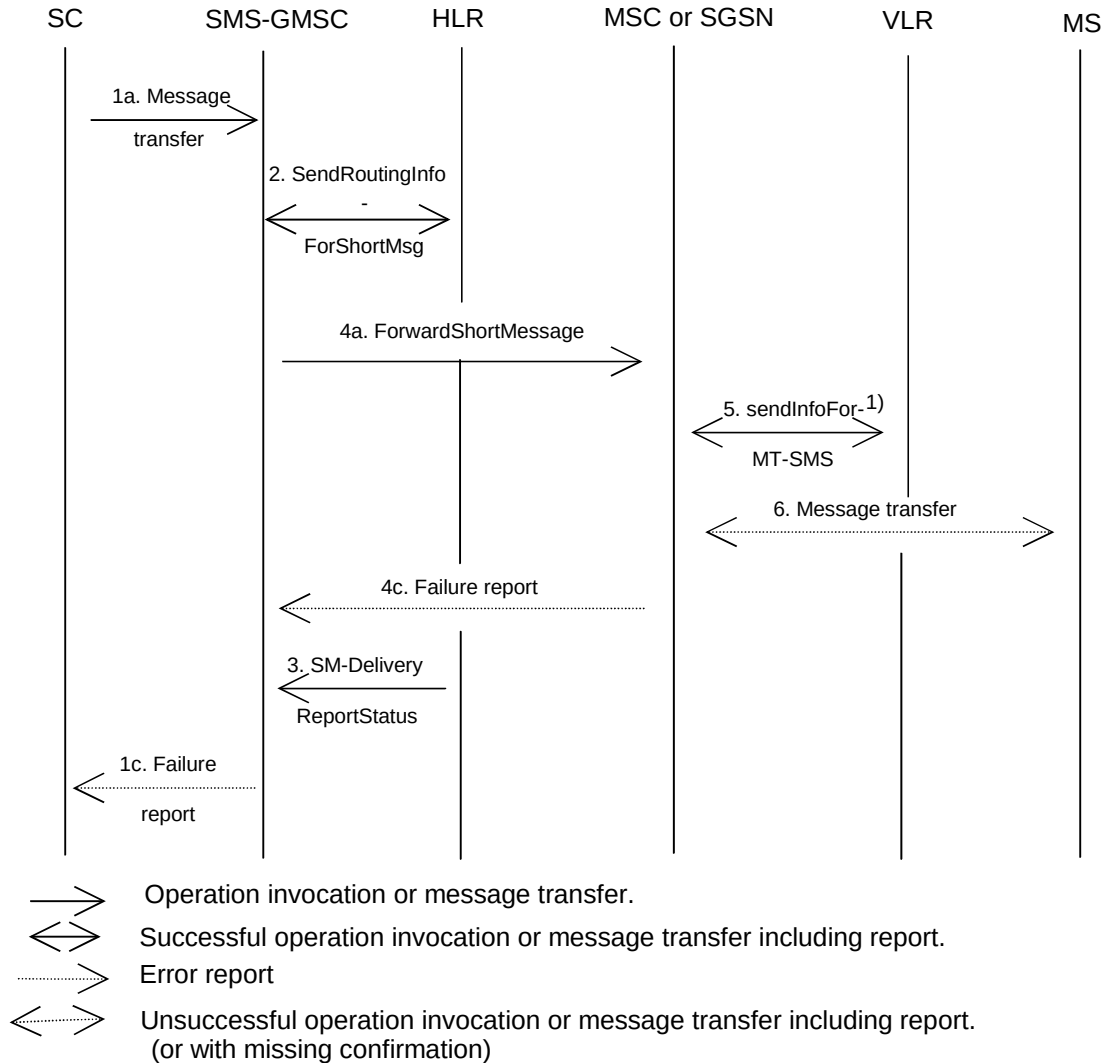
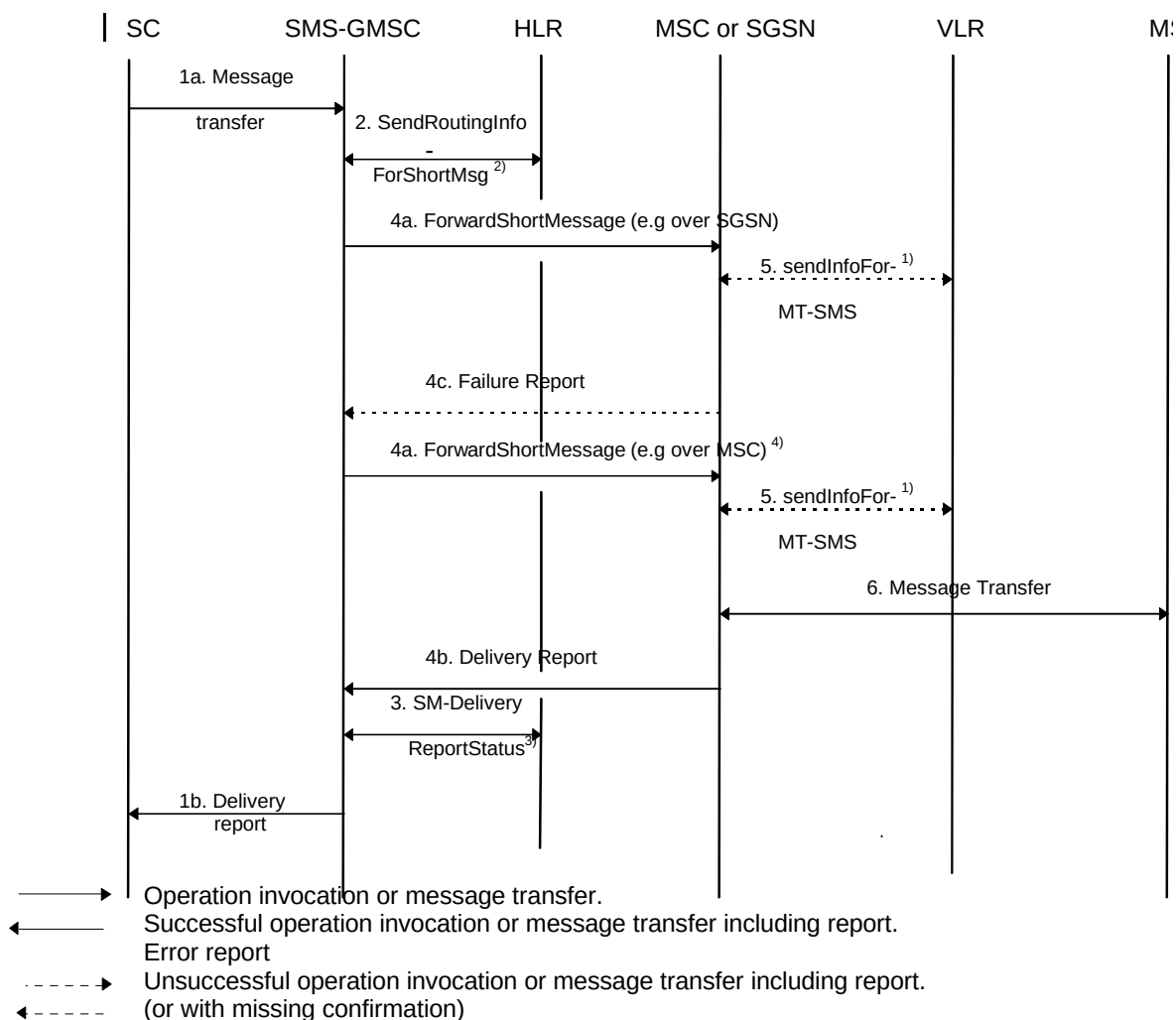


Figure 15e): Short message transfer attempt failing due to negative outcome of VLR information retrieval



NOTE 1): This operation is not used by the SGSN.

Figure 15f): Short message transfer attempt failing due to erroneous message transfer on the radio path



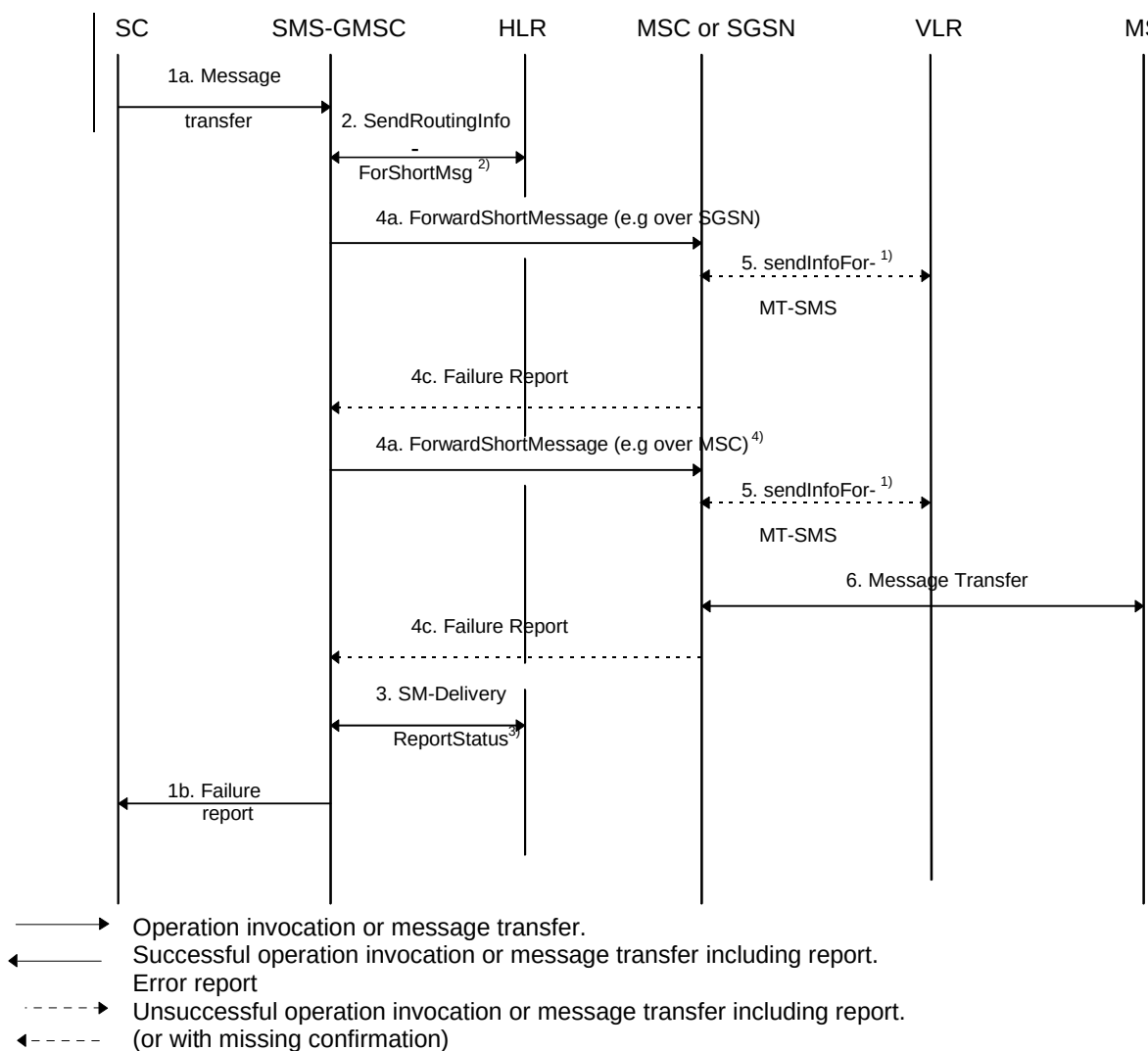
NOTE 1): This operation is not used by the SGSN.

NOTE 2): Two addresses (SGSN and MSC) are received from HLR.

NOTE 3): Successful transfer over second path and unsuccessful transfer over first path (e.g. Absent subscriber) are sent to HLR.

NOTE 4): The SMS transfer towards the second path is only triggered by the reception of some MAP errors on the first path as described in subclause 8.1.1.

Figure 15g): Short message transfer attempt failing over the first path (e.g. SGSN) and succeeding over the second path (e.g. MSC)



NOTE 1): This operation is not used by the SGSN.

NOTE 2): Two addresses (SGSN and MSC) are received from HLR.

NOTE 3): Unsuccessful transfer over the second path (e.g. MemoryCapacityExceeded) and over the first path (e.g. Absent subscriber) are sent to HLR.

NOTE 4): The SMS transfer towards the second path is only triggered by the reception of some MAP errors on the first path as described in subclause 8.1.1.

Figure 15h): Short message transfer attempt failing over the first path (e.g. SGSN) and over the second path (e.g. MSC)

Operation 1: Message transfer SC -> SMS-GMSC

This operation is used to transfer a short message from an SC to an SMS-GMSC.

The operation consists of:

- the transfer of a message containing the TPDU from the SC to the SMS-GMSC (see "1a. Message transfer" in figure 15); and
- the return of either a "Failure report" (see 1c. in figure 15) or a "Delivery report" (see 1b. in figure 15).

"Failure report" is returned to the SC when the SMS-GMSC has received indication from another entity (MSC, SGSN or HLR) the procedure was unsuccessful. The error indications which the SMS-GMSC may receive from the MSC, SGSN, HLR, VLR or MS enable the SMS-GMSC to return one of the error indications given in subclause 3.3 back to the SC.

Operation 2: sendRoutingInfoForShortMsg

The operation is an interrogation of the HLR by the SMS-GMSC to retrieve information necessary to forward the short message.

The result may contain the MSC, SGSN or both addresses, and shall also indicate which address belongs to the MSC and the SGSN.

Operation 3: SM-DeliveryReportStatus

The operation provides a means for the SMS-GMSC to request the HLR to add an SC address to the MWD, and is activated when the SMS-GMSC receives an absent subscriber indication from the MSC, SGSN or both, and/or when the SMS-GMSC receives a failure report for a short message transfer with cause MS Memory Capacity Exceeded via the MSC or SGSN. The Return Result optionally contains the MSIsdn-Alert.

This operation is also activated at successful delivery short message when the MNRF, MNRG or both are set in HLR.

The operation consists of:

- the transfer of a message, containing the MSISDN of the MS to which the short message was addressed, the SC-address, the successful outcome and/or the causes (Absent Subscriber, MS memory capacity exceeded or both) for updating the MWD, from the SMS-GMSC to the HLR (see 3. in figure 15).

Operation 4: forwardShortMessage

The operation provides a means for the SMS-GMSC to transfer a short message to the MSC or to the SGSN at which the MS is currently located.

The operation works in tandem with the forwarding of the short message from the MSC or from the SGSN to the MS. Thus, the outcome of the operation comprises either success, i.e. that the message has been delivered to the MS; or a failure that may be caused by several reasons, e.g. failure in the transfer SMS-GMSC -> MSC or SMS-GMSC -> SGSN, MS being detached, or no paging response.

It should be noted that the MNRG setting is implicitly carried out in SGSN when the message transfer is denied due to GPRS DETACH.

Operation 5: sendInfoForMT-SMS

The operation provides a means for the MSC to retrieve subscriber information from VLR for mobile terminated short message transfer. The operation may be associated with an authentication procedure, as shown in figure 16. Unsuccessful retrieval (e.g. absent subscriber) is indicated by a cause indication to the SMS-GMSC.

An overall depiction of how operation 5 interacts with signalling on the radio path is given in figure 16.

It should be noted that the MNRF setting is implicitly carried out when the message transfer is denied due to IMSI DETACH.

NOTE: This operation is not used by the SGSN.

Operation 6: Message transfer MSC -> MS

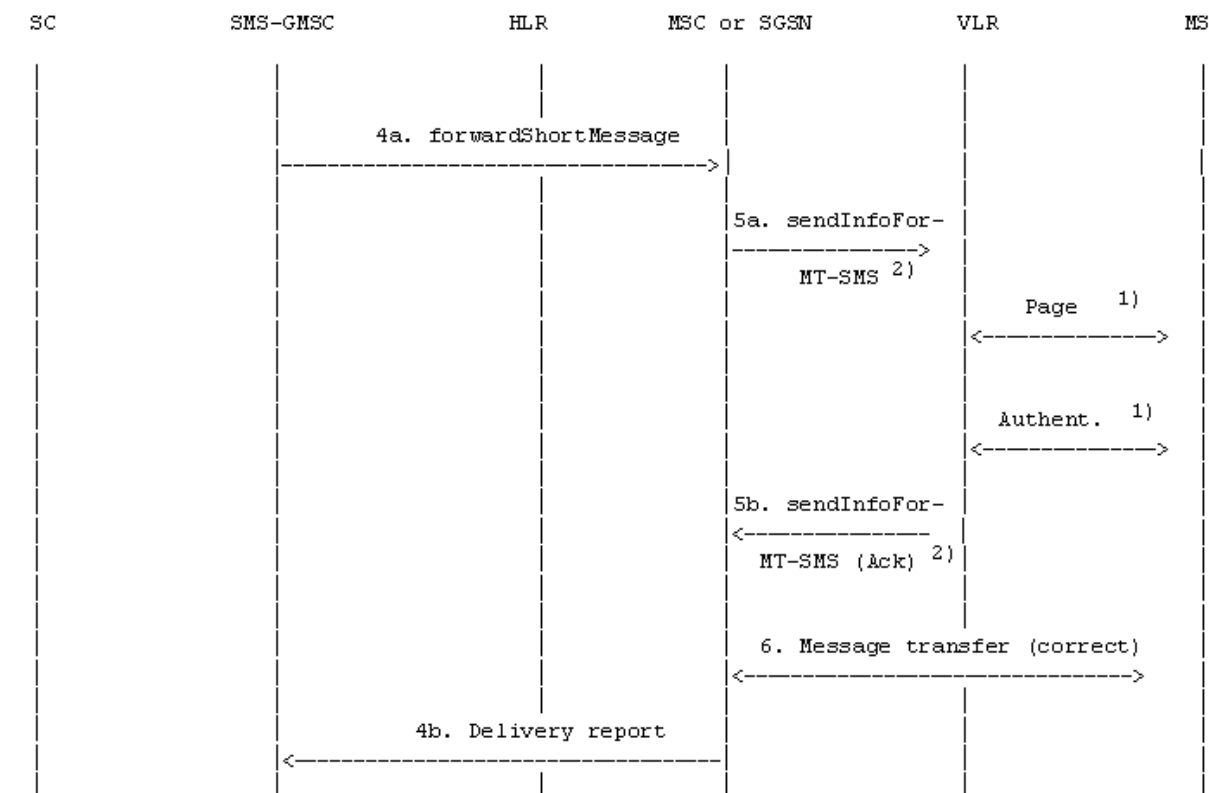
The operation is used to transfer a short message from the MSC to the MS.

If the transfer is not successful, e.g. due to the MS losing radio coverage after having successfully authenticated, a failure report (RP-ERROR) is returned to the SMS-GMSC. In this case, MWD and MCEF in the HLR shall be updated only for the case where the transfer fails with cause MS Memory Capacity Exceeded.

If the MS notifies the network that the MS has been unable to accept a short message because its memory capacity has been exceeded, then the ME shall set the memory capacity Exceeded Notification flag if present.

Operation 7: InformSC

The operation is used to transfer the MSIsdn-Alert from the HLR to the SMS-GMSC in case of the error Absent Subscriber or positive result given as an answer to the operation SendRoutingInfoForSM.



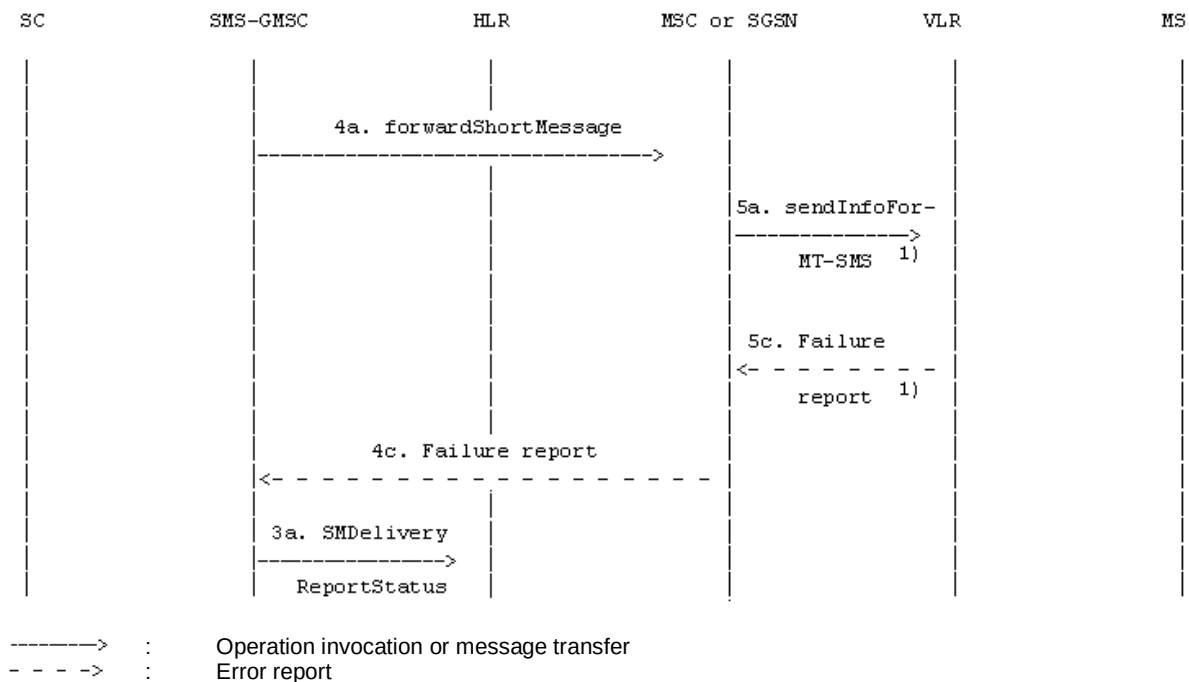
-----> : Operation invocation or message transfer
 <-----> : Successful operation invocation or message transfer incl. report

NOTE 1): Described in GSM 04.08 [12] and 3G TS 29.002 [15].

If the SGSN is used, Paging and Authentication are performed from SGSN.

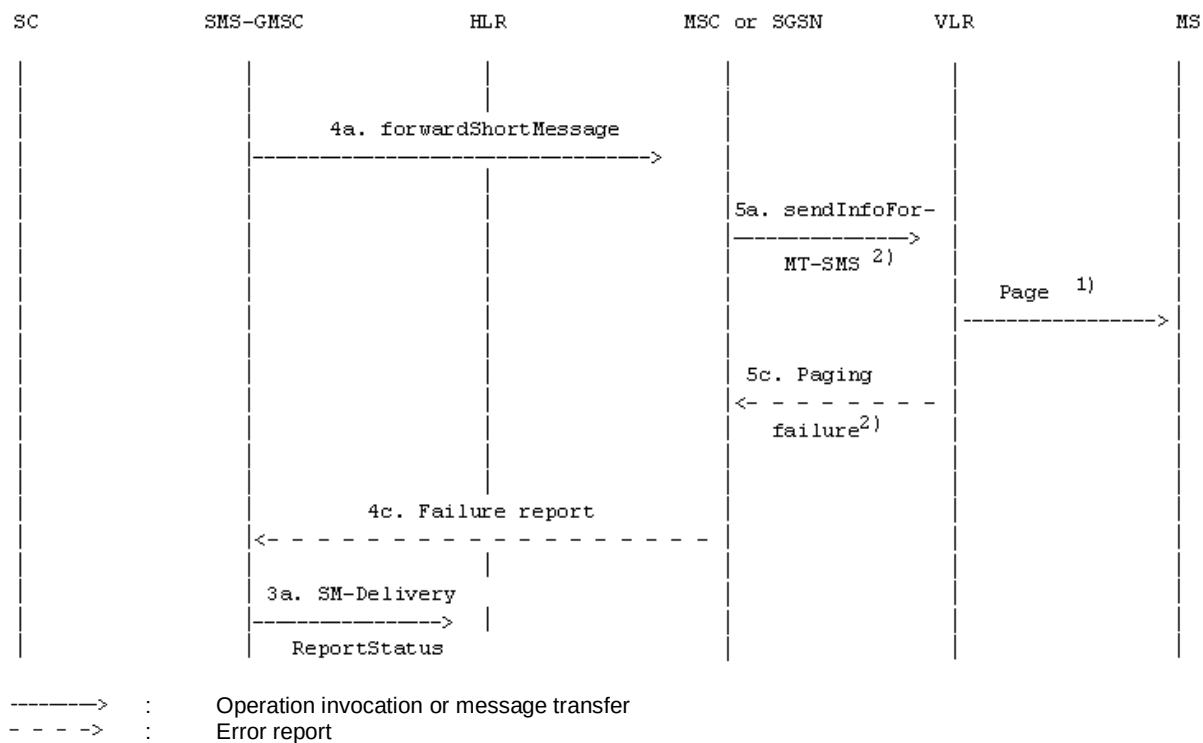
NOTE 2): This operation is not used by the SGSN.

Figure 16a): "Send information for MT SMS" procedure; error free case



NOTE 1): The GPRS DETACH information is in the SGSN.
 This operation is not used by the SGSN.

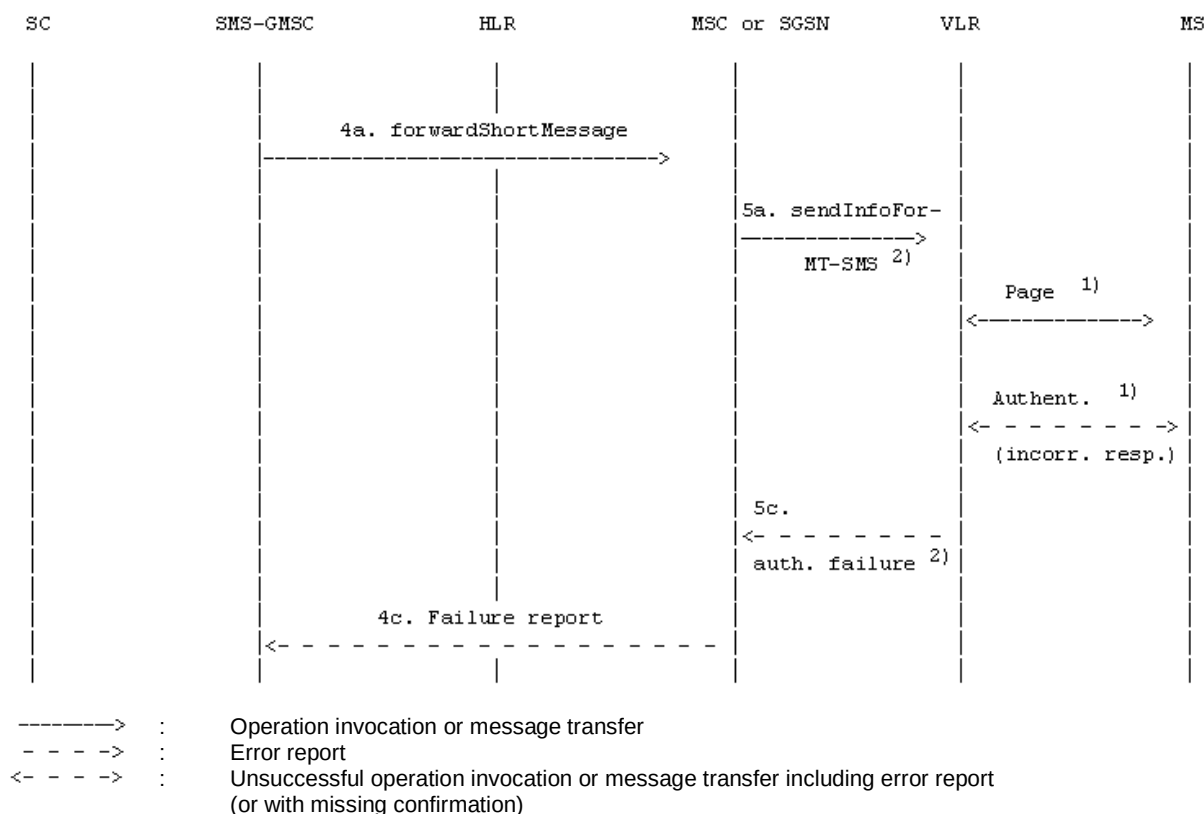
**Figure 16b): "Send information for MT SMS" procedure;
 erroneous case: absent subscriber (e.g. IMSI DETACH or GPRS DETACH)**



NOTE 1): Described in GSM 04.08 [12] and 3G TS 29.002 [15].
 If the SGSN is used, Paging is performed from SGSN.

NOTE 2): This operation is not used by the SGSN.

**Figure 16c): "Send information for MT SMS" procedure;
 erroneous case: Absent subscriber (e.g. no paging response)**



NOTE 1): Described in GSM 04.08 [12] and 3G TS 29.002 [15].

If the SGSN is used, Paging and Authentication are performed from SGSN.

NOTE 2): This operation is not used by the SGSN.

Figure 16d): "Send information for MT SMS" procedure; incorrect authentication

10.2 Short message mobile originated

The entities involved in this procedure is depicted in figure 17.

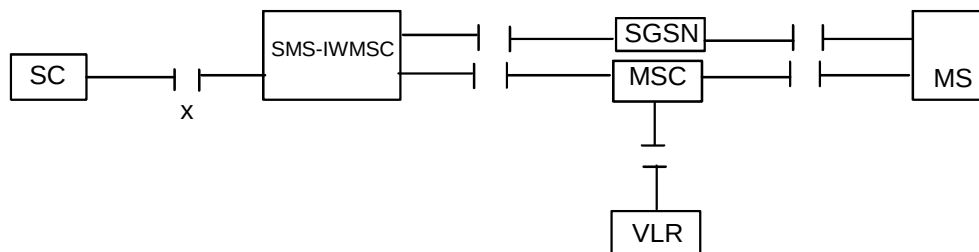


Figure 17: Interfaces involved in the Short message mobile originated procedure

GSM TS 03.02 [5]. X is the interface between an MSC or an SGSN and an SC as defined in clause 5.

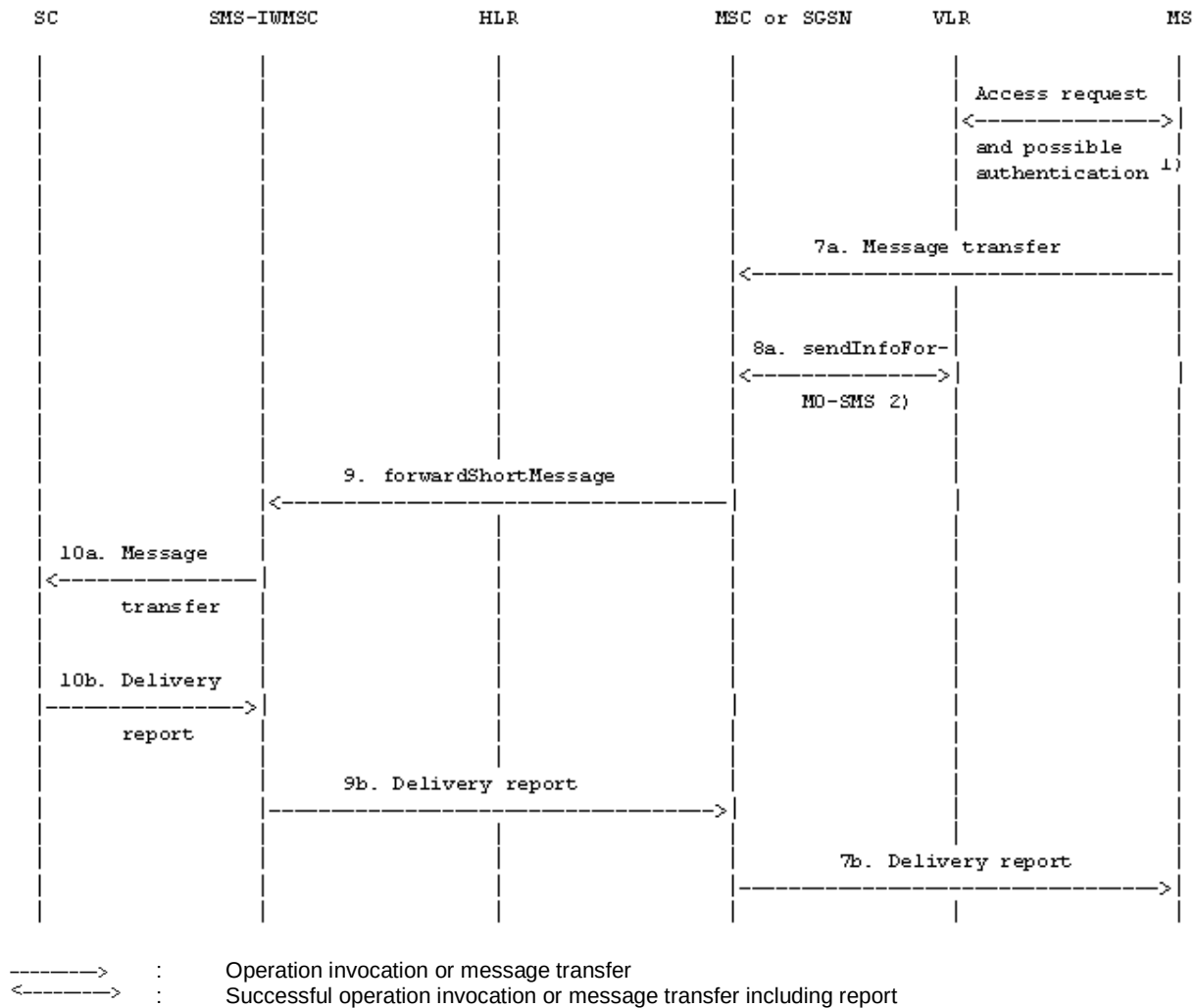
Note that since the short message mobile originated procedure covers the functionality required at SM-RL for transferring TPDUs from SC to MS, the procedure described covers both short message (SMS-SUBMIT) and command (SMS-COMMAND) transfer. The term "short message transfer" therefore in this subclause, covers both cases.

In figure 18, sequence diagrams for the following basic situations of short message mobile terminated transfer attempt:

- Successful short message transfer;
- Short message transfer attempt failing due to error at the MSC or SGSN;

- Short message transfer attempt failing due to negative outcome of VLR information retrieval;
- Short message transfer attempt failing due to error at the SMS-IW MSC;
- Short message transfer attempt failing due to error at the SC.

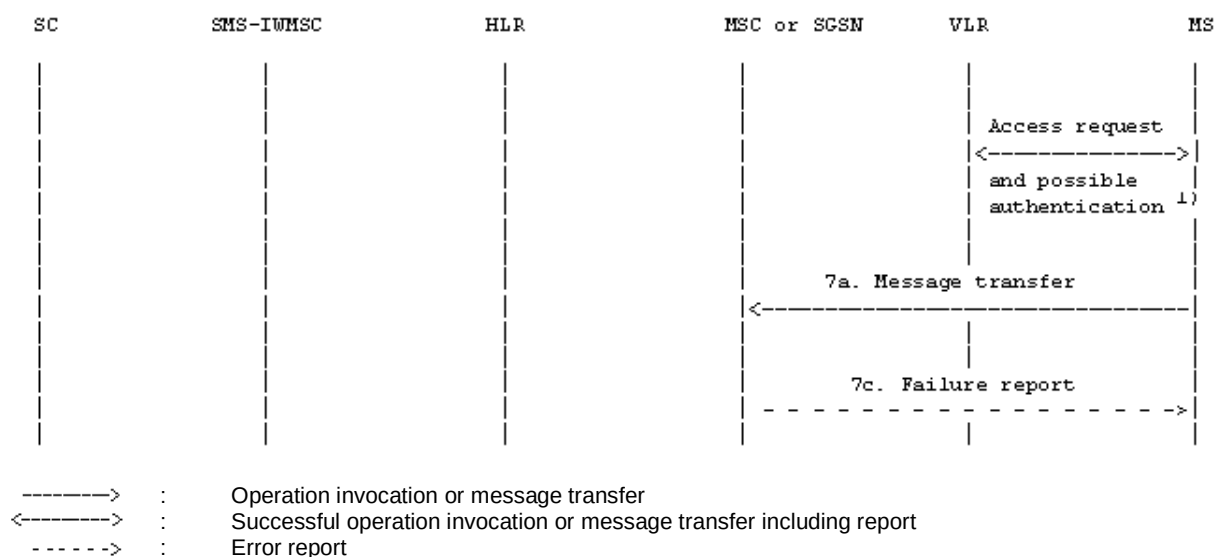
References to the relevant specifications of the different operations are given in clause 4.



NOTE 1): Described in [12] and 3G TS 29.002 [15].

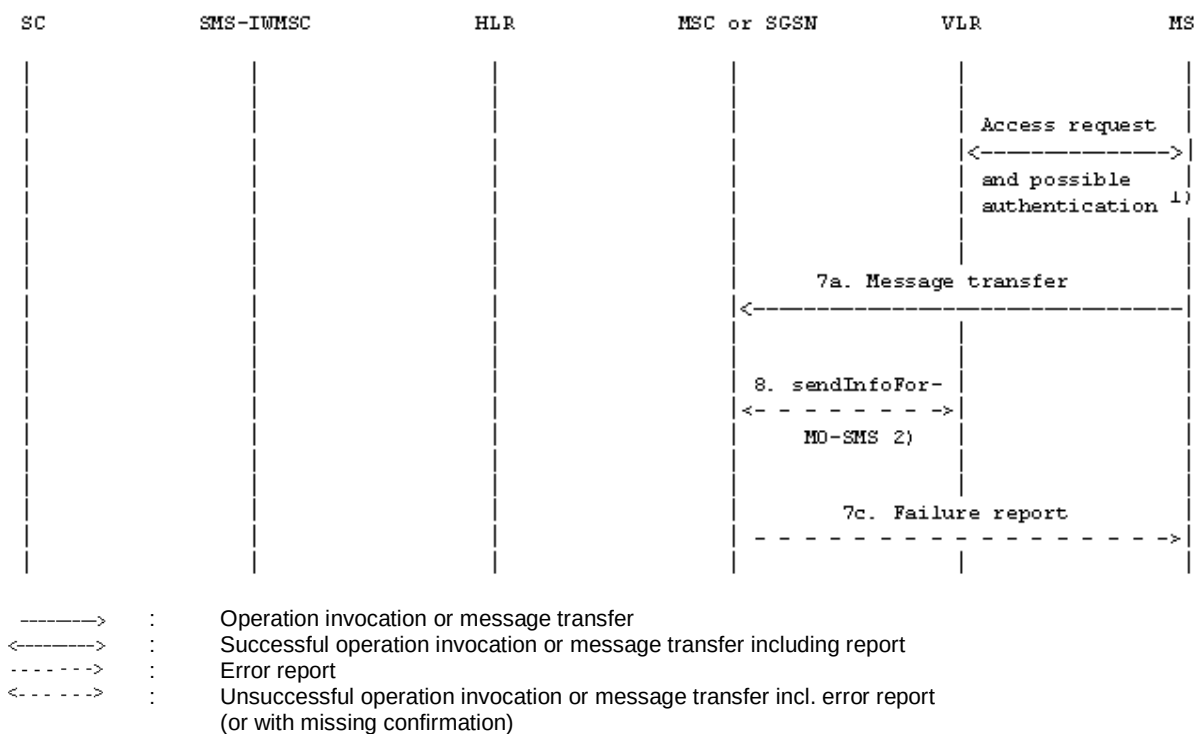
NOTE 2): This operation is not used by the SGSN.

Figure 18a): Successful short message transfer attempt



NOTE 1): Described in GSM 04.08 [12] and 3G TS 29.002 [15].

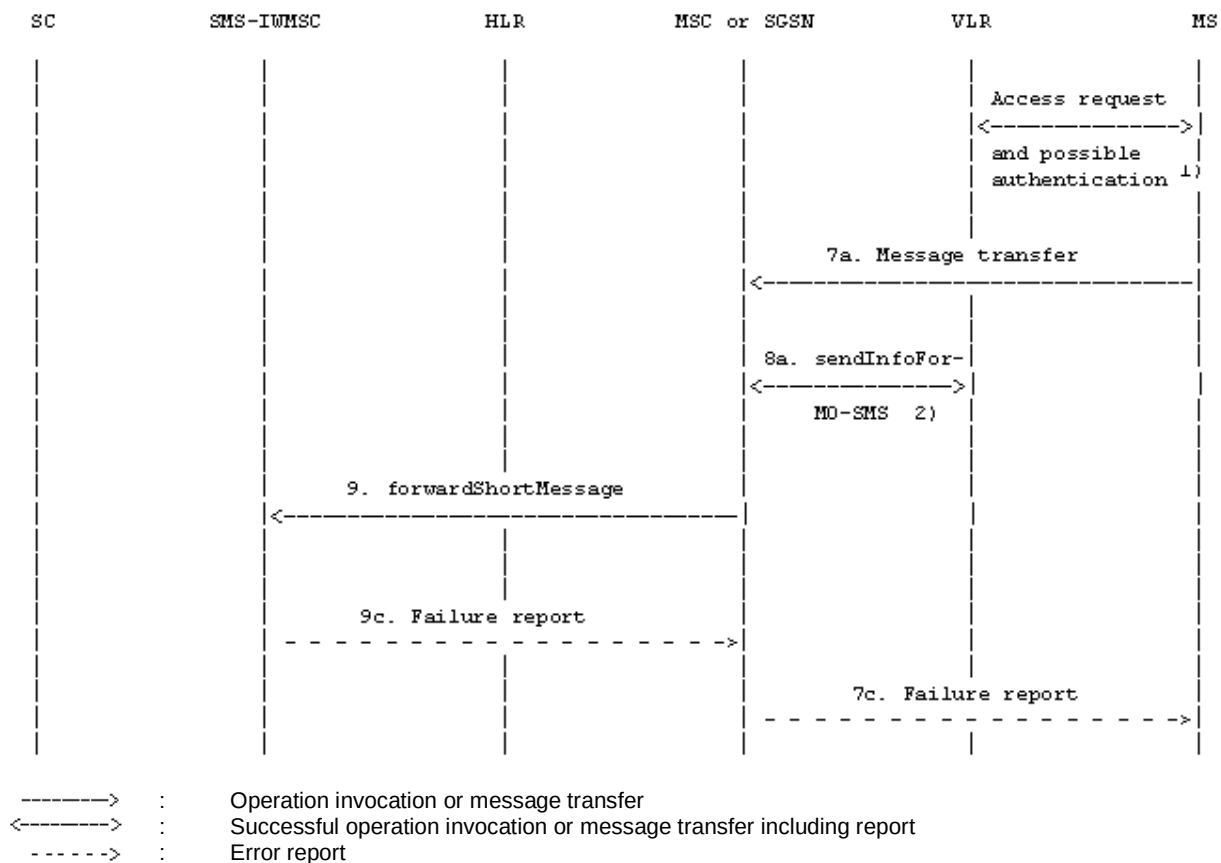
Figure 18b): Short message transfer attempt failing due to error at the MSC or SGSN



NOTE 1): Described in GSM 04.08 [12] and 3G TS 29.002 [15].

NOTE 2): This operation is not used by the SGSN.

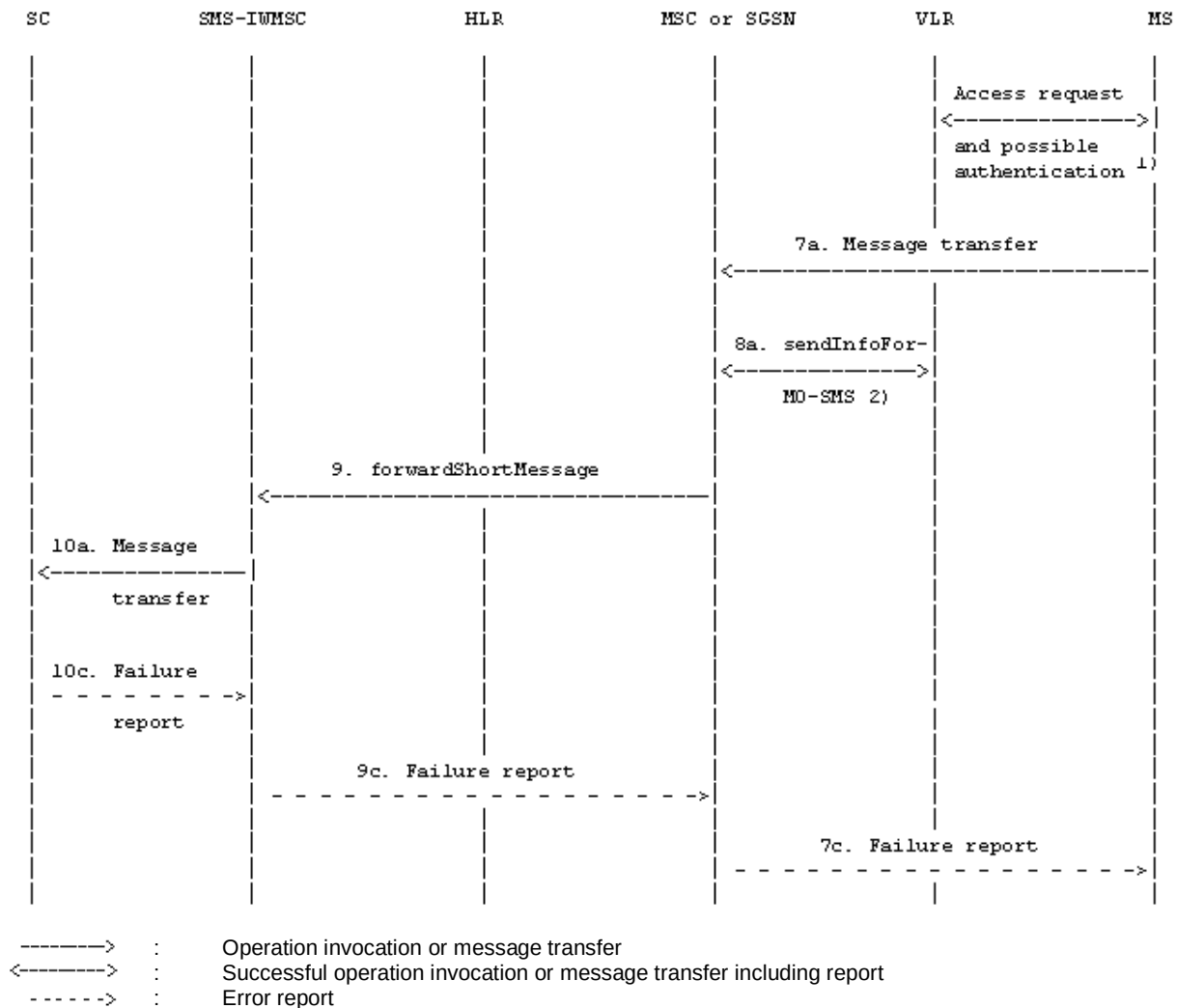
Figure 18c): Short message transfer attempt failing due to negative outcome of VLR information retrieval



NOTE 1): Described in GSM 04.08 [12] and 3G TS 29.002 [15].

NOTE 2): This operation is not used by the SGSN.

Figure 18d): Short message transfer attempt failing due to error at the SMS-IW MSC



NOTE 1): Described in GSM 04.08 [12] and 3G TS 29.002 [15].

NOTE 2): This operation is not used by the SGSN.

Figure 18e): Short message transfer attempt failing due to error at the SC

Operation 7: Message transfer MS -> MSC or MS -> SGSN

The operation is used to transfer a short message from the MS to the MSC or to the SGSN.

Operation 8: sendInfoForMO-SMS

The operation provides a means for the MSC to verify from the VLR that the mobile originated short message transfer does not violate supplementary services invoked or restrictions imposed using the network feature Operator Determined Barring.

A successful VLR response carries the MSISdn of the originating MS being transferred to the SC at SM-RL.

NOTE: This operation is not used by SGSN.

Operation 9: forwardShortMessage

The operation provides a means for the MSC or for the SGSN to transfer a short message to the SMS-IW MSC.

The procedure is required if the serving MSC or SGSN cannot access the SC directly, e.g. because it has no connection to SC (see clause 5).

The procedure works in tandem with the forwarding of the short message from the SMS-IW MSC to the SC. Thus, the outcome of the operation comprises either success, i.e. that the message has been delivered to the SC; or a failure that may be caused by several reasons, e.g. failure in the transfer MSC --> SMS-IW MSC or SGSN --> SMS-IW MSC, SC does not comply.

Operation 10: Message transfer SMS-IW MSC -> SC

The operation is used to transfer a short message from an SMS-IW MSC to an SC, and consists of:

- the transfer of a message containing the TPDU from the SMS-IW MSC to the SC (see "10a. Message transfer" in figure 18); and
- the return of either a "Failure report" (see 10c. in figure 18) or a "Delivery report" (see 10b. in figure 18).

"Failure report" is returned to the MS when the SMS-IW MSC has received indication from the network or the SC that the procedure was unsuccessful.

10.3 Alert transfer

The entities involved in this procedure are depicted in figure 19.

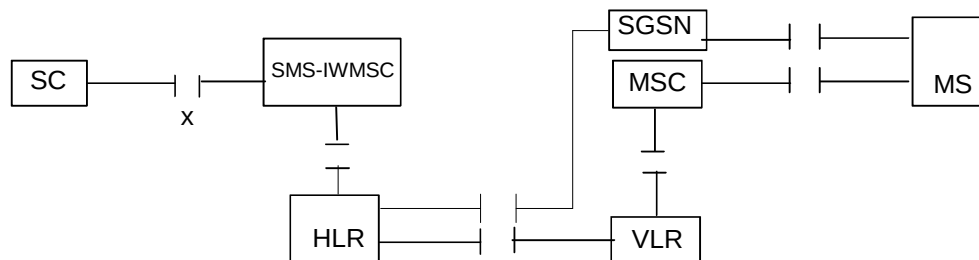


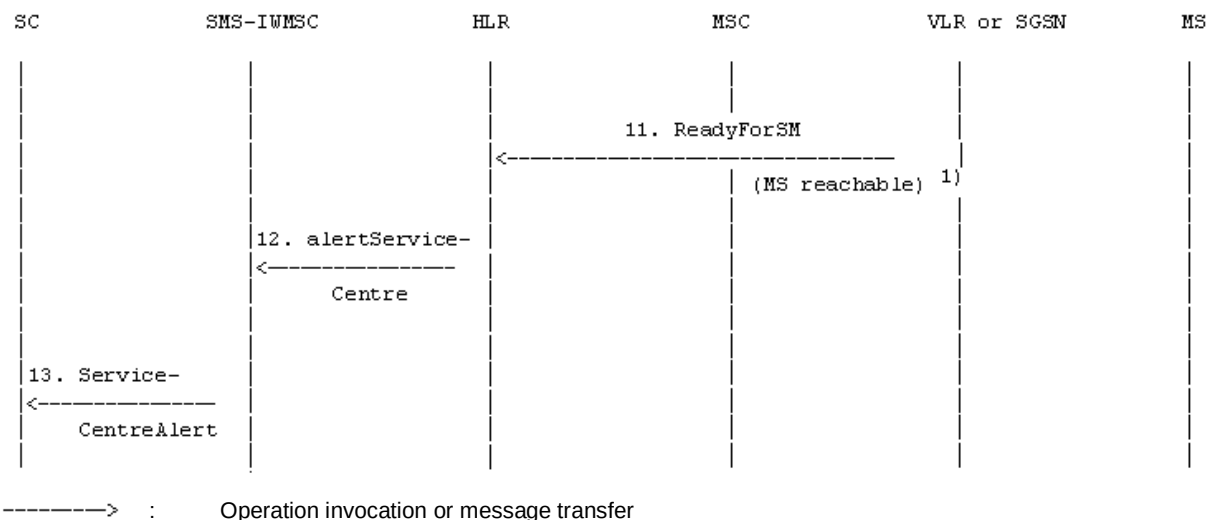
Figure 19: Interfaces involved in the Alert procedure. X is the interface between an SC and an MSC as defined in clause 5

This procedure consists of the operations shown in figure 20.

Three cases are distinguished:

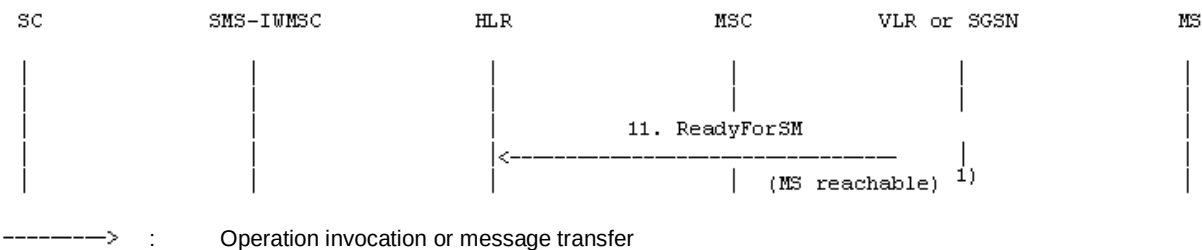
- the MS becomes reachable when the MNRF, MNRG or both are set but the MCEF is not set (figure 20a);
- the MS becomes reachable when the MNRF, MNRG or both, and the MCEF are set (figure 20b);
- the MS notifies the network that it has memory available to receive one or more short messages when the MCEF is set (figure 20c).

The operations between MSC and VLR, between HLR and VLR or SGSN and between HLR and SMS-IW MSC are specified in 3G TS 29.002 [15]. The operation between MS and MSC or SGSN is specified in 3G TS 24.011 [13]. References to specifications of other operations are given in clause 4.



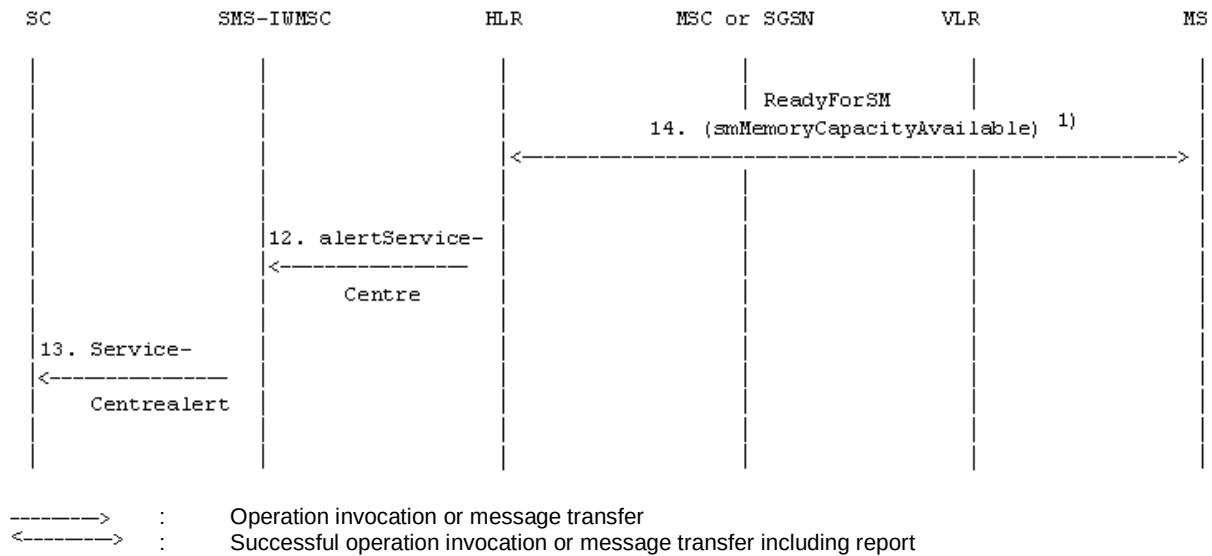
NOTE 1): In case ReadyForSM is sent by the SGSN, the reason may be MS reachable via the SGSN, or MS reachable via the SGSN and the MSC (see 3G TS 23.060 [27]).

Figure 20a: The alert procedure when the MS becomes reachable, MNRF, MNRG or both are set and MCEF is not set



NOTE 1): In case ReadyForSM is sent by the SGSN, the reason may be MS reachable via the SGSN, or MS reachable via the SGSN and the MSC (see 3G TS 23.060 [27]).

Figure 20b: The alert procedure when the MS becomes reachable, MNRF, MNRG or both are set and MCEF is set



NOTE 1): Described in 3G TS 24.011 [13] and 3G TS 29.002 [15].

Figure 20c: The alert procedure when the MS notifies the network that it has memory available to receive one or more short messages and MCEF is set

Operation 11: ReadyForSM (MS reachable)

The operation provides a means to transfer alert information from VLR or SGSN to HLR.

The procedure is activated when the VLR or the SGSN detects that the MS is active, i.e. when the MS responds to a paging request.

Operation 12: alertServiceCentre

The operation provides a means to transfer alert information from HLR to MSC.

Operation 13: ServiceCentreAlert

The operation provides a means to transfer alert information from an SMS-IW MSC to an SC.

The operation consists of transfer of a message ("RP-ALERT-SC") from the SMS-IW MSC to the SC.

Operation 14: ReadyForSM (smMemoryCapacityAvailable)

The operation provides a means for the MS to notify the network that it has memory available to receive one or more short messages.

The following applies if the memory capacity available notification flag is implemented in the (U)SIM.

The operation consists of transfer of a message ("RP-SM-MEMORY-AVAILABLE") from the MS to the HLR, and the return of an acknowledgement to the MS. When the MS rejects a short message due to lack of available memory capacity the need to transfer notification shall be stored in the (U)SIM. After a attempt to transfer the RP-SM-Memory-Available message the following applies:

If the MS receives a positive acknowledgement it shall unset the memory capacity exceeded notification flag in the (U)SIM and exit this procedure.

If the MS receives a negative acknowledgement indicating a permanent failure condition (as specified in 3G TS 24.011 [13]) it shall unset the memory capacity exceeded notification flag in the (U)SIM and exit the procedure.

If the MS receives a negative acknowledgement indicating a temporary failure condition (as specified in 3G TS 24.011 [13]) or receives no acknowledgement or an indication of failure by lower layers, it shall repeat the attempt to transfer the message in accordance with procedures defined in 3G TS 24.011 [13]. If these repeat procedures fail, the mobile shall unset the memory capacity exceeded notification flag in the (U)SIM and exit this procedure.

If memory capacity has become available because memory is cleared, the value of the memory capacity exceeded notification flag is read. If the flag is set, the MS notifies the network that memory capacity is now available as described above.

When the mobile is powered up or the SIM / UICC is inserted, the mobile shall check the memory capacity exceeded notification flag in the (U)SIM; if the flag is set and the (U)SIM has memory available to receive a short message the mobile shall attempt to notify the network that it has memory available, as described above.

11 Mapping of error causes between RP layers

This clause describes the interworking between the relay layers on the radio interface (i.e. between the servicing MSC/SGSN and the mobile station), and within the network (i.e. between servicing MSC/SGSN, VLR, HLR, or GMSC).

11.1 Mobile Terminated short message transfer

If errors are indicated by the VLR after invocation of the "sendInfoFor-MT-SMS" operation, the appropriate error information is returned to the SMS-GMSC in a failure report as specified in 3G TS 29.002 [15] (negative outcome of "forwardShortMessage" see clause 10),

If errors are detected by the MSC or by the SGSN during the transfer on the radio interface, the error cause returned in the return error of the MAP procedure ForwardShortMessage shall be set as follows:

Failure at the MSC or SGSN	Return error to be included in the MAP-proc
RP-ERROR message with error cause: 22 Memory capacity exceeded Other error causes	SM_DeliveryFailure with cause "MemoryCapacityExceeded" ¹⁾ SM_DeliveryFailure with cause "equipmentProtocolError" ¹⁾
CP or lower layer error (e.g. RR, layer 2 failure) ²⁾ Mobile has no SM capability	SM_DeliveryFailure with cause "equipmentProtocolError" ¹⁾ SM_DeliveryFailure with cause "equipmentNotSM-Equiped" ¹⁾ 0
TR1N timeout ²⁾ MNSMS-error-ind (No SAPI 3)	SM_DeliveryFailure with cause "equipmentProtocolError" ¹⁾

- 1) For definition of MAP error SM_DeliveryFailure and its parameter "cause" see 3G TS 29.002 [15].
- 2) The error causes of the RP-ERROR message, the CP layer and timer TR1N are defined in 3G TS 24.011 [13].

11.2 Memory available notification

If errors are indicated by the HLR (via the VLR or the SGSN) after invocation of the "ReadyForSM" operation, the MSC or the SGSN shall return the appropriate error information to the MS in a failure report (i.e. a RP-ERROR message) containing the following error cause:

Return error from ReadyForSM (Alert Reason is "memory available")	Cause value in the RP-ERROR message
DataMissing UnexpectedDataValue UnknownSubscriber FacilityNotSupported System Failure	38 Network out of order 38 Network out of order 30 Unknown Subscriber 69 Requested facility not implemented 38 Network out of order
Local or lower layer failure (e.g. reject condition, timer expired or transaction abort)	38 Network out of order

NOTE: The coding and the use of the RP-ERROR message is specified in 3G TS 24.011 [13].

11.3 Mobile Originated short message transfer

If errors are indicated by the VLR after invocation of the "sendInfoForMO-SMS" operation.(see clause 10), the MSC shall return the appropriate error information to the MS in a failure report (i.e. a RP-ERROR message) containing the following error cause:

Return error from SendInfoForMO-SMS	Cause value in the RP-ERROR message
DataMissing	38 Network out of order
UnexpectedDataValue	38 Network out of order
TeleserviceNotProvisioned	50 Requested facility not subscribed
CallBarred	
- barringServiceActive	10 Call barred
- operatorBarring	8 Operator determined barring

NOTE: The coding and the use of the RP-ERROR message is specified in 3G TS 24.011 [13]. The operation SendInfoForMO-SMS is not used by the SGSN.

If errors are indicated by the SMS-IWMSC (negative outcome of the "forwardShortMessage),) the MSC or the SGSN shall send a failure report (i.e. a RP-ERROR message) to the MS, with the error cause coded as follows:

Return error from ForwardShortMessage	Cause value in the RP-ERROR message
DataMissing	38 Network out of order
FacilityNotSupported	69 Requested facility not implemented
UnexpectedDataValue	38 Network out of order
SM-DeliveryFailure cause: unknownSC	1 Unassigned number
SM-DeliveryFailure cause: SC-Congestion	42 Congestion
SM-DeliveryFailure cause: invalidSME-Addr	21 Short message transfer rejected
SM-DeliveryFailure cause: subscriberNotSC-Subscriber	28 Unidentified subscriber
Local or lower layer failure (e.g. reject condition, timer expired or transaction abort)	38 Network out of order

NOTE: The coding and the use of the RP-ERROR message is specified in 3G TS 24.011 [13].

Annex A (informative): Protocol stacks for interconnecting SCs and MSCs

No mandatory protocol between the Service Centre (SC) and the Mobile Switching Centre (MSC) below the transfer layer is specified by GSM/UMTS specifications; this is a matter of agreement between SC and PLMN operators.

Some example protocols are provided in GSM TS 03.47 [11] to assist SC and PLMN operators. These are based on the following principles, which SC and PLMN operators are recommended to follow even if they choose not to use one of the examples given in GSM TS 03.47 [11]:

The protocol(s) between SC and MSC below transfer layer should:

- a) provide the service defined for SM-RL (see Subclause 9.3);
- b) be based on widely accepted telecommunications protocols in the public domain;
- c) permit open interconnection.

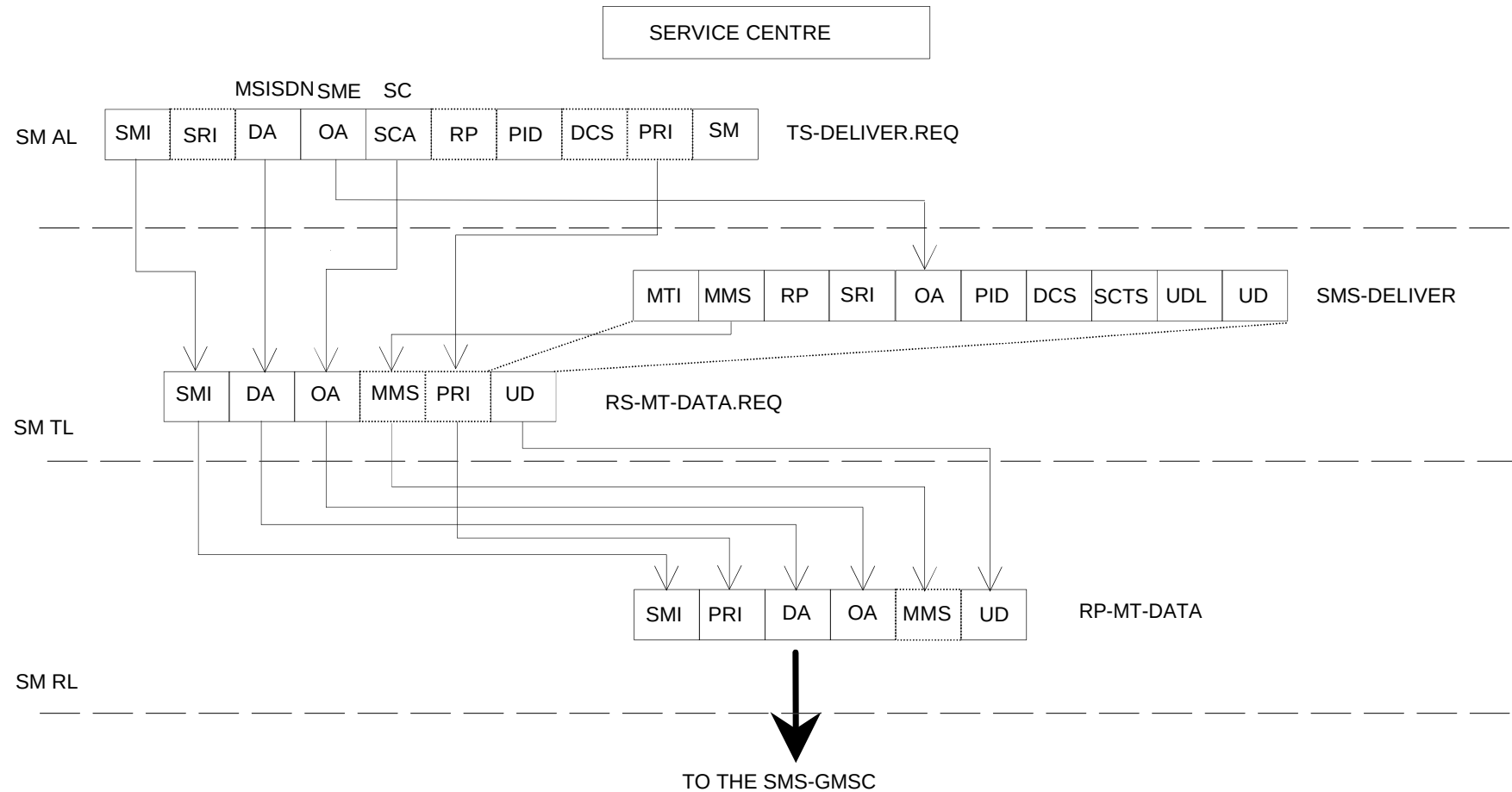
Annex B (informative): Information now contained in 3G TS 23.038 [9]

Annex B held information that is now contained in 3G TS 23.038 [9].

Annex C (informative): Short message information flow

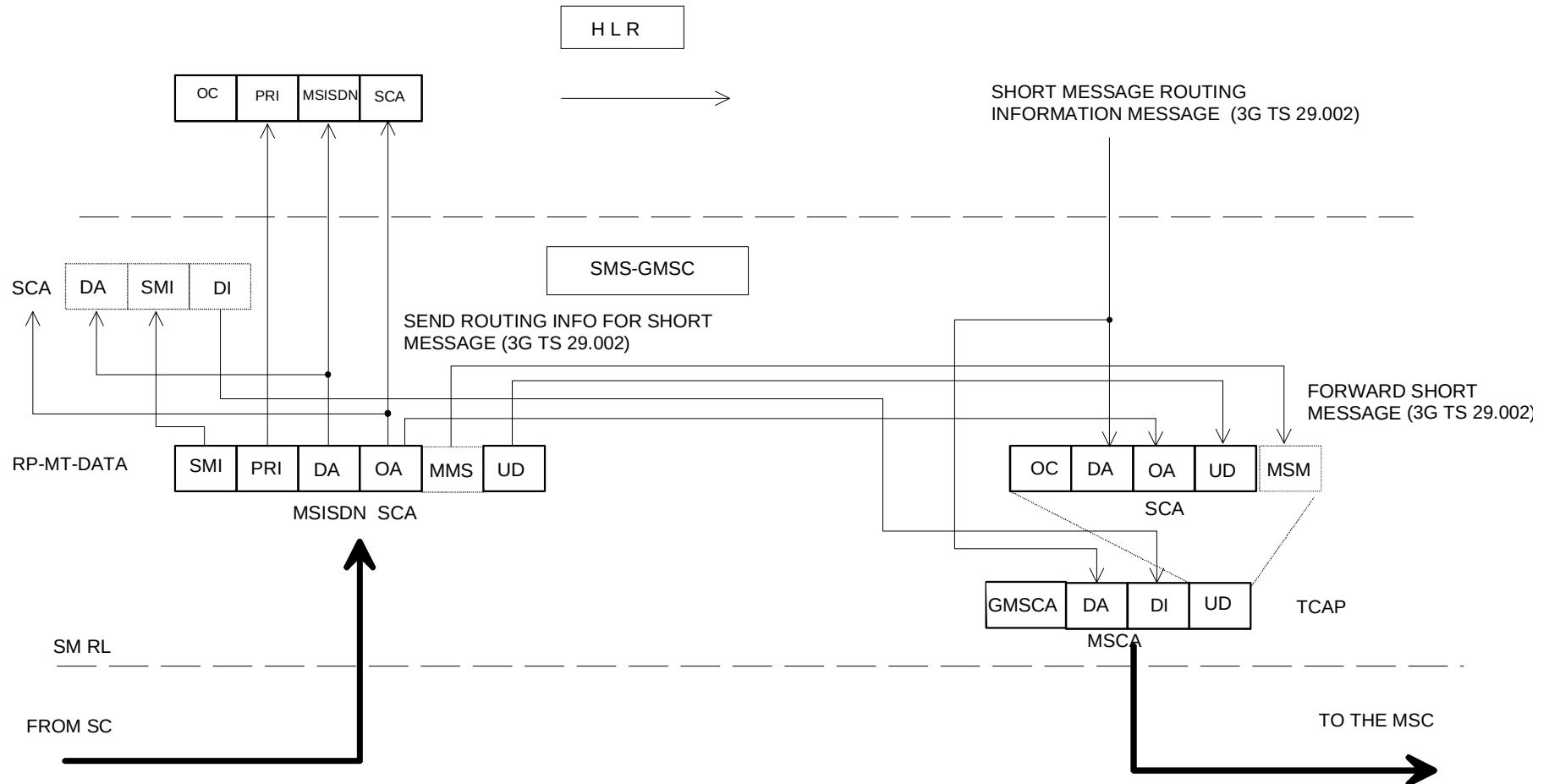
The diagrams in this annex describe the flow of primitives and parameters during the short message transfer. These diagrams refer to specifications 3G TS 23.040, 3G TS 24.011[13] and 3G TS 29.002 [15]. The parameters in dotted lines are optional. The abbreviations used in diagrams are listed below. The relevant specifications are given in parentheses. (*) stands for a common GSM/UMTS abbreviations and (-) for a general abbreviation.

CM	Call Management (*)
CS	CauSe (-)
DA	Destination Address (-)
DCS	Data Coding Scheme (3G TS 23.040)
DI	Dialogue Identifier TCAP
GMSCA	Gateway MSC Address
GPRS	General Packet Radio Services 3G TS 23.060 [27])
HLR	Home Location Register (*)
IMSI	International Mobile Subscriber Identity (*)
MAL	MSISdn-Alert (3G TS 23.040)
MMS	More Messages to Send (3G TS 23.040)
MR	Message Reference (3G TS 23.040)
MS	Mobile Station (*)
MSC	Mobile services Switching Centre (*)
MSCA	MSC Address
MSI	Mobile waiting Set Indication (3G TS 23.040)
MSISdn	Mobile Station ISDN number (*)
MSM	More Short Messages (3G TS 29.002 [15])
MSRN	Mobile Station Roaming Number (*)
MT	Message Type (3G TS 24.011[13])
MTI	Message Type Indicator (3G TS 24.011[13])
MWS	Message Waiting Set (3G TS 23.040)
OA	Originating Address (-)
OC	Operation Code (3G TS 29.002 [15])
PCI	Protocol Control Information (-)
PDI	Protocol Discriminator (*)
PRI	PRIority (3G TS 23.040)
RCT	ReCeption Time (3G TS 23.040)
REA	REcipient Address (3G TS 23.040)
RL	ReLay function (3G TS 24.011[13])
RP	Reply Path (3G TS 23.040)
SC	Service Centre (3G TS 23.040)
SCA	Service Centre Address (3G TS 23.040)
SCTS	Service Centre Time Stamp (3G TS 23.040)
SGSN	Serving GPRS Support Node (3G TS 23.060 [27])
SM	Short Message (3G TS 23.040)
SM-AL	Short Message Application Layer (3G TS 23.040)
SME	Short Message Entity (3G TS 23.040)
SMI	Short Message Identifier (3G TS 23.040)
SM-RL	Short Message Relay Layer (3G TS 23.040, 24.011[13])
SMS-GMSC	Short Message Service Gateway MSC (3G TS 23.040)
SMS-IW MSC	Short Message Service Interworking MSC (3G TS 23.040)
SoR	Status of Report (3G TS 23.040)
SM-TL	Short Message Transfer Layer (3G TS 23.040)
SRI	Status Report Indication (3G TS 23.040)
SRR	Status Report Request (3G TS 23.040)
TCAP	Transaction Capabilities Application Part (-)
TID	Transaction Identifier (*)
UD	User Data (-)
UDL	User Data Length (3G TS 23.040)
VLR	Visitor Location Register (*)
VP	Validity Period (3G TS 23.040)
VPF	Validity Period Format (3G TS 23.040)



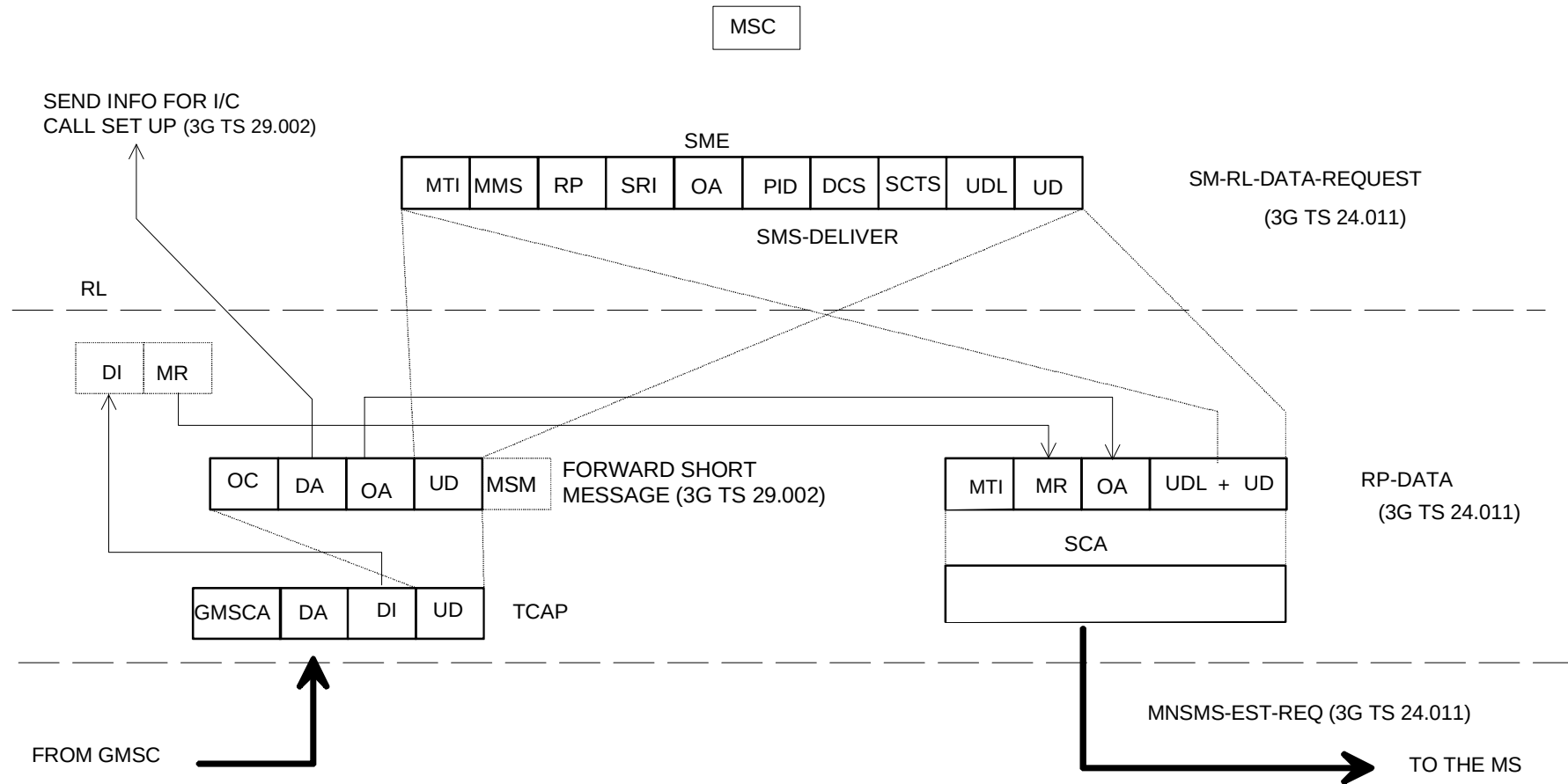
NOTE: SMI is not carried via SM-RL of subclause 9.3.5 but is carried via the relay service between the SC and GMSC (see subclause 9.3.4.1).

Figure C.1: Mobile terminated short message



NOTE: A sequence of short messages shall have MMS set to 1 in each RP-MT-DATA except the last (last shall have MMS set to 0). Each RP-MT-DATA shall be carried via FORWARD SHORT MESSAGE via TCAP and shall be assigned the same Dialogue Identifier as previous RP-MT-DATAS in the sequence.

Figure C.2: Mobile terminated short message



NOTE: MR is of local significance to the MSC/MS interface and is not the value supplied to the MSC.

Figure C.3: Mobile terminated short message

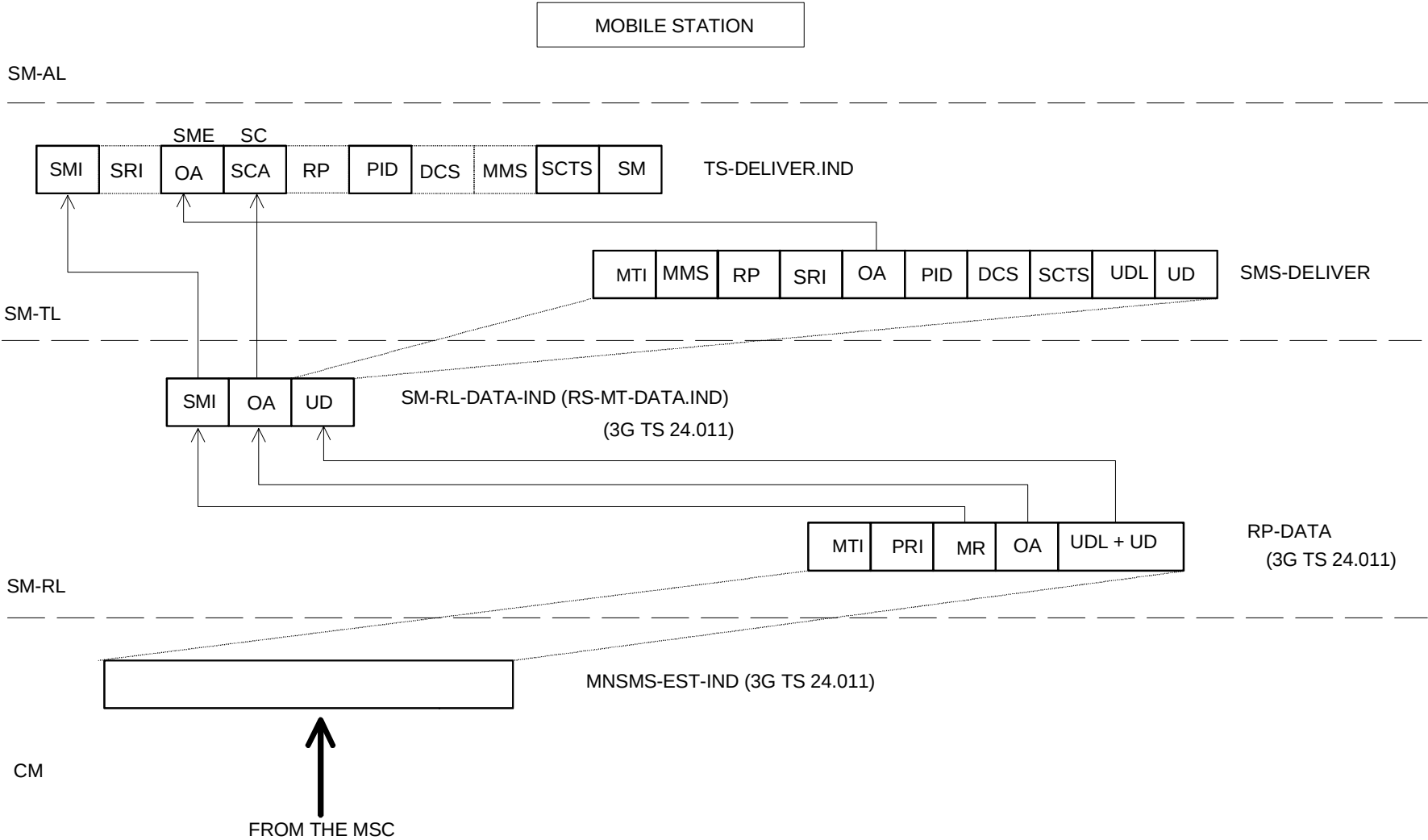


Figure C.4: Mobile terminated short message

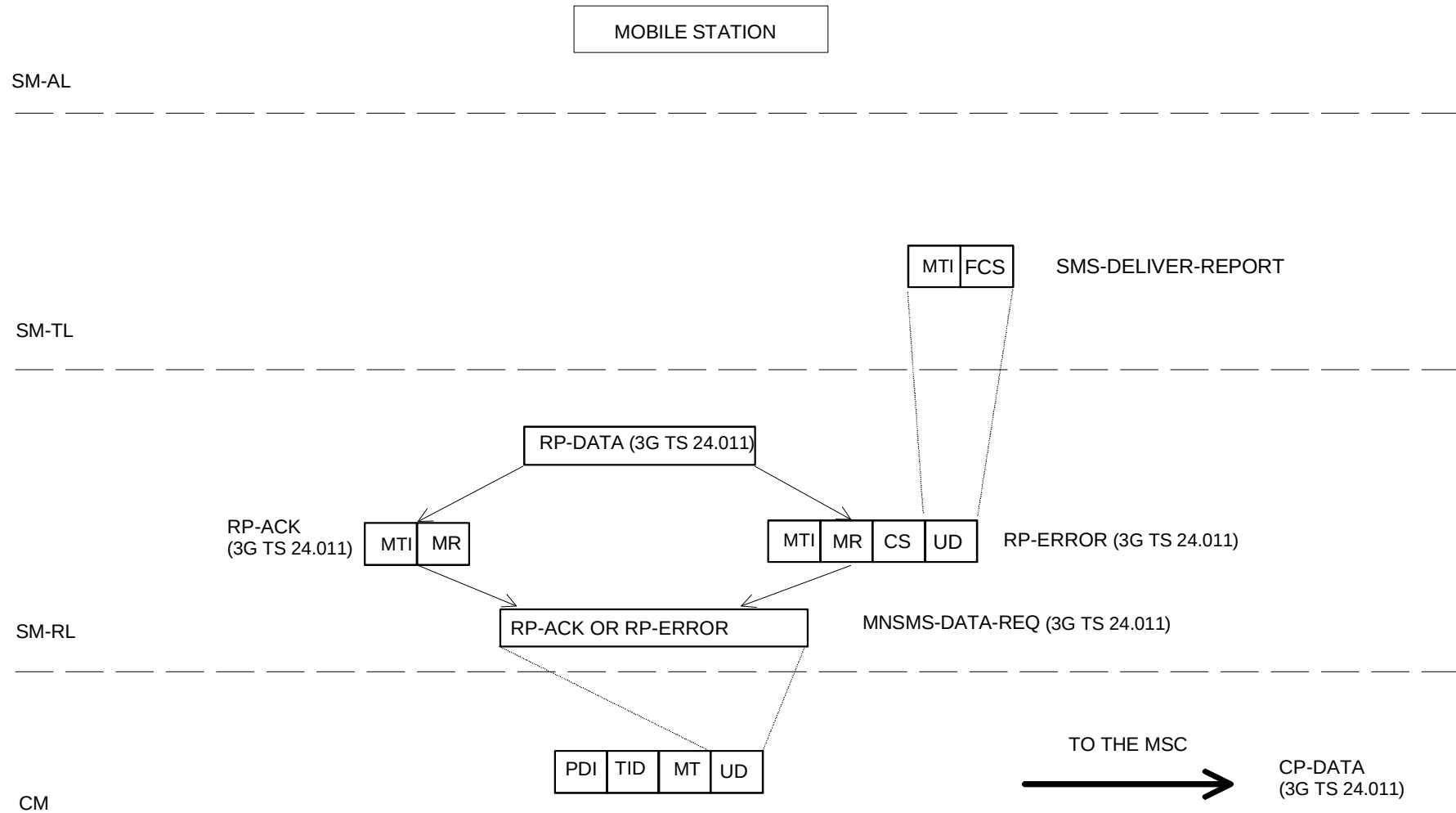
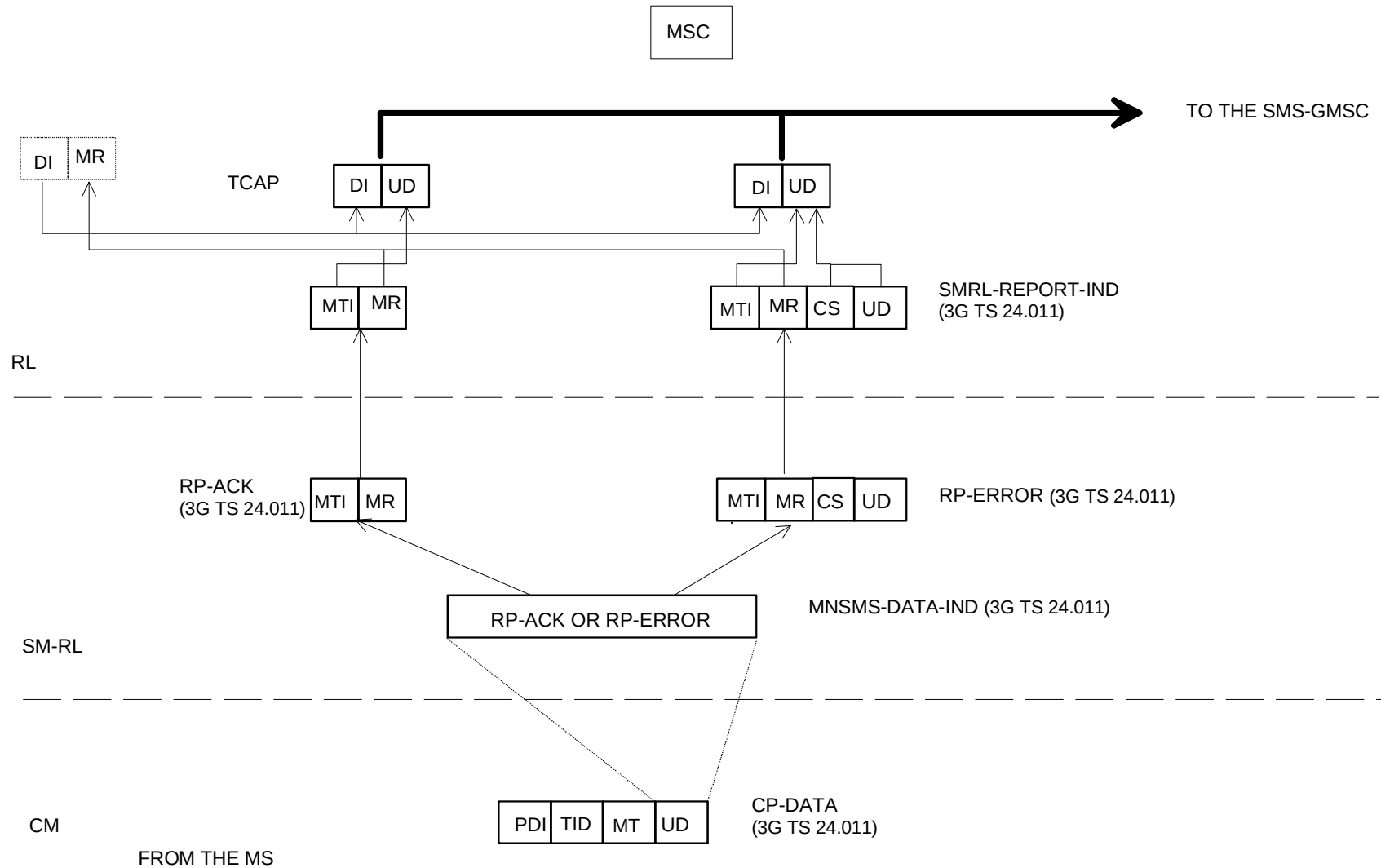
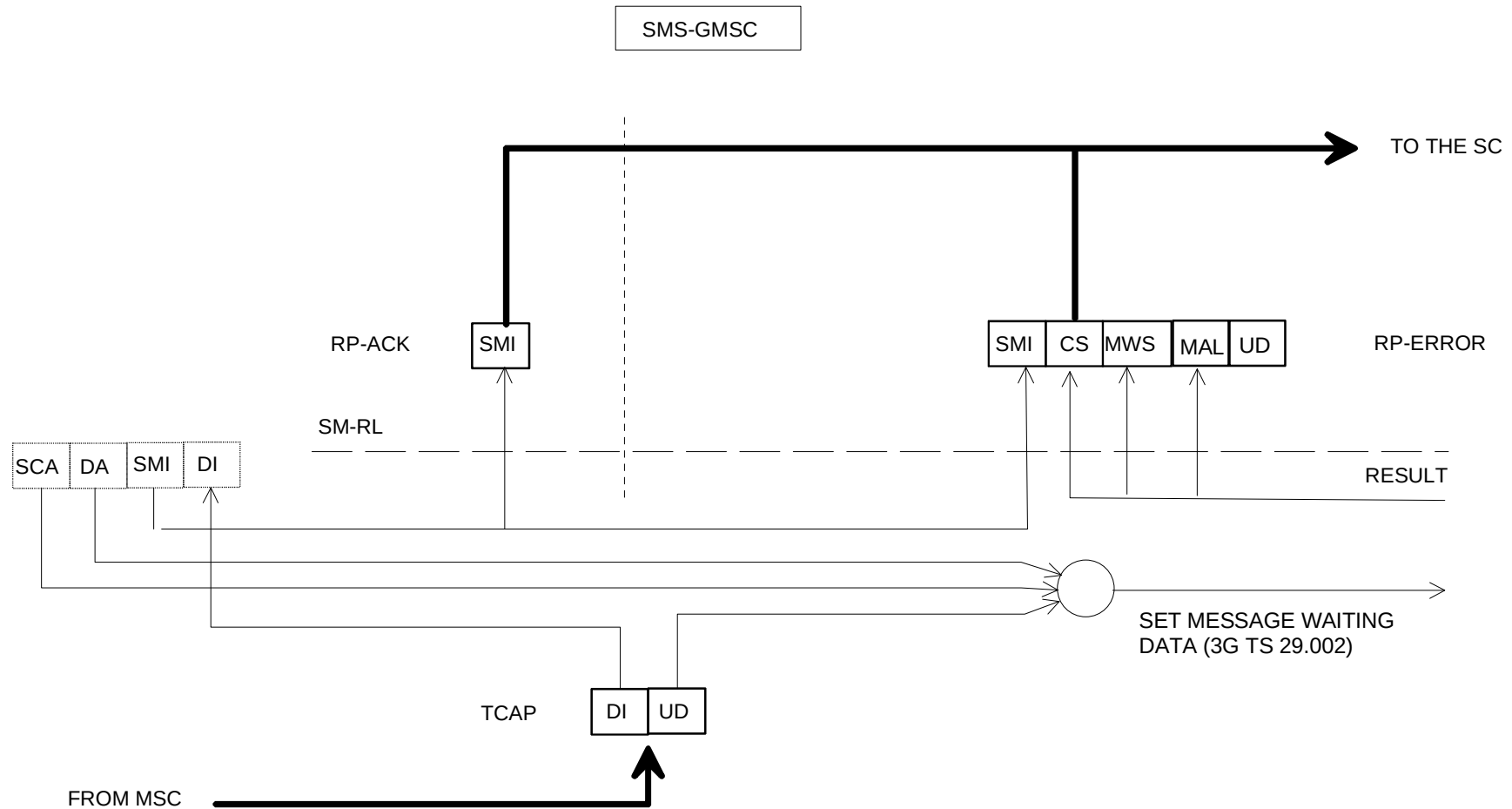


Figure C.5: Acknowledgement in the MT case



NOTE: The cause carried via UD of TCAP is not the cause supplied via RP-ERROR but is the cause resulting from application of the mapping specified by table 8.5 of 24.011[13].

Figure C.6: Acknowledgement in the MT case



NOTE 1: The MAP operation "SetMessageWaitingData" is invoked only if a cause "Absent Subscriber" is carried in TCAP UD.

NOTE 2: The cause delivered to the SC is not necessarily the cause carried via TCAP but is one of the set specified by table 03.40/1.

Figure C.7: Acknowledgement in the MT case

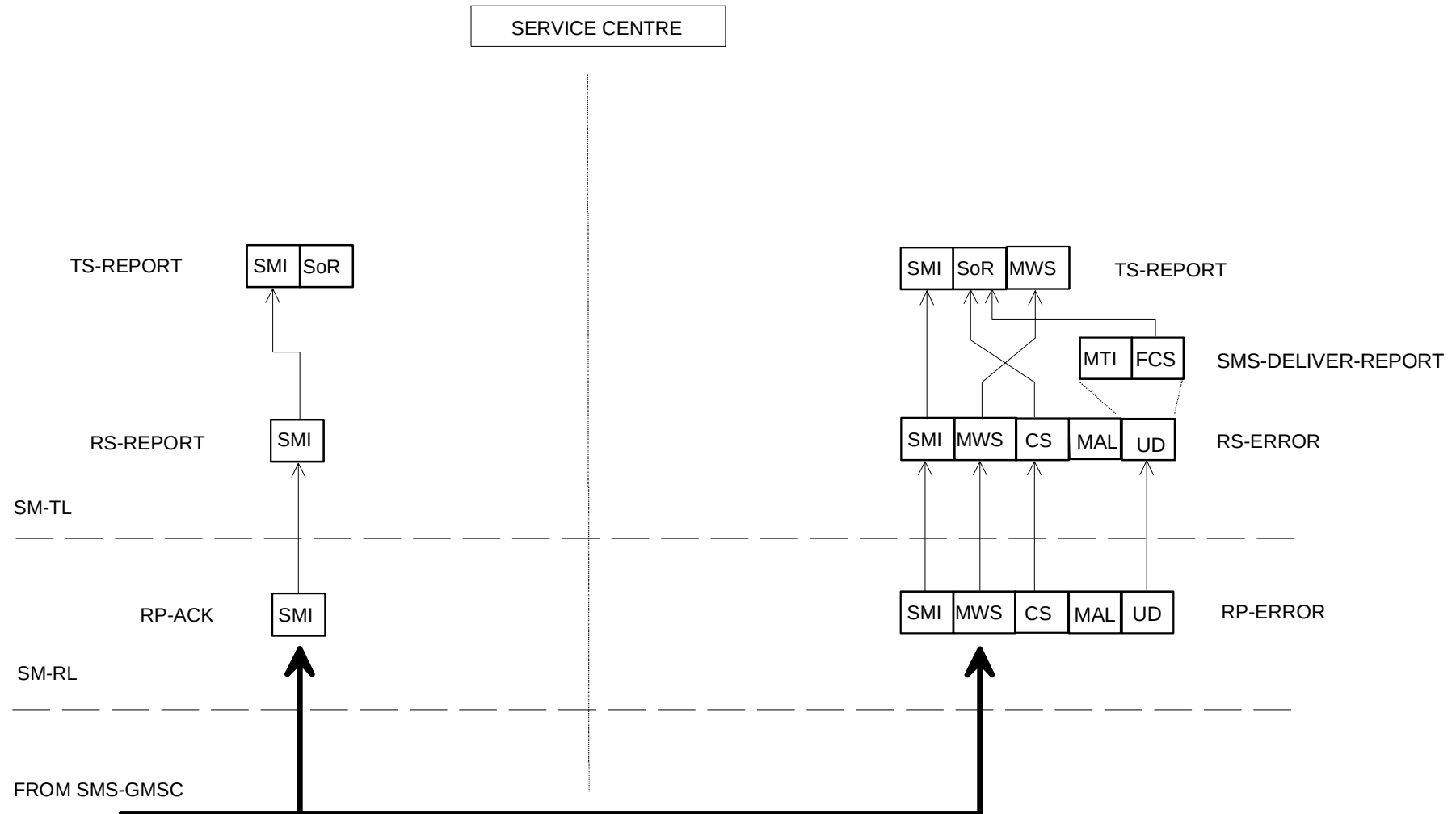


Figure C.8: Acknowledgement in the MT case

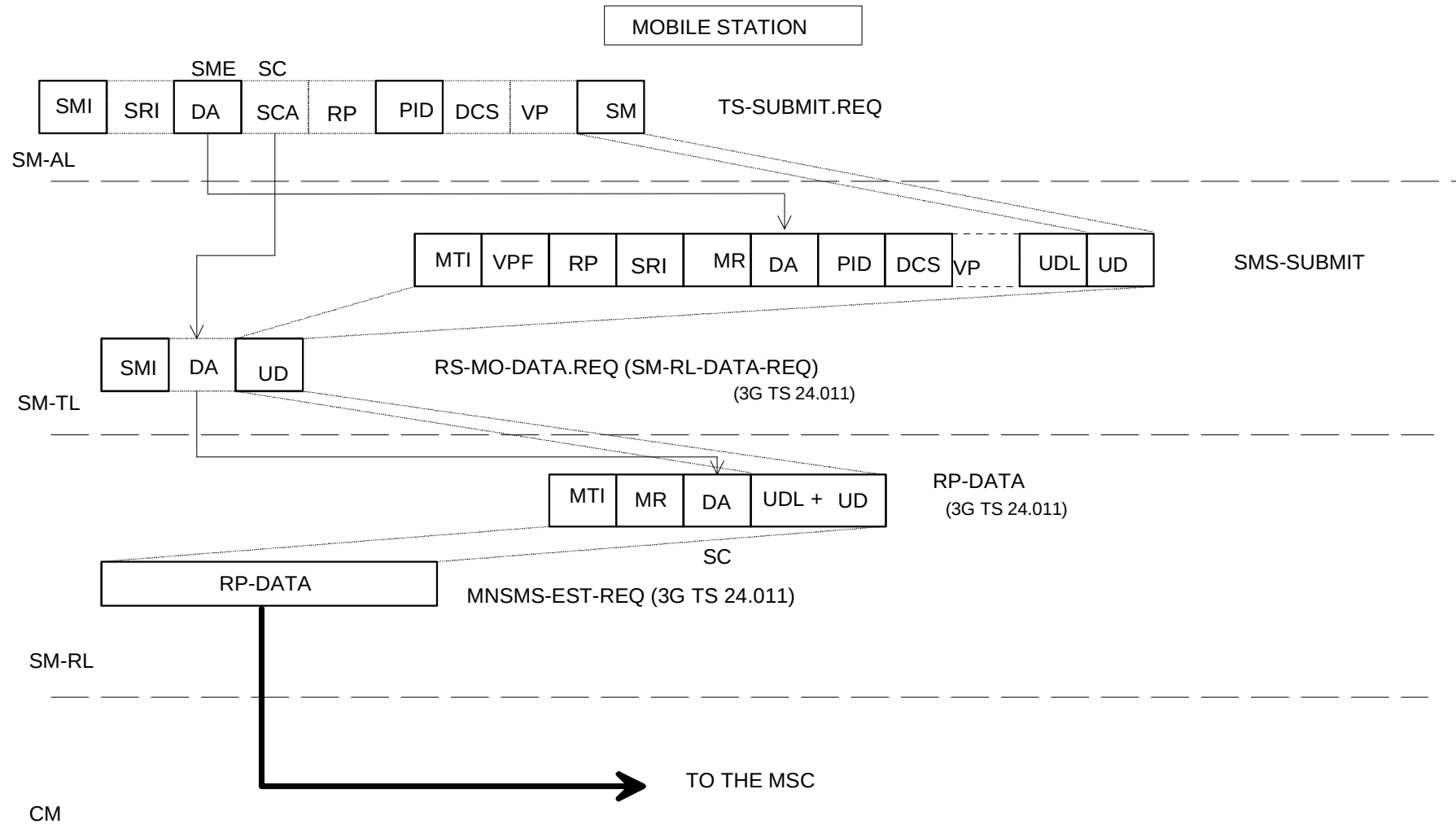


Figure C.9: Mobile originated short message

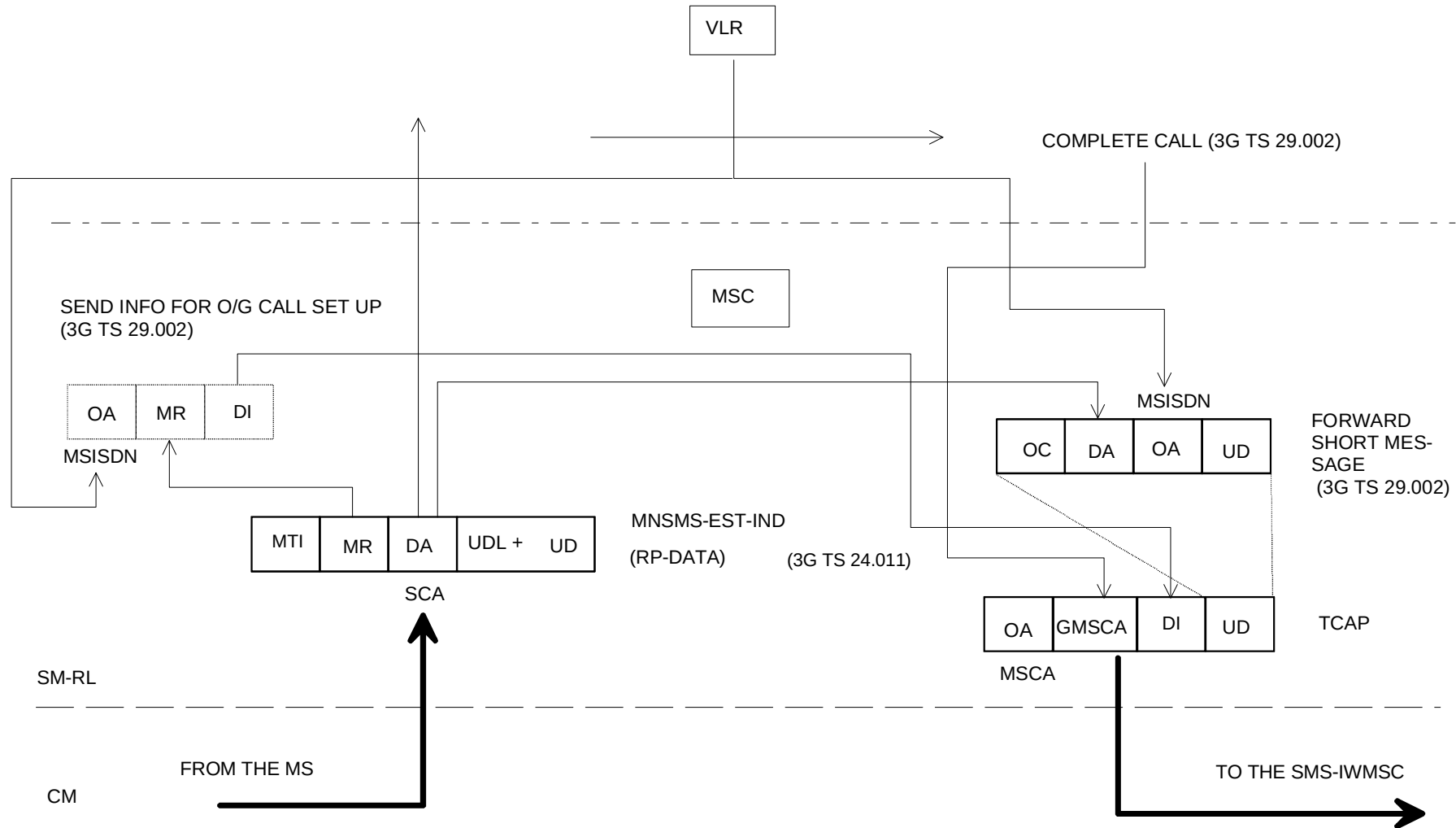
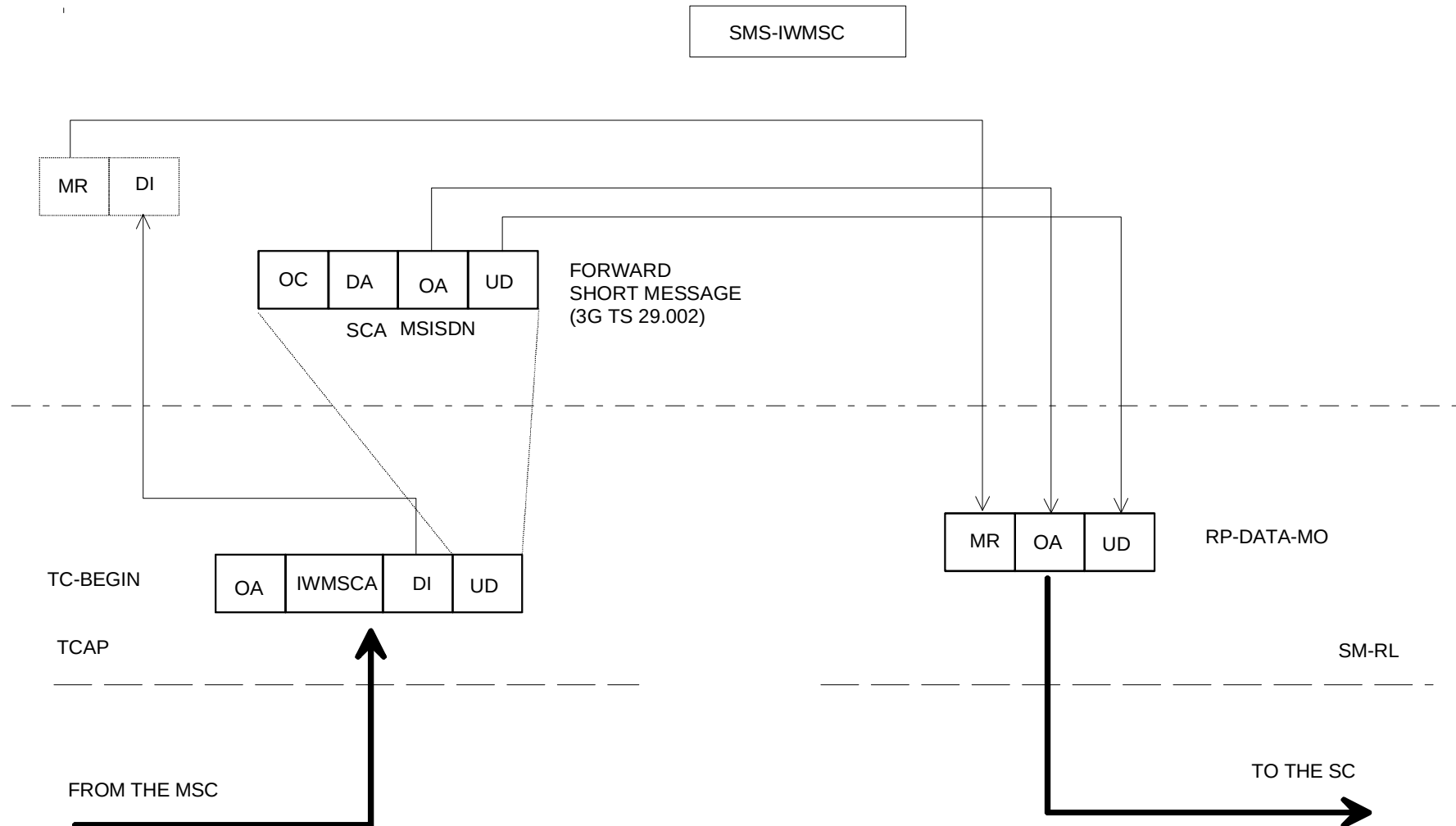


Figure C.10: Mobile originated short message



NOTE: MR is of local significance to the IWMSC/SC interface and is not the value supplied by the MS via the MS/MS interface.

Figure C.11: Mobile originated short message

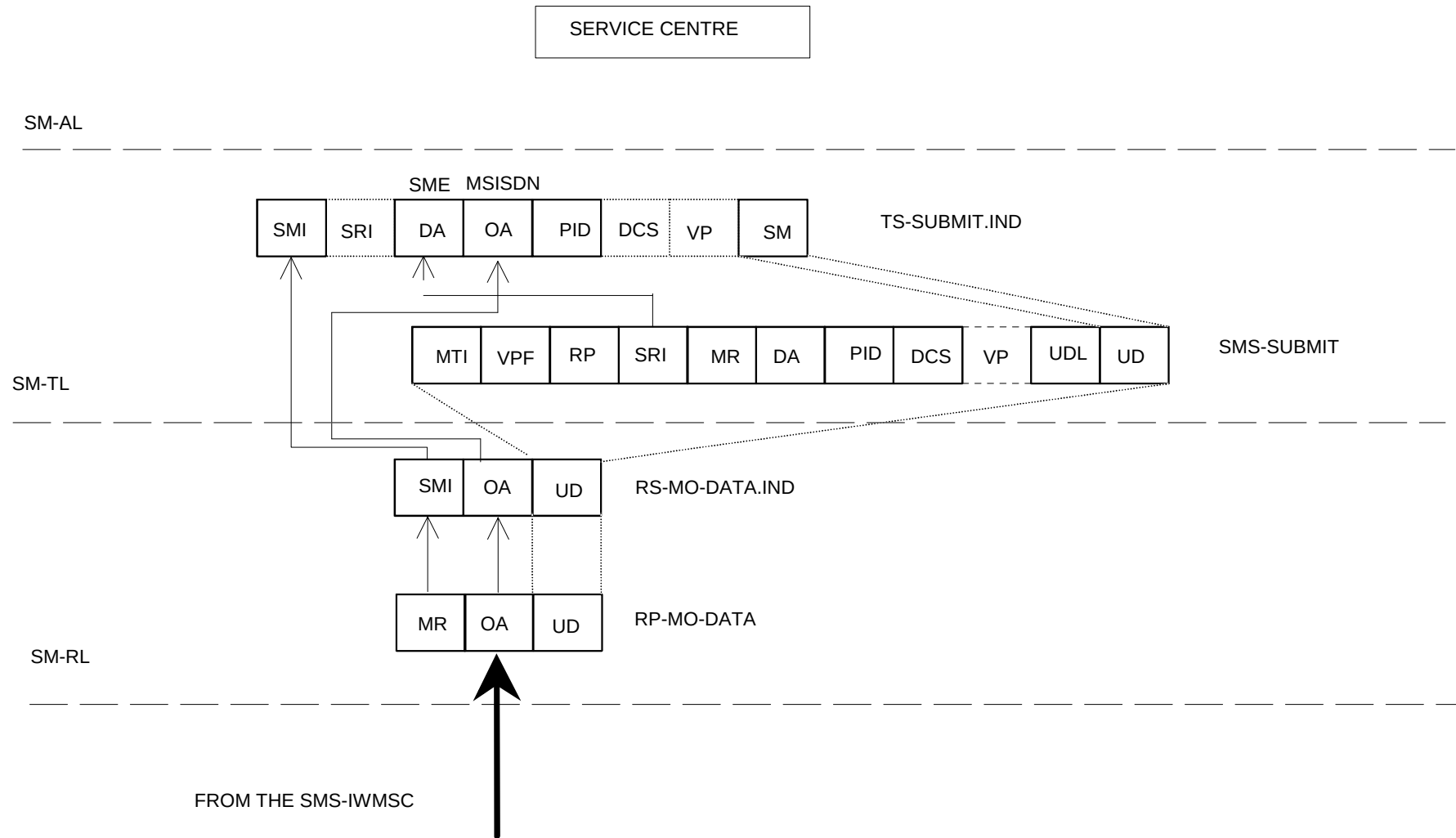


Figure C.12: Mobile originated short message

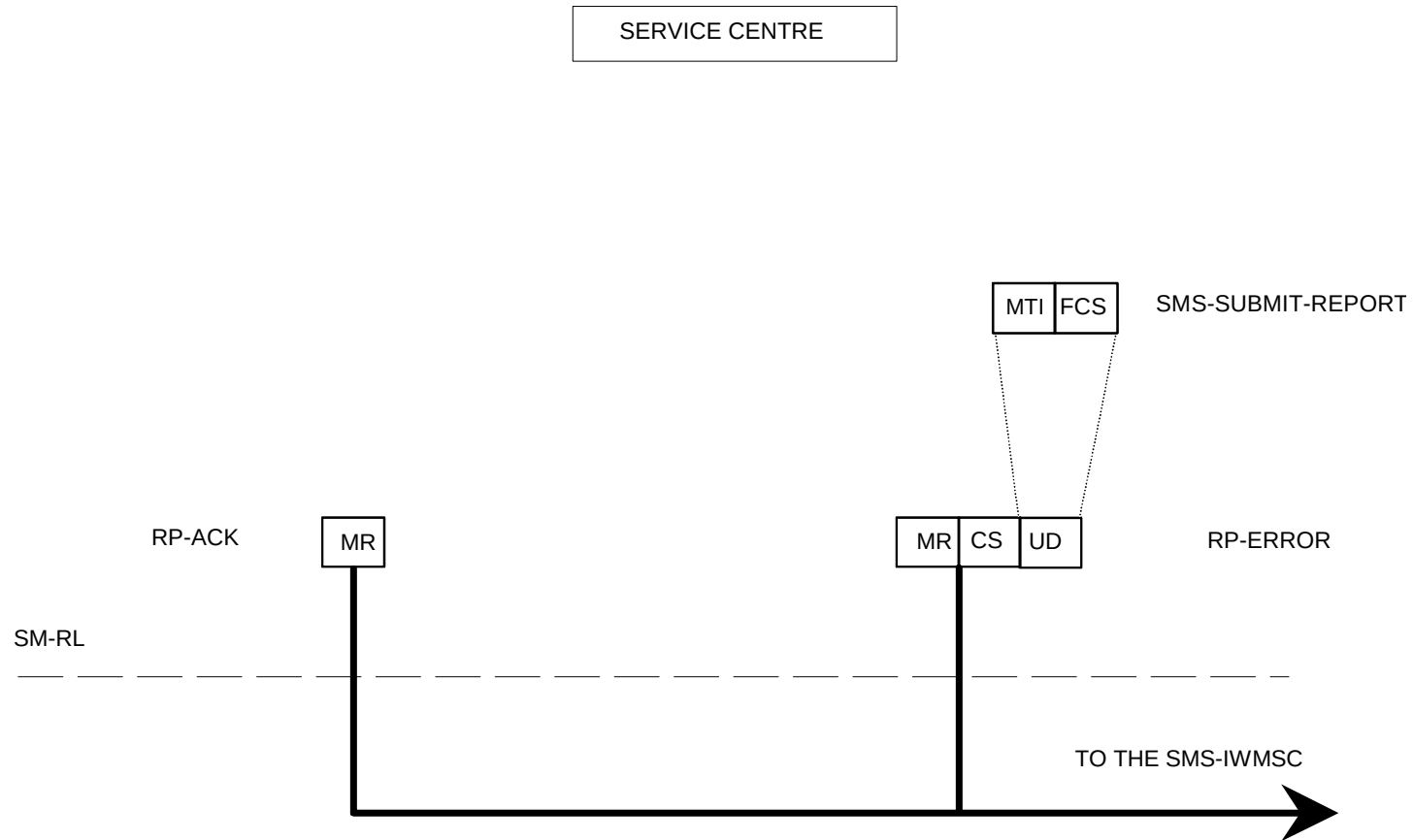


Figure C.13: Acknowledgement in the MO case

SMS-IW MSC

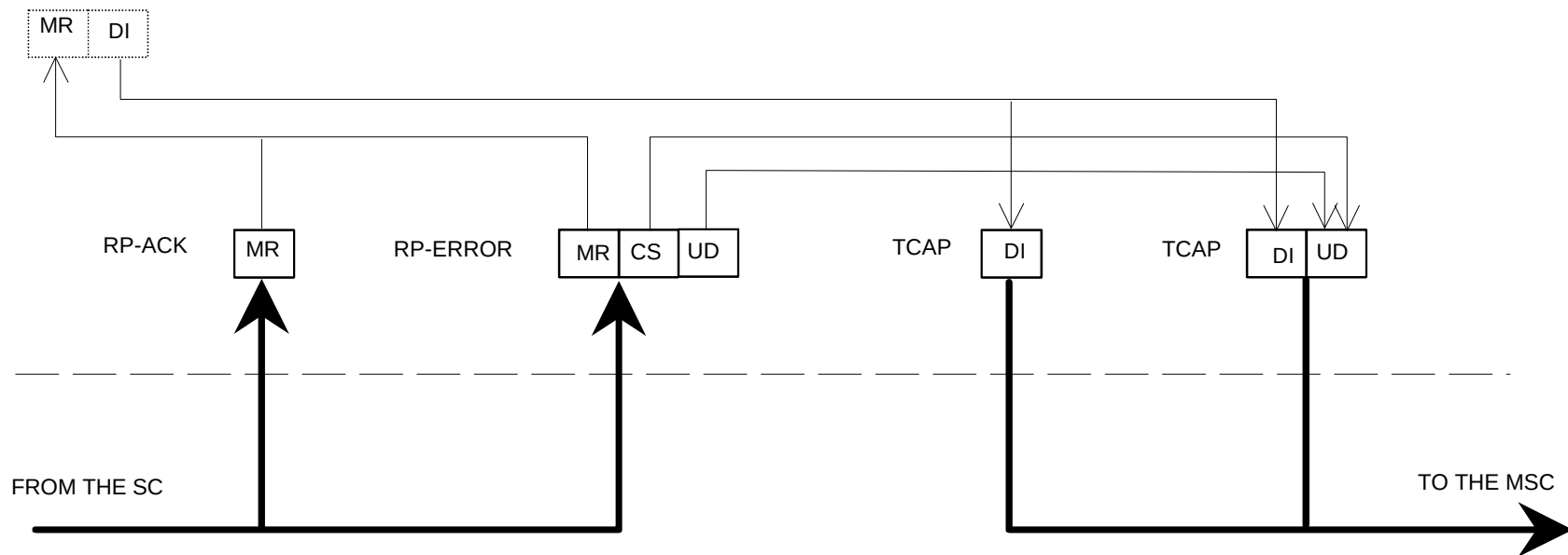
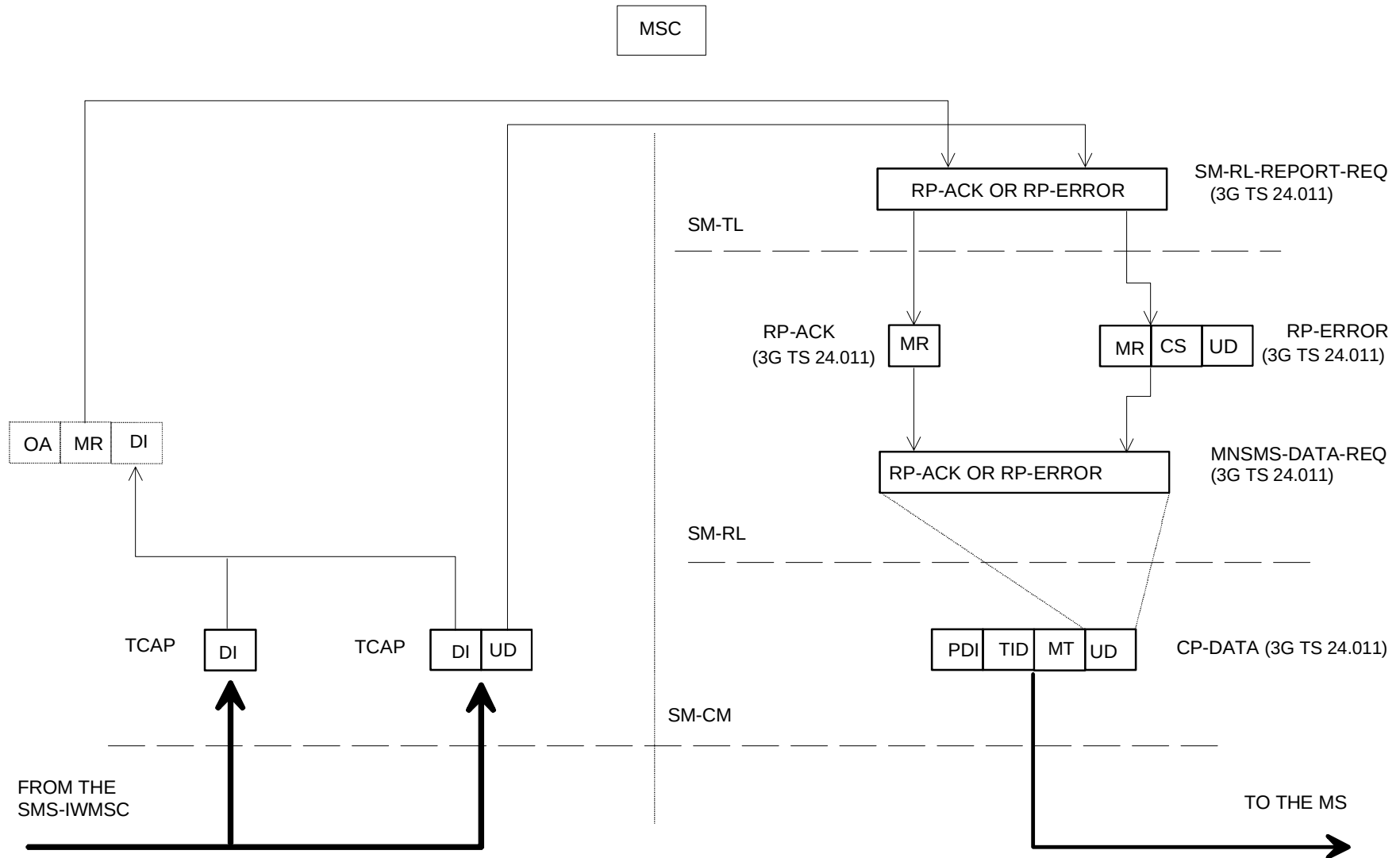


Figure C.14: Acknowledgement in the MO case



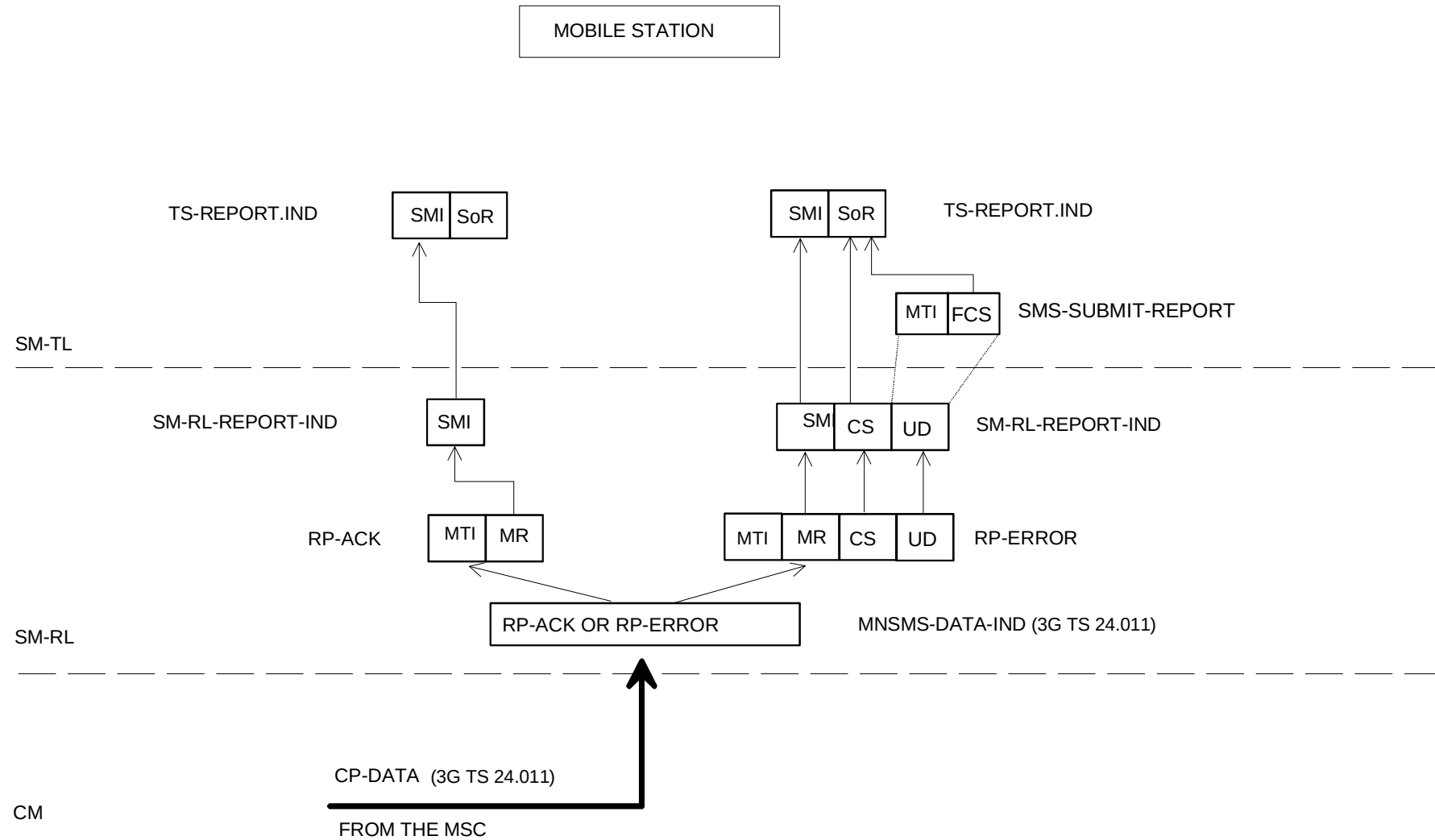


Figure C.16: Acknowledgement in the MO case

Annex D (informative): Mobile Station reply procedures

D.1 Introduction

The reply procedures specified in this annex should be followed by a mobile station when replying to a short message, i.e. when generating a MO SM in response to a received MT SM, addressed to the originator of that MT SM. The main purpose of this annex is to specify how the MS selects the service centre for delivering that MO SM: an arbitrary SME may only be reached by submitting the reply SM to a specific SC, known to be able of delivering to that SME.

D.2 The scope of applicability

The reply procedures in clauses 5 and 6 of this annex should be followed by every MS which fulfils the following criteria:

- 1) The MS automatically selects the value for the RP-Destination-Address parameter in RP-MO-DATA, or the MS has the SC address within the SM-RL entity. (That is to say: the human user is not obliged to manually key in the SC address for every MO short message).
- 2) The MS or an application within it supports some form of replying to a MT SM with a MO SM. (That is to say: in the process of generating the reply MO SM, any reference whatsoever, implicit or explicit, is made to the original MT SM).
- 3) The replying support of (2) is to be equally available towards every SME.

When an SME submits an SM to an SC for delivery, it may request that the SC sets the TP-Reply-Path parameter in the SM to be delivered. If the submitting SME is an MS, the reply path requesting procedure; in clause 4 of this annex may be applied. However, an SC may support the reply procedures without supporting the reply path requesting procedure; in that case, the SC sets the TP-Reply-Path parameter on another basis, which must be the case if the SM originates from an SME which is not an MS.

D.3 Terminology

An originating SME submits an original SM to an original SC, which delivers the original MT SM to a replying MS. The replying MS sends back a reply MO SM, a MO SM which is generated (automatically or by human operations) in response to the original MT SM, and which is addressed to the originating SME.

If the originating SME is an MS, the original MT SM is submitted within an SMS-SUBMIT PDU; we say that reply path is requested if the TP-Reply-Path parameter is set in the SMS-SUBMIT PDU of the original MT SM.

We say that reply path exists if the TP-Reply-Path parameter was set in the SMS-DELIVER PDU of the original MT SM; we say that reply path does not exist otherwise.

The replying MS may have a default SC which is normally used for delivering all the MO short messages originated from the replying MS. Alternatively, a human user or automatic application may specify a selected SC for delivering a particular SM (thus the term selected SC refers to an SC address selected for one short message only).

D.4 The reply path requesting procedure

The discussion in this clause applies to cases when the originating SME is a mobile station only. The reply procedures discussed in the clauses to follow this one are independent of the type of the originating SME.

The reply path is requested by the originating SME (an MS) by setting the TP-Reply-Path parameter in the SMS SUBMIT PDU of the original SM. If the original SC supports reply path requesting for the originating SME (an MS), it

shall take notice of the TP-Reply-Path parameter in the SMS-SUBMIT PDU and set the TP-Reply-Path parameter in the SMS-DELIVER PDU of the original MT SM towards the replying MS. Hence, reply path exists for the replying MS towards the originating SME (an MS).

D.5 The reception of an original MT SM

When a replying MS receives an original MT SM, it then has:

- 1) originating SME = TP-Originating-Address in the SMS-DELIVER PDU,
- 2) original SC = RP-Originating-Address in RPS-MT-DATA, and
- 3) reply path exists / reply path does not exist = TP-Reply-Path in SMS-DELIVER PDU (set / not set).

D.6 The submission of the reply MO SM

According to clause 5, the replying MS knows if:

- a) reply path exists; or
- b) reply path does not exist.

We then specify that when submitting the reply MO SM, the replying MS should use parameters as follows:

- 1) TP-Destination-Address in SMS-SUBMIT PDU = originating SME,
- 2a) If reply path exists:
RP-Destination-Address in RP-MO-DATA = original SC,
- 2b) If reply path does not exist:
RP-Destination-Address in RS-MO-DATA = selected SC or default SC or original SC,
- 3a) If reply path exists:
after submitting one reply MO SM, the reply path does not exist any more.

In case (2b), it is allowed to use the original SC or the default SC, but then there is no guarantee that the original/default SC shall deliver the reply MO SM. (The original SC may refuse to deliver, if the replying MS is not its subscriber; the default SC may be unable to deliver, if it has no access path to the originating SME.)

Requirement (3a) states that the case (a), reply path exists, holds for one reply MO SM only (per original MT SM).

D.7 Usage of SCs for replying

The specification in this annex supports the following way of replying.

The original MT SM and the reply MO SM are delivered by the same SC, the original SC. This principle maximizes the probability that the SC can e.g. route the reply MO SM to the proper data network for reaching the originating SME; this principle is a must, if the originating SME is integrated within the original SC.

If the original SC by any means whatsoever knows that it is both willing and able to deliver one (potential) reply MO SM, it may indicate this fact by setting the TP-Reply-Path parameter in the original MT SM. The original SC thus commits itself to delivering one reply MO SM; let us call this reply delivery commitment.

One reason for the SC to make the reply delivery commitment may be the reply path requesting procedure specified in clause 4 on this annex.

The reply path commitment is not valid forever, but the original SC may have e.g. a time limit for maintaining this commitment.

D.8 Replying possibilities for Phase 1 mobile stations

The Phase 2 mobile stations should support the procedures in this annex (if they fulfil the criteria in clause 2 of it). Yet, Phase 1 mobile stations, too, may apply steps (1) and (2a) in clause 6 of this annex, i.e. reply via the original SC, automatically or manually (by choosing selected SC = original SC), despite the fact that the TP-Reply-Path parameter shall be ignored by them. The delivery of the reply MO SM cannot be guaranteed in this case, yet the possibility of delivery may be improved (especially if the originating SME is not an MS.)

D.9 The resulting service for originating SMEs

As the consequence of the replying procedures specified in this annex, all SMEs and applications within them may assume that replying from all mobile stations is always possible, provided that the mobile stations do support the proper replying mechanism itself (human response in context with the original MT SM, automatic replying by an application, application level protocols, etc.).

Annex E (informative): Change history

TSG	TSG TDoc	Vers	CR	Rev	Ph	Cat	Subject	New Vers	Work Item
T#4	TP-99126	2.0.0	New				Creation of 3GPP 23.040 v3.0.0 out of GSM 03.40 v7.1.0	3.0.0	
T#4	TP-99124	3.0.0	001		R99	A	Clarification concerning SMSC address checking in the MS for concatenated messages and replace message types	3.1.0	TEI
T#4	TP-99146	3.0.0	002		R99	A	Guidance regarding the SMSC address in a Status Report	3.1.0	TEI
T#5	TP-99177	3.1.0	003		R99	A	Change to reserved port number range for SMS	3.2.0	TEI
T#5	TP-99177	3.1.0	004		R99	B	New TP-PID value for delivery of ANSI-136 Short Messages	3.2.0	SMS
T#5	TP-99177	3.1.0	005		R99	D	IEI values in concatenated SM's	3.2.0	SMS
T#6	TP-99237	3.2.0	007		R99	F	Adaptations for UMTS	3.3.0	TEI
T#6	TP-99237	3.2.0	006		R99	C	Duplicate messages	3.3.0	TEI
T#6	TP-99237	3.2.0	008		R99	A	Concatenated Short Message	3.3.0	TEI
T#7	TP-000024	3.3.0	009		R99	B	Enhancement of the Message Content in SMS	3.4.0	MMS
T#7	TP-000024	3.3.0	010		R99	B	Multiple Information Elements	3.4.0	TEI
T#7	TP-000024	3.3.0	011		R99	B	SMS E-MAIL PARAMETERS	3.4.0	TEI
-	-	3.4.0	-	-	R99	-	Editorial graphics update to make visible	3.4.1	-
T#8	TP-000073	3.4.1	012		R99	F	Alignment in Enhanced Messaging Service	3.5.0	EMS
T#8	TP-000073	3.4.1	014		R99	F	Correction to text on SMS TimeZone	3.5.0	TEI
T#8	TP-000073	3.4.1	015		R99	F	Correction of TP-PID	3.5.0	TEI

APPENDIX D

**Universal Mobile Telecommunications System (UMTS);
Technical realization of the Short Message Service (SMS)
(3G TS 23.040 version 3.5.0 Release 1999)**



Reference

RTS/TSGT-0223040UR2

Keywords

UMTS

ETSI

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The cross reference between GSM, UMTS, 3GPP and ETSI identities can be found under www.etsi.org/key.

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Introduction

The Short Message Service (SMS) provides a means of sending messages of limited size to and from GSM/UMTS mobiles. The provision of SMS makes use of a Service Centre, which acts as a store and forward centre for short messages. Thus a GSM/UMTS PLMN needs to support the transfer of short messages between Service Centres and mobiles.

Mobile originated messages shall be transported from an MS to a Service Centre. These may be destined for other mobile users, or for subscribers on a fixed network. Mobile terminated messages shall be transported from a Service Centre to an MS. These may be input to the Service Centre by other mobile users (via a mobile originated short message) or by a variety of other sources, e.g. speech, telex, or facsimile.

1 Scope

The present document describes the Short Message Service (SMS) for GSM/UMTS networks. It defines:

- the services and service elements;
- the network architecture;
- the Service Centre functionality;
- the MSC functionality (with regard to the SMS);
- the SGSN functionality (with regard to the SMS);
- the routing requirements;
- the protocols and protocol layering;

for the Teleservice Short Message Service, as specified in the GSM TS 02.03 [2] and 3G TS 22.105 [32].

The use of radio resources for the transfer of short messages between the MS and the MSC or the SGSN is described in 3G TS 24.011 [13] "Short Message Service Support on Mobile Radio Interface", and is dealt with in that specification.

The network aspects of Short Message Service provision are outside the scope of the present document (i.e. the provision of network connectivity between the PLMN subsystems). There is no technical restriction within the present document for the transfer of short messages between different PLMN's. Any such restriction is likely to be subject to commercial arrangements and PLMN operators must make their own provision for interworking or for preventing interworking with other PLMN's as they see fit.

The required and assumed network service offered to the higher layers is defined in the present document.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.

For a specific reference, subsequent revisions do not apply.

For a non-specific reference, the latest version applies.

[1]	GSM 01.04: "Digital cellular telecommunication system (Phase 2+); Abbreviations and acronyms".
[2]	GSM 02.03: "Digital cellular telecommunication system (Phase 2+); Teleservices supported by a GSM Public Land Mobile Network (PLMN)".
[3]	3G TS 22.004: "General on supplementary services".
[4]	3G TS 22.041: "Operator determined barring".
[5]	GSM 03.02: "Digital cellular telecommunication system (Phase 2+); Network architecture".
[6]	3G TS 23.008: "Organization of subscriber data".
[7]	3G TS 23.011: "Technical realization of supplementary services - General Aspects".
[8]	3G TS 23.015: "Technical realisation of Operator Determined Barring (ODB)".
[9]	3G TS 23.038: "Alphabets and language-specific information".

- [10] 3G TS 23.041: "Technical realization of Cell Broadcast Service (CBS)".
- [11] GSM 03.47 (ETR 354): "Digital cellular telecommunication system; Example protocol stacks for interconnecting Service Centre(s) (SC) and Mobile-services Switching Centre(s) (MSC)".
- [12] GSM 04.08: "Digital cellular telecommunication system (Phase 2+); Mobile radio interface layer 3 specification".
- [13] 3G TS 24.011: "Short Message Service (SMS) support on mobile radio interface".
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- [15] 3G TS 29.002: "Mobile Application Part (MAP) specification".
- [16] GSM 11.11: "Digital cellular telecommunication system (Phase 2+); Specification of the Subscriber Identity Module - Mobile Equipment (SIM- ME) interface".
- [17] CCITT Recommendation E.164 (Blue Book): "Numbering plan for the ISDN era".
- [18] CCITT Recommendation E.163 (Blue Book): "Numbering plan for the international telephone service".
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- [21] CCITT Recommendation T.101 (Blue Book): "International interworking for videotex services".
- [22] CCITT Recommendation X.121 (Blue Book): "International numbering plan for public data networks".
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- [24] ISO/IEC10646: "Universal Multiple-Octet Coded Character Set (USC); UCS2, 16 bit coding".
- [25] 3G TS 22.022: "Personalisation of GSM ME Mobile functionality specification - Stage 1".
- [26] 3G TS 23.042: "Compression Algorithm for Text Messaging Services".
- [27] 3G TS 23.060: "General Packet Radio Service (GPRS); Service description; Stage 2".
- [28] GSM 03.48: "Digital cellular telecommunications system (Phase 2+); Security Mechanisms for the SIM application toolkit; Stage 2".
- [29] 3G TR 21.905: "3G Vocabulary".
- [30] 3G TS 31.102: "Characteristics of the USIM application".
- [31] 3G TS 31.101: "UICC – Terminal interface; Physical and logical characteristics".
- [32] 3G TS 22.105: "Services and Service Capabilities".
- [33] Infrared Data Association. Specifications for Ir Mobile Communications (IrMC). iMelody.
- [34] IETF RFC 822: "Standard for the format of ARPA Internet text messages".

2.1 Definitions and abbreviations

2.1.1 Definitions

NOTE: The term ‘mobile station’ (MS) in the present document is synonymous with the term ‘user equipment’ (UE) in UMTS terminology as defined in 3G TR 21.905 [29].

active MS: A switched-on mobile station with a SIM / UICC see 3G TS 31.101 [31] module attached.

alert-SC: Service element provided by a GSM/UMTS PLMN to inform an SC which has previously initiated unsuccessful short message delivery attempt(s) to a specific MS, that the MS is now recognized by the PLMN to have recovered operation.

status report: SC informing the originating MS of the outcome of a short message submitted to an SME.

Gateway MSC For Short Message Service (SMS-GMSC): A function of an MSC capable of receiving a short message from an SC, interrogating an HLR for routing information and SMS info, and delivering the short message to the VMSC or the SGSN of the recipient MS.

Interworking MSC For Short Message Service (SMS-IWMSC): A function of an MSC capable of receiving a short message from within the PLMN and submitting it to the recipient SC.

Messages-Waiting (MW): Service element that makes a PLMN store information (Messages-Waiting-Indication), listing those SCs that have made unsuccessful short message delivery attempts to MSs in that PLMN.

Messages-Waiting-Indication (MWI): Data to be stored in the HLR and VLR with which an MS is associated, indicating that there is one or more messages waiting in a set of SCs to be delivered to the MS (due to unsuccessful delivery attempt(s)).

Messages-Waiting-Data (MWD): A part of the MWI to be stored in the HLR. MWD consists of an address list of the SCs which have messages waiting to be delivered to the MS.

Mobile-services Switching Centre (MSC): The Mobile-services Switching Centre is an exchange which performs switching functions for mobile stations located in a geographical area designated as the MSC area.

Mobile-Station-Memory-Capacity-Exceeded-Flag (MCEF): A part of the MWI to be stored in the HLR. MCEF is a Boolean parameter indicating if the address list of MWD contains one or more entries because an attempt to deliver a short message to an MS has failed with a cause of MS Memory Capacity Exceeded.

Mobile-Station-Not-Reachable-Flag (MNRF): The part of the MWI to be stored in the VLR and the HLR. MNRF is a Boolean parameter indicating if the address list of MWD contains one or more entries because an attempt to deliver a short message to an MS has failed with a cause of Absent Subscriber.

Mobile-station-Not-Reachable-for-GPRS (MNRG): The part of the MWI to be stored in the SGSN and the HLR. MNRG is a Boolean parameter indicating if the address list of MWD contains one or more entries because an attempt to deliver a short message to an MS has failed with a cause of Absent Subscriber.

Mobile-Station-Not-Reachable-Reason (MNRR): The part of the MWI in the HLR which stores the reason for an MS being absent when an attempt to deliver a short message to an MS fails at the MSC with a cause of Absent Subscriber.

More-Messages-To-Send (MMS): Information element offering an MS receiving a short message from an SC the information whether there are still more messages waiting to be sent from that SC to the MS. The TP-MMS element (conveyed in the Transfer layer) is copied into the RP-MMS element (conveyed in the Relay layer). It is possible with Phase 2 and later versions of MAP (3G TS 29.002 [15]) for the RP-MMS element to keep an SM transaction open between the GMSC and the MS in the case where there are more-messages-to-send. Earlier versions of MAP support the transport of the TP-MMS element.

priority: Service element enabling the SC or SME to request a short message delivery attempt to an MS irrespective of whether or not the MS has been identified as temporarily absent.

protocol-identifier: Information element by which the originator of a short message (either an SC or an MS) may refer to a higher layer protocol.

reply path procedure: A mechanism which allows an SME to request that an SC should be permitted to handle a reply sent in response to a message previously sent from that SME to another SME. This may happen even though the SC may be unknown to the SME which received the initial message.

report: Response from either the network or the recipient upon a short message being sent from either an SC or an MS. A report may be a delivery report, which confirms the delivery of the short message to the recipient, or it may be a failure report, which informs the originator that the short message was never delivered and the reason why.

When issued by the Service Centre, the delivery report confirms the reception of the Short Message by the SC, and not the delivery of the Short Message to the SME.

When issued by the Mobile Station, the delivery report confirms the reception of the Short Message by the Mobile Station, and not the delivery of the Short Message to the user.

replace short message type: A range of values in the Protocol Identifier which allows an indication to be sent with a short message (MT or MO) that the short message is of a particular type allowing the receiving MS or the SC to replace an existing message of the same type held in the SC, the ME or on the SIM / UICC, provided it comes:

- in MT cases: from the same SC and originating address;
- in MO cases: from the same MS.

Service Centre (SC): Function responsible for the relaying and store-and-forwarding of a short message between an SME and an MS. The SC is not a part of the GSM/UMTS PLMN, however MSC and SC may be integrated.

Serving GPRS Support Node (SGSN): The Serving GPRS Support Node is an exchange which performs packet switching functions for mobile stations located in a geographical area designated as the SGSN area.

short message: Information that may be conveyed by means of the Short Message Service described in the present document.

Short Message Entity (SME): An entity which may send or receive Short Messages. The SME may be located in a fixed network, an MS, or an SC.

SMS-STATUS-REPORT: Short message transfer protocol data unit informing the receiving MS of the status of a mobile originated short message previously submitted by the MS, i.e. whether the SC was able to forward the message or not, or whether the message was stored in the SC for later delivery.

SMS-COMMAND: Short message transfer protocol data unit which enables an MS to invoke an operation at the SC. An MS may then, for example, delete a short message, cancel a TP-Status-Report-Request, enquire about the status of a short message or request another function to be performed by the SC.

The type of operation is indicated by the TP-Command-Type and the particular SM to operate on is indicated by the TP-Message-Number and the TP-Destination-Address. Receipt of an SMS-COMMAND is confirmed by an RP-ACK or RP-ERROR. In the case of certain SMS-COMMANDs, an SMS-STATUS-REPORT may be sent, where the outcome of the SMS-COMMAND is passed in its TP-Status field.

SMS-DELIVER: Short message transfer protocol data unit containing user data (the short message), being sent from an SC to an MS.

SMS-SUBMIT: Short message transfer protocol data unit containing user data (the short message), being sent from an MS to an SC.

Service-Centre-Time-Stamp (SCTS): Information element offering the recipient of a short message the information of when the message arrived at the SM-TL entity of the SC. The time of arrival comprises the year, month, day, hour, minute, second and time zone.

Validity-Period (VP): Information element enabling the originator MS to indicate the time period during which the originator considers the short message to be valid.

2.1.2 Abbreviations

For the purposes of the present document, the following abbreviations apply

ACSE	Association Control Service Element
E.163	CCITT Rec. E.163 (Blue Book)
E.164	CCITT Rec. E.164 (Blue Book)
SM MT	Short Message Mobile Terminated
SM MO	Short Message Mobile Originated
SM-AL	Short Message Application Layer
SM-TL	Short Message Transfer Layer
SM-RL	Short Message Relay Layer
SM-LL	Short Message Lower Layers
SM-TP	Short Message Transfer Layer Protocol
SM-RP	Short Message Relay Layer Protocol
SM-TS	Short Message Transfer Service
SM-RS	Short Message Relay Service
T.100	CCITT Rec. T.100 (Blue Book)
T.101	CCITT Rec. T.101 (Blue Book)
TPDU	Transfer protocol data unit
X.121	CCITT Rec. X.121 (Blue Book)
X.400	CCITT Rec. X.400 (Blue Book)

In addition to those above, definitions used in the present document are listed in GSM TR 01.04 [1] / 3G TR 21.905 [29].

3 Services and service elements

The SMS provides a means to transfer short messages between a GSM/UMTS MS and an SME via an SC. The SC serves as an interworking and relaying function of the message transfer between the MS and the SME.

The present document describes only the short message services between the MS and SC. It may, however, refer to possible higher layer applications.

3.1 Basic services

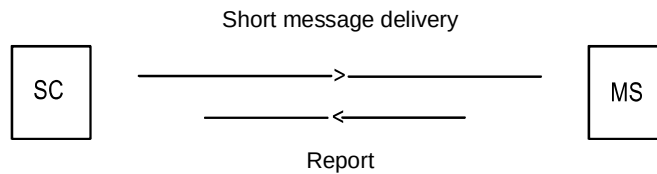
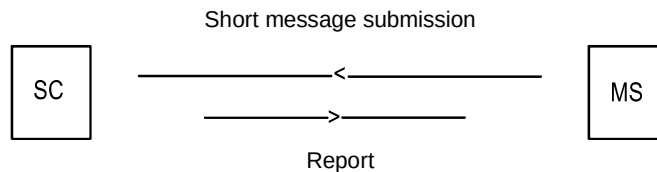
The Short Message Service comprise two basic services:

- SM MT (Short Message Mobile Terminated);
- SM MO (Short Message Mobile Originated).

SM MT denotes the capability of the GSM/UMTS system to transfer a short message submitted from the SC to one MS, and to provide information about the delivery of the short message either by a delivery report or a failure report with a specific mechanism for later delivery; see figure 1.

SM MO denotes the capability of the GSM/UMTS system to transfer a short message submitted by the MS to one SME via an SC, and to provide information about the delivery of the short message either by a delivery report or a failure report. The message must include the address of that SME to which the SC shall eventually attempt to relay the short message; see figure 2.

The text messages to be transferred by means of the SM MT or SM MO contain up to 140 octets.

**Figure 1: The Short Message Service mobile terminated****Figure 2: The Short Message Service mobile originated**

An active MS shall be able to receive a short message TPDU (SMS-DELIVER) at any time, independently of whether or not there is a speech or data call in progress. A report shall always be returned to the SC; either confirming that the MS has received the short message, or informing the SC that it was impossible to deliver the short message TPDU to the MS, including the reason why.

An active MS shall be able to submit a short message TPDU (SMS-SUBMIT) at any time, independently of whether or not there is a speech or data call in progress. A report shall always be returned to the MS; either confirming that the SC has received the short message TPDU, or informing the MS that it was impossible to deliver the short message TPDU to the SC, including the reason why.

NOTE: When the transmission or reception of a short message coincide with a change of state in the MS, i.e. from busy to idle or from idle to busy, or during a handover, the short message transfer might be aborted.

It is also possible for two short messages to be received in sequence having the same originating address and identification, i.e. message reference number (MO) or SC Timestamp (MT). Such a situation may be due to errors at the RP or CP layers (e.g. during inter MSC handover) where it may be a duplicated message or otherwise it may be a valid new message.

The receiving entity should therefore make provision to check other parameters contained in the short message to decide whether the second short message is to be discarded.

3.2 Short Message Service elements

The SMS comprises 7 elements particular to the submission and reception of messages:

- Validity-Period;
- Service-Centre-Time-Stamp;
- Protocol-Identifier;
- More-Messages-to-Send;
- Priority;
- Messages-Waiting;
- Alert-SC.

3.2.1 Validity-Period

The Validity-Period is the information element which gives an MS submitting an SMS-SUBMIT to the SC the possibility to include a specific time period value in the short message (TP-Validity-Period field, see clause 9). The TP-Validity-Period parameter value indicates the time period for which the short message is valid, i.e. for how long the SC shall guarantee its existence in the SC memory before delivery to the recipient has been carried out.

3.2.2 Service-Centre-Time-Stamp

The Service-Centre-Time-Stamp is the information element by which the SC informs the recipient MS about the time of arrival of the short message at the SM-TL entity of the SC. The time value is included in every SMS-DELIVER (TP-Service-Centre-Time-Stamp field, see clause 9) being delivered to the MS.

3.2.3 Protocol-Identifier

The Protocol-Identifier is the information element by which the SM-TL either refers to the higher layer protocol being used, or indicates interworking with a certain type of telematic device.

The Protocol-Identifier information element makes use of a particular field in the message types SMS-SUBMIT, SMS-SUBMIT-REPORT for RP-ACK, SMS-DELIVER DELIVER, SMS-DELIVER-REPORT for RP-ACK, SMS_STATUS_REPORT and SMS-COMMAND TP-Protocol-Identifier (TP-PID).

3.2.4 More-Messages-to-Send

The More-Messages-to-Send is the information element by which the SC informs the MS that there is one or more messages waiting in that SC to be delivered to the MS. The More-Messages-to-Send information element makes use of a Boolean parameter in the message SMS-DELIVER, TP-More-Messages-to-Send (TP-MMS).

3.2.5 Delivery of Priority and non-Priority Messages

Priority is the information element provided by an SC or SME to indicate to the PLMN whether or not a message is a priority message.

Delivery of a non-priority message shall not be attempted if the MS has been identified as temporarily absent (see subclause 3.2.6).

Delivery of a non-priority message shall be attempted if the MS has not been identified as temporarily absent irrespective of whether the MS has been identified as having no free memory capacity (see subclause 3.2.6).

Delivery of a priority message shall be attempted irrespective of whether or not the MS has been identified as temporarily absent, or having no free memory capacity.

3.2.6 Messages-Waiting

The Messages-Waiting is the service element that enables the PLMN to provide the HLR, SGSN and VLR with which the recipient MS is associated with the information that there is a message in the originating SC waiting to be delivered to the MS. The service element is only used in case of previous unsuccessful delivery attempt(s) due to temporarily absent mobile or MS memory capacity exceeded. This information, denoted the Messages-Waiting-Indication (MWI), consists of Messages-Waiting-Data (MWD), the Mobile-station-Not-Reachable-for-GPRS (MNRG), the Mobile-Station-Not-Reachable-Flag (MNRF), the Mobile-Not-Reachable-Reason (MNRR) and the Mobile-Station-Memory-Capacity-Exceeded-Flag (MCEF) located in the HLR; the Mobile-station-Not Reachable-for-GPRS (MNRG) located in the SGSN, and the Mobile-Station-Not-Reachable-Flag (MNRF) located in the VLR. figure 3 shows an example.

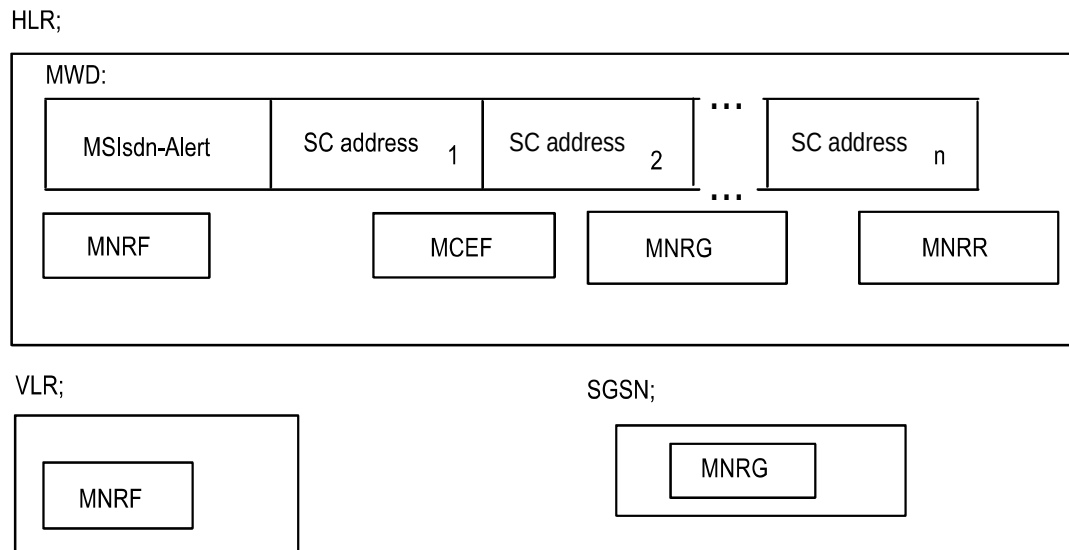


Figure 3: Example of how information on one MS can be put in relation to SC(s) in order to fulfil the requirement of Alert-SC mechanism

The MWD shall contain a list of addresses (SC-Addr) of SCs which have made previous unsuccessful delivery attempts of a message (see clause 5). In order to be able to send alert messages to every SC which has made unsuccessful delivery attempts to an MS, the HLR shall store the MSIsdn-Alert (see subclause 3.2.7) together with references to the SC addresses. The requirements placed upon the HLR are specified in GSM TS 03.08 [6]. The description of how the HLR is provided with SC and MS address information is given in 3G TS 29.002 [15].

The Mobile-Station-Memory-Capacity-Exceeded-Flag (MCEF) within the HLR is a Boolean parameter with the value TRUE an attempt to deliver a short message to an MS has failed with a cause of MS Memory Capacity Exceeded, and with the value FALSE otherwise.

The Mobile-station-Not Reachable-for-GPRS (MNRG) within the HLR and the SGSN is a Boolean parameter with the value TRUE when an attempt to deliver a short message to an MS has failed with a cause of Absent Subscriber, and with the value FALSE otherwise (except as described in note 1 below).

The Mobile-Station-Not-Reachable-Flag (MNRF) within the HLR and the VLR is a Boolean parameter with the value TRUE when the list MWD contains one or more list elements because an attempt to deliver a short message to an MS has failed with a cause of Absent Subscriber, and with the value FALSE otherwise.

The Mobile-Station-Not-Reachable-Reason (MNRR) within the HLR stores the reason for the MS being absent when an attempt to deliver a short message to an MS fails at the MSC, SGSN or both with the cause Absent Subscriber. The HLR updates the MNRR with the reason for absence when an absent subscriber diagnostic information is received from the GMSC and the MNRF, MNRG or both are set. The HLR clears the MNRR when the MNRF and MNRG are cleared. If the MNRF is set due to a failure at the MSC with cause Absent Subscriber and information pertaining to the absence of the MS is not available from the GMSC, the MNRR shall remain in a cleared state. Also, if the MNRG is set due to a failure at the SGSN with cause Absent Subscriber and information pertaining to the absence of the MS is not available from the GMSC, the MNRR shall remain in a cleared state. The MNRR shall either be in a cleared state or contain one of the following reasons:

- No Paging Response via the MSC;
- No Paging Response via the SGSN;
- IMSI Detached;
- GPRS Detached.

NOTE 1: The MNRG can also be set in the HLR and in the SGSN after an unsuccessful attempt to invoke the network requested PDP-Context Activation procedure. In this case, no SC address is stored in MWD list (see 3G TS 23.060 [27]).

NOTE 2: When a short message delivery attempt fails at the HLR due to Roaming being Restricted, the MS being deregistered in HLR or the MS being Purged the absent subscriber diagnostic reason is returned to the SC, however the reason is not stored in the MNRR.

The MWD, MCEF, MNRR, MNRG and MNRF are updated in the following way:

- 1a) When a mobile terminated short message delivery fails due to the MS being temporarily absent (i.e. either IMSI DETACH flag is set or there is no response from the MS to a paging request via the MSC), the SC address is inserted into the MWD list (if it is not already present), the MNRF is set (if it is not already set) and the MNRR via the MSC is updated (if the information is available), as described in clause 10.
- 1b) When a mobile terminated short message delivery fails due to the MS being temporarily absent (i.e. either GPRS DETACH flag is set or there is no response from the MS to a paging request via the SGSN), the SC address is inserted into the MWD list (if it is not already present), the MNRG is set (if it is not already set) and the MNRR via the SGSN is updated (if the information is available), as described in clause 10.
- 1c) When a mobile terminated short message delivery fails due to the MS memory capacity via the MSC being exceeded, the SC address is inserted into the MWD list (if it is not already present), the MCEF is set (if it is not already set), the MNRF is cleared and the MNRR via the MSC is updated as described in clause 10.
- 1d) When a mobile terminated short message delivery fails due to the MS memory capacity via the SGSN being exceeded, the SC address is inserted into the MWD list (if it is not already present), the MCEF is set (if it is not already set), the MNRG is cleared and the MNRR via the SGSN is updated as described in clause 10.
- 1e) If the MSIsdn used by the SC to address the recipient MS for alerting purposes is different from the MSIsdn-Alert of the MS (see subclause 3.2.7), the HLR returns the MSIsdn-Alert to the SC within the failure report, see "1c Failure report" in figures 15 and 16.
- 2a) When either the HLR or VLR detects that the MS (with a non-empty MWD and the MCEF clear in the HLR and the MNRF set in the VLR) has recovered operation (e.g. has responded to a paging request over MSC), the HLR directly or on request of the VLR shall invoke operations to alert the SCs within the MWD (see subclause 3.2.7 and clause 10). Once the Alert SC operations have been invoked, the MNRF and MNRR via the MSC are cleared. After each SC is alerted by the HLR, the address for that SC is deleted from the MWD. If the MCEF is set in the HLR, the HLR clears the MNRF and MNRR via the MSC, but does not invoke operations to alert the SCs within the MWD and data are not cleared from the MWD.
- 2b) When either the HLR or SGSN detects that the MS (with a non-empty MWD and the MCEF clear in the HLR and the MNRG set in the SGSN) has recovered operation (e.g. has responded to a paging request via the SGSN), the HLR directly or on request of the SGSN shall invoke operations to alert the SCs within the MWD (see subclause 3.2.7 and clause 10). Once the Alert SC operations have been invoked, the MNRG and MNRR via the SGSN are cleared. After each SC is alerted by the HLR, the address for that SC is deleted from the MWD. If the MCEF is set in the HLR, the HLR clears the MNRG and MNRR via the SGSN, but does not invoke operations to alert the SCs within the MWD and data are not cleared from the MWD.
- 2c) When the HLR receives (via the MSC and the VLR) a notification that the MS (with a non-empty MWD and the MCEF set in the HLR) has memory capacity available to receive one or more short messages, the HLR shall invoke operations to alert the SCs within the MWD (see subclause 3.2.7 and clause 10). Once the Alert SC operations have been invoked, the MNRF is cleared in the VLR and the MCEF, MNRF and MNRR via the MSC are cleared in the HLR. After each SC is alerted by the HLR, the address for that SC is deleted from the MWD.
- 2d) When the HLR receives (via the SGSN) a notification that the MS (with a non-empty MWD and the MCEF set in the HLR) has memory capacity available to receive one or more short messages, the HLR shall invoke operations to alert the SCs within the MWD (see subclause 3.2.7 and clause 10). Once the Alert SC operations have been invoked, the MNRG is cleared in the SGSN and the MCEF, MNRG and MNRR via the SGSN are cleared in the HLR. After each SC is alerted by the HLR, the address for that SC is deleted from the MWD.
- 2e) When the HLR receives from the SMS-GMSC a notification that a short message has been successfully delivered from an SC to an MS via the MSC for which the MCEF is set and the MWD are not empty, the HLR shall invoke operations to alert other SCs within the MWD (see subclause 3.2.7 and clause 10). Once the Alert SC operations have been invoked, the MCEF, MNRF and MNRR via the MSC are cleared in the HLR. After each SC is alerted by the HLR, the address for that SC is deleted from the MWD. The SC which successfully delivered the message is also deleted from the MWD, if present.

2f) When the HLR receives from the SMS-GMSC a notification that a short message has been successfully delivered from an SC to an MS via the SGSN for which the MCEF is set and the MWD are not empty, the HLR shall invoke operations to alert other SCs within the MWD (see subclause 3.2.7 and clause 10). Once the Alert SC operations have been invoked, the MCEF, MNRG and MNRR via the SGSN are cleared in the HLR. After each SC is alerted by the HLR, the address for that SC is deleted from the MWD. The SC which successfully delivered the message is also deleted from the MWD, if present.

2g) When the HLR receives (via the MSC and the VLR, or the SGSN) a notification that the MS has memory capacity available to receive one or more short messages but the MCEF is not set and the MWD are empty, the HLR acknowledges the notification but does not alert any service centre.

NOTE 3: The HLR can be in a situation where the MWD list is empty but where either MNRF or MNRG (with the related MNRR) is still set. This enables the HLR to return the correct address (MSC or SGSN address) at the next Send Routing Information Request from the SMS-GMSC.

NOTE 4: If the SMS delivery failed on first attempt via the MSC or the SGSN (see cases 1a for IMSI Detach and 1b for GPRS Detach), and is successful on the second attempt (see cases 2e and 2f), the SC address shall not be inserted into the MWD list

3.2.7 Alert-SC

The Alert-SC is the service element, which may be provided by some GSM/UMTS PLMNs, to inform the SC that an MS

1) to which a delivery attempt has failed because the MS is not reachable or because the MS memory capacity was exceeded;

and

2) which is now recognized by the PLMN:

a) to have resumed operation (e.g. to have responded to a paging request); or

b) to have memory newly available (which implies that the mobile is reachable).

is again ready to receive one or more short messages. The SC may - on reception of an Alert-SC - initiate the delivery attempt procedure for the queued messages destined for this MS.

To each MS there may be allocated several MSIsdns. When the HLR is to alert an SC that an MS is again attainable it shall use a specific MSIsdn value for this purpose; in the present document called MSIsdn-Alert.

NOTE 5: Repeated delivery attempts from the SC may be of two types:

i) A repeated delivery attempt because the SC has been informed that the MS is active and available to receive short messages.

ii) An autonomous repeated delivery attempt by the SC.

The application of these two options is defined by the providers of the SC and the network.

3.2.8 Options concerning MNRG, MNRF, MNRR, MCEF and MWD

Setting the Mobile-Station-Not-Reachable-Flag (MNRF) in the VLR is mandatory. Setting the Mobile-station-Not-Reachable-for-GPRS (MNRG) in the SGSN is mandatory. It is mandatory for the VLR or the SGSN to send the "MS Reachable" message (see clause 10) to the HLR when the MS has been detected as becoming active and then to clear MNRF in the VLR or the MNRG in SGSN.

The Messages-Waiting-Data (MWD), the Mobile-Station-Not-Reachable-Flag (MNRF), the Mobile-station-Not-Reachable-for-GPRS (MNRG), the Mobile-Station-Not-Reachable-Reason (MNRR) and the Mobile-Station-Memory-Capacity-Exceeded-Flag (MCEF) within the HLR are optional, but if one is implemented all must be implemented (except MNRG if the HLR does not support GPRS). This is linked to the transmission of the "Alert SC" message.

The following describes what happens when a delivery fails.

Case 1: MWD, MNRF, MNRG, MNRR and MCEF are implemented in the HLR

In the case of a delivery failure (to an MS) with cause Absent Subscriber, the SMS-GMSC requests the HLR to add, if needed, a new entry in the MWD with cause Absent Subscriber. This new entry contains the SC address. The HLR sets its copy of the MNRF, MNRG or both and updates the MNRR (if the information is available). The SC is notified of the failure, the reason for the MS being absent and also of the MWD setting in the HLR within the Report message (see clause 10).

In the case of a delivery failure (to an MS) with cause Mobile Station Memory Capacity Exceeded via the SGSN or the MSC, the SMS-GMSC requests the HLR to add, if needed, a new entry in the MWD with cause Mobile Station Memory Capacity Exceeded. This new entry contains the SC address. The HLR sets the MCEF and reset MNRF or MNRG. The SC is notified of the failure and also of the MWD setting in the HLR within the Report message (see clause 10).

If the HLR indicates that it is able to store the SC address, then the SC shall receive an Alert SC message when the MS becomes active.

If the HLR indicates that it is unable to store the SC address (e.g. because MWD is full), then the only way to ensure delivery is for the SC to try to retransmit the message periodically.

When the HLR receives the MS Reachable message, if the MCEF is clear it sends an Alert SC message to the concerned SC, updates MWD and clears MNRF (if the MS is reachable via the MSC) or MNRG (if the MS is reachable via the SGSN).

When the HLR receives the MS Memory Capacity Available message, it sends an Alert SC message to the concerned SC, updates MWD, clears the MCEF and clears MNRF (if the MS is reachable via the MSC) or MNRG (if the MS is reachable via the SGSN).

Case 2: MWD, MNRF, MNRG, MNRR and MCEF are not implemented in the HLR

In the case of a delivery failure, the SC is notified that the HLR is unable to store its address in the MWD. In case of a delivery failure (to a MS) with cause Absent Subscriber, the SC is notified of the reason for the MS being absent (if the information is available). The SC must retransmit the short message periodically in order to ensure delivery.

The HLR discards the MS Reachable message received from the VLR or SGSN without any failure or error report.

The HLR discards the MS Memory Capacity Available message received from the MS via the MSC and the VLR or SGSN without any failure or error report.

3.2.9 Status report capabilities

The SMS also offers to the SC the capabilities of informing the MS of the status of a previously sent mobile originated short message. The status of the message can be:

- Successfully delivered to the SME;
- The SC was not able to forward the message to the SME. The reason can be an error of permanent or temporary nature. Permanent errors can be e.g. validity period expired, invalid SME address. Errors of temporary nature can be e.g. SC-SME connection being down, SME temporarily unavailable.

This is achieved by the SC returning a status report TPDU (SMS-STATUS-REPORT) to the originating MS when the SC has concluded the status of the short message. The status report may be initiated by a status report request within the mobile originated short message. The status report TPDU is treated as an SMS-DELIVER TPDU by the SC when it comes to delivery procedures e.g. the alerting mechanism.

The SC may also return to a non-MS SME the status of a mobile terminated short message. This is however outside the scope of the present document.

The status report capabilities of the SMS are optional, i.e. the choice of whether to offer status report or not is left to the SC operator.

For reasons of resilience and/or load sharing architecture of SMSC's by network operators, the SMSC address (the RP-OA) used by the SMSC to send the Status Report to the MS cannot be guaranteed to be the same SMSC address (RP-

DA) used by the MS to submit the SM to which the Status Report refers. Where an MS wishes to implement a check that these addresses correlate, a means of disabling the correlation check shall be provided at the MS through MMI.

3.2.10 Reply Path

Reply Path specified in the present document provides a way of both requesting and indicating a service centre's commitment to deliver a reply from the replying MS to the originating SME.

Annex D deals with MS procedures, which in general are outside the scope of GSM/UMTS specifications. However, for advanced use of the SMS, including both application level protocols and human responses, it is of vital importance to guarantee that a reply-supporting MS is able to reply on every SM, to every SME capable of receiving such reply short messages.

3.3 Unsuccessful short message TPDU transfer SC -> MS

Unsuccessful message transfer SC -> MS may be caused by a variety of different errors. The description of the occurrence of the different errors and how to handle and transfer the error indications is given in GSM 04.08 [12], 3G TS 24.011 [13] and 3G TS 29.002 [15].

The different error indications which the SMS-GMSC shall be capable of returning to the SC following an unsuccessful short message TPDU transfer SC -> MS, are given in table 1. In some cases, additional diagnostic information may be provided.

3.3.1 Errors occurring during transfer of TPDU to MS

These errors are generally due to barring or unsupported service in the PLMN or MS. An error indication is returned to the SC from the SMS-GMSC, but further diagnostic information from the MS shall not be available.

3.3.2 Errors occurring after TPDU arrives at MS

These errors may occur due to the MS not supporting optional short message service features, or in connection with a short message application. An error indication shall be returned to the SC from the SMS-GMSC. Additionally, a TPDU (SMS-DELIVER-REPORT) containing diagnostic information may be conveyed from the MS to the originating SC, transparently through the PLMN, by means defined in 3G TS 24.011 [13] and 3G TS 29.002 [15]. The sending of the diagnostic information is optional at the MS, but when it is sent, the PLMN shall convey the information to the SC, and the SC shall support reception of the information.

Table 1: Error indications related to mobile terminated short message transfer which may be transferred to the originating SC

Error indication	S ¹⁾	Meaning
Unknown subscriber	P	The PLMN rejects the short message TPDU because there is not allocated an IMSI or a directory number for the mobile subscriber in the HLR (see 3G TS 29.002 [15]).
Teleservice not provisioned	P	The PLMN rejects the short message TPDU because the recipient MS has no SMS subscription (see 3G TS 29.002 [15]).
Call barred	T	The PLMN rejects the short message TPDU due to barring of the MS (see 3G TS 29.002 [15], description of the Barring supplementary service, 3G TS 22.004 [3] and 3G TS 23.011[7]), description of Call barred due to Unauthorised Message Originator, 3G TS 29.002 [15], and description of Operator Determined Barring, 3G TS 22.041 [4] and 3G TS 23.015 [8]).
Facility not supported	T	The VPLMN rejects the short message TPDU due to no provision of the SMS in the VPLMN (see 3G TS 29.002 [15]).
Absent subscriber	T	The PLMN rejects the short message TPDU because - there was no paging response via the SGSN, MSC or both, (see GSM 04.08 [12] & 3G TS 29.002 [15]) - the IMSI GPRS or both records are marked detached (see 3G TS 29.002 [15]), - the MS is subject to roaming restrictions (see "Roaming not allowed", 3G TS 29.002 [15]). - deregistered in the HLR. The HLR does not have an MSC, SGSN or both numbers stored for the target MS, (see 3G TS 29.002 [15]) - Unidentified subscriber (see 3G TS 29.002 [15]) - MS purged, (see 3G TS 29.002 [15]) (The reasons for absence are assigned integer values in table 1a. The appropriate integer value is sent with the absent subscriber error indication as defined in 3G TS 29.002 [15])
MS busy for MT SMS	T	The PLMN rejects the short message TPDU because of congestion encountered at the visited MSC or the SGSN. Possible reasons include any of the following events in progress: - short message delivery from another SC; - IMSI or GPRS detach - Location Update or Inter SGSN Routing Area Update; - paging; - emergency call; - call setup.
SMS lower layers not provisioned	capabilities T	The PLMN rejects the short message TPDU due to MS not being able to support the Short Message Service. The short message transfer attempt is rejected either due to information contained in the class-mark, or the MSC not being able to establish connection at SAPI = 3 (see GSM 04.08 [12] and 3G TS 29.002 [15]).
Error in MS	T	The PLMN rejects the short message TPDU due to an error occurring within the MS at reception of a short message, e.g. lack of free memory capacity or protocol error.
Illegal Subscriber	P	The PLMN rejects the short message TPDU because the MS failed authentication
Illegal Equipment	P	The PLMN rejects the short message TPDU because the IMEI of the MS was black-listed in the EIR
System failure	T	The PLMN rejects the short message TPDU due to network or protocol failure others than those listed above (see 3G TS 29.002 [15])
Memory Capacity Exceeded	T	The MS rejects the short message since it has no memory capacity available to store the message

1) : Status (Permanent or Temporary)

The relation between the two sets of error indications is given in the table 1. Each error is classified as either "Temporary" or "Permanent". This classification gives an indication of whether or not it is probable that the MS becomes attainable within a reasonable period, and so provides the recommended action to be taken by the SC, i.e. either to store the message for later transfer, or to discard it.

Table 1a: Assignment of values to reasons for absence (values must be in the range of 0 to 255, see 3G TS 29.002 [15])

Values	Reason for absence
0	- no paging response via the MSC
1	- IMSI detached
2	- roaming restriction
3	- deregistered in the HLR for non GPRS
4	- MS purged for non GPRS
5	- no paging response via the SGSN
6	- GPRS detached
7	- deregistered in the HLR for GPRS
8	- MS purged for GPRS
9	- Unidentified subscriber via the MSC
10	- Unidentified subscriber via the SGSN
All 'non GPRS' reasons (except for roaming restriction) can be combined with all 'GPRS' reasons and vice-versa	
All other integer values are reserved.	

3.4 Unsuccessful short message TPDU transfer MS -> SC

The error indications related to mobile originated short message transfer which may be transferred to the originating MS are given in 3G TS 24.011 [13]. In some cases, additional diagnostic information may be provided.

3.4.1 Errors occurring during transfer of TPDU to SC

These errors are generally due to barring or unsupported service in the PLMN. An error indication is returned to the MS from the MSC or the SGSN, but further diagnostic information from the SC shall not be available.

3.4.2 Errors occurring after TPDU arrives at SC

These errors may occur due to the SC not supporting optional short message service features, or in connection with a short message application. An error indication shall be returned to the MS from the MSC or from the SGSN. Additionally, a TPDU (SMS-SUBMIT-REPORT) containing diagnostic information may be conveyed from the SC to the originating MS, transparently through the PLMN, as defined in 3G TS 29.002 [15] and 3G TS 24.011 [13]. The sending of the diagnostic information is optional at the SC, but when it is sent, the PLMN shall convey the information to the MS, and the MS shall support reception of the information.

NOTE: The SMS-SUBMIT-REPORT is part of the negative acknowledgement to the mobile originated short message, and is not part of the status report capabilities described in subclause 3.2.9.

3.5 Use of Supplementary Services in combination with the Short Message Service

Only a sub-set of the Supplementary Services defined in 3G TS 22.004 [3] and 3G TS 23.011 [7] may be used in combination with the Short Message Service. This sub-set comprises the following Supplementary Services:

All the 5 Barring services.

3.6 Applicability of Operator Determined Barring to the Short Message Service

The network feature Operator Determined Barring (see 3G TS 22.041 [4]) applies to the Short Message Service.

If a short message fails due to operator determined barring then an appropriate error cause is returned to the originator.

3.7 Multiple short message transfer

To avoid the need for a mobile to be paged, authenticated etc. for each message waiting in the Service Centre, the SC may indicate to the SMS-GMSC that there are more messages to send. When this indication is given, MAP procedures are invoked such that this indication is passed to the VMSC, and the VMSC does not release the MS until all short messages waiting in the SC have been transferred.

3.8 SMS and Internet Electronic Mail interworking

The interworking between Internet electronic mail and SMS is offered in both directions which enables new and old mobiles to send/receive Internet electronic mails via SMS. The interworking is according to the following procedures:

- An SMS message which is required to interwork with Internet email may have its TP-PID value set for Internet electronic mail;

NOTE: There is an alternative mechanism described in 9.2.3.24 providing full RFC 822 [34] internet electronic mail interworking.

- Either single or concatenated SMS can be used to transport the email;
- Concatenation may be achieved by the TPUDH mechanism or text-based means described below;
- Email cc fields are not supported;
- Where multiple fields are present, additional spaces may be inserted by the sender to improve presentation of the message. Spaces may not be inserted into the actual email address (e.g. user@domain1.domain2).

3.8.1 Basic Format

The basic format for transferring email in either direction consists of the following:

MT SMS:

[<from-address><space>]<message>

MO SMS:

[<to-address><space>]<message>

where [] denote optional fields and <> delimit fields.

The to-address or from address may take the form

user@domain1.domain2

or

User Name <user@domain1.domain2>

In the latter case the angle brackets <> are part of the address and are actually transmitted.

Depending on the nature of the gateway, the destination/origination address is either derived from the content of the SMS TP-OA or TP-DA field, or the TP-OA/TP-DA field contains a generic gateway address and the to/from address is added at the beginning as shown above.

Multiple addresses may be identified in MO messages by separating each address by a comma like this:

address1,address2,address3<space><message>

It is optional for the receiving gateway to support this. If the receiving gateway does not support multiple messages then it shall reject the original message by returning an appropriate error in a text message.

3.8.2 Optional Fields

The following further optional fields are supported. An email <-> SMS gateway may insert additional spaces in the MT message for presentation to the user, and must accept additional spaces in the MO message from the user.

3.8.2.1 Subject

The subject is placed between the address and the message, delimited by round brackets () or preceded by ##, for example:

```
[<to-address>](<subject>)<message>
```

or

```
[<to-address>]##<subject>#<message>
```

An MO message may contain either format. An MT message may contain either format. Developers must ensure that both forms are supported for full compatibility.

3.8.2.2 Real Name

The Real Name field contains the real name of the sender and is used only in MO messages. The SC or email gateway shall generate an email message according to standard email procedures containing Real Name <user@domain1.domain2> (the angle brackets being part of the address and hence transmitted). If a subject is to be included with the Real Name then only the ## prefix is used.

The syntax is:

```
[<to-address>]#<real-name>[##<subject>]#<message>
```

3.8.2.3 Optional Control Flag

An optional control flag may be added to the start of the message in MO messages only. This consists of a single character <CF> following a # symbol as follows:

```
[#<CF>#][<to-address>]<space><message>
```

This may also be used in combination with the above fields. It is intended for use where a particular SC or email gateway specific function is required to be invoked. For example, the control flag #A# might add a particular (pre-stored) signature to the end of the message or #R# might change the from-address to a pre-stored value or #5# might add the text "Please phone me at the office". All of these functions are open for definition by Service Centre or email gateway operators.

3.8.3 Text concatenation

If the concatenation mechanism described in 9.2.3.24.1 is not supported by the transmitting or receiving entity, the following textual concatenation mechanism may be used. The first message is ended with a + sign, and each subsequent message start and end with + signs until the final message which starts with a + sign but does not end with a + sign.

```
<message1>+
```

```
+<message2>+
```

```
+<message3>
```

Any header fields placed on the front of an MO or MT message are not added to the second and subsequent messages.

This provides a simple mechanism which is completely backward compatible. There is no indication of the number of messages and should a message be lost by the system or arrive out of sequence then the original message cannot be reconstructed. Therefore, wherever possible the concatenation mechanism specified in 9.2.3.24.1 should be used instead.

3.8.4 Alternative characters for Internet email addresses in MO SMS.

It is difficult or impossible to generate some characters on a mobile phone and so the following alternatives may be used:

@ may be replaced by *

_ (underscore) may be replaced by \$

3.9 SMS COMPRESSION

Short Messages may be compressed in accordance with the compression algorithm described in 3G TS 23.042 [26].

Compression and Decompression may take place between SME's or between an SME and the SC.

The compression only applies to the TP-User-Data part of the TPDU and excludes any TP-User-Data-Header which may be present. The Compression Header (see 3G TS 23.042 [26]) must commence at the first octet of the TP-User-Data field immediately following any TP-User-Data-Header field which may be present.

The TP-UDL value must be set in accordance with that value defined for the compressed TP-User-Data case in subclause 9.2.3.16.

The TP-DCS parameter indicates whether or not a short message is compressed. If the TP-DCS parameter indicates that the short message is compressed then the alphabet encoding values (bits 2 and 3 in 3G TS 23.038 [9]) must be ignored by the receiving entity.

In the case where a short message after compression is greater than 140 octets (including the Compression Header and Footer (see 3G TS 23.042 [26]) and any TP-User-Data-Header which may be present) then the sending entity must concatenate the short message in the normal way as described in subclause 9.2.3.24.1 if it wishes to continue to send the short message. Only the first segment of the concatenated short message must contain the Compression Header defined in 3G TS 23.042 [26]. All segments other than the final segment must be 140 octets in length. Only the final segment contains the Compression Footer (see 3G TS 23.042 [26]).

For mobile terminated compressed messages, where the MMI or the Message Class indicated in the TP-DCS requires the message to be stored in the MS then the MS shall store the compressed message as received. In the case where the MS is capable of decompression then the MS may display the decompressed message. Such an MS may optionally store the message in decompressed form subject to the MS being configured to do this via MMI. However, prior to storing the message in decompressed form, the MS may have to create a concatenated SM and carry out component modification on the TP-UDL and TP-DCS values to indicate the correct length values and that the message is no longer compressed. Transfer of messages direct from the radio interface or those stored in the MS to a TE is according to the procedure defined in 3G TS 27.005 [14] and is independent of whether the message is compressed or uncompressed.

For mobile originated compressed messages, an MS capable of compression may compress a short message generated within the MS itself prior to sending it to the radio interface. An MS capable of compression may optionally compress an uncompressed message received from a TE subject to the MS being configured to do this via MMI. In such a case the MS would have to carry out component modification on the TP-UDL and TP-DCS values to indicate the correct length values and that the message is compressed. A TE may send a message (compressed or uncompressed) to the MS using the procedures defined in 3G TS 27.005 [14]. The MS shall store the compressed message as received and/or transfer it directly to the radio interface.

3.10 Enhanced Messaging Service

The Enhanced Messaging Service (EMS) is based upon the standard SMS, but with formatting added to the text. The formatting permits the message to contain simple animations, small pictures, small melodies and formatting of the text, everything mixed together into one message. This section lists the supported features. The coding mechanisms and formats are specified in subclause 9.2.3.24.10

3.10.1 Text formatting

The following text formatting features are supported:

Alignment

- Left (default)
- Centre
- Right

Font size

- Normal (default)
- Large
- Small

Style

- Normal (default)
- **Bold**
- *Italic*
- Underlined
- ~~Strikethrough~~

3.10.2 Pictures

It is possible to include either a small (16*16 pixels), large (32*32 pixels) or pictures of variable size. These pictures have neither animation nor grey scales, it is plain black and white. All pictures are user defined. If multiple pictures are received side by side, then they will be stitched together with no inter-character spacing. If a <CR> is inserted in the middle of multiple pictures, then the left margin of the pictures are vertically aligned. If two pictures that are of the same size are logically separate, they should be separated by a space or other characters. Maximum recommended pictures size usage of this technique: 96x64 (6 large pictures, with a CR in the middle). This unified picture is then formatted as one.

3.10.3 Animations

Predefined

There are number of predefined animations. These animations are not sent as animation over the air interface, only the identification of them. As soon as the position of the animation in the SM data is reached, the animation corresponding to the received number shall be displayed in a manner which is manufacturer specific.

User Defined

The user-defined animations consist of 4 pictures and there are two different sizes of these animations. The picture size of the small animations are 8*8 pixels and the large 16*16 pixels. These animations are sent over the air interface.

3.10.4 Sound

Predefined

There are a number of predefined sounds. These sounds are not transferred over the air interface, only the identification of them. There are 10 different sounds that can be added in the message, and as soon as the sound mark is in focus (on the display), the sound will be played.

User Defined

The sender can define own melodies according to the iMelody format [33]. These melodies are transferred in the SM and can take up to 128 bytes.

4 Network architecture

4.1 Basic network structure

The exchange of messages between an MS and an SME involves the entities shown in figure 4.

The basic network structure of the SMS is depicted in figure 5.

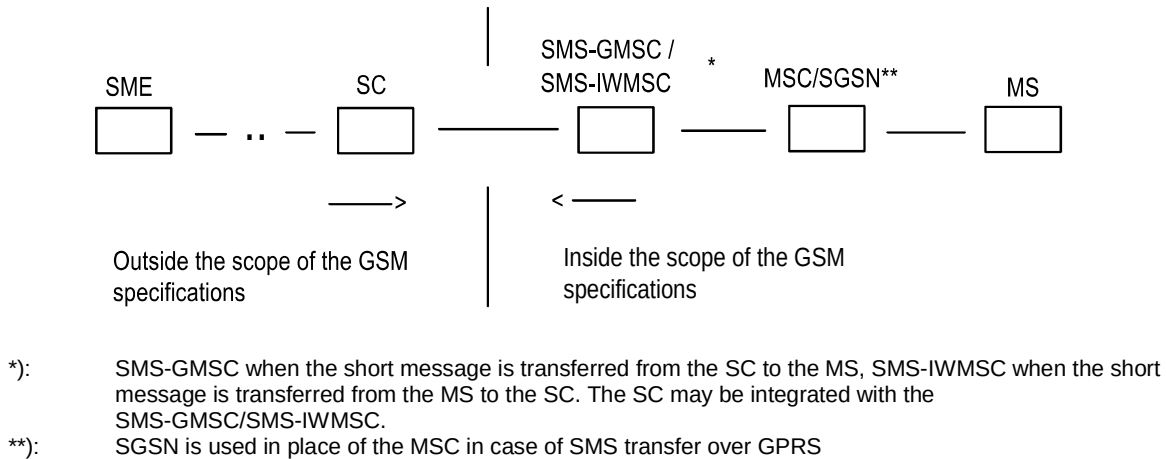
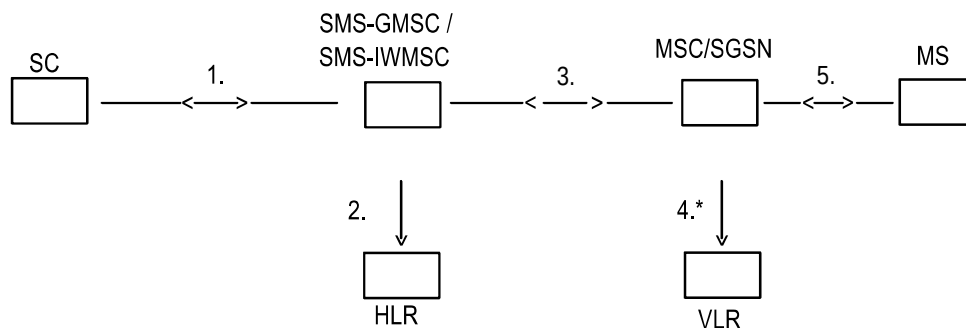


Figure 4: Entities involved in the provision of SM MT and SM MO: SC, SMS-GMSC/SMS-IWMSC, SGSN, MSC and MS

The links of figure 5 support the short message transfer in the following way:

- message transfer on link 1 is described in clause 5;
- the operations performed on links 2 and 4 is described in 3G TS 29.002 [15];
- message transfer on link 3 is described in subclause 4.2;
- message transfer on link 5 is supported by protocol described in 3G TS 24.011 [13].



- *):
- This interface is not used in case of SMS transfer via the SGSN

Figure 5: The main network structure serving as a basis for the short message transfer

4.2 Transfer on link 3

The link 3 is used to support communications between MSC, SMS-GMSC and SMS-IW MSC, or between SGSN, SMS-GMSC and SMS-IW MSC. Two cases can be distinguished according to whether or not the MSC, SMS-GMSC, SMS-IW MSC and SGSN are located in the same PLMN.

In the first case, the link definition is left to the operators. For example, this link may use:

- PSPDN; or
- CCITT SS no 7 (according to 3G TS 29.002 [15]).

In the second case, CCITT SS no 7 shall be used over link 3 according to 3G TS 29.002 [15], unless otherwise bilaterally agreed.

5 Service Centre and PLMN interconnection

The present document deals with the SC only with regard to the interchange of messages between SC and MS. Only the requirements put upon the SC by the SMS functionality are specified in the present document.

5.1 Service centre connection

One SC may be connected to several PLMNs, and may be connected to several MSCs (SMS-GMSCs or SMS-IW MSCs) within one and the same PLMN.

The SC is addressed from the mobile by an E.164 [17] number in the numbering plan of the PLMN to which the SC is connected. This E.164 [17] number shall uniquely identify the SC to that PLMN.

There may be an intermediate network between the PLMN and the SC; in this case the PLMN must autonomously make a connection to the SC using the SC address in this intermediate network.

No mandatory protocol between the SC and the MSC below the transfer layer is specified by GSM/UMTS; this is a matter for agreement between SC and PLMN operators. However, annex A provides an example protocol stack which could be used.

5.2 Routing requirements

5.2.1 Mobile terminated short message

The SC sends the short message to the SMS-GMSC. The SMS-GMSC interrogates the HLR to retrieve routing information necessary to forward the short message, and then sends the message to the relevant MSC or SGSN, transiting other networks if necessary. The MSC or SGSN then sends the short message to the MS.

5.2.2 Mobile originated short message

The MS sends the short message to the MSC or the SGSN. The MS shall always address the required SC by an E.164 [17] address. The visited PLMN shall route the message to the appropriate SMS-IW MSC in the SC's PLMN, transiting other networks if necessary.

6 Service Centre functionality

In the present document, only the SC functionality related to the short message service between the SC and the MS is specified.

6.1 Service Centre capabilities

The SC should be capable of:

- submitting a short message to an MS, retaining the responsibility of the message until
 - 1) the report has been received; or
 - 2) the Validity-Period expires.
- receiving a report from the PLMN;
- receiving a short message from an MS;
- returning a report to the PLMN for a previously received short message.

6.2 SC functional requirements

The detailed functionality of the SC is outside the scope of the present document, and is for the SC operator to define. However, the following functional requirements are mandatory for all SCs in order to support the SM-TP (see clause 9) towards the PLMN:

- 1) To identify each SMS-DELIVER sent to an MS in a unique way, a time stamp value is included in the field TP-Service-Centre-Time-Stamp, TP-SCTS, of the SMS-DELIVER. The time stamp gives the time when the message arrived at the SC with the accuracy of a second. If two or more messages to the same MS arrive at the SC within one second, the SC shall modify the time stamp of those messages in such a way that:
 - a) all messages to the MS contain different time stamps;
 - b) the modification of the time stamps is kept to a minimum.
- 2) The SC is only allowed to have one outstanding SMS-DELIVER (i.e. a message for which a report has not been received) to a specific MS at a given time.
- 3) The SC shall be able to initiate overwriting of short messages previously received by the SC if requested by the same originating address (MS or any other source) by use of the same message type.

7 MS functionality

In the present document, only the MS functionality related to the short message service between the SC and the MS is specified.

7.1 MS capabilities

The MS, when equipped for SMS, should be capable of:

- submitting a short message TPDU to an SC, retaining the responsibility of the message until:
 - 1) the report arrives from the network; or
 - 2) a timer expires.
- receiving a short message TPDU from an SC;
- returning a delivery report to the network for a previously received short message;
- receiving a report from the network;
- notifying the network when it has memory capacity available to receive one or more short messages when it has previously rejected a short message because its memory capacity was exceeded;

- notifying the SC when a short message is intended to replace a short message the MS has previously submitted to the same destination address.

It is recommended that an MS supporting both replying and automatic SC selection (as specified in clause D.2 of annex D) follows procedures specified in annex D when replying to MT short messages with MO short messages.

It is recommended that an MS supporting a capability for requesting a reply path follows procedures specified in annex D.

7.2 MS configuration

The reference configuration is assumed as in figure 6, i.e. only the case where the terminal is integrated in the MS is considered.

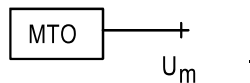


Figure 6: Reference configuration of the MS which apply to the SMS

NOTE: It is foreseen that a terminal interface may be offered, e.g. for higher layer protocols, memory capacity reasons or to be able to type in mobile originated messages. This terminal interface is regarded as an implementation option, although, where offered, it must be based upon an R- or S-reference point. 3G TS 27.005 [14] provides an example based on the R reference point.

8 Node functionality

The overall requirements to the MSC, SMS-GMSC, SMS-IW MSC and SGSN with respect to handling of the Short Message Service is to cater for the routing and necessary intermediate buffering of the short messages.

8.1 Node functionality related to SM MT

8.1.1 Functionality of the SMS-GMSC

When receiving a short message TPDU from the SC, the SMS-GMSC is responsible for the following operations:

- reception of the short message TPDU;
- inspection of the parameters.

NOTE 1: The SMS-GMSC may be identical to the MSC.

if parameters are incorrect:

- returning the appropriate error information to the SC in a failure report (see clauses 9 and 10);

if errors are not found within parameters:

- interrogating the HLR ("sendRoutingInfoForShortMsg", see clause 10); retrieving routing information or possible error information;

if HLR is returning error information:

- returning the appropriate error information to the SC in a failure report (see clauses 9 and 10);

if no errors are indicated by the HLR:

- transferring the short message TPDU to the MSC or SGSN using the routing information obtained from the HLR ("forwardShortMessage", see clause 10).

NOTE 2: In case where two addresses (SGSN and MSC) are received from HLR, the SMS-GMSC may choose (operator dependant) via which nodes (SGSN or MSC) the SMS is first to be sent. The SMS delivery via the SGSN is normally more radio resource efficient than the SMS delivery via the MSC.

if one address (SGSN or MSC) is received from HLR:

- When receiving the report associated with the short message from the MSC or SGSN (positive or negative outcome of "forwardShortMessage", see clause 10), the SMS-GMSC is responsible for the following operations:

if the report indicates successful delivery:

- notifying the HLR of the successful delivery via the MSC or the SGSN, which shall cause the HLR to alert any service centres whose addresses are stored in the MWD for the MS;
- creating and sending the successful report to the SC;

if the report is a failure report indicating "absent subscriber" via the MSC or the SGSN (see subclause 3.3):

- requesting the HLR to insert the address of the originating SC into the MWD (if implemented) with cause Absent Subscriber ("SM_DeliveryReportStatus", see clauses 9 and 10);
- informing the HLR of the reason for the MS being absent via the MSC or the SGSN (if this information is available);
- establishing, where necessary, a link with the addressed SC (see clause 5);
- creating and sending the negative report to the SC which should include the reason for the MS being absent (if this information is available) so that the SC may adjust any retry algorithm appropriately (see clauses 9 and 10);

if the report is a failure report indicating "MS memory capacity exceeded" via the MSC or the SGSN (see subclause 3.3):

- requesting the HLR to insert the address of the originating SC into the MWD (if implemented) with cause MS Memory Capacity Exceeded via the MSC or the SGSN ("SM_DeliveryReportStatus", see clauses 9 and 10);
- establishing, where necessary, a link with the addressed SC (see clause 5);
- creating and sending the report to the SC (see clauses 9 and 10).

if two addresses (SGSN and MSC) are received from HLR:

- When receiving the first report associated with the short message from the MSC or SGSN (positive or negative outcome of "forwardShortMessage", see clause 10), the SMS-GMSC is responsible for the following operations:

if the first report indicates successful delivery:

- notifying the HLR of the successful delivery via the MSC or the SGSN, which shall cause the HLR to alert any service centres whose addresses are stored in the MWD for the MS;
- creating and sending the successful report to the SC;

if the first report is a failure report indicating:

- Unidentified subscriber;
- Facility not supported;
- Absent subscriber with indication: GPRS or IMSI Detach;
- System failure;
- Unexpected data value;
- Data missing;

- GPRS connection suspended (see TS 3G TS 29.002 [15]);
- transferring the short message TPDU to the second path using the routing information obtained from HLR.

if the second report indicates successful delivery:

- notifying the HLR of the successful delivery of the second transfer via the MSC or SGSN, which shall cause the HLR to alert any service centres whose addresses are stored in the MWD for the MS;
- notifying the HLR of the unsuccessful delivery at first transfer only with cause "absent subscriber";
- notifying the HLR of the reason for the MS being absent via the MSC or the SGSN (if this information is available);
- establishing, when necessary, a link with the addressed SC (see clause 5);
- creating and sending the successful report to the SC;

if the second report is a failure report:

- requesting the HLR to insert the address of the originating SC into the MWD (if implemented) only if at least one of the first or second report failed due to "MS Memory Capacity Exceeded" or "Absent Subscriber" ("SM_DeliveryReportStatus", see clauses 9 and 10);
- notifying the HLR only with the causes "Absent Subscriber", "Memory Capacity Exceeded" via the MSC or the SGSN, or both;
- notifying the HLR of the reason for the MS being absent via the MSC, SGSN or both (if this information is available);
- establishing, where necessary, a link with the addressed SC (see clause 5);
- creating and sending the negative report to the SC with errors from first and second path (see clauses 9 and 10);

8.1.2 Functionality of the MSC

When receiving a short message TPDU from the SMS-GMSC ("forwardShortMessage", see clause 10), the MSC is responsible for the following operations:

- reception of the short message TPDU;
- retrieving information from the VLR ("sendInfoFor-MT-SMS", see clause 10); location area address and, when appropriate, error information;

if errors are indicated by the VLR:

- returning the appropriate error information to the SMS-GMSC in a failure report (negative outcome of "forwardShortMessage" see clauses 10 and 11);

if no errors are indicated by the VLR:

- transferring the short message to the MS (see 3G TS 24.011 [13]).

When receiving a confirmation that the message is received by the MS (see 3G TS 24.011 [13]):

- relaying the delivery confirmation to the SMS-GMSC in a delivery report (positive outcome of "forwardShortMessage", see clauses 10 and 11).

When receiving a failure report of the short message transfer to the MS (see 3G TS 24.011 [13]):

- returning the appropriate error information to the SMS-GMSC in a failure report (negative outcome of "forwardShortMessage", see clause 10).

When receiving a notification from the MS that it has memory available to receive one or more short messages (see 3G TS 24.011 [13]):

- relaying the notification to the VLR ("mSMemoryCapacityAvailable", see clause 10);

if errors are indicated by the VLR:

- returning the appropriate error information to the MS in a failure report (negative outcome of "ReadyForSM", see clauses 10 and 11).

When there is an ongoing MT-SMS transfer to the MS (see 3G TS 24.011 [13]), or other busy condition for MT-SMS, the MSC has the option to store the TPDU in a queue for a short time (which must be shorter than the supervision timer defined in 3G TS 29.002 [15]). The maximum time that a message may be queued is related to the permitted delay for the MSC to respond to the SMS-GMSC. When the MS becomes available for MT-SMS transfer, the stored TPDU's are delivered to the MS on a first-in first-out basis. If a message is not successfully transferred to the MS within the permitted time, the MSC returns an appropriate error to the SMS-GMSC.

8.1.3 Functionality of the SGSN

When receiving a short message TPDU from the SMS-GMSC ("forwardShortMessage", see clause 10), the SGSN is responsible for the following operations:

- reception of the short message TPDU;

if errors are detected by the SGSN:

- returning the appropriate error information to the SMS-GMSC in a failure report (negative outcome of "forwardShortMessage" see clauses 10 and 11);

if no errors are detected by the SGSN:

- transferring the short message to the MS (see 3G TS 24.011 [13]).

When receiving a confirmation that the message is received by the MS (see 3G TS 24.011 [13]):

- relaying the delivery confirmation to the SMS-GMSC in a delivery report (positive outcome of "forwardShortMessage", see clauses 10 and 11).

When receiving a failure report of the short message transfer to the MS (see 3G TS 24.011 [13]):

- returning the appropriate error information to the SMS-GMSC in a failure report (negative outcome of "forwardShortMessage", see clause 10).

When receiving a notification from the MS that it has memory available to receive one or more short messages (see 3G TS 24.011 [13]):

if errors are detected by the SGSN:

- returning the appropriate error information to the MS in a failure report (negative outcome of "ReadyForSM", see clauses 10 and 11).

if no errors are detected by the SGSN:

- notifying the HLR of memory available in the MS via the SGSN with "ReadyForSM" (see clauses 10 and 11).

When the MS is becoming reachable again (see GSM 04.08 [12]):

- notifying the HLR of MS being reachable via the SGSN (and via the MSC if any) with "ReadyForSM" (see clauses 10).

When there is an ongoing MT-SMS transfer to the MS (see 3G TS 24.011 [13]), or other busy condition for MT-SMS, the SGSN has the option to store the TPDU in a queue for a short time (which must be shorter than the supervision timer defined in 3G TS 29.002 [15]). The maximum time that a message may be queued is related to the permitted delay for the SGSN to respond to the SMS-GMSC. When the MS becomes available for MT-SMS transfer, the stored TPDU's are delivered to the MS on a first-in first-out basis. If a message is not successfully transferred to the MS within the permitted time, the SGSN returns an appropriate error to the SMS-GMSC.

8.2 Node functionality related to SM MO

8.2.1 Functionality of the MSC

When receiving a short message TPDU from the MS, the MSC is responsible for the following operations:

- reception of the short message TPDU (see 3G TS 24.011 [13]);
- retrieving information from the VLR ("sendInfoForMO-SMS", see clause 10); the MSISDN of the MS and, when appropriate, error information. The retrieval of information from the VLR is followed by the VLR investigating the MNRF (to be used in the alerting procedure, see clause 10)

if errors are indicated by the VLR:

- returning the appropriate error information to the MS in a failure report (negative outcome of "sendInfoForMO-SMS" see clauses 10 and 11);

if no errors are indicated by the VLR:

- inspection of the RP-DA parameter;

if parameters are incorrect:

- returning the appropriate error information to the MS in a failure report (see 3G TS 24.011 [13]);

if no parameter errors are found:

NOTE: The SMS-IWMSC may be identical to the MSC.

- transferring the short message TPDU to the SMS-IWMSC ("forwardShortMessage", see clause 10).

When receiving the report of the short message from the SMS-IWMSC (positive or negative outcome of the "forwardShortMessage", see clause 10), the MSC is responsible for the following operations:

- relaying the report to the MS (see 3G TS 24.011 [13]).

8.2.2 Functionality of the SMS-IWMSC

When receiving a short message TPDU from the MSC or SGSN ("forwardShortMessage", see clause 10), the SMS-IWMSC is responsible for the following operations:

- reception of the short message TPDU;
- establishing, where necessary, a link with the addressed SC (see clause 5);
- transferring the short message TPDU to the SC (if the address is valid).

If a report associated with the short message is received from the SC, the SMS-IWMSC is responsible for the following operations:

- relaying of the report to the MSC or SGSN (positive or negative outcome of "forwardShortMessage", see clause 10).

If a report associated with the short message is not received from the SC before a timer expires or if the SC address is invalid, the SMS-IWMSC is responsible for the following operations:

- returning the appropriate error information to the MSC or SGSN in a failure report (negative outcome of "forwardShortMessage", see clause 10).

The value of the timer is dependent on the protocol between the SC and the SMS-IWMSC.

8.2.3 Functionality of the SGSN

When receiving a short message TPDU from the MS, the SGSN is responsible for the following operations:

- reception of the short message TPDU (see 3G TS 24.011 [13]);
- inspection of the RP-DA parameter;

if parameters are incorrect:

- returning the appropriate error information to the MS in a failure report (see 3G TS 24.011 [13]);

if no parameter errors are found:

- transferring the short message TPDU to the SMS-IW MSC ("forwardShortMessage", see clause 10).

When receiving the report of the short message from the SMS-IW MSC (positive or negative outcome of the "forwardShortMessage", see clause 10), the SGSN is responsible for the following operations:

- relaying the report to the MS (see 3G TS 24.011 [13]).

8.3 SMS-IW MSC functionality related to alerting

When receiving an alert from the HLR ("alertServiceCentre", see clause 10), the SMS-IW MSC is responsible for the following operations:

- inspect the SC address;
- generate an RP-Alert-SC (see clause 9);
- transferring the RP-Alert-SC to the SC.

NOTE: If the SC address is not valid, then no further action shall be taken.

9 Protocols and protocol architecture

The protocol layers of the SMS are structured as shown in figure 7.

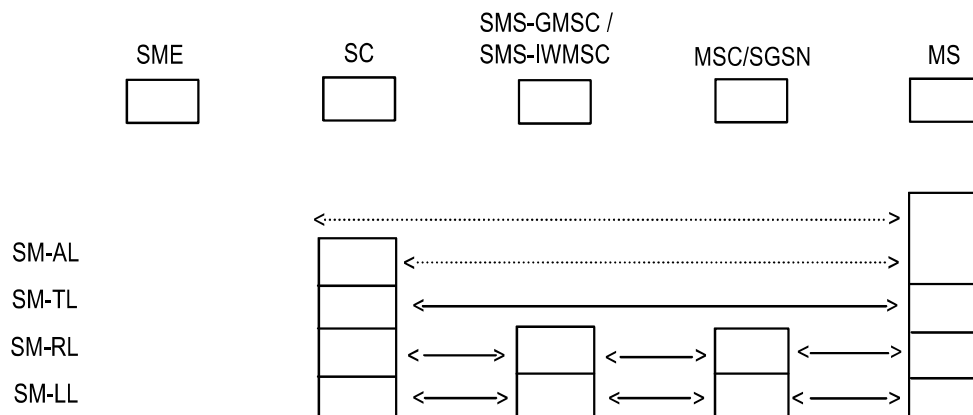


Figure 7: Protocol layer overview for the Short Message Service

The present document specifies the protocol at the SM-TL, the service offered by the SM-TL at the MS and the SC, and the service offered by the SM-RL at the SC.

9.1 Protocol element features

9.1.1 Octet and Bit transmission order

The octets are transmitted according to their individual numbering; the octet with the lowest number being transmitted first. The bits within each octet are transmitted according to their individual numbering also; the bits with the lowest internal number being transmitted first.

9.1.2 Numeric and alphanumeric representation

For parameters within the TPDU's, there are four ways of numeric representation: Integer representation, octet, semi-octet and alphanumeric representation.

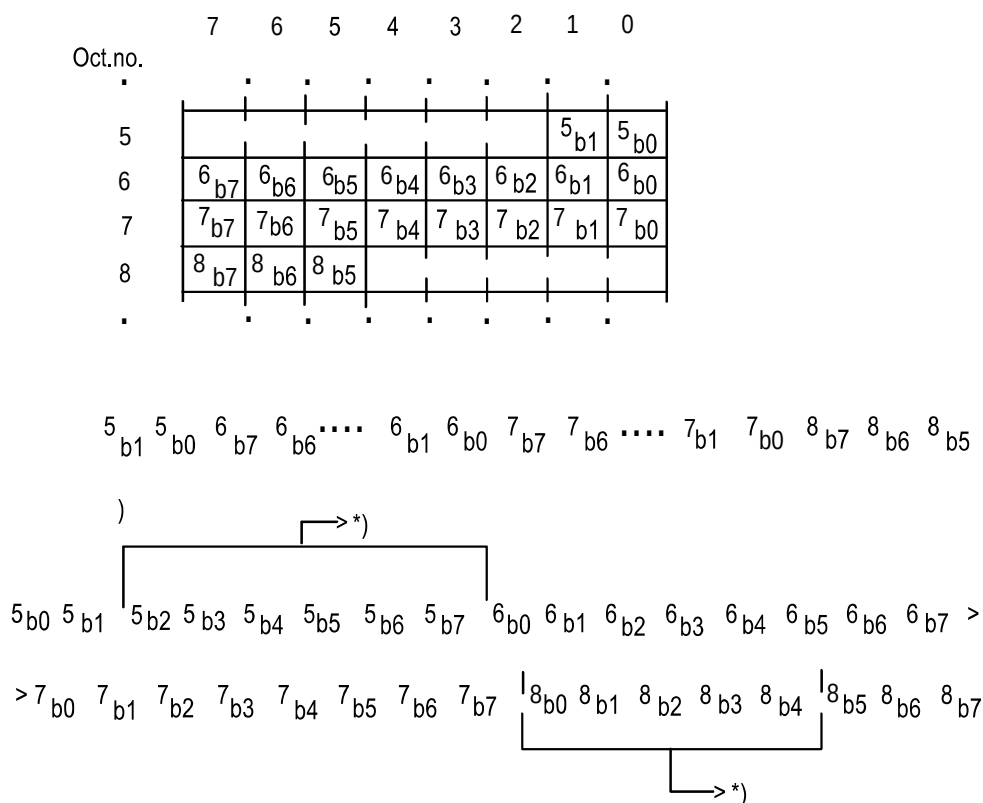
9.1.2.1 Integer representation

Wherever the bits from a number of octets, complete or in fractions, are to represent an integer, the interpretation shall be according to the following:

- 1) Between octets: The octets with the lowest octet numbers shall contain the most significant bits.
- 2) Within an octet: The bits with the highest bit numbers shall be the most significant.

Below is given an example of octet and bit representation and transmission order of an integer represented field.

Let the 2 rightmost bits of octet no 5, the complete octet no 6 and 7, and the 3 leftmost bits of octet no 8 represent an integer, as shown in figure 8.



*) : Bits not representing the integer.

Figure 8: 21 bits from the octets 5, 6, 7, and 8 in a short message) shall represent an integer as shown in), and shall be transmitted in an order as shown in)

9.1.2.2 Octet representation

A field which is octet represented, shall always consist of a number of complete octets. Each octet within the field represents one decimal digit. The octets with the lowest octet numbers shall contain the most significant decimal digits.

9.1.2.3 Semi-octet representation

A field which is semi-octet represented, shall consist of a number of complete octets and - possibly - one half octet. Each half octet within the field represents one decimal digit. The octets with the lowest octet numbers shall contain the most significant decimal digits. Within one octet, the half octet containing the bits with bit numbers 0 to 3, shall represent the most significant digit.

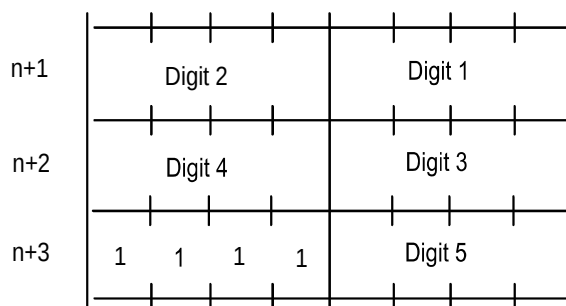
In the case where a semi-octet represented field comprises an odd number of digits, the bits with bit numbers 4 to 7 within the last octet are fill bits and shall always be set to "1111".

If a mobile receives an address field containing non-integer information in the semi-octets other than "1111" (e.g. 1110) it shall display the semi-octet as the representation given in GSM 04.08 [12] under "called BCD number", viz 1010="*", 1011="#", 1100="a", 1101="b", 1110="c". In the event of a discrepancy between the values quoted here and the values specified in GSM 04.08[12] then GSM 04.08 [12] shall take precedence. If a mobile receives "1111" in a position prior to the last semi-octet then processing shall commence with the next semi-octet and the intervening semi-octet shall be ignored.

Within each semi octet, the bits with the highest bit numbers shall be the most significant.

Below is given an example:

Octet no:



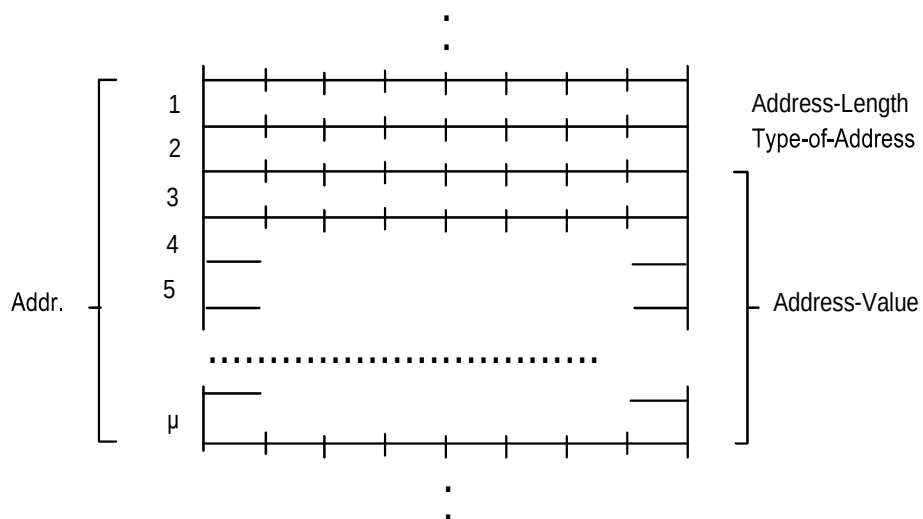
9.1.2.4 Alphanumeric representation

A field which uses alphanumeric representation shall consist of a number of 7-bit characters represented as the default alphabet defined in 3G TS 23.038 [9].

9.1.2.5 Address fields

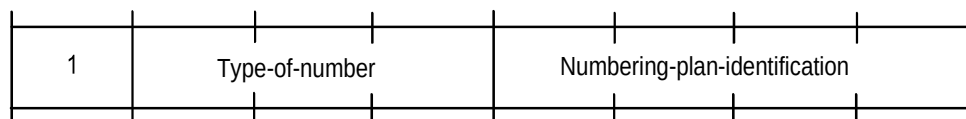
Address fields used by SM-RL are specified in 3G TS 24.011 [13] and 3G TS 29.002 [15].

Each address field of the SM-TL consists of the following sub-fields: An Address-Length field of one octet, a Type-of-Address field of one octet, and one Address-Value field of variable length; as shown below:



The Address-Length field is an integer representation of the number of useful semi-octets within the Address-Value field, i.e. excludes any semi octet containing only fill bits.

The Type-of-Address field format is as follows:



Type-of-number:
Bits 6 5 4

0 0 0	Unknown ¹⁾
0 0 1	International number ²⁾
0 1 0	National number ³⁾
0 1 1	Network specific number ⁴⁾
1 0 0	Subscriber number ⁵⁾
1 0 1	Alphanumeric, (coded according to 3G TS 23.038 [9] GSM 7-bit default alphabet)
1 1 0	Abbreviated number
1 1 1	Reserved for extension

The MS shall interpret reserved values as "Unknown" but shall store them exactly as received.

The SC may reject messages with a type of number containing a reserved value or one which is not supported.

- 1) "Unknown" is used when the user or network has no a priori information about the numbering plan. In this case, the Address-Value field is organized according to the network dialling plan, e.g. prefix or escape digits might be present.
- 2) The international format shall be accepted also when the message is destined to a recipient in the same country as the MSC or as the SGSN.
- 3) Prefix or escape digits shall not be included.
- 4) "Network specific number" is used to indicate administration/service number specific to the serving network, e.g. used to access an operator.
- 5) "Subscriber number" is used when a specific short number representation is stored in one or more SCs as part of a higher layer application. (Note that "Subscriber number" shall only be used in connection with the proper PID referring to this application).

Numbering-plan-identification (applies for Type-of-number = 000,001,010)

Bits	3	2	1	0	
0 0 0 0					Unknown
0 0 0 1					ISDN/telephone numbering plan (E.164 [17]/E.163[18])
0 0 1 1					Data numbering plan (X.121)
0 1 0 0					Telex numbering plan
1 0 0 0					National numbering plan
1 0 0 1					Private numbering plan
1 0 1 0					ERMES numbering plan (ETSI DE/PS 3 01-3)
1 1 1 1					Reserved for extension
All other values are reserved.					

For Type-of-number = 101 bits 3,2,1,0 are reserved and shall be transmitted as 0000. Note that for addressing any of the entities SC, MSC, SGSN or MS, Numbering-plan-identification = 0001 shall always be used. However, for addressing the SME, any specified Numbering-plan-identification value may be used.

The MS shall interpret reserved values as "Unknown" but shall store them exactly as received.

The SC may reject messages with a type of number containing a reserved value or one which is not supported.

Within the Address-Value field, either a semi-octet or an alphanumeric¹⁾ representation applies.

The maximum length of the full address field (Address-Length, Type-of-Address and Address-Value) is 12 octets.

- 1) Applies only to addressing at the SM-TL.

9.2 Service provided by the SM-TL

9.2.1 General

The Short Message Transfer Layer (SM-TL) provides a service to the Short Message Application Layer (SM-AL). This service enables the SM-AL to transfer short messages to its peer entity, receive short messages from its peer entity and receive reports about earlier requests for short messages to be transferred.

In order to keep track of messages and reports about those messages, primitives between the SM-AL and SM-TL contain a Short Message Identifier (SMI), which is a reference number for the message associated with the primitive. This Short Message Identifier is mapped to and from the Short Message Identifier used between the SM-TL and the Short Message Relay Layer (SM-RL). The Short Message Identifier is not carried between entities and therefore a given message may have different SMIs at the MS and SC sides (see subclause 9.3.1 below).

The SM-TL communicates with its peer entity by the protocol described in the following subclauses.

9.2.2 PDU Type repertoire at SM-TL

The SM-TL comprises the following six PDUs:

SMS-DELIVER, conveying a short message from the SC to the MS;

SMS-DELIVER-REPORT, conveying

- a) a failure cause (if necessary);
- b) information as part of a positive or negative acknowledgement to an SMS-DELIVER or SMS-STATUS-REPORT

SMS-SUBMIT, conveying a short message from the MS to the SC;

SMS-SUBMIT-REPORT, conveying

- a) a failure cause (if necessary);
- b) information as part of a positive or negative acknowledgement to an SMS-SUBMIT or SMS-COMMAND

SMS-STATUS-REPORT, conveying a status report from the SC to the MS;

SMS-COMMAND, conveying a command from the MS to the SC.

9.2.2.1 SMS-DELIVER type

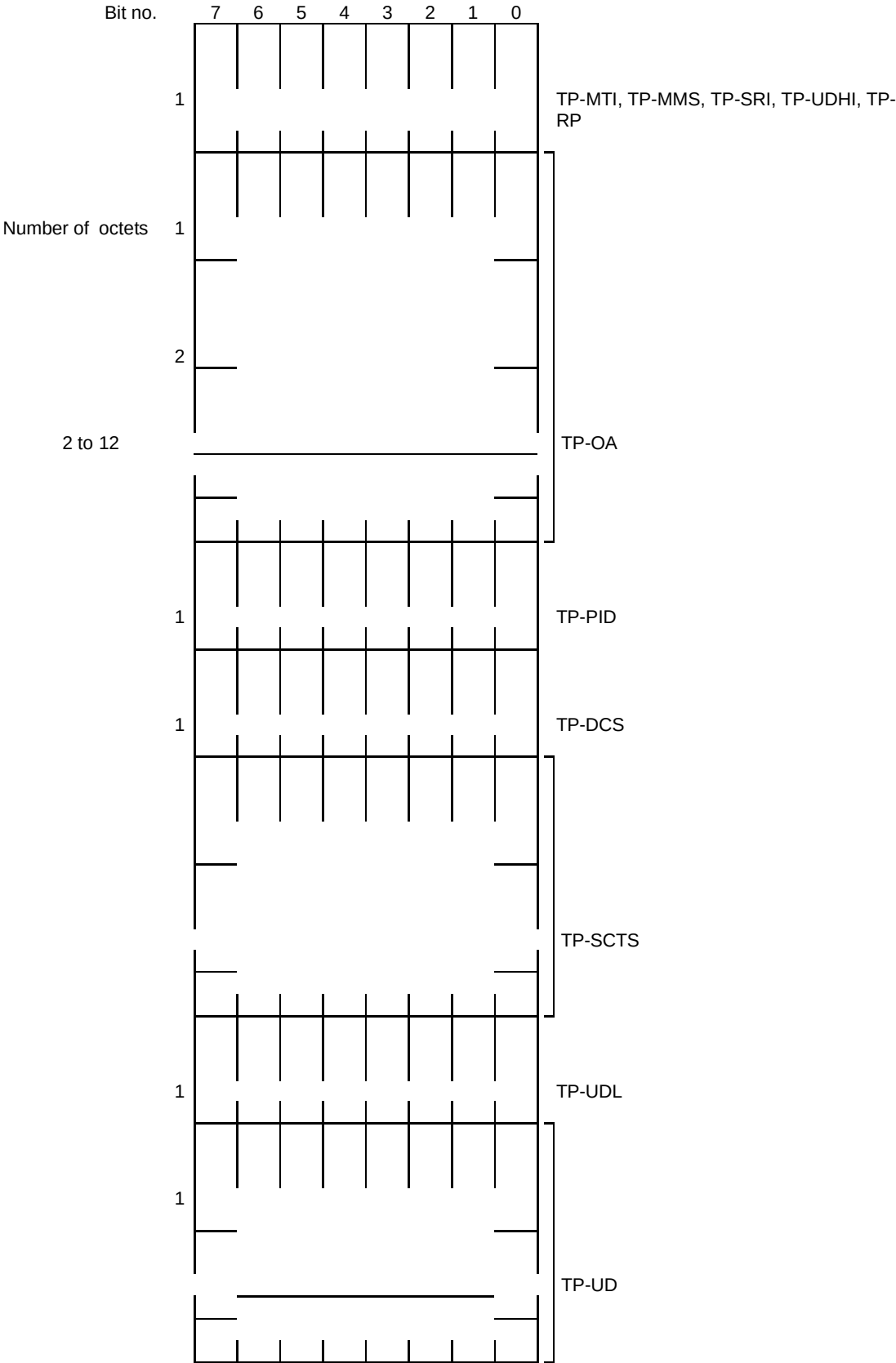
Basic elements of the SMS-DELIVER type:

Abbr.	Reference	p1)	R2)	Description
TP-MTI	TP-Message-Type-Indicator	M	2b	Parameter describing the message type.
TP-MMS	TP-More-Messages-to-Send	M	b	Parameter indicating whether or not there are more messages to send
TP-RP	TP-Reply-Path	M	b	Parameter indicating that Reply Path exists.
TP-UDHI	TP-User-Data-Header-Indicator	O	b	Parameter indicating that the TP-UD field contains a Header
TP-SRI	TP-Status-Report-Indication	O	b	Parameter indicating if the SME has requested a status report.
TP-OA	TP-Originating-Address	M	2-12o	Address of the originating SME.
TP-PID	TP-Protocol-Identifier	M	o	Parameter identifying the above layer protocol, if any.

TP-DCS	TP-Data-Coding-Scheme	M	o	Parameter identifying the coding scheme within the TP-User-Data.
TP-SCTS	TP-Service-Centre-Time-Stamp	M	7o	Parameter identifying time when the SC received the message.
TP-UDL	TP-User-Data-Length	M	I	Parameter indicating the length of the TP-User-Data field to follow.
TP-UD	TP-User-Data	O	3)	

- 1) Provision; Mandatory (M) or Optional (O).
- 2) Representation; Integer (I), bit (b), 2 bits (2b), Octet (o), 7 octets (7o), 2-12 octets (2-12o).
- 3) Dependent on the TP-DCS.

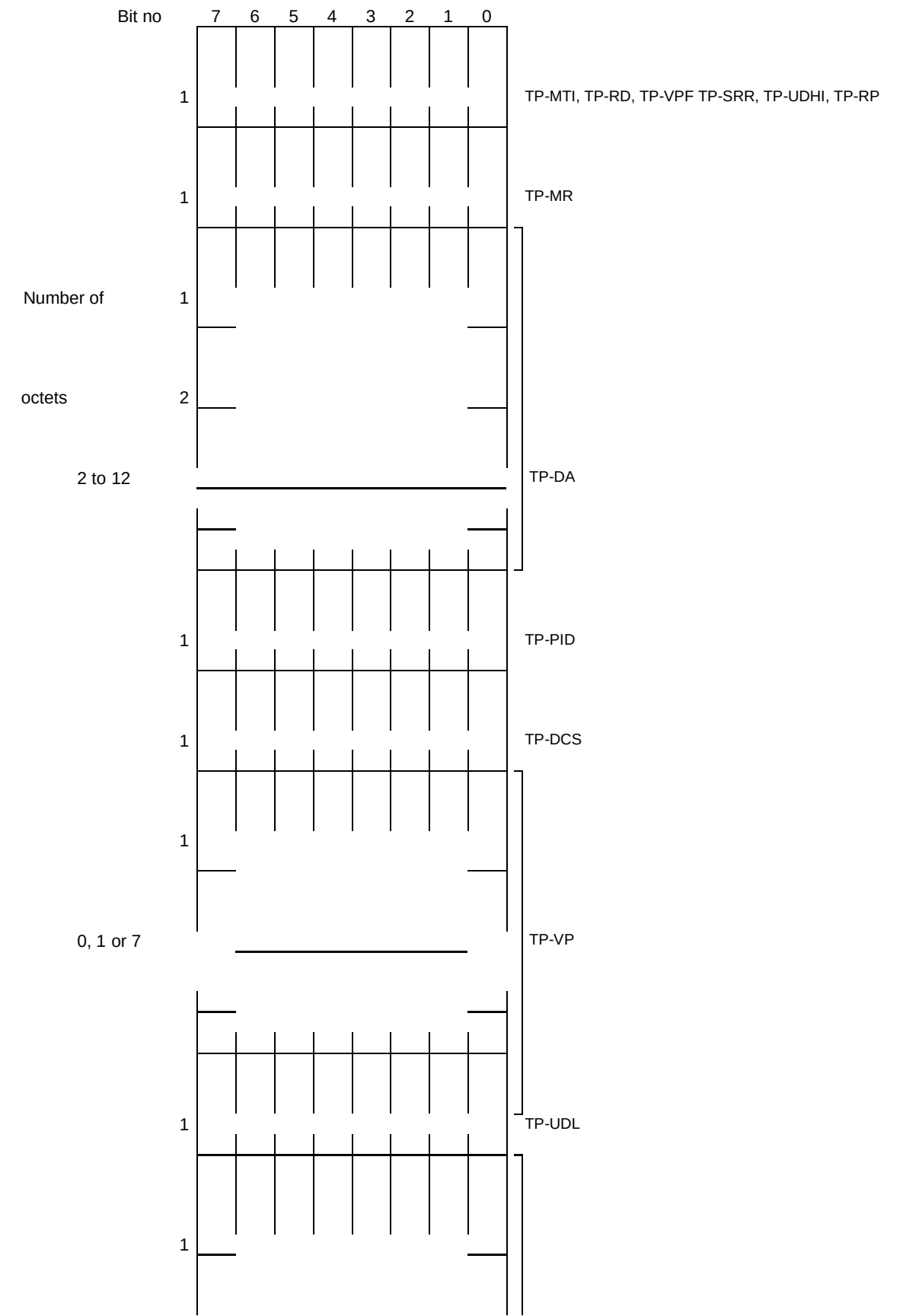
Layout of SMS-DELIVER:

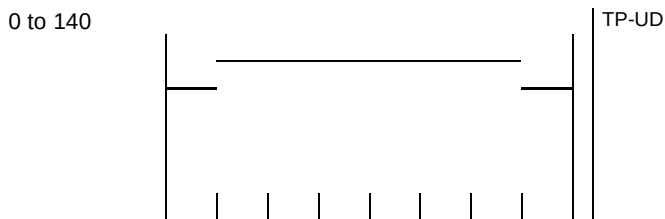


Abbr.	Reference	p1)	p2)	Description
				SM from the same OA
TP-VPF	TP-Validity-Period-Format	M	2b	Parameter indicating whether or not the TP-VP field is present.
TP-RP	TP-Reply-Path	M	b	Parameter indicating the request for Reply Path.
TP-UDHI	TP-User-Data-Header-Indicator	O	b	Parameter indicating that the TP-UD field contains a Header.
TP-SRR	TP-Status-Report-Request	O	b	Parameter indicating if the MS is requesting a status report.
TP-MR	TP-Message-Reference	M	I	Parameter identifying the SMS-SUBMIT.
TP-DA	TP-Destination-Address	M	2-12o	Address of the destination SME.
TP-PID	TP-Protocol-Identifier	M	o	Parameter identifying the above layer protocol, if any.
TP-DCS	TP-Data-Coding-Scheme	M	o	Parameter identifying the coding scheme within the TP-User-Data.
TP-VP	TP-Validity-Period	O	o/7o	Parameter identifying the time from where the message is no longer valid.
TP-UDL	TP-User-Data-Length	M	I	Parameter indicating the length of the TP-User-Data field to follow.
TP-UD	TP-User-Data	O	3)	

- 1) Provision; Mandatory (M) or Optional (O).
- 2) Representation; Integer (I), bit (b), 2 bits (2b), Octet (o), 7 octets (7o), 2-12 octets (2-12o).
- 3) Dependent on the TP-DCS.

Layout of SMS-SUBMIT:





NOTE: Any unused bits shall be set to zero by the sending entity and shall be ignored by the receiving entity.

9.2.2.2a SMS-SUBMIT-REPORT type

An SMS-SUBMIT-REPORT TPDU is carried as a RP-User-Data element within an RP-ERROR PDU and is part of the negative acknowledgement to an SMS-SUBMIT or SMS-COMMAND.

An SMS-SUBMIT-REPORT TPDU is also carried as a RP-User-Data element with an RP-ACK PDU and is part of a positive acknowledgement to a SMS-SUBMIT or SMS-COMMAND.

(i) SMS-SUBMIT-REPORT for RP-ERROR

Basic elements of the SMS-SUBMIT-REPORT type:

Abbr.	Reference	p1)	p2)	Description
TP-MTI	TP-Message-Type-Indicator	M	2b	Parameter describing the message type
TP-UDHI	TP-User-Data-Header-Indication	O	b	Parameter indicating that the TP-UD field contains a Header
TP-FCS	TP-Failure-Cause	M	I	Parameter indicating the reason for SMS-SUBMIT failure
TP-PI	TP-Parameter-Indicator	M	o	Parameter indicating the presence of any of the optional parameters which follow
TP-SCTS	TP-Service-Centre-Time-Stamp	M	7o 5)	Parameter identifying the time when the SC received the SMS-SUBMIT See subclause 9.2.3.11
TP-PID	TP-Protocol-Identifier	O	o	See subclause 9.2.3.9
TP-DCS	TP-Data-Coding-Scheme	O	o	see subclause 9.2.3.10
TP-UDL	TP-User-Data-Length	O	o	see subclause 9.2.3.16
TP-UD	TP-User-Data	O	3) 4)	see subclause 9.2.3.24

1) Provision: Mandatory (M) or Optional (O).

2) Representation: Integer (I), bit (b), 2bits (2b), octet (o).

3) Dependent upon the TP-DCS.

4) The TP-User-Data field in the SMS-SUBMIT-REPORT is only available for use by the SC.

5) This same time value shall also be carried in the SMS-STATUS-REPORT relating to a particular SM. See subclause 9.2.2.3. This shall allow the submitting SME to associate a particular SMS-SUBMIT with a subsequent SMS-STATUS-REPORT by correlating the TP-SCTS values.

Layout of SMS-SUBMIT-REPORT:

		Bit Number								
Number of Octets	7	6	5	4	3	2	1	0		
1									TP-MTI, TP-UDHI	
1									TP-FCS	
1									TP-PI	
7									TP-SCTS	
0,1									TP-PID	
0,1									TP-DCS	
0,1									TP-UDL	
0 to 151									TP-UD	

Bits 7 and 5 - 2 in octet 1 are presently unused and the sender shall set them to zero. If any of these bits is non-zero, the receiver shall not examine the other field and shall treat the TP-Failure-Cause as "Unspecified error cause".

(ii) SMS-SUBMIT-REPORT for RP-ACK

Basic elements of the SMS-SUBMIT_REPORT type:

Abbr	Reference	p1)	p2)	Description
TP-MTI	TP-Message Type-Indicator	M	2b	Parameter describing the message type
TP-UDHI	TP-User-Data-Header-Indication	O	b	Parameter indicating that the TP-UD field contains a Header
TP-PI	TP-Parameter-Indicator	M	o	Parameter indicating the presence of any of the optional parameters which follow
TP-SCTS	TP-Service-Centre-Time-Stamp	M	7o 5)	Parameter identifying the time when the SC received the SMS-SUBMIT See subclause 9.2.3.11
TP-PID	TP-Protocol-Identifier	O	o	See subclause 9.2.3.9
TP-DCS	TP-Data-Coding-Scheme	O	o	see subclause 9.2.3.10
TP-UDL	TP-User-Data-Length	O	o	see subclause 9.2.3.16
TP-UD	TP-User-Data	O	3) 4)	see subclause 9.2.3.24

1) Provision: Mandatory (M) or Optional (O).

2) Representation: Integer (I), Bit (B), 2bits (2b), octet (o).

3) Dependent upon the TP-DCS.

4) The TP-User-Data field in the SMS-SUBMIT-REPORT is only available for use by the SC.

5) This same time value shall also be carried in the SMS-STATUS-REPORT relating to a particular SM. See subclause 9.2.2.3. This shall allow the submitting SME to associate a particular SMS-SUBMIT with a subsequent SMS-STATUS-REPORT by correlating the TP-SCTS values.

Layout of SMS-SUBMIT REPORT

Bit Number

Number of Octets	7	6	5	4	3	2	1	0	
1									TP-MTI, TP-UDHI
1									TP-PI
7									TP-SCTS
0,1									TP-PID
0,1									TP-DCS
0,1									TP-UDL
0 to 152									TP-UD

Bits 7 and 5 - 2 in octet 1 are presently unused in the SMS-SUBMIT-REPORT and the sender shall set them to zero. If any of these bits is non-zero, the receiver shall ignore them.

9.2.2.3 SMS-STATUS-REPORT type

Basic elements of the SMS-STATUS-REPORT type:

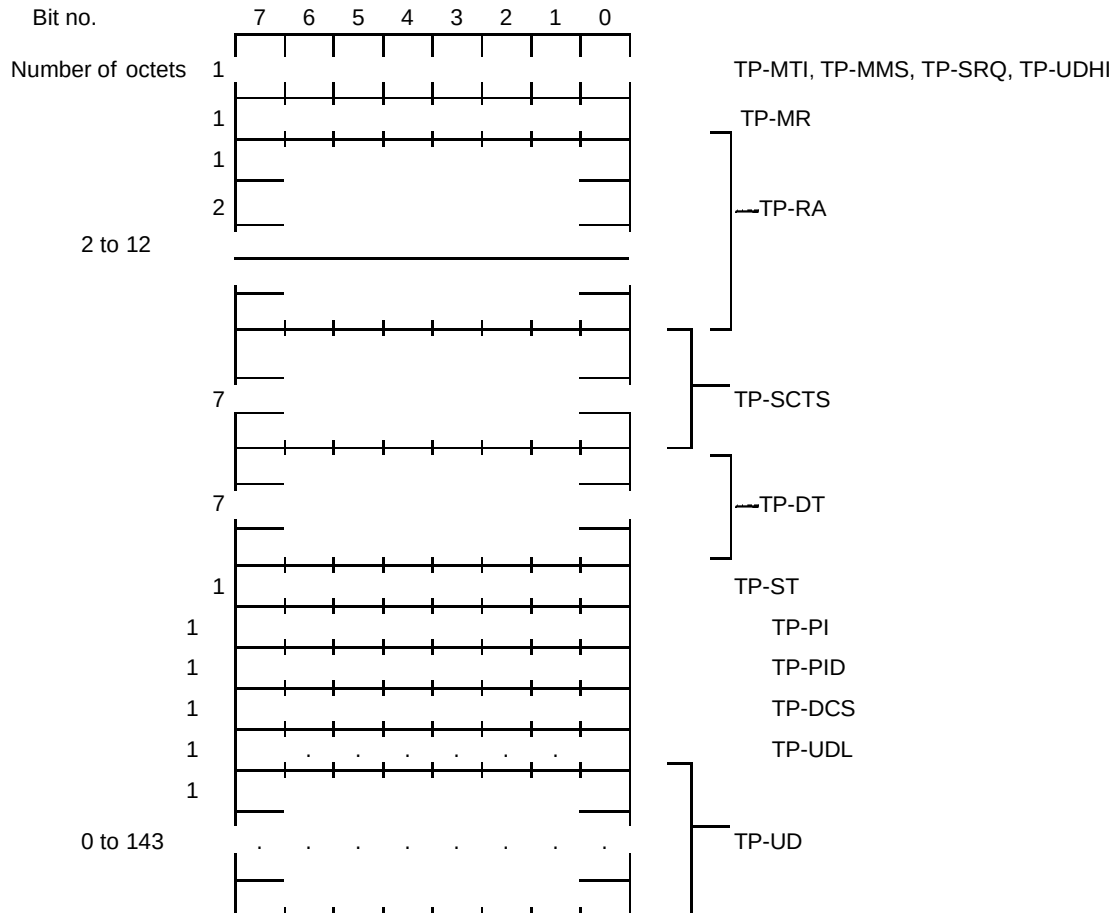
Abbr.	Reference	p1)	R2)	Description
TP-MTI	TP-Message-Type-Indicator	M	2b	Parameter describing the message type
TP-UDHI	TP-User-Data-Header-Indication	O	b	Parameter indicating that the TP-UD field contains a Header
TP-MMS	TP-More-Messages-to-Send	M	b	Parameter indicating whether or not there are more messages to send
TP-SRQ	TP-Status-Report-Qualifier	M	b	Parameter indicating whether the previously submitted TPDU was an SMS-SUBMIT or an SMS-COMMAND
TP-MR	TP-Message-Reference ³⁾	M	I	Parameter identifying the previously submitted SMS-SUBMIT or SMS-COMMAND
TP-RA	TP-Recipient-Address	M	2-12o	Address of the recipient of the previously submitted mobile originated short message
TP-SCTS	TP-Service-Centre-Time-Stamp	M	7o	Parameter identifying time when the SC received the previously sent SMS-SUBMIT
TP-DT	TP-Discharge-Time	M	7o	Parameter identifying the time associated with a particular TP-ST outcome
TP-ST	TP-Status	M	o	Parameter identifying the status of the previously sent mobile originated short message
TP-PI	TP-Parameter-Indicator	O 4)	o	Parameter indicating the presence of any of the optional parameters which follow
TP-PID	TP-Protocol-Identifier	O	o	see subclause 9.2.3.9. TP-PID of original SMS-SUBMIT
TP-DCS	TP-Data-Coding-Scheme	O	o	see subclause 9.2.3.10
TP-UDL	TP-User-Data-Length	O	o	see subclause 9.2.3.16
TP-UD	TP-User-Data	O	5)	see subclause 9.2.3.24

1) Provision: Mandatory (M) or Optional (O).

2) Representation: Integer (I), bit (b), 2 bits (2b), Octet (o), 7 octets (7o), 2-12 octets (2-12o).

- 3) Where the SMS-STATUS-REPORT is the result of an SMS-COMMAND and the TP-Command-Type was an Enquiry, the TP-MR returned in the SMS-STATUS-REPORT shall be the TP-MN which was sent in the SMS-COMMAND (i.e. the TP-MR of the previously submitted SM to which the Enquiry refers).
- 4) Mandatory if any of the optional parameters following TP-PI is present, otherwise optional.
- 5) TP-UD contains information related to a SMS-DELIVER; can contain information transported in the TP-UD of SMS-DELIVER-REPORT, and information inserted by the SMSC. The length of the TP-UD field is limited and might not be long enough to fit information both from the original receiving terminal (as included into the SMS-DELIVER-REPORT) and information added by the SMSC. In these cases the former information has higher priority, and the latter shall be truncated.

Layout of SMS-STATUS-REPORT:



NOTE: Any unused bits shall be set to zero by the sending entity and shall be ignored by the receiving entity.

The maximum guaranteed length of TP-UD is 131 octets. In order to achieve the maximum stated above (143 octets), the TP-RA field must have a length of 2 octets and TP-PID and TP-DCS must not be present.

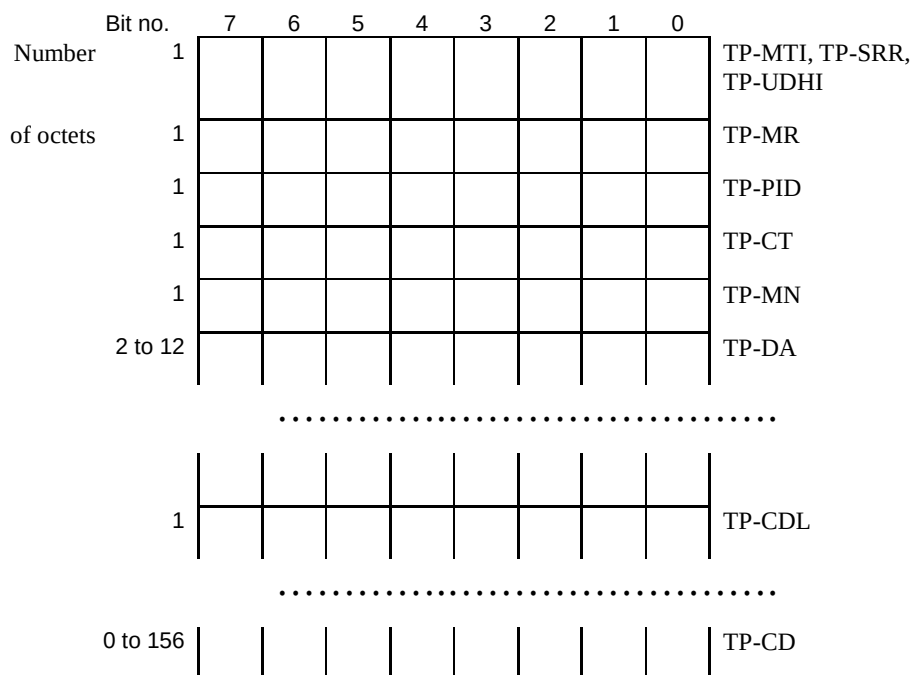
9.2.2.4 SMS-COMMAND type

Basic elements of the SMS-COMMAND type:

Abbr.	Reference	p ¹⁾	R ²⁾	Description
TP-MTI	TP-Message-Type-Indicator	M	2b	Parameter describing the type
TP-UDHI	TP-User-Data-Header-Indication	O	b	Parameter indicating that the TP-CD field contains a Header
TP-SRR	TP-Status-Report- Request	O	b	Parameter indicating if the SMS Command is requesting a status report.
TP-MR	TP-Message Reference	M	I	Parameter identifying the SMS-COMMAND
TP-PID	TP-Protocol- Identifier	M	o	Parameter identifying the above layer protocol, if any
TP-CT	TP-Command-Type	M	o	Parameter specifying which operation is to be performed on a SM
TP-MN	TP-Message-Number	M ³⁾	o	Parameter indicating which SM in the SC to operate on
TP-DA	TP-Destination-Address	M ⁴⁾	2-12o	Parameter indicating the Destination Address to which the TP-Command refers
TP-CDL	TP-Command-Data-Length	M	o	Parameter indicating the length of the TP-CD field in octets
TP-CD	TP-Command-Data	O	o	Parameter containing user data

- 1) Provision: Mandatory (M) or Optional (O).
- 2) Representation: Integer (I), bit (b), 2bits (2b), octet (o).
- 3) For TP-Command-Types which are not for a specific SM this field shall be ignored when received. Its value is of no concern but the field must be present to maintain the structure.
- 4) For certain TP-Command-Types which operate on a specific SM (e.g. Enquire, Delete etc.) the full TP-DA must be specified. For TP-Command-Types which do not operate on a specific SM, the address length must be set to zero indicating that the Address-Value fields are not present. The Type-of-Address field must be present (see 9.1.2.5) and shall be set to zero and ignored.

Layout of SMS-COMMAND:



NOTE: The maximum guaranteed length of TP-CD is 146 octets. In order to achieve the maximum stated above (156 octets), the TP-DA field must have a length of 2 octets.

9.2.3 Definition of the TPDU parameters

9.2.3.1 TP-Message-Type-Indicator (TP-MTI)

The TP-Message-Type-Indicator is a 2-bit field, located within bits no 0 and 1 of the first octet of all PDUs which can be given the following values:

bit1	bit0	Message type
0	0	SMS-DELIVER (in the direction SC to MS)
0	0	SMS-DELIVER REPORT (in the direction MS to SC)
1	0	SMS-STATUS-REPORT (in the direction SC to MS)
1	0	SMS-COMMAND (in the direction MS to SC)
0	1	SMS-SUBMIT (in the direction MS to SC)
0	1	SMS-SUBMIT-REPORT (in the direction SC to MS)
1	1	Reserved

If an MS receives a TPDU with a "Reserved" value in the TP-MTI it shall process the message as if it were an "SMS-DELIVER" but store the message exactly as received.

9.2.3.2 TP-More-Messages-to-Send (TP-MMS)

The TP-More-Messages-to-Send is a 1-bit field, located within bit no 2 of the first octet of SMS-DELIVER and SMS-STATUS-REPORT, and to be given the following values:

Bit no 2:	0	More messages are waiting for the MS in this SC
	1	No more messages are waiting for the MS in this SC

NOTE: In the case of SMS-STATUS-REPORT this parameter refers to messages waiting for the mobile to which the status report is sent. The term message in this context refers to SMS-messages or status reports.

9.2.3.3 TP-Validity-Period-Format (TP-VPF)

The TP-Validity-Period-Format is a 2-bit field, located within bit no 3 and 4 of the first octet of SMS-SUBMIT, and to be given the following values:

bit4	bit3	
0	0	TP-VP field not present
1	0	TP-VP field present - relative format
0	1	TP-VP field present - enhanced format
1	1	TP-VP field present - absolute format

Any unsupported value may be rejected by the SC by returning the 'TP-VPF not supported' TP-FCS value in the SMS Submit Report for RP-Error.

9.2.3.4 TP-Status-Report-Indication (TP-SRI)

The TP-Status-Report-Indication is a 1-bit field, located within bit no. 5 of the first octet of SMS-DELIVER, and to be given the following values:

Bit no. 5: 0	A status report shall not be returned to the SME
1	A status report shall be returned to the SME

9.2.3.5 TP-Status-Report-Request (TP-SRR)

The TP-Status-Report-Request is a 1-bit field, located within bit no. 5 of the first octet of SMS-SUBMIT and SMS-COMMAND, and to be given the following values:

Bit no. 5: 0	A status report is not requested
1	A status report is requested

9.2.3.6 TP-Message-Reference (TP-MR)

The TP-Message-Reference field gives an integer representation of a reference number of the SMS-SUBMIT or SMS-COMMAND submitted to the SC by the MS. The MS increments TP-Message-Reference by 1 for each SMS-SUBMIT or SMS-COMMAND being submitted. The value to be used for each SMS-SUBMIT is obtained by reading the Last-Used-TP-MR value from the SMS Status data field in the (U)SIM (see GSM TS 11.11 [16] and 3G TS 31.102 [30]) and incrementing this value by 1. After each SMS-SUBMIT has been submitted to the network, the Last-Used-TP-MR value in the (U)SIM is updated with the TP-MR that was used in the SMS-SUBMIT operation. The reference number may possess values in the range 0 to 255. The value in the TP-MR assigned by the MS is the same value which is received at the SC.

In the case where no response or an RP-Error is received in response to an SMS-SUBMIT or SMS-COMMAND, then the MS shall automatically repeat the SMS-SUBMIT or SMS-COMMAND but must use the same TP-MR value and set the TP-RD bit to 1 (see 9.2.3.25). The number of times the MS automatically repeats the SMS-SUBMIT or SMS-COMMAND shall be in the range 1 to 3 but the precise number is an implementation matter. The automatic repeat mechanism should be capable of being disabled through MMI.

If all automatic attempts fail (or in the case of no automatic attempts the first attempt fails), the user shall be informed. The failed message shall be stored in the mobile in such a way that the user can request a retransmission using the same TP-MR value, without the need to re-enter any information. Such storage need only be provided for a single failed message, i.e. the one most recently attempted.

The SC should discard an SMS-SUBMIT or SMS-COMMAND which has the TP-RD bit set to a 1 and which has the same TP-MR value as the previous SMS-SUBMIT or SMS-COMMAND received from the same originating address. The SC shall send an RP-ACK in response to the discarded SMS-SUBMIT or SMS-COMMAND.

The SMS-STATUS-REPORT also contains a TP-Message-Reference field. The value sent to the MS shall be the same as the TP-Message-Reference value generated by the MS in the earlier SMS-SUBMIT or SMS-COMMAND to which the status report relates.

9.2.3.7 TP-Originating-Address (TP-OA)

The TP-Originating-Address field is formatted according to the formatting rules of address fields.

9.2.3.8 TP-Destination-Address (TP-DA)

The TP-Destination-Address field is formatted according to the formatting rules of address fields.

9.2.3.9 TP-Protocol-Identifier (TP-PID)

The TP-Protocol-Identifier parameter serves the purposes indicated in subclause 3.2.3. It consists of one octet, and the bits in the octet are used as follows:

The MS shall interpret reserved or unsupported values as the value 00000000 but shall store them exactly as received.

The SC may reject messages with a TP-Protocol-Identifier containing a reserved value or one which is not supported.

bits	usage
7 6	
0 0	Assigns bits 0..5 as defined below
0 1	Assigns bits 0..5 as defined below
1 0	reserved
1 1	Assigns bits 0-5 for SC specific use

In the case where bit 7 = 0 and bit 6 = 0,

bit 5 indicates telematic interworking:

value = 0 : no interworking, but SME-to-SME protocol

value = 1 : telematic interworking

In the case of telematic interworking, the following five bit patterns in bits 4..0 are used to indicate different types of telematic devices:

4.. 0	
00000	implicit - device type is specific to this SC, or can be concluded on the basis of the address
00001	telex (or teletex reduced to telex format)
00010	group 3 telefax
00011	group 4 telefax
00100	voice telephone (i.e. conversion to speech)
00101	ERMES (European Radio Messaging System)
00110	National Paging system (known to the SC)
00111	Videotex (T.100 [20] /T.101 [21])
01000	teletex, carrier unspecified
01001	teletex, in PSPDN
01010	teletex, in CSPDN
01011	teletex, in analog PSTN
01100	teletex, in digital ISDN
01101	UCI (Universal Computer Interface, ETSI DE/PS 3 01-3)
01110..01111	(reserved, 2 combinations)
10000	a message handling facility (known to the SC)
10001	any public X.400-based message handling system
10010	Internet Electronic Mail
10011..10111	(reserved, 5 combinations)
11000..11110	values specific to each SC, usage based on mutual agreement between the SME and the SC (7 combinations available for each SC)
11111	A GSM/UMTS mobile station. The SC converts the SM from the received TP-Data-Coding-Scheme to any data coding scheme supported by that MS (e.g. the default).

If bit 5 has value 1 in an SMS-SUBMIT PDU, it indicates that the SME is a telematic device of a type which is indicated in bits 4..0, and requests the SC to convert the SM into a form suited for that device type. If the destination network is ISDN, the SC must also select the proper service indicators for connecting to a device of that type.

If bit 5 has value 1 in an SMS-DELIVER PDU, it indicates that the SME is a telematic device of a type which is indicated in bits 4..0.

If bit 5 has value 0 in an SMS-DELIVER PDU, the value in bits 4..0 identifies the SM-AL protocol being used between the SME and the MS.

Note that for the straightforward case of simple MS-to-SC short message transfer the Protocol Identifier is set to the value 0.

In the case where bit 7 = 0, bit 6 = 1, bits 5..0 are used as defined below

5 .. .0	
000000	Short Message Type 0
000001	Replace Short Message Type 1
000010	Replace Short Message Type 2
000011	Replace Short Message Type 3
000100	Replace Short Message Type 4
000101	Replace Short Message Type 5
000110	Replace Short Message Type 6
000111	Replace Short Message Type 7
001000..011101	Reserved
011110	Enhanced Message Service (EMS. Refer subclause 3.10)
001000..011110	Reserved
011111	Return Call Message
100000..111011	Reserved
111100	ANSI-136 R-DATA
111101	ME Data download
111110	ME De-personalization Short Message
111111	(U)SIM Data download

A short message type 0 indicates that the ME must acknowledge receipt of the short message but may discard its contents.

The Replace Short Message feature is optional for the ME and the (U)SIM but if implemented it shall be performed as described here.

For MT short messages, on receipt of a short message from the SC, the MS shall check to see if the associated Protocol Identifier contains a Replace Short Message Type code.

If such a code is present, then the MS shall check the originating address and replace any existing stored message having the same Protocol Identifier code and originating address with the new short message and other parameter values. If there is no message to be replaced, the MS shall store the message in the normal way. The MS may also check the SC address as well as the Originating Address. However, in a network which has multiple SCs, it is possible for a Replace Message type for a SM to be sent via different SCs and so it is recommended that the SC address should not be checked by the MS unless the application specifically requires such a check.

If a Replace Short Message Type code is not present then the MS shall store the message in the normal way.

In MO short messages the SC reacts similarly but only the address of the originating MS or any other source is checked.

The Enhanced Message Service PID value shall be set in a MO enhanced short message unless there is a need to set the PID to any other value (e.g. for telematic interworking). In the event where the message contains one or more IE that could not be understood by the receiving SME, this PID value may be used to assist the receiving SME and/or the SMSC to identify such a message (e.g. for diagnostic purposes). It is not a mandatory requirement for the SMSC or receiving SME to process this PID value or for the SMSC to pass the value to the receiving SME.

A Return Call Message indicates to the MS to inform the user that a call (e.g. a telephone call) can be established to the address specified within the TP-OA. The RP-OA contains the address of the SC as usual. The message content (if present) gives displayable information (e.g. the number of waiting voice messages). The message is handled in the same way as all other messages of the Replace Short Message Types.

The ME De-personalization Short Message is a ME-specific message which instructs the ME to de-personalities the ME (see 3G TS 22.022 [25]). The TP-DCS shall be set to Uncompressed, Default Alphabet, and Message Class 1 (ME-specific), which corresponds to a bit coding of 00010001. The TP-UD field contains de-personalization information coded according to 3G TS 22.022 [25]. This information shall not be displayed by an ME which supports the scheme. The acknowledgement to this message is a SMS-DELIVER-REPORT for RP-ACK in which the TP-User-Data shall be coded according to 3G TS 22.022 [25].

(U)SIM Data download is a facility whereby the ME must pass the short message in its entirety including all SMS elements contained in the SMS deliver to the (U)SIM using the mechanism described in GSM TS 11.11 [16] and 3G TS 31.102 [30]. The DCS shall be set to 8 bit message class 2 (either bit coding 1111 0110 or 00010110). The entire user data field is available for (U)SIM Data download. If the DCS is not set to 8-bit message class 2 then the message shall be handled in the normal way by the ME.

ME Data download is a facility whereby the ME shall process the short message in its entirety including all SMS elements contained in the SMS deliver to the ME. The DCS should normally be set to message class 1. If the DCS is set to message class 1 and no application in the ME exists, which is able to process the short message, the ME may discard the short message. The entire user data field is available for ME data download. The TPDU parameters required for the SMS-DELIVER should be passed transparently by all involved SCs, so no TPDU parameter in the entire short message is modified, other than the changes required to convert an SMS-SUBMIT into an SMS-DELIVER.

ANSI-136 R-DATA is a facility whereby the ME must pass the short message in its entirety, including all elements contained in the SMS DELIVER, to the (U)SIM using the mechanism described in GSM TS 11.14 [16] and 3G TS 31.102 [30]. The DCS shall be set to 8-bit message class 2 (either bit coding 11110110 or 00010110). If the DCS is not set to 8-bit message class 2 then the message shall be handled in the normal way by the ME.

9.2.3.10 TP-Data-Coding-Scheme (TP-DCS)

The TP-Data-Coding-Scheme is defined in 3G TS 23.038 [9].

9.2.3.11 TP-Service-Centre-Time-Stamp (TP-SCTS)

The TP-Service-Centre-Time-Stamp field is given in semi-octet representation, and represents the local time in the following way:

	Year:	Month:	Day:	Hour:	Minute:	Second:	Time Zone
Digits: (Semi-octets)	2	2	2	2	2	2	2

The Time Zone indicates the difference, expressed in quarters of an hour, between the local time and GMT. In the first of the two semi-octets, the first bit (bit 3 of the seventh octet of the TP-Service-Centre-Time-Stamp field) represents the algebraic sign of this difference (0: positive, 1: negative).

The Service-Centre-Time-Stamp, and any other times coded in this format that are defined in the present document, represent the time local to the sending entity.

If the MS has knowledge of the local time zone, then any time received (e.g. Service-Centre-Time-Stamp) at the MS may be displayed in the local time rather than the time local to the sending entity. Messages shall be stored as received without change to any time contained therein.

The Time Zone code enables the receiver to calculate the equivalent time in GMT from the other semi-octets in the Service-Centre-Time-Stamp, or indicate the time zone (GMT, GMT+1H etc.), or perform other similar calculations as required by the implementation. The value contained in the Time Zone field must take into account daylight saving time, such that when the sending entity changes from regular (winter) time to daylight saving (summer) time, there is a change to the value in the Time Zone field, for example in the UK the winter setting is 00000000 and the summer setting is 01000000.

If the MS receives a non-integer value in the SCTS, it shall assume that the digit is set to 0 but shall store the entire field exactly as received.

9.2.3.12 TP-Validity-Period (TP-VP)

9.2.3.12.1 TP-VP (Relative format)

The TP-Validity-Period comprises 1 octet in integer representation, giving the length of the validity period, counted from when the SMS-SUBMIT is received by the SC.

The representation of time is as follows:

TP-VP value	Validity period value
0 to 143	(TP-VP + 1) x 5 minutes (i.e. 5 minutes intervals up to 12 hours)
144 to 167	12 hours + ((TP-VP - 143) x 30 minutes)
168 to 196	(TP-VP - 166) x 1 day
197 to 255	(TP-VP - 192) x 1 week

9.2.3.12.2 TP-VP (Absolute format)

The TP-Validity Period comprises 7 octets in semi octet representation giving the absolute time of the validity period termination.

The representation of time is identical to the representation of the TP-Service-Centre-Time-Stamp.

9.2.3.12.3 TP-VP (Enhanced format)

The TP-Validity Period comprises 7 octets. The presence of all octets is mandatory although they may not all be used. The first octet indicates the way in which the following 6 octets are used. Any reserved/unused bits or octets must be set to zero.

Octet 1 TP-VP functionality indicator

bit 7 Extension bit

Set to 1 if the TP-VP functionality indicator is to be extended to another octet. A setting of 0 indicates that there are no more TP-VP functionality indicator extension octets to follow.

Any such extension octet shall immediately follow the previous TP-VP functionality indicator.

bit 6 Single shot SM.

Set to 1 if the SC is required to make up to one delivery attempt. The TP-Validity Period, where present, shall be applicable to the Single shot SM.

bits 5, 4, 3 Reserved

bits 2, 1, 0 Validity Period Format.

Value bits 2 1 0

0	0	0	No Validity Period specified
0	0	1	Validity Period is as specified for the relative case. The following octet contains the TP-VP value as described in 9.2.3.12.1
0	1	0	Validity period is relative in integer representation and the following octet contains the TP-VP value in the range 0 to 255 representing 0 to 255 seconds. A TP-VP value of zero is undefined and reserved for future use.
0	1	1	Validity period is relative in semi-octet representation. The following 3 octets contain the relative time in Hours, Minutes and Seconds giving the length of the validity period counted from when the SMS-SUBMIT is received by the SC. The representation of time uses the same representation as the Hours, Minutes and Seconds in the TP-Service-Centre-Time-Stamp.
1	0	0	Reserved
1	0	1	Reserved
1	1	0	Reserved
1	1	1	Reserved

The SC shall reject any Unsupported/ Reserved values received by returning the 'TP-VP not supported' TP-FCS value in the Submit SM Report for RP-Error.

9.2.3.13 TP-Discharge-Time (TP-DT)

The TP-Discharge-Time field indicates the time at which a previously submitted SMS-SUBMIT was successfully delivered to or attempted to deliver to the recipient SME or disposed of by the SC.

In the case of "transaction completed" the time shall be the time of the completion of the transaction. In the case of "SC still trying to transfer SM" the time shall be the time of the last transfer attempt. In the case of "permanent or temporary error - SC not making any more transfer attempts" the time shall be the time of either the last transfer attempt or the time at which the SC disposed of the SM according to the Status outcome in TP-ST.

The TP-Discharge-Time is given in semi-octet representation in a format identical to the TP-SCTS.

9.2.3.14 TP-Recipient-Address (TP-RA)

The TP-Recipient-Address field indicates the address of the SME that was the destination of the previously submitted mobile originated short message being subject to the status report. The field is formatted according to the formatting rules of address fields.

9.2.3.15 TP-Status (TP-ST)

The TP-Status field indicates the status of a previously submitted SMS-SUBMIT and certain SMS COMMANDS for which a Status -Report has been requested. It consists of one octet and the bits in the octet are used as follows:

The MS shall interpret any reserved values as "Service Rejected" (01100011) but shall store them exactly as received.

bits	value/usage
7	0 Bits 0..6 as defined below:
6....0	Indicate whether the previously submitted short message was successfully forwarded to the SME, or whether an error condition has been encountered, as follows:
	Short message transaction completed
	0000000 Short message received by the SME
	0000001 Short message forwarded by the SC to the SME but the SC is unable to confirm delivery
	0000010 Short message replaced by the SC
	Reserved values

0000011..0001111	Reserved
0010000..0011111	Values specific to each SC

Temporary error, SC still trying to transfer SM

0100000	Congestion
0100001	SME busy
0100010	No response from SME
0100011	Service rejected
0100100	Quality of service not available
0100101	Error in SME
0100110..0101111	Reserved
0110000..0111111	Values specific to each SC

Permanent error, SC is not making any more transfer attempts

1000000	Remote procedure error
1000001	Incompatible destination
1000010	Connection rejected by SME
1000011	Not obtainable
1000100	Quality of service not available
1000101	No interworking available
1000110	SM Validity Period Expired
1000111	SM Deleted by originating SME
1001000	SM Deleted by SC Administration
1001001	SM does not exist (The SM may have previously existed in the SC but the SC no longer has knowledge of it or the SM may never have previously existed in the SC)
1001010..1001111	Reserved
1010000..1011111	Values specific to each SC

Temporary error, SC is not making any more transfer attempts

1100000	Congestion
1100001	SME busy
1100010	No response from SME
1100011	Service rejected
1100100	Quality of service not available
1100101	Error in SME
1100110..1101001	Reserved
1101010..1101111	Reserved
1110000..1111111	Values specific to each SC

bits	value/usage
7	1 Bits 0..6 reserved

9.2.3.16 TP-User-Data-Length (TP-UDL)

If the TP-User-Data is coded using the GSM 7 bit default alphabet, the TP-User-Data-Length field gives an integer representation of the number of septets within the TP-User-Data field to follow. If the 7bit default-alphabet extension mechanism is used within the TP-User-Data (see 3G TS 23.038 [9]), the actual number of characters in the message shall be less than the number of septets. If a TP-User-Data-Header field is present, then the TP-User-Data-Length value is the sum of the number of septets in the TP-User-Data-Header field (including any padding) and the number of septets in the TP-User-Data field which follows. See figure 9.2.3.24 (a). If the TP-User-Data is coded using 8-bit data, the TP-User-Data-Length field gives an integer representation of the number of octets within the TP-User-Data field to follow. If a TP-User-Data-Header field is present, then the TP-User-Data-Length value is the sum of the number of octets in the TP-User-Data-Header field and the number of octets in the TP-User-Data field which follows. See figure 9.2.3.24 (b).

If the TP-User-Data is coded using UCS2 [24] data, the TP-User-Data-Length field gives an integer representation of the number of octets within the TP-User-Data field to follow. If a TP-User-Data-Header field is present, then the

TP-User-Data-Length value is the sum of the number of octets in the TP-User-Data-Header field and the number of octets in the TP-User-Data field which follows. See figure 9.2.3.24 (b).

If the TP-User-Data is coded using compressed GSM 7 bit default alphabet or compressed 8 bit data or compressed UCS2 [24] data, the TP-User-Data-Length field gives an integer representation of the number of octets after compression within the TP-User-Data field to follow. If a TP-User-Data-Header field is present, then the TP-User-Data-Length value is the sum of the number of uncompressed octets in the TP-User-Data-Header field and the number of octets in the compressed TP-User-Data field which follows. See figure 9.2.3.24 (c)

For other Data Coding Schemes, see 3G TS 23.038 [9]. If this field is zero, the TP-User-Data field shall not be present.

9.2.3.17 TP-Reply-Path (TP-RP)

The TP-Reply-Path is a 1-bit field, located within bit no 7 of the first octet of both SMS-DELIVER and SMS-SUBMIT, and to be given the following values:

Bit no 7:	0	TP-Reply-Path parameter is not set in this SMS-SUBMIT/DELIVER
	1	TP-Reply-Path parameter is set in this SMS-SUBMIT/DELIVER

Please refer to annex D for details about the Reply procedures.

9.2.3.18 TP-Message-Number (TP-MN)

The TP-Message-Number is an 8-bit field allowing an MS to refer uniquely to an SM in the SC which that MS has previously submitted. The TP-MN value is the TP-MR value of a previously submitted SM.

9.2.3.19 TP-Command-Type (TP-CT)

The TP-Command-Type is an 8-bit field specifying the type of operation that the SC is to perform. It has the following values:

Value (bit 7 .. 0)	Command Description	Status Report Request Value
00000000	Enquiry relating to previously submitted short message	1
00000001	Cancel Status Report Request relating to previously submitted short message	0
00000010	Delete previously submitted Short Message	0
00000011	Enable Status Report Request relating to previously submitted short message	0
00001000..00011111	Reserved	unspecified
11100000..11111111	Values specific for each SC	1 or 0

The SC shall return an RP-Error with an appropriate TP-Failure-Cause for any TP-Command value which is reserved, unsupported or invalid or the actioning of the command has failed.

The SC shall return an RP-ACK if the actioning of the Command has succeeded.

A successful Enquiry shall result in the SC sending a SMS-STATUS-REPORT for the SM to which the Enquiry refers. In the case where the SC has a number of SMs which have the same TP-MR, the same TP-DA and have come from the same originating address the SC shall send a SMS-STATUS-REPORT for each SM.

In the case where a TP-Command is to Delete a previously submitted short message, the SC shall send a Status Report indicating that the SM has been deleted if the original Submit SM request requested a status Report.

9.2.3.20 TP-Command-Data-Length (TP-CDL)

The TP-Command-Data-Length field is used to indicate the number of octets contained within the TP-Command-Data-field. If this field is set to zero, the TP-Command-Data field shall not be present.

9.2.3.21 TP-Command-Data (TP-CD)

The TP-Command-Data field contains data relating to the operation requested by the MS which is to be performed at the SC. The maximum length of this field is 157 octets. The usage and provision of the optional TP-Command-Data field shall be determined by the function selected by the TP-Command-Type field.

9.2.3.22 TP-Failure-Cause (TP-FCS)

The TP-Failure-Cause field is used to report the reason for failure to transfer or process a short message. It consists of a single octet used as follows:

TP-FCS Value (Hex)	Meaning	When used	
		MO	MT
00 - 7F	Reserved		
80 - 8F	TP-PID errors		
80	Telematic interworking not supported	x	
81	Short message Type 0 not supported	x	x
82	Cannot replace short message	x	x
83 - 8E	Reserved		
8F	Unspecified TP-PID error	x	x
90 - 9F	TP-DCS errors		
90	Data coding scheme (alphabet) not supported	x	
91	Message class not supported		x
92 - 9E	Reserved		
9F	Unspecified TP-DCS error	x	x
A0 - AF	TP-Command Errors		
A0	Command cannot be actioned	x	
A1	Command unsupported	x	
A2 - AE	Reserved		
AF	Unspecified TP-Command error	x	
B0	TPDU not supported	x	x
B1 - BF	Reserved		
C0	SC busy	x	
C1	No SC subscription	x	
C2	SC system failure	x	
C3	Invalid SME address	x	
C4	Destination SME barred	x	
C5	SM Rejected-Duplicate SM	x	
C6	TP-VPF not supported	x	
C7	TP-VP not supported	x	
C8 - CF	Reserved		
D0	(U)SIM SMS storage full		x
D1	No SMS storage capability in (U)SIM		x
D2	Error in MS		x
D3	Memory Capacity Exceeded		x
D4	(U)SIM Application Toolkit Busy		x
D5	(U)SIM data download error		x
D6 - DF	Reserved		
E0 - FE	Values specific to an application	x	x
FF	Unspecified error cause	x	x

NOTE: Any reserved codes which are received should be treated as an unspecified error cause.
MT and MO refer to the overall mobile terminated and mobile originated services; not the direction of transmission of TP-FCS.

9.2.3.23 TP-User-Data-Header-Indicator (TP-UDHI)

The TP-User-Data-Header-Indicator is a 1 bit field within bit 6 of the first octet of the following six PDUs:

- SMS-SUBMIT,
- SMS-SUBMIT-REPORT,
- SMS-DELIVER,
- SMS-DELIVER-REPORT,
- SMS-STATUS-REPORT,
- SMS-COMMAND.

TP-UDHI has the following values.

Bit no. 6	0	The TP-UD field contains only the short message
	1	The beginning of the TP-UD field contains a Header in addition to the short message

9.2.3.24 TP-User Data (TP-UD)

The length of the TP-User-Data field is defined in the PDU's of the SM-TL (see subclause 9.2.2).

The TP-User-Data field may comprise just the short message itself or a Header in addition to the short message depending upon the setting of TP-UDHI.

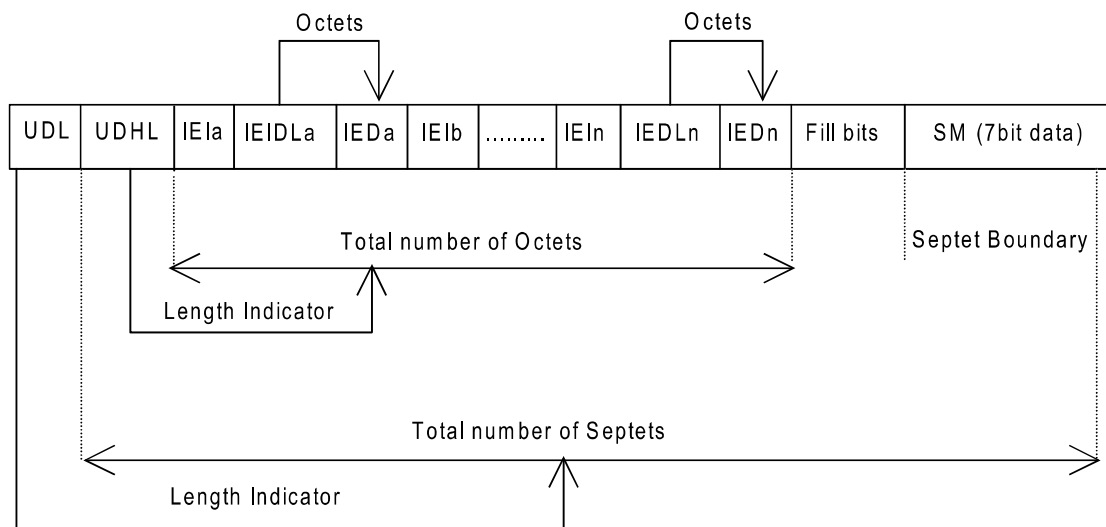
Where the TP-UDHI value is set to 0 the TP-User-Data field comprises the short message only, where the user data can be 7 bit (default alphabet) data, 8 bit data, or 16 bit (UCS2 [24]) data.

Where the TP-UDHI value is set to 1 the first octets of the TP-User-Data field contains a Header in the following order starting at the first octet of the TP-User-Data field.

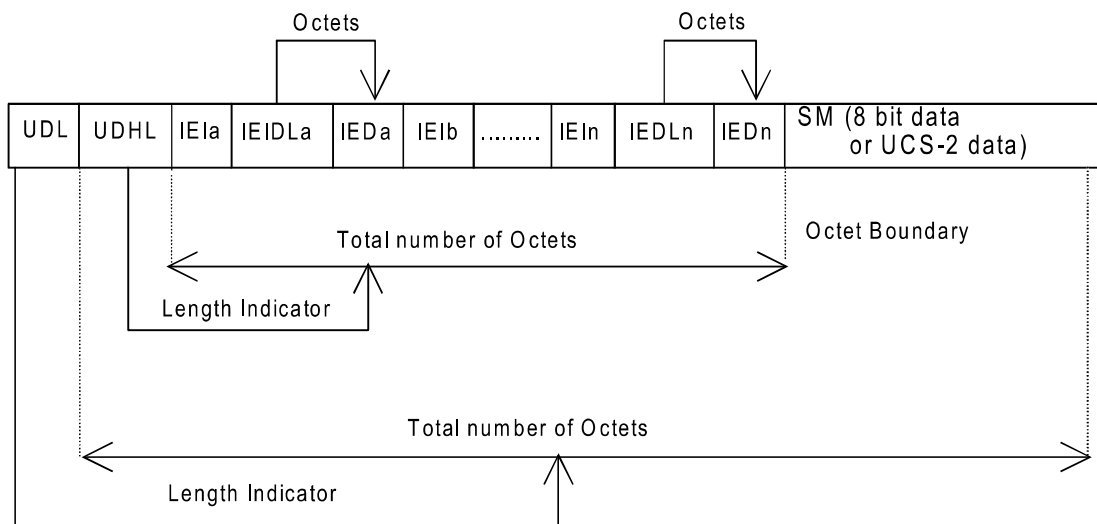
Irrespective of whether any part of the User Data Header is ignored or discarded, the MS shall always store the entire TPDU exactly as received.

FIELD	LENGTH
Length of User Data Header	1 octet
Information-Element-Identifier "A"	1 octet
Length of Information-Element "A"	1 octet
Information-Element "A" Data	1 to "n" octets
Information-Element-Identifier "B"	1 octet
Length of Information-Element "B"	1 octet
Information-Element "B" Data	1 to "n" octets
Information-Element-Identifier "n"	1 octet
Length of Information-Element "n"	1 octet
Information-Element "n" Data	1 to "n" octets

The diagram below shows the layout of the TP-User-Data-Length and the TP-User-Data for uncompressed GSM 7 bit default alphabet data. The UDHL field is the first octet of the TP-User-Data content of the Short Message.

**Figure 9.2.3.24 (a)**

The diagram below shows the layout of the TP-User-Data-Length and the TP-User-Data for uncompressed 8 bit data or uncompressed UCS2 data. The UDHL field is the first octet of the TP-User-Data content of the Short Message.

**Figure 9.2.3.24 (b)**

The diagram below shows the layout of the TP-User-Data-Length and the TP-User-Data for compressed GSM 7 bit default alphabet data, compressed 8 bit data or compressed UCS2 data. The UDHL field is the first octet of the TP-User-Data content of the Short Message.

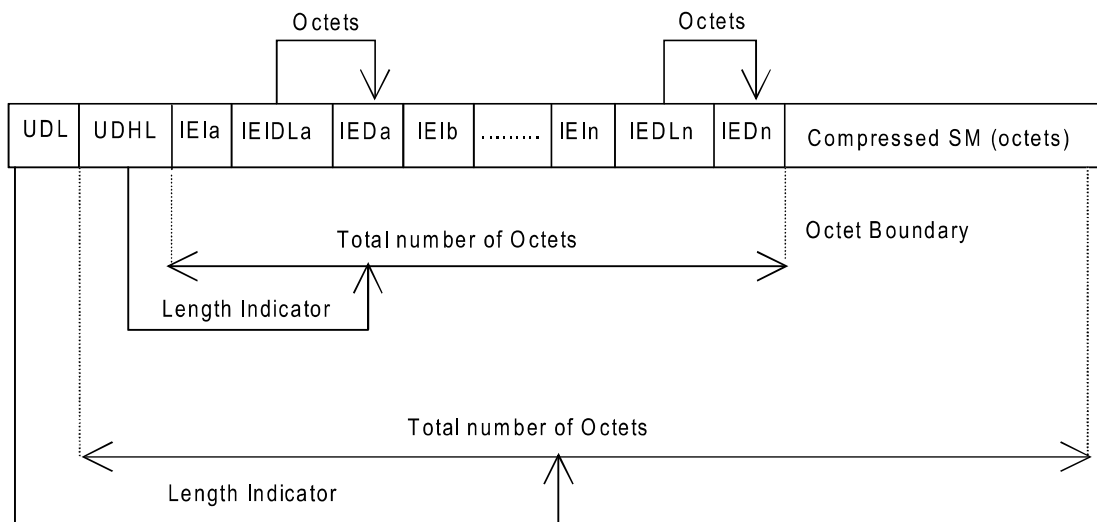


Figure 9.2.3.24 (c)

The definition of the TP-User-Data-Length field which immediately precedes the "Length of User Data Header" is unchanged and shall therefore be the total length of the TP-User-Data field including the Header, if present. (see 9.2.3.16)

The "Length-of-Information-Element" fields shall be the integer representation of the number of octets within its associated "Information-Element-Data" field which follows and shall not include itself in its count value.

The "Length-of-User-Data-Header" field shall be the integer representation of the number of octets within the "User-Data-Header" information fields which follow and shall not include itself in its count or any fill bits which may be present (see text below).

Information Elements may appear in any order and need not necessarily follow the order used in the present document.

In the case where there are no multiple instances of any Information Element type: If Information Elements are duplicated (either with the same or different content), within one single SM or within one segment of a concatenated message then the contents of the last occurrence of the Information Element shall be used.

In the case where there are multiple instances of any Information Element type: If certain types of Information Elements are duplicated (either with the same or different content) within one single SM or within one segment of a concatenated message and there is a contradiction in meaning (e.g. more than one Special Message Indication for voice) or there is a contradiction of Information Element types (e.g. an 8bit port address and a 16bit port address), then the contents of the last occurrence of the Information Element shall be used. Other types of Information Elements may occur more than once when there is additional information of the same type to be conveyed. The individual specifications for each Information Element will state if multiple use is permitted and in such a case will also indicate the maximum number of occurrences within one User Data Header.

If the length of the User Data Header overall is such that there appear to be too few or too many octets in the final Information Element then the whole User Data Header shall be ignored.

If any reserved values are received within the content of any Information Element then that part of the Information Element shall be ignored.

The Information Element Identifier octet shall be coded as follows:

VALUE (hex)	MEANING
00	Concatenated short messages, 8-bit reference number
01	Special SMS Message Indication
02	Reserved
03	Value not used to avoid misinterpretation as <LF> character
04	Application port addressing scheme, 8 bit address
05	Application port addressing scheme, 16 bit address
06	SMSC Control Parameters
07	UDH Source Indicator
08	Concatenated short message, 16-bit reference number
09	Wireless Control Message Protocol
0A	Text Formatting
0B	Predefined Sound
0C	User Defined Sound (iMelody max 128 bytes)
0D	Predefined Animation
0E	Large Animation (16*16 times 4 = 32*4 =128 bytes)
0F	Small Animation (8*8 times 4 = 8*4 =32 bytes)
10	Large Picture (32*32 = 128 bytes)
11	Small Picture (16*16 = 32 bytes)
12	Variable Picture
13-1F	Reserved for future EMS features (see subclause 3.10)
20	RFC 822 E-Mail Header
21-6F	Reserved for future use
70 – 7F	(U)SIM Toolkit Security Headers
80 – 9F	SME to SME specific use
A0 – BF	Reserved for future use
C0 – DF	SC specific use
E0 – FF	Reserved for future use

A receiving entity shall ignore (i.e. skip over and commence processing at the next information element) any information element where the IEI is Reserved or not supported. The receiving entity calculates the start of the next information element by looking at the length of the current information element and skipping that number of octets.

The SM itself may be coded as 7, 8 or 16 bit data.

If 7 bit data is used and the TP-UD-Header does not finish on a septet boundary then fill bits are inserted after the last Information Element Data octet up to the next septet boundary so that there is an integral number of septets for the entire TP-UD header. This is to ensure that the SM itself starts on an septet boundary so that an earlier Phase mobile shall be capable of displaying the SM itself although the TP-UD Header in the TP-UD field may not be understood.

It is optional to make the first character of the SM itself a Carriage Return character encoded according to the default 7 bit alphabet so that earlier Phase mobiles, which do not understand the TP-UD-Header, shall over-write the displayed TP-UD-Header with the SM itself.

If 16 bit (USC2) data is used then padding octets are not necessary. The SM itself shall start on an octet boundary.

If 8 bit data is used then padding is not necessary. An earlier Phase mobile shall be able to display the SM itself although the TP-UD header may not be understood.

It is also possible for mobiles not wishing to support the TP-UD header to check the value of the TP-UDHI bit in the SMS-Deliver PDU and the first octet of the TP-UD field and skip to the start of the SM and ignore the TP-UD header.

9.2.3.24.1 Concatenated Short Messages

This facility allows short messages to be concatenated to form a longer message.

In the case of uncompressed 8-bit data, the maximum length of the short message within the TP-UD field is 134 (140-6) octets.

In the case of uncompressed GSM 7 bit default alphabet data, the maximum length of the short message within the TP-UD field is 153 (160-7) characters.

In the case of 16 bit uncompressed USC2 data, the maximum length of the short message within the TP-UD field is 67 $((140-6)/2)$ characters. A UCS2 character must not be split in the middle; if the length of the User Data Header is odd, the maximum length of the whole TP-UD field is 139 octets.

In the case of compressed GSM 7 bit default alphabet data, 8 bit data or UCS2 the maximum length of the compressed short message within the TP-UD field is 134 $(140-6)$ octets including the Compression Header and Compression Footer, both or either of which may be present (see subclause 3.9).

The maximum length of an uncompressed concatenated short message is 39015 $(255*153)$ default alphabet characters, 34170 $(255*134)$ octets or 17085 $(255*67)$ UCS2 characters.

The maximum length of a compressed concatenated message is 34170 $(255*134)$ octets including the Compression Header and Compression Footer (see subclause 3.9 and figure 9.2.3.24.1(a) below).

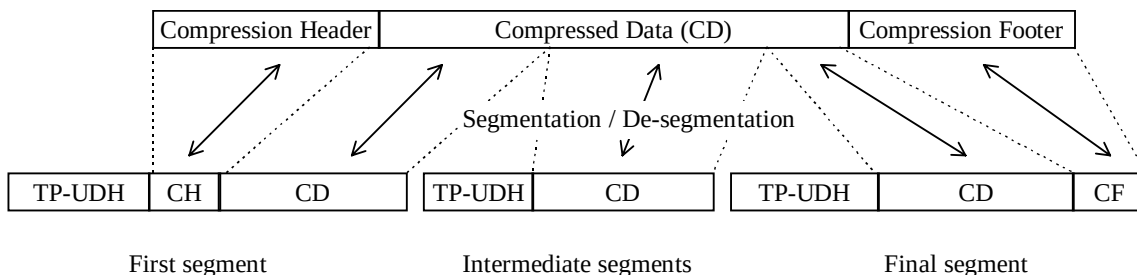


Figure 9.2.3.24.1 (a): Concatenation of a Compressed short message

The Information-Element-Data field contains information set by the application in the SMS-SUBMIT so that the receiving entity is able to re-assemble the short messages in the correct order. Each concatenated short message contains a reference number which together with the originating address and Service Centre address allows the receiving entity to discriminate between concatenated short messages sent from different originating SMEs and/or SCs. In a network which has multiple SCs, it is possible for different segments of a concatenated SM to be sent via different SCs and so it is recommended that the SC address should not be checked by the MS unless the application specifically requires such a check.

The TP elements in the SMS-SUBMIT PDU, apart from TP-MR, TP-SRR, TP-UDL and TP-UD, should remain unchanged for each SM which forms part of a concatenated SM, otherwise this may lead to irrational behaviour. TP-MR must be incremented for every segment of a concatenated message as defined in subclause 9.2.3.6. A SC shall handle segments of a concatenated message like any other short message. The relation between segments of a concatenated message is made only at the originator, where the message is segmented, and at the recipient, where the message is reassembled. SMS-COMMANDs identify messages by TP-MR and therefore apply to only one segment of a concatenated message. It is up to the originating SME to issue SMS-COMMANDs for all the required segments of a concatenated message.

The Information-Element-Data octets shall be coded as follows.

Octet 1 Concatenated short message reference number

This octet shall contain a modulo 256 counter indicating the reference number for a particular concatenated short message. This reference number shall remain constant for every short message which makes up a particular concatenated short message.

Octet 2 Maximum number of short messages in the concatenated short message.

This octet shall contain a value in the range 0 to 255 indicating the total number of short messages within the concatenated short message. The value shall start at 1 and remain constant for every short message which makes up the concatenated short message. If the value is zero then the receiving entity shall ignore the whole Information Element.

Octet 3 Sequence number of the current short message.

This octet shall contain a value in the range 0 to 255 indicating the sequence number of a particular short message within the concatenated short message. The value shall start at 1 and increment by one for every short message sent within the concatenated short message. If the value is zero or the value is greater than the value in octet 2 then the receiving entity shall ignore the whole Information Element.

The IEI and associated IEI length and IEI data shall be present in every segment of the concatenated SM.

9.2.3.24.2 Special SMS Message Indication

There are three levels of "Message Waiting" indication provided within the present document. The first level is to set the Protocol Identifier to "Return Call message", which indicates that a message is waiting and relies on the text of the message to supply the detail. The second level uses the Data Coding Scheme with or without Return Call Message (see 3G TS 23.038 [9]) to indicate the type of message waiting and whether there are some messages or no messages. The third level is described here, and provides the maximum detail level for analysis by the mobile, i.e. an indication of the number and type of messages waiting in systems connected to the PLMN. This third level is provided for future flexibility, as it cannot immediately be used without compatibility problems with the earliest Phase mobiles. It is envisaged that this scheme can start to be used once mobiles supporting TP-UDH become widely available.

This information may be stored by the MS in a form other than an SMS message, for example an indicator may be shown if the number of messages is non-zero or removed if the number of messages is zero. The MS may also store actual number of messages waiting and provide some other MMI to access this information. Text may be included by the SMS Service Centre for backward compatibility with the earliest Phase mobiles and the Data Coding Scheme may also be used to convey this information in parallel for backward compatibility with "middle" Phase mobiles (which support the use of Data Coding Scheme for Message Waiting Indication but not the use of TP-UDH for Message Waiting Indication).

The information-Element octets shall be coded as follows:

Octet 1 Message Indication type and Storage

Bit 7 Indicates whether or not the message shall be stored.

Bit 7

0 Discard message after updating indication

1 Store message

In the event of a conflict between this setting and the setting of the Data Coding Scheme (see 3G TS 23.038 [9]) then the message shall be stored if either the DCS indicates this, or Octet 1 above indicates this.

Bits 6..0 show the message indication type

000 0000	Voice Message Waiting
000 0001	Fax Message Waiting
000 0010	Electronic Mail Message Waiting
000 0011	Other Message Waiting (see 3G TS 23.038 [9] for definition of "other")

Other values are reserved for future use.

Octet 2 Message Count

This octet shall contain a value in the range 0 to 255 indicating the number of messages of the type specified in Octet 1 waiting. The value 255 shall be taken to mean 255 or greater. In the event of a conflict between this setting and the setting of the Data Coding Scheme (see 3G TS 23.038 [9]) then the Message Count in the TP-UDH shall override the indication in the TP-DCS.

If more than one type of message is required to be indicated within one SMS message, then further octets must be used, as in the following example:

```
[00] TP-UDL [1E] (30 decimal septets)
[01] Length of TP-UDH [08]
[02] IEI = Special SMS Message Indication [01]
[03] Length = 02
[04] Octet 1 = Voice Mail, do not store [00]
[05] Octet 2 = 04 Messages
[06] IEI = Special SMS Message Indication [01]
[07] Length = 02
[08] Octet 1 = Fax Mail, Store [81]
[09] Octet 2 = 02 Messages
+ 5 Fill bits
+ 19 seven-bit character message text
```

The Total number of bits is 210.

In the case where this IEI is to be used in a concatenated SM then the IEI, its associated IEI length and IEI data shall be contained in the first segment of the concatenated SM. The IEI, its associated IEI length and IEI data should also be contained in every subsequent segment of the concatenated SM although this is not mandatory. However, in the case where these elements are not contained in every subsequent segment of the concatenated SM and where an out of sequence segment delivery occurs or where the first segment is not delivered then processing difficulties may arise at the receiving entity which may result in the concatenated SM being totally or partially discarded.

9.2.3.24.3 Application Port Addressing 8 bit address

This facility allows short messages to be routed to one of multiple applications in the TE (terminal equipment), using a method similar to TCP/UDP ports in a TCP/IP network. An application entity is uniquely identified by the pair of TP-DA/TP-OA and the port address. The port addressing is transparent to the transport, and also useful in Status Reports.

The total length of the IE is 2 octets

octet 1 Destination port

This octet contains a number indicating the receiving port, i.e. application, in the receiving device.

octet 2 Originator port

This octet contains a number indicating the sending port, i.e. application, in the sending device.

The port range is up to 255 using 8 bit addressing space. The Integer value of the port number is presented as in 3G TS 23.040 subclause 9.1.2.1.

VALUE (port number)	MEANING
0 - 239	Reserved
240 - 255	Available for allocation by applications

A receiving entity shall ignore (i.e. skip over and commence processing at the next information element) any information element where the value of the Information-Element-Data is Reserved or not supported.

In the case where this IE is to be used in a concatenated SM then the IEI, its associated IEI length and IEI data shall be contained in the first segment of the concatenated SM. The IEI, its associated IEI length and IEI data shall also be contained in every subsequent segment of the concatenated SM.

9.2.3.24.4 Application Port Addressing 16 bit address

This facility allows short messages to be routed to one of multiple applications in the TE (terminal equipment), using a method similar to TCP/UDP ports in a TCP/IP network. An application entity is uniquely identified by the pair of TP-DA/TP-OA and the port address. The port addressing is transparent to the transport, and also useful in Status Reports.

The total length of the IE is 4 octets

octet 1,2 Destination port

These octets contain a number indicating the receiving port, i.e. application, in the receiving device.

octet 3,4 Originator port

These octets contain a number indicating the sending port, i.e. application, in the sending device.

The port range is up to 65535 using 16 bit addressing space. The Integer value of the port number is presented as in 3G TS 23.040 subclause 9.1.2.1.

VALUE (port number)	MEANING
0 - 15999	As allocated by IANA (http://www.IANA.com/)
16000 - 16999	Available for allocation by applications
17000 - 65535	Reserved

A receiving entity shall ignore (i.e. skip over and commence processing at the next information element) any information element where the value of the Information-Element-Data is Reserved or not supported.

In the case where this IE is to be used in a concatenated SM then the IEI, its associated IEI length and IEI data shall be contained in the first segment of the concatenated SM. The IEI, its associated IEI length and IEI data shall also be contained in every subsequent segment of the concatenated SM.

9.2.3.24.5 SMSC Control Parameters

The facility enables the SMS protocol headers to be expanded using a flexible method. It may be used to control the SMSC, but is also passed transparently to the receiving mobile. The Information Element must be present in every short message affected by it, i.e. in every short message in a concatenated message.

The Information Element data octets shall be coded as follows:

octet 1 Selective Status Report

This facility is used to control the creation of Status Reports, depending on the error code of the particular message. It is also used by the sending entity to request inclusion of the original UDH into the Status Report. In this case the original UDH must be separated from the rest of the UDH using the Source Indicator. The TP-SRR must be set in order for the Selective Status Report to be enabled. The bits are defined as follows:

bit 0

- 0 No Status Report for short message transaction completed
- 1 Status Report for short message transaction completed

bit 1

- 0 No Status Report for permanent error when SC is not making any more transfer attempts
- 1 Status Report for permanent error when SC is not making any more transfer attempts

bit 2

- 0 No Status Report for temporary error when SC is not making any more transfer attempts
- 1 Status Report for temporary error when SC is not making any more transfer attempts

bit 3

- 0 No Status Report for temporary error when SC is still trying to transfer SM
- 1 Status Report for temporary error when SC is still trying to transfer SM

bits 4 and 5

reserved for future use.

bit 6

- 0 No activation
- 1 A Status Report generated by this Short Message, due to a permanent error or last temporary error, cancels the SRR of the rest of the Short Messages in a concatenated message. This feature can only be used where a SC is aware of the segmentation of a concatenated SM and is therefore an implementation matter.

bit 7

- 0 Do not include original UDH into the Status Report
- 1 Include original UDH into the Status Report

9.2.3.24.6 UDH Source Indicator

The facility is used to separate the UDH of the original message, a UDH created by the SMSC, and a UDH provided by the original receiving entity. The Source Indicator is placed in front of the content inserted by the source. The indicated content (one or more Information-Elements) ends at the next UDH-Source-Indicator, or at the end of the UDH. The Separator is intended to be used especially in Status Reports, but can also be used by the SMSC to add information into Short Message (for example Message waiting). The default content for a UDH in a SMS-DELIVERY is the headers inserted by the sending device, and the default content for a UDH in a SMS-STATUS-REPORT is the headers copied from the SMS-DELIVERY-REPORT.

Values of octet:

- 01 The following part of the UDH is created by the original sender (valid in case of Status Report)
- 02 The following part of the UDH is created by the original receiver (valid in case of Status Report)
- 03 The following part of the UDH is created by the SMSC (can occur in any message or report)

In the case where this IEI is to be used in a concatenated SM then the IEI, its associated IEI length and IEI data shall be contained in the first segment of the concatenated SM. The IEI, its associated IEI length and IEI data should also be contained in every subsequent segment of the concatenated SM although this is not mandatory. However, in the case where these elements are not contained in every subsequent segment of the concatenated SM and where an out of sequence segment delivery occurs or where the first segment is not delivered then processing difficulties may arise at the receiving entity which may result in the concatenated SM being totally or partially discarded.

9.2.3.24.7 (U)SIM Toolkit Security Headers

There are no IEI data values associated with these IEI values and so the associated Length of Information element field is present but set to zero.

These IEI values implicitly define that a Security Header is always present at the start of the TP-User-Data field which immediately follows the TP-User-Data-Header. Details of the Security Header will be found in GSM TS 03.48 [28].

In the case where a concatenated message contains a Security Header then the Security Header will only be present in the first segment of a concatenated message.

In the case where SMS compression is applied to a TP-User-Data field which contains a Security Header then the SMS compression header (3G TS 23.042 [26]) shall immediately precede the Security Header.

9.2.3.24.8 Concatenated short messages, 16-bit reference number

This facility is an enhanced variant of the Concatenated Short Message facility (see subclause 9.2.3.24.1). The enhancement is a 16-bit reference number, instead of the short 8-bit reference number. The larger reference number reduces the probability that two different concatenated messages are mistakenly sent with identical reference numbers to a receiver. Except for the size of the reference number this facility is identical to the Concatenated Short Message facility (see subclause 9.2.3.24.1).

In the case of uncompressed 8-bit data, the maximum length of the short message within the TP-UD field is 133 (140-7) octets.

In the case of uncompressed GSM 7 bit default alphabet data, the maximum length of the short message within the TP-UD field is 151 (160-9) characters.

In the case of 16 bit uncompressed USC2 data, the maximum length of the short message within the TP-UD field is 66 ((140-7)/2) characters. A UCS2 character must not be split in the middle; if the length of the User Data Header is odd, the maximum length of the whole TP-UD field is 139 octets.

In the case of compressed GSM 7 bit default alphabet data, 8 bit data or UCS2 the maximum length of the compressed short message within the TP-UD field is 133 (140-7) octets including the Compression Header and Compression Footer, both or either of which may be present (see subclause 3.9).

The relation between compression and concatenation is the same as for Concatenated Short Messages (see subclause 9.2.3.24.1).

The Information-Element-Data field contains information set by the application in the SMS-SUBMIT so that the receiving entity is able to re-assemble the short messages in the correct order. Each concatenated short message contains a reference number which together with the originating address and Service Centre address allows the receiving entity to discriminate between concatenated short messages sent from different originating SMEs and/or SCs. In a network which has multiple SCs, it is possible for different segments of a concatenated SM to be sent via different SCs and so it is recommended that the SC address should not be checked by the MS unless the application specifically requires such a check.

The TP elements in the SMS-SUBMIT PDU, apart from TP-MR, TP-UDL and TP-UD, should remain unchanged for each SM which forms part of a concatenated SM, otherwise this may lead to irrational behaviour. TP-MR must be incremented for every segment of a concatenated message as defined in subclause 9.2.3.6. A SC shall handle segments of concatenated message like any other short message. The relation between segments of a concatenated message is made at the originator, where the message is segmented, and at the recipient, where the message is reassembled. SMS-COMMANDs identify messages by TP-MR and therefore apply to only one segment of a concatenated message. It is up to the originating SME to issue SMS-COMMANDs for all the required segments of a concatenated message.

The Information-Element-Data octets shall be coded as follows.

Octet 1-2 Concatenated short messages, 16-bit reference number

This octet shall contain a modulo 65536 counter indicating the reference number for a particular enhanced concatenated short message. This reference number shall remain constant for every short message which makes up a particular enhanced concatenated short message.

Octet 3 Maximum number of short messages in the enhanced concatenated short message.

This octet shall contain a value in the range 0 to 255 indicating the total number of short messages within the concatenated short message. The value shall start at 1 and remain constant for every short message which makes up the enhanced concatenated short message. If the value is zero then the receiving entity shall ignore the whole Information Element.

Octet 4 Sequence number of the current short message.

This octet shall contain a value in the range 0 to 255 indicating the sequence number of a particular short message within the concatenated short message. The value shall start at 1 and increment by one for every short message sent within the concatenated short message. If the value is zero or the value is greater than the value in octet 3 then the receiving entity shall ignore the whole Information Element.

The IEI and associated IEI length and IEI data shall be present in every segment of the concatenated SM.

9.2.3.24.9 Wireless Control Message Protocol

The Wireless Control Message Protocol (WCMP) is part of the WAP suite of protocols; an open standard specified by the WAP Forum Ltd.

The protocol specifies a set of messages that can be used by the receiver to notify the sender if an error occurs. This can be due to routing problems, no application listening at the destination port number, or due to insufficient buffer capacity. The error messages can be used by the sender to avoid retransmitting packets, that can not be properly handled at the receiver. WCMP can also be used for diagnostics and informational purposes. WCMP messages are usually generated by a datagram transport layer or a management entity.

The Information-Element-Data octet(s) shall be coded as follows:

Octet 1-n Protocol Data Unit of WCMP

This octet(s) shall contain a WCMP protocol data unit.

In the case where this IE is to be used in a concatenated SM then the IEI, its associated IEI length and IEI data shall be contained in the first segment of the concatenated SM. The IEI, its associated IEI length and IEI data shall also be contained in every subsequent segment of the concatenated SM.

9.2.3.24.10 Enhanced Messaging Service

9.2.3.24.10.1 EMS Coding

Enhanced Messaging is based on standard mechanism in GSM SMS messaging. The first mechanism is called **user data header** (TP-UDH), which makes it possible to include binary data in a normal SM prior the text message itself (subclause 9.2.3.24). The binary data is in the TP-UD field (message), which means that it steals a part of the 140 bytes. Each object within the SM shall be identified by a IE in the TP-UD Header. The IE will contain a **octet** (refer to subclause 9.2.3.24.10.1) that identifies the absolute position of the object within and from the beginning of the SM data. In case of formatting text, an additional octet will give the number of characters for which the formatting applies. Next mechanism that is used is **concatenation**, see subclause 9.2.3.24.1. This mechanism permits longer messages than 140 bytes, in fact 255 messages a 140 bytes each can be concatenated to one message up to about 38k bytes.

EMS IEs of the same type may occur more than once in a single message or one segment of a concatenated SM.

9.2.3.24.10.1.1 Text Formatting

The Information-Element-Data octet(s) shall be coded as follows.

Octet 1 Start position of the text formatting. Set to the number of characters after the formatting shall be applied from the beginning of the SM data.

This octet shall be coded as an integer value in the range 0 (beginning of the SM data) to the maximum number of characters included in the SM data of one single SM or one segment of a concatenated SM.

Octet 2 Text formatting length. Gives the number of formatted characters

This octet shall be coded as an integer value in the range 1 to the maximum number of characters for which the formatting applies in one single SM or one segment of a concatenated SM.

Octet 3 formatting mode value coded as following:

Octet 3:	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	
Bit 1	Bit 0	*Alignment							
0	0	Left							
0	1	Center							
1	0	Right							
1	1	Language dependent (default)							

*in case formatting text is inserted on the same line as previous non formatting text or with a different mode value, the alignment value shall be set to the same value as the previous formatted predefined object.

Bit 3	Bit 2	Font Size
0	0	Normal (default)
0	1	Large
1	0	Small
1	1	<i>reserved</i>
Bit 4		Style bold
1		Bold on
0		Bold off
Bit 5		Style <i>Italic</i>
1		Italic on
0		Italic off
Bit 6		Style <u>Underlined</u>
1		Underlined on
0		Underlined off
Bit 7		Style ~~Strikethrough~~
1		Strikethrough on
0		Strikethrough off

If bit 4,5,6 and 7 are set to 0, it will mean normal style (default).

9.2.3.24.10.1.2 Predefined Sound

The Information-Element-Data octet(s) shall be coded as follows.

Octet 1 position indicating in the SM data the instant after which the sound shall be played. It will be set to the number of characters from the beginning of the SM data after which the sound shall be played.

This octet shall be coded as an integer value in the range 0 (beginning of the SM data) to the maximum number of characters included in the SM data of one single SM or one segment of a concatenated SM

Octet 2 sound number. Shall be encoded as a integer value.

9.2.3.24.10.1.3 User Defined Sound

The Information-Element-Data octet(s) shall be coded as follows.

Octet 1 position indicating in the SM data the instant the after which the sound shall be played (refer to subclause 9.2.3.24.10.1.2).

Octet 2-n Protocol Data Unit as described in subclause 9.2.3.24.10.3.1.

This octet(s) shall contain a User Defined Sound.

9.2.3.24.10.1.4 Predefined Animation

The Information-Element-Data octet(s) shall be coded as follows.

Octet 1 position indicating in the SM data the instant the animation shall be displayed. Set to the number of characters from the beginning of the SM data after which the animation shall be displayed.

This octet shall be coded as an integer value in the range 0 (beginning of the SM data) to the maximum number of characters included in the SM data of one single SM or one segment of a concatenated SM

Octet 2 animation number. Shall be encoded as an integer value.

9.2.3.24.10.1.5 Large Animation

The Information-Element-Data octet(s) shall be coded as follows:

Octet 1 position indicating the instant the animation shall be displayed in the SM data (refer subclause 9.2.3.24.10.1.4).

Octet 2-n Protocol Data Unit as described in subclause 9.2.3.24.10.3.3.

This octet(s) shall contain a Large Animation.

9.2.3.24.10.1.6 Small Animation

The Information-Element-Data octet(s) shall be coded as follows:

Octet 1 position indicating the instant the animation shall be displayed in the SM data (refer subclause 9.2.3.24.10.1.4).

Octet 2-n Protocol Data Unit as described in subclause 9.2.3.24.10.3.3.

This octet(s) shall contain a Small Animation.

9.2.3.24.10.1.7 Large Picture

The Information-Element-Data octet(s) shall be coded as follows:

Octet 1 position indicating in the SM data the instant the picture shall be displayed. Set to the number of characters from the beginning of the SM data after which the picture shall be displayed. This octet shall be coded as an integer value in the range 0 (beginning of the SM data) to the maximum number of characters included in the SM data of one single SM or one segment of a concatenated SM

Octet 2-n Protocol Data Unit as described in 9.2.3.24.10.3.2.

This octet(s) shall contain a Large Picture.

9.2.3.24.10.1.8 Small Picture

The Information-Element-Data octet(s) shall be coded as follows:

Octet 1 position indicating in the SM data the instant the picture shall be displayed in the SM data (refer subclause 9.2.3.24.10.1.7).

Octet 2-n Protocol Data Unit as described in subclause 9.2.3.24.10.3.2.

This octet(s) shall contain a Small Picture.

9.2.3.24.10.1.9 Variable Picture

The Information-Element-Data octet(s) shall be coded as follows:

Octet 1 position indicating in the SM data the instant the picture shall be displayed in the SM data (refer subclause 9.2.3.24.10.1.7).

Octet 2 Horizontal dimension of the picture.

This octet shall contain the horizontal number of 8 pixels i.e. this value shall be multiplied by 8 to get the whole number of horizontal pixels.

Octet 3 Vertical dimension of the picture.

This octet shall contain the vertical number of pixels.

Octet 4-n Protocol Data Unit as described in subclause 9.2.3.24.10.3.2.

This octet(s) shall contain a Variable Picture line by line from top left to bottom right.

The values of the horizontal and vertical dimensions must be chosen properly by the sending entity. If the calculated size of this IE exceeds the limits of a single SM or segment it shall be discarded by the receiving entity.

Examples of EMS coding

All IE values in the TP-UD are hexadecimal values.

9.2.3.24.10.2.1 Example of Basic text formatting and predefined EMS coding

An example of the basic concept of coding is given as follows:

TP-UDHI=1

SMS User Data Header: UDHL=05, IEI=0A, IEDL=03, IED₁=0F, IED₂=12, IED₃=10

SMS User Data: This is a text with bold option on following with normal text.

Should be displayed as:

This is a text with bold option on following with normal text.

It is also possible to add predefined sounds in the message.

Example:

TP-UDHI=1

SMS User Data Header: UDHL=08, IEI=0B, IEDL=02, IED₁=09,<sound5>, IEI=0B, IEDL=2, IED₁=1C,<sound7>

SMS User Data: This is a message with two different sounds

The sound nr5 shall be played after the 9th received character ("a") and sound nr7 shall be played after the 28th received character ("e").

9.2.3.24.10.2.2 Example of User defined Objects EMS coding

Example of a message including one small picture is coded as follows:

TP UDHI=1

SMS User Data Header: UDHL=24, IEI=11, IEIDL=22, IED₁=08, <  (small picture 32bytes)>

SMS User Data: Hello!<CR><LF><CR><LF>One small picture in here

Should be displayed as:

Hello!  One small picture in here

If the message starts with <CR>, then the "unreadable" data in an old terminal will be overwritten by the text, and the user will not see any strange characters. It is possible to insert the same picture several times in the same message. In that case, the TP-UD header shall contain as many IE as the number of occurrences contained in the SM or one segment of a concatenated message. Using defined elements will normally imply that more than one SM is required and therefore concatenation is required.

9.2.3.24.10.2.3 Concatenation of SMS messages

Concatenated messages are required in most cases required when using several types of EMS elements, since it is only possible to send one large picture/large animation/melody in one single SM. After including either of these elements, there are only 4 (or 9 if no concatenation is used) characters left to the text part, and this is usually too little.

If one or more objects are embedded in one segment of a concatenated message, the IE octet indicating its/their position within the SM data cannot be set to a value that would refer to a position in the next segment(s) so that received segments should be processed before all of them have been received. It means that a formatting text that could not be conveyed in one segment shall be split in as many segments as necessary. In that case, the IE relating to the formatting shall be repeated in all the segments in which it will apply.

Example of a message including 2 Large Pictures, 4 Small animations and 2 User defined Melodies together with some text.

The EMS message: <Large Picture1> <User Defined Melody 1> Hello All, This is a real Enhanced Message <Small Animation 1>. I can send <Small Animation 2> and receive <Small Animation 3> really advanced EMS messages <Animation 4> Isn't it impressive? /Lars <User Defined Melody2> <Large Picture 2>

This EMS message has to use concatenated messages and the SM will typically contain the following data:

SM	User Data Header	User Data
1	IEI=10 (Large Picture) IED ₁ =00 (beginning of the SM) <Large Picture 1 (128 bytes)>	[<CR><LF>]
2	IEI=0C (User Defined Sound) IED ₁ =00 (beginning of the SM) <User Melody 1 (129bytes max)>	Hello
3	IEI=0F (Small Animation) IED ₁ =24 (36 th position) <Small Animation 1 (32 bytes)> IEI=0F (Small Animation) IED ₁ =2F (47 th position) <Small Animation 2 (32 bytes)>	All, This is a real Enhanced Message. I can send and
4	IEI=0F (Small Animation) IED ₁ =07 (7 th position) <Small Animation 3 (32 bytes)> IEI=0F (Small Animation) IED ₁ =25 (37 th position) <Small Animation 4 (32 bytes)>	receive really advanced EMS messages. Isn't it impressive? /Lars.
5	IEI=0C (User Defined Sound) IED ₁ =00 (beginning of the SM) <User Melody 1 (128 bytes max)>	[<CR><LF>]
6	IEI=10 (Large Picture) IED ₁ =00 (beginning of the SM) <Large Picture 2 (128 bytes)>	

9.2.3.24.10.3 EMS Formats

9.2.3.24.10.3.1 Sounds

Predefined Sounds

There are a number of fixed predefined sounds. Each sound nr corresponds to a specific sound according to the table below. The presentations of these sounds are manufacturer specific.

Sound nr	Description
0	Chimes high
1	Chimes low
2	Ding
3	TaDa
4	Notify
5	Drum
6	Claps
7	FanFar
8	Chord high
9	Chord low

User defined sounds

The user defined sounds are coded according to the iMelody format[33]. The maximum length of a sound is 128 bytes.

9.2.3.24.10.3.2 Pictures

Pictures are coded from upper left to lower right and in each byte the most significant bit represent the pixel at the left. The pictures are plain black and white, no colours or grey scales are supported. The bitvalue "0" represents a white pixel and the bitvalue "1" represents a black pixel.

Example 16*16 picture

Byte 1	Byte 2
Byte 3	Byte 4
...	...
...	...
Byte 31	Byte 32

9.2.3.24.10.3.3 Animation

Predefined

There are a number of predefined animations. Each animation nr corresponds to a specific animation according to the table below. The way of displaying the animation is manufacturer specific.

Animation nr	Description
0	I am ironic, flirty
1	I am glad
2	I am sceptic
3	I am sad
4	WOW!
5	I am crying

User Defined

Animations are coded as 4 sequential pictures, with the first picture sent first.

9.2.3.24.11 RFC 822 E-Mail Header

This information element is used to indicate the existence of an RFC 822 Internet electronic mail in the data part of the short message. Both, E-Mail Header and (optional) E-Mail Body shall be parts of the SM's data and shall be compliant with the syntax specified in RFC 822 [34]. The character set used for encoding of E-Mail Header and E-Mail body, however, shall be according to 3G TS 23.038 [9]. Encoding of E-Mail Header and E-Mail Body shall be done using the same character set.

In compliance with RFC 822 [34] the E-Mail Header shall always be located at the very beginning of the SM's data part. It shall always be present in the "unfolded" format as it is specified in RFC 822 [34]. Not the <CRLF> character defined in RFC 822 [34] but the <LF> character according to 3G TS 23.038 [9] shall be used for the separation of different E-Mail Header fields.

If an RFC 822 E-Mail Body exists, it shall immediately follow the E-Mail Header in the SM's data part.

NOTE 1: The null line defined in RFC 822 for the separation of E-Mail Header and E-Mail Body may be discarded.

NOTE 2: The sending of extended SMTP headers is allowed and the MS should not reject the message if there are header fields in the email header part that are not specified in RFC 822.

In case of an RFC 822 E-Mail Header exceeding the data part of a single SM, concatenation shall be used. In this case the E-Mail Header starts in the first segment of a concatenated SM and continues in one or several subsequent segments. The RFC 822 E-Mail Body shall immediately follow the final fraction of the RFC 822 E-Mail Header and may also be spread over several segments of the concatenated SM.

In case where this IEI is to be used in a concatenated SM then the IEI, its associated IEDL, and IED fields shall be contained in the first segment of the concatenated SM and shall also be contained in every subsequent segment of the concatenated SM.

The Information-Element-Data octet shall be coded as follows:

Octet 1 RFC 822 E-Mail Header length indicator

This octet shall indicate the length of the RFC 822 E-Mail Header that is located at the beginning of the data part of the SM. In case of an E-Mail Header exceeding the data part of a single SM, this octet shall indicate the length of that fraction of the RFC 822 E-Mail Header that is located at the beginning of the data part of the current segment of the concatenated SM.

If the user data is coded using the GSM 7 bit default alphabet, this IED octet shall give an integer representation of the number of septets within (that fraction of) the RFC 822 E-Mail Header that is located at the beginning of the data part of the current (segment of the concatenated) SM. See figure 9.2.3.24.11 (a).

If the user data is coded using 8-bit data, this IED octet shall give an integer representation of the number of octets within (that fraction of) the RFC 822 E-Mail Header that is located at the beginning of the data part of the current (segment of the concatenated) SM. See figure 9.2.3.24.11 (b).

If the user data is coded using UCS2 [24] data, this IED octet shall give an integer representation of the number of UCS2 characters (consisting of 2 octets) within (that fraction of) the RFC 822 E-Mail Header that is located at the beginning of the data part of the current (segment of the concatenated) SM. See figure 9.2.3.24.11 (c).

NOTE 3: If the user data is coded using compressed GSM 7 bit default alphabet or compressed 8 bit data or compressed UCS2 [24] data the RFC 822 E-Mail Header length indicator's value shall be based on the amount of uncompressed data, i.e. before compression is performed.

The diagram below shows the layout of the IED for GSM 7 bit default alphabet data.

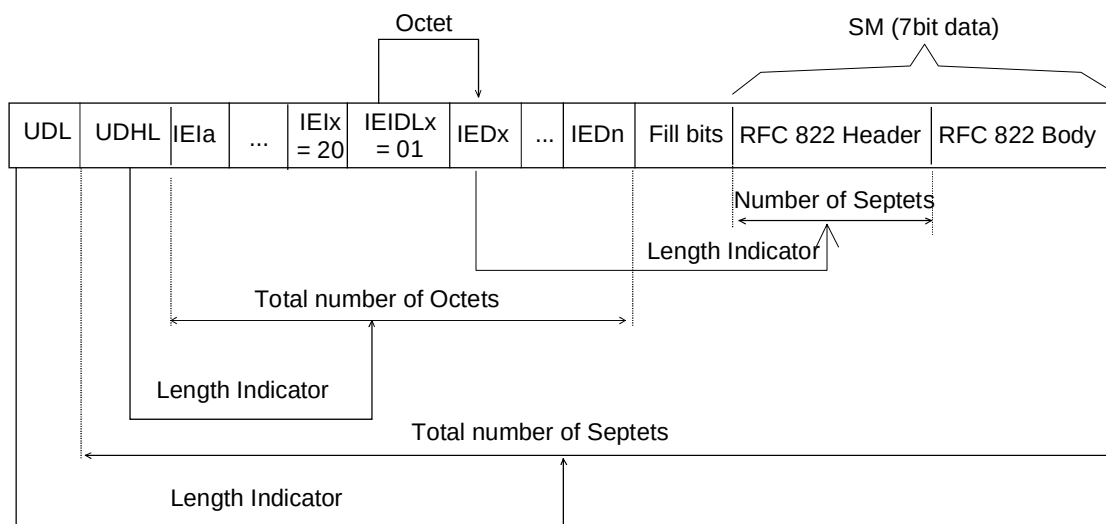


Figure 9.2.3.24.11 (a)

The diagram below shows the layout of the IED for 8 bit data.

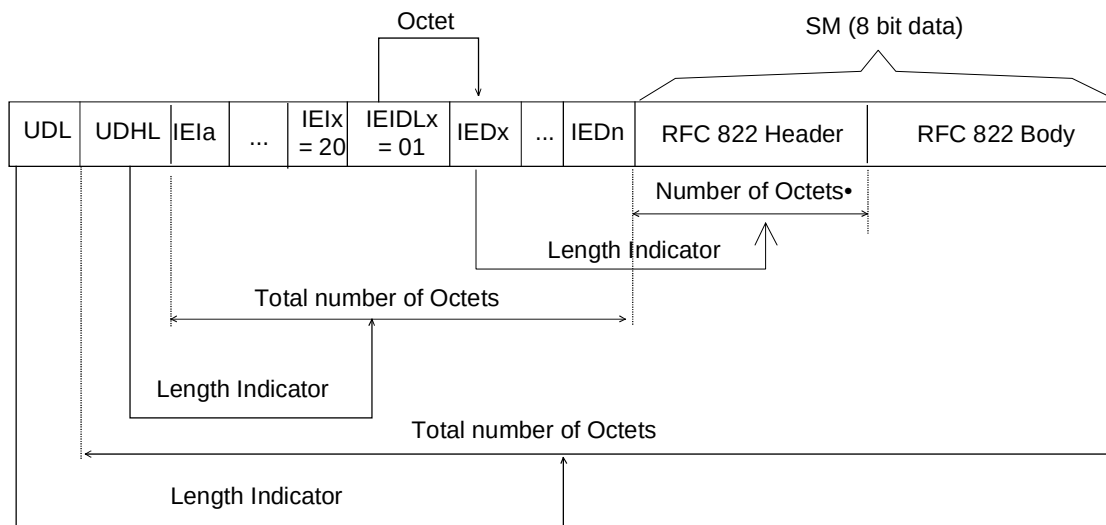


Figure 9.2.3.24.11 (b)

The diagram below shows the layout of the IED for UCS2 data.

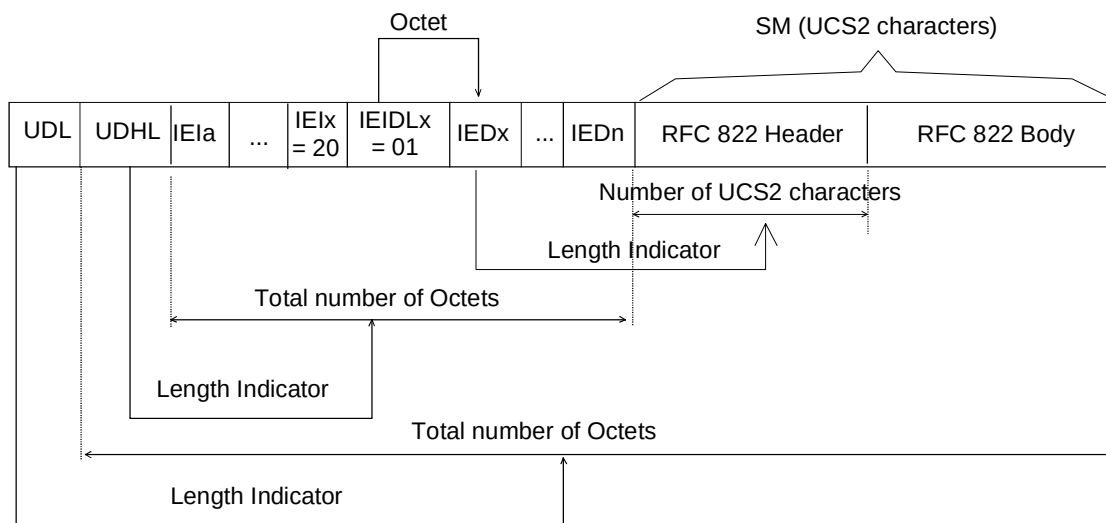


Figure 9.2.3.24.11 (c)

9.2.3.25 TP-Reject-Duplicates (TP-RD)

The TP-Reject-Duplicates is a 1 bit field located within bit 2 of the first octet of SMS-SUBMIT and has the following values.

Bit no. 2:	0	Instruct the SC to accept an SMS-SUBMIT for an SM still held in the SC which has the same TP-MR and the same TP-DA as a previously submitted SM from the same OA.
	1	Instruct the SC to reject an SMS-SUBMIT for an SM still held in the SC which has the same TP-MR and the same TP-DA as the previously submitted SM from the same OA. In this case an appropriate TP-FCS value shall be returned in the SMS-SUBMIT-REPORT.

9.2.3.26 TP-Status-Report-Qualifier (TP-SRQ)

The TP-Status-Report-Qualifier is a 1 bit field located within bit 5 of the first octet of SMS-STATUS-REPORT and has the following values

Bit no. 5:	0	The SMS-STATUS-REPORT is the result of a SMS-SUBMIT.
	1	The SMS-STATUS-REPORT is the result of an SMS-COMMAND e.g. an Enquiry.

9.2.3.27 TP-Parameter-Indicator (TP-PI)

The TP-Parameter-Indicator comprises a number of octets between 1 and n where each bit when set to a 1 indicates that a particular optional parameter is present in the fields which follow. The TP-PI is present as part of the RP-User-Data in the RP-ACK for both the SMS-DELIVER TPDU and the SMS-SUBMIT TPDU.

The structure of the TP-PI is as follows:

Octet 1

bit 7	bit 6	bit 5	bit 4	bit 3	bit 2	bit 1	bit 0
Extension bit	Reserved	Reserved	Reserved	Reserved	TP-UDL	TP-DCS	TP-PID

The most significant bit in octet 1 and any other TP-PI octets which may be added later is reserved as an extension bit which when set to a 1 shall indicate that another TP-PI octet follows immediately afterwards.

If the TP-UDL bit is set to zero then by definition then neither the TP-UDL field or the TP-UD field can be present.

If a Reserved bit is set to "1" then the receiving entity shall ignore the setting. The setting of this bit shall mean that additional information will follow the TP-User-Data, so a receiving entity shall discard any octets following the TP-User-Data.

9.3 Service provided by the SM-RL

9.3.1 General

The Short Message Relay Layer (SM-RL) provides a service to the Short Message Transfer Layer (SM-TL). This service enables the SM-TL to send Transfer Protocol Data Units (TPDUs) to its peer entity, receive TPDUs from its peer entity and receive reports about earlier requests for TPDUs to be transferred.

In order to keep track of TPDUs and reports about those TPDUs, primitives between the SM-TL and SM-RL contain a Short Message Identifier (SMI), which is a reference number for the TPDU associated with the primitive. This Short Message Identifier is not carried via the SM-RL protocol of subclause 9.3.2. It is carried via the relay layer service between the SC and GMSC. It is also carried by SM-RL of 3G TS 24.011 [13], between the visited MSC and MS. The parameter is not carried by MAP but is mapped to and from the TCAP dialogue Identifier (see CCITT Recommendation Q.771, "Blue Book" [19]) at the GMSC and the visited MSC (therefore the Message Identifier at the SC/GMSC interface is not the same as at the visited MSC/MS interface).

The SM-RL communicates with its peer entity by the protocol described in the following subclauses.

9.3.2 Protocol element repertoire at SM-RL

Different protocols are required between different pairs of SM-RL entities. Those are described in other GSM/UMTS specifications. This subclause gives a survey of the different information elements which have to be conveyed between those entities. (Note that the notation of the protocol and information elements may vary between different GSM/UMTS specifications).

The SM-RL comprises the following 6 protocol elements:

RP-MO-DATA	for transferring a TPDU from MS to SC
RP-MT-DATA	for transferring a TPDU from SC to MS
RP-ACK	for acknowledging an RP-MO-DATA, an RP-MT-DATA or an RP-SM-MEMORY-AVAILABLE
RP-ERROR	for informing of an unsuccessful RP-MO-DATA or an RP-MT-DATA transfer attempt
RP-ALERT-SC	for alerting the SC that the MS has recovered operation (information sent from the HLR to the SC)
RP-SM-MEMORY-AVAILABLE	for notifying the network that the MS has memory available to accept one or more short messages (information sent from the MS to the HLR)

9.3.2.1 RP-MO-DATA

Basic elements of the RP-MO-DATA type.

Abbr.	Reference	p1)	Description
RP-OA	RP-Originating-Address	++-	Address of the originating MS.
RP-DA	RP-Destination-Address	--+	Address of the destination SC.
RP-UD	RP-User-Data	+++	Parameter containing the TPDU

- 1) Provision on the links SC<->MSC, MSC<->MSC or MSC<->SGSN, and MSC<->MS or SGSN<->MS indicated by "xxx", where x may be either "+" or "-", dependent on whether the parameter is mandatory or not on the respective link.

9.3.2.2 RP-MT-DATA

Basic elements of the RP-MT-DATA type.

Abbr.	Reference	p1)	Description
RP-PRI	RP-Priority-Request	+--	Parameter indicating whether or not the short message transfer should be stopped if the originator SC address is already contained in the MWD.
RP-MMS	RP-More-Messages-To-Send	OO-	Parameter indicating that there are more messages waiting in the SC
RP-OA	RP-Originating-Address	+++	Address of the originating SC.
RP-DA	RP-Destination-Address	++-	Address of the destination MS.
RP-UD	RP-User-Data	+++	Parameter containing the TPDU
RP-MTI	RP-Message Type Indicator	O--	Parameter indicating if the TPDU is a SMS Deliver or a SMS Status Report ²⁾
RP-SMEA	RP-originating SME-Address	O--	Address of the originating SME ²⁾

- 1) Provision on the links SC<->MSC, MSC<->MSC or MSC<->SGSN, and MSC<->MS or SGSN<->MS indicated by "xxx", where x may be "+", "-" or "O", dependent on whether the parameter is mandatory, not present or optional on the respective link.
- 2) These information elements may be included in the "Send Routing Information for SM" sent by the SMS-GMSC to the HLR.

When transmitted, the RP-SMEA shall take the TP-OA value.

When transmitted, the RP-MTI shall be given the following values:

0	SMS Deliver
1	SMS Status Report.

This may be used by the HLR to distinguish the two cases in order not to apply any filtering mechanism based on the RP-SMEA value in case of a SMS-Status Report transmission.

9.3.2.3 RP-ACK

The RP-ACK contains the RP-User-Data which is a parameter containing the TPDU (see 9.2.2.1a and 9.2.2.2a).

9.3.2.4 RP-ERROR

Basic elements of the RP-ERROR type.

Abbr.	Reference	p1)	Description
RP-MSI	RP-MW-Set-Indication	+--	Parameter indicating whether or not the MWI has been up-dated. ²⁾
RP-CS	RP-Cause	+++	Parameter identifying the error type. The RP-Cause parameter gives the reason why a short message transfer attempt fails. In practice three relay layer protocols are used - SC to GMSC/IW MSC (see GSM TS 03.47 [11]), MAP (see 3G TS 29.002 [15]) and via the radio interface (see 3G TS 24.011 [13])
RP-MSIsdn	RP-international--MS-ISDN-number	+--	MSIsdn-Alert of the MS, see subclause 3.2.7 ³⁾
RP-UD	RP-User-Data	OO O	Parameter containing a TPDU

- 1) Provision on the links SC<->MSC, MSC<->MSC or MSC<->SGSN, and MSC<->MS or SGSN<->MS indicated by "xxx", where x may be "+", "-" or "O" dependent on whether the parameter is mandatory, not present or optional on the respective link.
- 2) Only present when the RP-ERROR is transferred from the SMS-GMSC to the SC.

- 3) Only present when the RP-MT-DATA transfer attempt failed because the MS is not reachable or because the MS memory capacity was exceeded and the MSISdn-Alert is different from the MSISdn used by the SC to address the recipient MS.

9.3.2.5 RP-ALERT-SC

Basic elements of the RP-ALERT-SC type:

Abbr.	Reference	p1)	Description
RP-MSISdn	RP-International-MS-ISDN-Number	M	MSISdn of the MS.

- 1) Provision; Mandatory (M).

9.3.2.6 RP-SM-MEMORY-AVAILABLE

Basic elements of the RP-SM-MEMORY-AVAILABLE type:

Abbr.	Reference	p1)	Description
RP-IMSI	RP-International-Mobile-Subscriber-Identity	++-	IMSI of the MS.

- 1) Provision on the links HLR<->VLR or HLR<->SGSN, VLR<->MSC and MSC<->MS or SGSN<->MS indicated by "xxx", where x may be either "+" or "-", dependent on whether the parameter is mandatory or not present on the respective link.

10 Fundamental procedures within SMS

The SMS comprises 3 fundamental procedures:

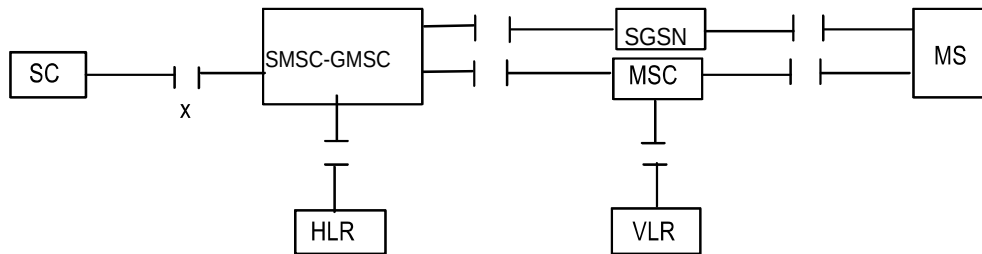
- 1) Short message mobile terminated. This procedure consists of all necessary operations to:
 - a) transfer a short message or status report from the SC to the MS;
 - b) return a report to the SC, containing the result of the message transfer attempt.
- 2) Short message mobile originated. This procedure consists of all necessary operations to:
 - a) transfer a short message from the MS to the SC;
 - b) return a report to the MS, containing the result of the message transfer attempt.
- 3) Transfer of an Alert. This procedure consists of all necessary operations for an HLR or a VLR to initiate a transfer of an Alert to a specific SC, informing the SC that the MS has recovered operation.

3G TS 29.002 [15] defines operations necessary for the provision of the Short Message Service. The operations defined in clause 10 describe the requirement that the Short Message Service puts upon the network functionality. If discrepancies exist in nomenclature, it is the 3G TS 29.002 [15] that shall be the reference.

Annex C indicates the flow of primitives and parameters during the short message transfer between the SC and the MS. Both the Mobile terminated and the Mobile originated cases are covered.

10.1 Short message mobile terminated

The entities involved in this procedure are depicted in figure 14.



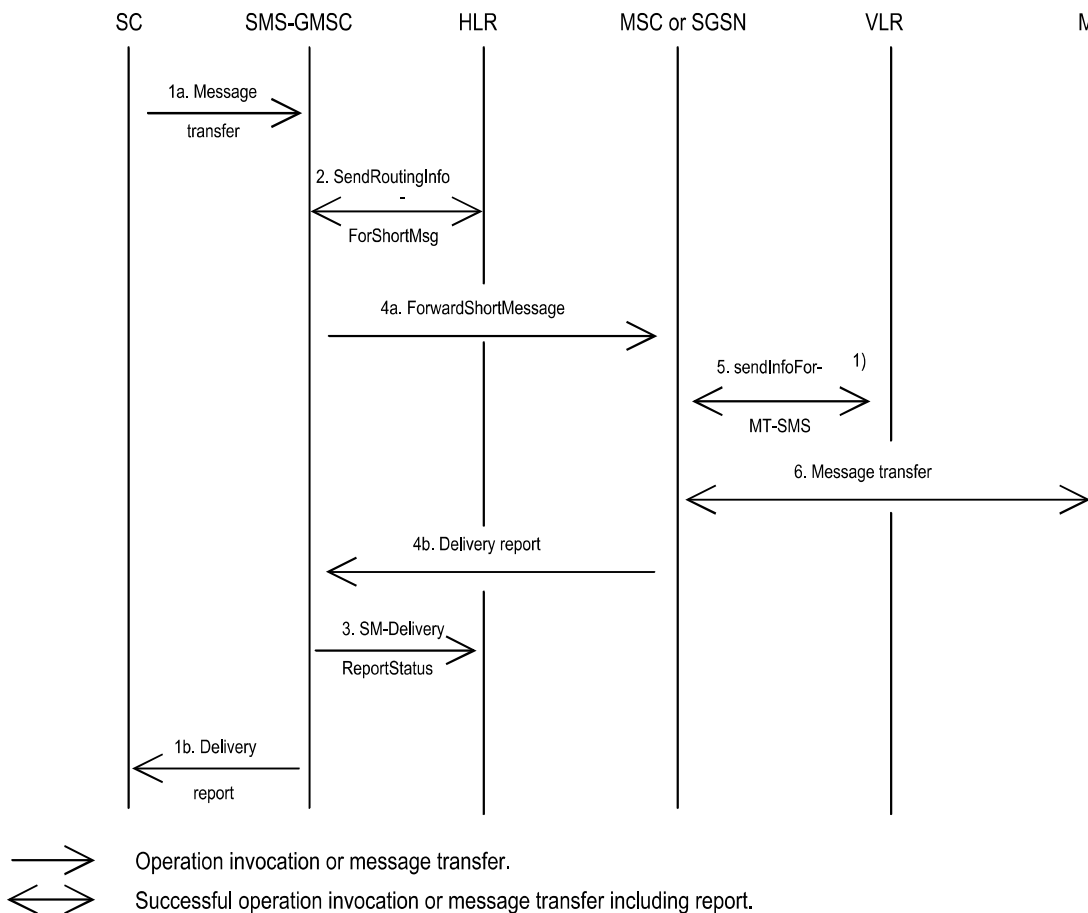
NOTE: Since the short message mobile terminated procedure covers the functionality required at SM-RL for transferring TPDUs from SC to MS, the procedure described covers both short message (SMS-DELIVER) and status report (SMS-STATUS-REPORT) transfer. The term "short message transfer" therefore, in this clause, covers both cases.

Figure 14: Interfaces involved in the Short message mobile terminated procedure. GSM TS 03.02 [5].
X is the interface between an MSC and an SC as defined in clause 5

In figure 15, sequence diagrams are shown for the following basic situations of short message mobile terminated transfer attempt:

- Successful short message transfer via the MSC or the SGSN;
- Short message transfer attempt failing due to error at the SMS-GMSC;
- Short message transfer attempt failing due to negative outcome of HLR information retrieval;
- Short message transfer attempt failing due to error at the MSC or SGSN;
- Short message transfer attempt failing due to negative outcome of VLR information retrieval;
- Short message transfer attempt failing due to erroneous message transfer on the radio path;
- Short message transfer attempt failing over the first path (e.g. SGSN) and succeeding over the second path (e.g. MSC);
- Short message transfer attempt failing over the first path (e.g. SGSN) and over the second path (e.g. MSC).

References to the relevant specifications of the different operations are given in clause 4.



NOTE 1): This operation is not used by the SGSN.

Figure 15a): Successful short message transfer attempt via the MSC or the SGSN

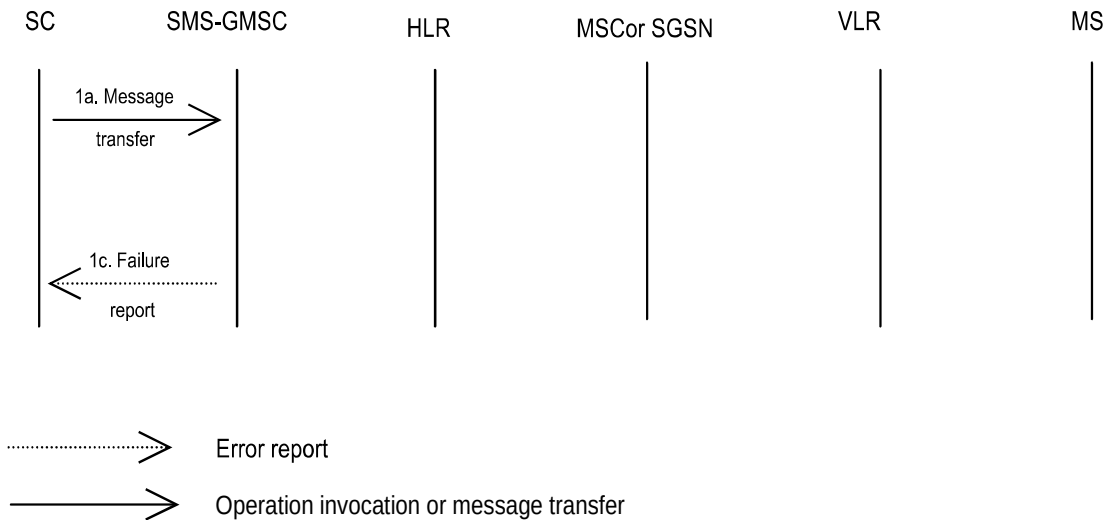


Figure 15b): Short message transfer attempt failing due to error at the SMS-GMSC

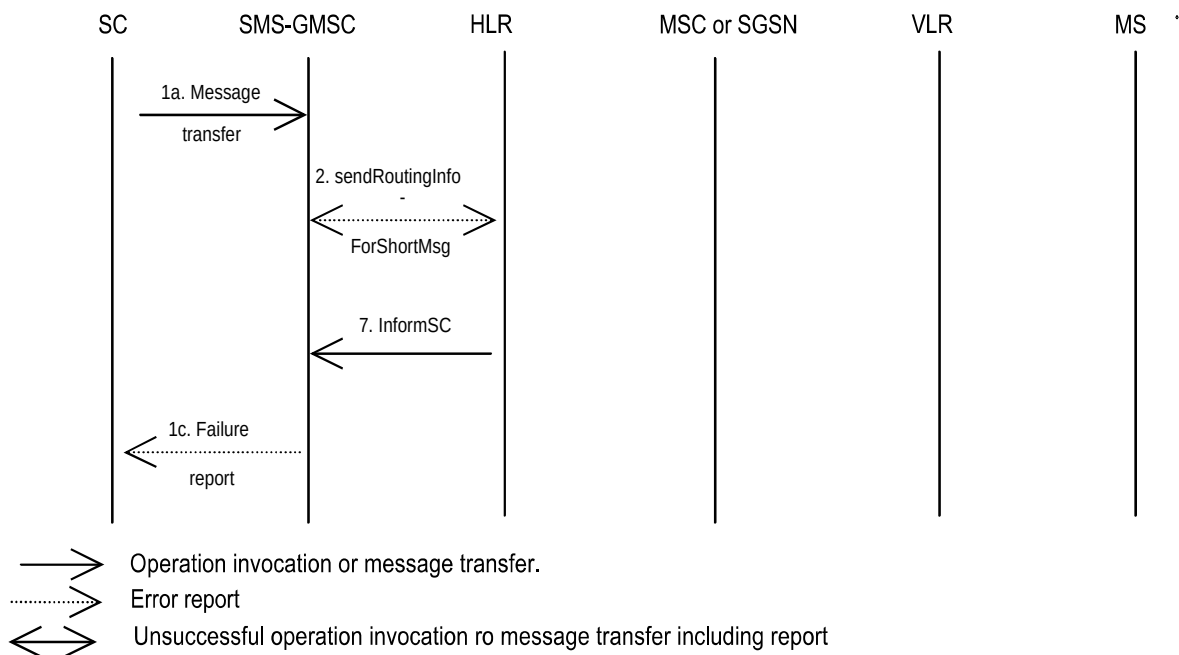


Figure 15c): Short message transfer attempt failing due to negative outcome of HLR information retrieval

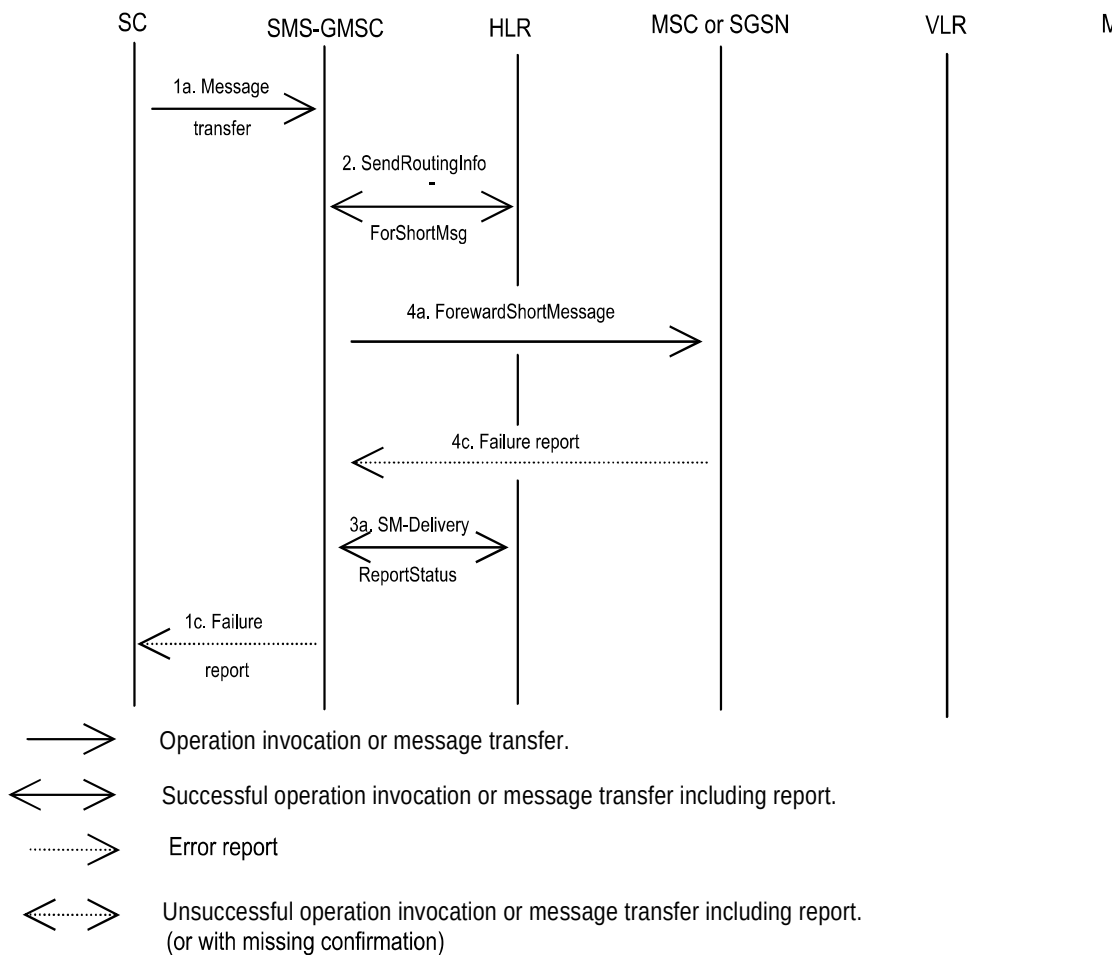


Figure 15d): Short message transfer attempt failing due to error at the MSC or SGSN

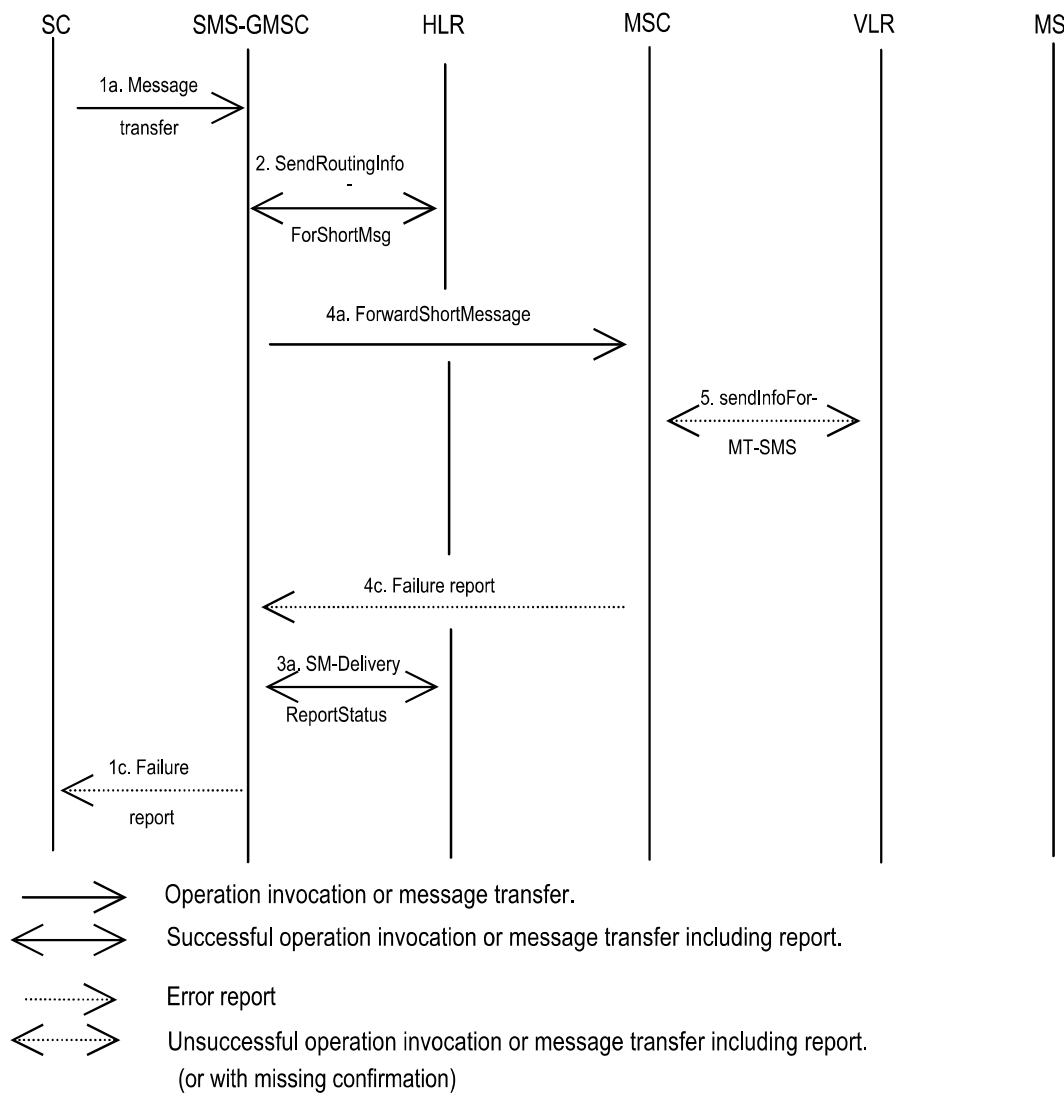
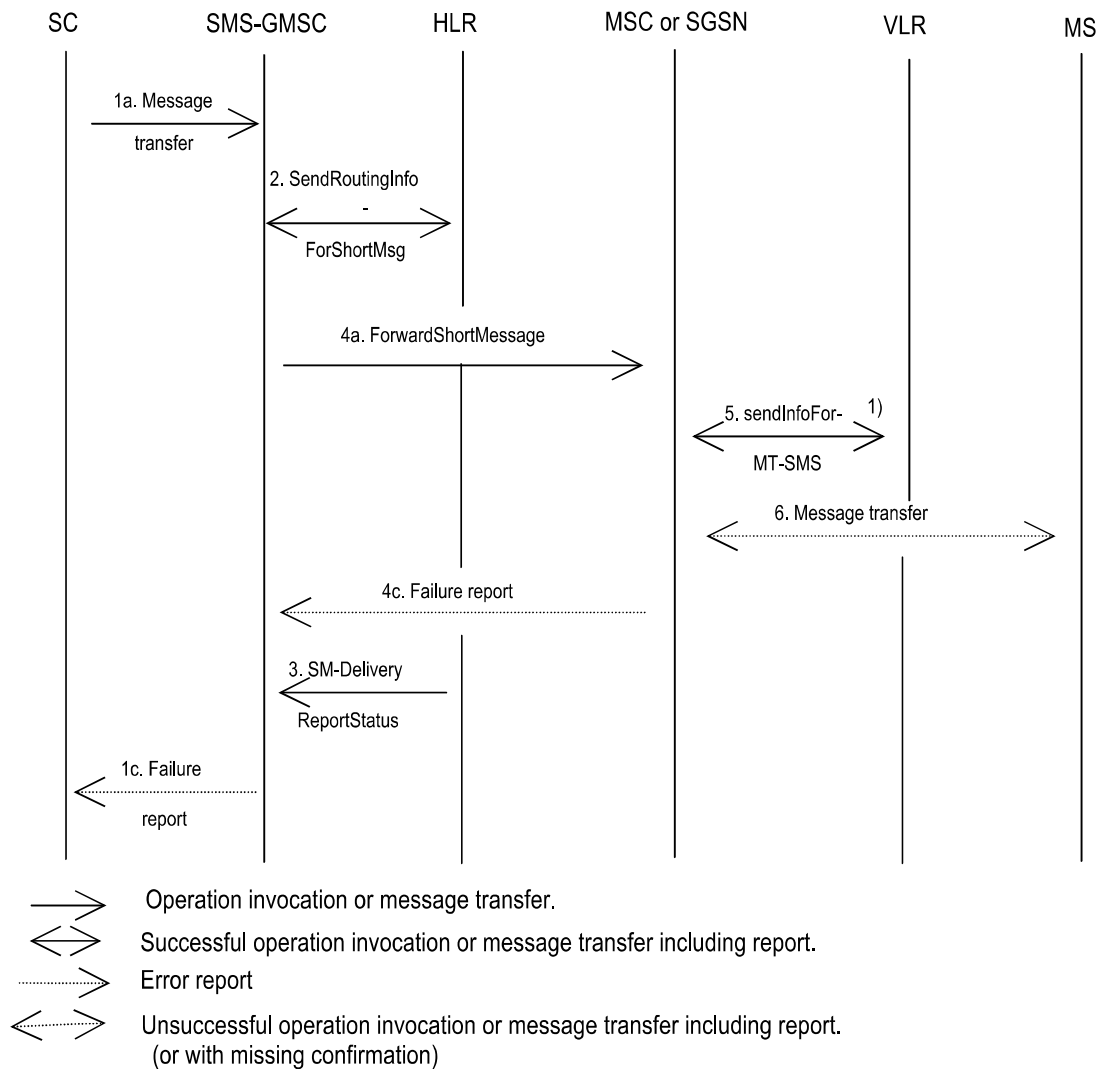
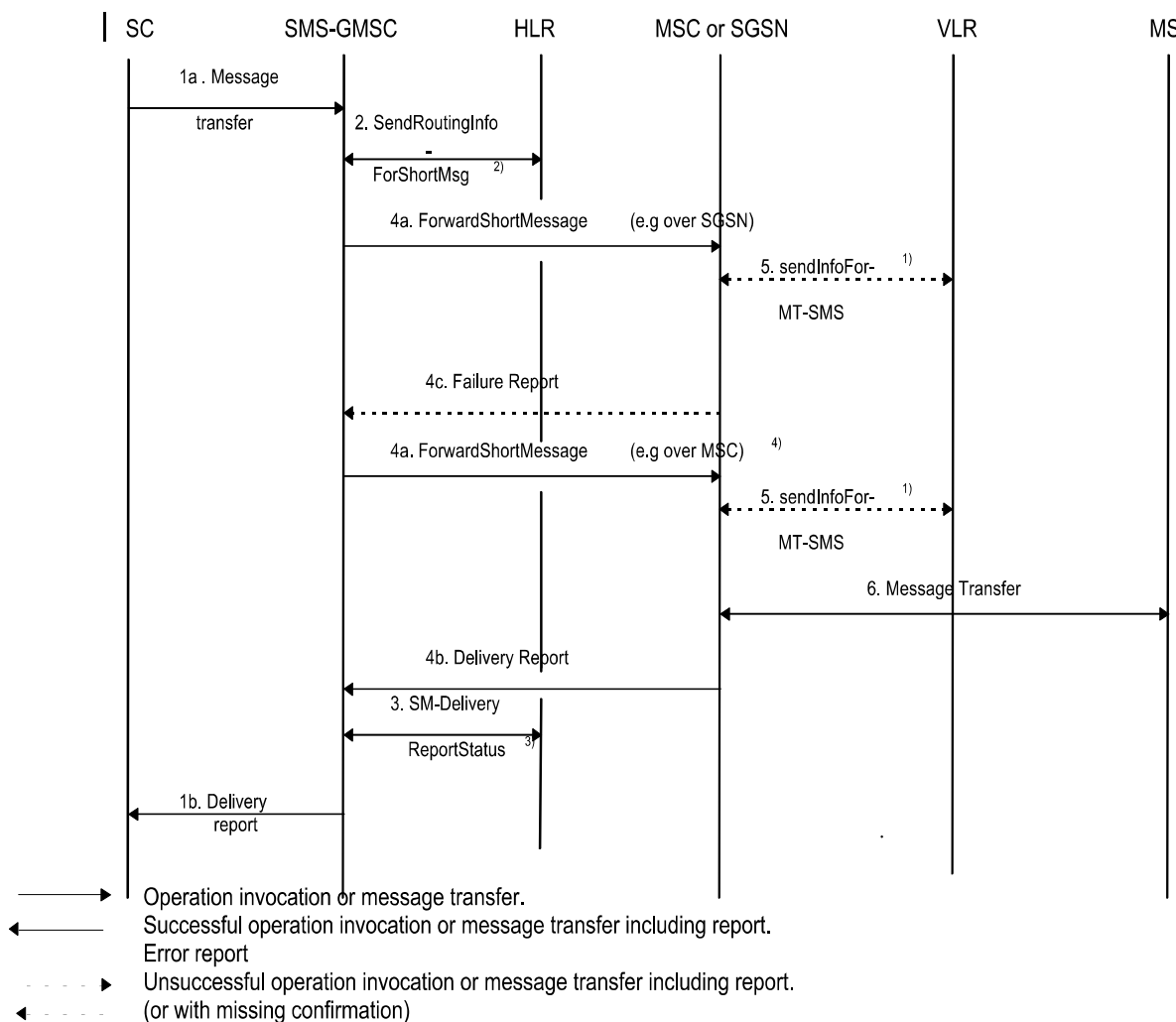


Figure 15e): Short message transfer attempt failing due to negative outcome of VLR information retrieval



NOTE 1): This operation is not used by the SGSN.

Figure 15f): Short message transfer attempt failing due to erroneous message transfer on the radio path



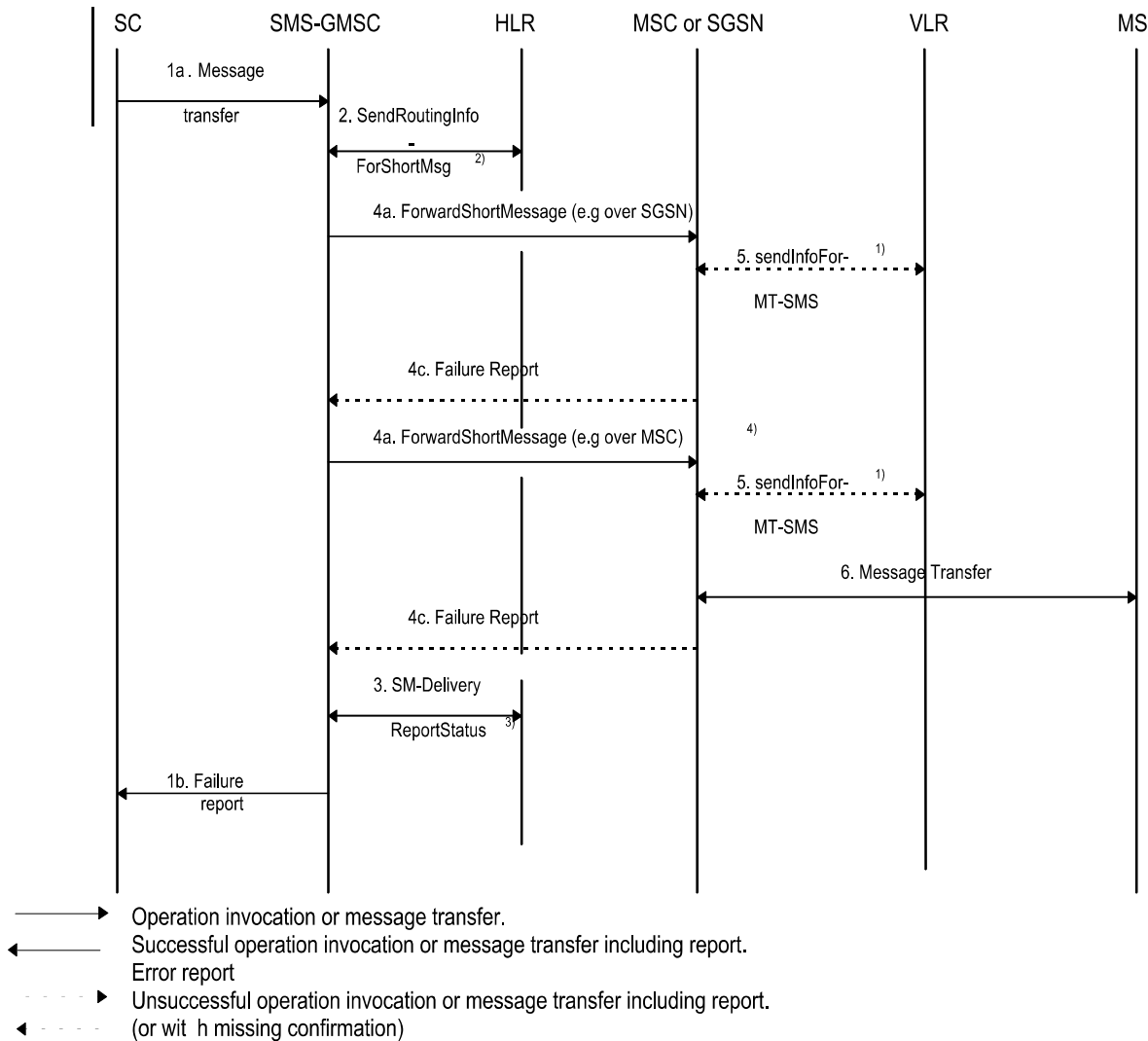
NOTE 1): This operation is not used by the SGSN.

NOTE 2): Two addresses (SGSN and MSC) are received from HLR.

NOTE 3): Successful transfer over second path and unsuccessful transfer over first path (e.g. Absent subscriber) are sent to HLR.

NOTE 4): The SMS transfer towards the second path is only triggered by the reception of some MAP errors on the first path as described in subclause 8.1.1.

Figure 15g): Short message transfer attempt failing over the first path (e.g. SGSN) and succeeding over the second path (e.g. MSC)



NOTE 1): This operation is not used by the SGSN.

NOTE 2): Two addresses (SGSN and MSC) are received from HLR.

NOTE 3): Unsuccessful transfer over the second path (e.g. MemoryCapacityExceeded) and over the first path (e.g. Absent subscriber) are sent to HLR.

NOTE 4): The SMS transfer towards the second path is only triggered by the reception of some MAP errors on the first path as described in subclause 8.1.1.

Figure 15h): Short message transfer attempt failing over the first path (e.g. SGSN) and over the second path (e.g. MSC)

Operation 1: Message transfer SC -> SMS-GMSC

This operation is used to transfer a short message from an SC to an SMS-GMSC.

The operation consists of:

- the transfer of a message containing the TPDU from the SC to the SMS-GMSC (see "1a. Message transfer" in figure 15); and
- the return of either a "Failure report" (see 1c. in figure 15) or a "Delivery report" (see 1b. in figure 15).

"Failure report" is returned to the SC when the SMS-GMSC has received indication from another entity (MSC, SGSN or HLR) the procedure was unsuccessful. The error indications which the SMS-GMSC may receive from the MSC, SGSN, HLR, VLR or MS enable the SMS-GMSC to return one of the error indications given in subclause 3.3 back to the SC.

Operation 2: sendRoutingInfoForShortMsg

The operation is an interrogation of the HLR by the SMS-GMSC to retrieve information necessary to forward the short message.

The result may contain the MSC, SGSN or both addresses, and shall also indicate which address belongs to the MSC and the SGSN.

Operation 3: SM-DeliveryReportStatus

The operation provides a means for the SMS-GMSC to request the HLR to add an SC address to the MWD, and is activated when the SMS-GMSC receives an absent subscriber indication from the MSC, SGSN or both, and/or when the SMS-GMSC receives a failure report for a short message transfer with cause MS Memory Capacity Exceeded via the MSC or SGSN. The Return Result optionally contains the MSIsdn-Alert.

This operation is also activated at successful delivery short message when the MNRF, MNRG or both are set in HLR.

The operation consists of:

- the transfer of a message, containing the MSISDN of the MS to which the short message was addressed, the SC-address, the successful outcome and/or the causes (Absent Subscriber, MS memory capacity exceeded or both) for updating the MWD, from the SMS-GMSC to the HLR (see 3. in figure 15).

Operation 4: forwardShortMessage

The operation provides a means for the SMS-GMSC to transfer a short message to the MSC or to the SGSN at which the MS is currently located.

The operation works in tandem with the forwarding of the short message from the MSC or from the SGSN to the MS. Thus, the outcome of the operation comprises either success, i.e. that the message has been delivered to the MS; or a failure that may be caused by several reasons, e.g. failure in the transfer SMS-GMSC -> MSC or SMS-GMSC -> SGSN, MS being detached, or no paging response.

It should be noted that the MNRG setting is implicitly carried out in SGSN when the message transfer is denied due to GPRS DETACH.

Operation 5: sendInfoForMT-SMS

The operation provides a means for the MSC to retrieve subscriber information from VLR for mobile terminated short message transfer. The operation may be associated with an authentication procedure, as shown in figure 16. Unsuccessful retrieval (e.g. absent subscriber) is indicated by a cause indication to the SMS-GMSC.

An overall depiction of how operation 5 interacts with signalling on the radio path is given in figure 16.

It should be noted that the MNRF setting is implicitly carried out when the message transfer is denied due to IMSI DETACH.

NOTE: This operation is not used by the SGSN.

Operation 6: Message transfer MSC -> MS

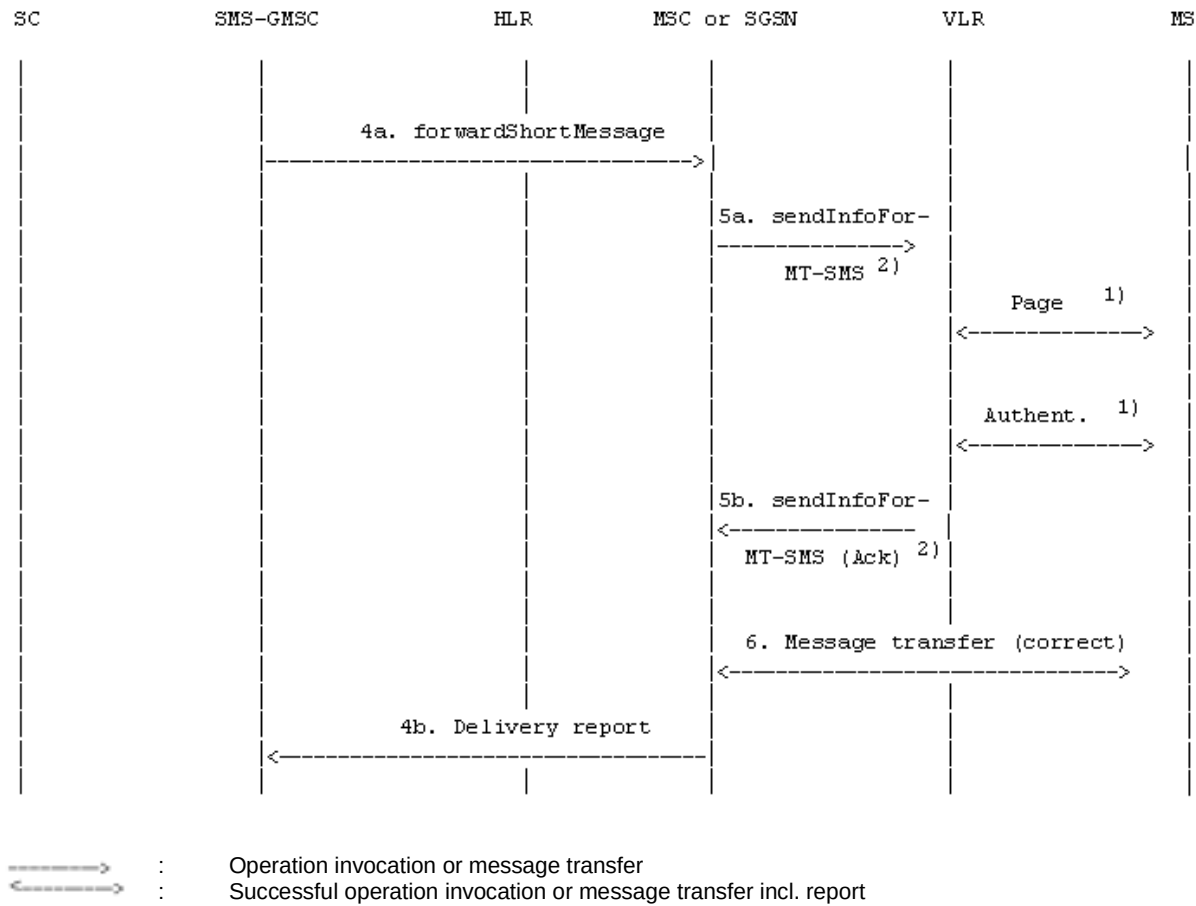
The operation is used to transfer a short message from the MSC to the MS.

If the transfer is not successful, e.g. due to the MS losing radio coverage after having successfully authenticated, a failure report (RP-ERROR) is returned to the SMS-GMSC. In this case, MWD and MCEF in the HLR shall be updated only for the case where the transfer fails with cause MS Memory Capacity Exceeded.

If the MS notifies the network that the MS has been unable to accept a short message because its memory capacity has been exceeded, then the ME shall set the memory capacity Exceeded Notification flag if present.

Operation 7: InformSC

The operation is used to transfer the MSIsdn-Alert from the HLR to the SMS-GMSC in case of the error Absent Subscriber or positive result given as an answer to the operation SendRoutingInfoForSM.

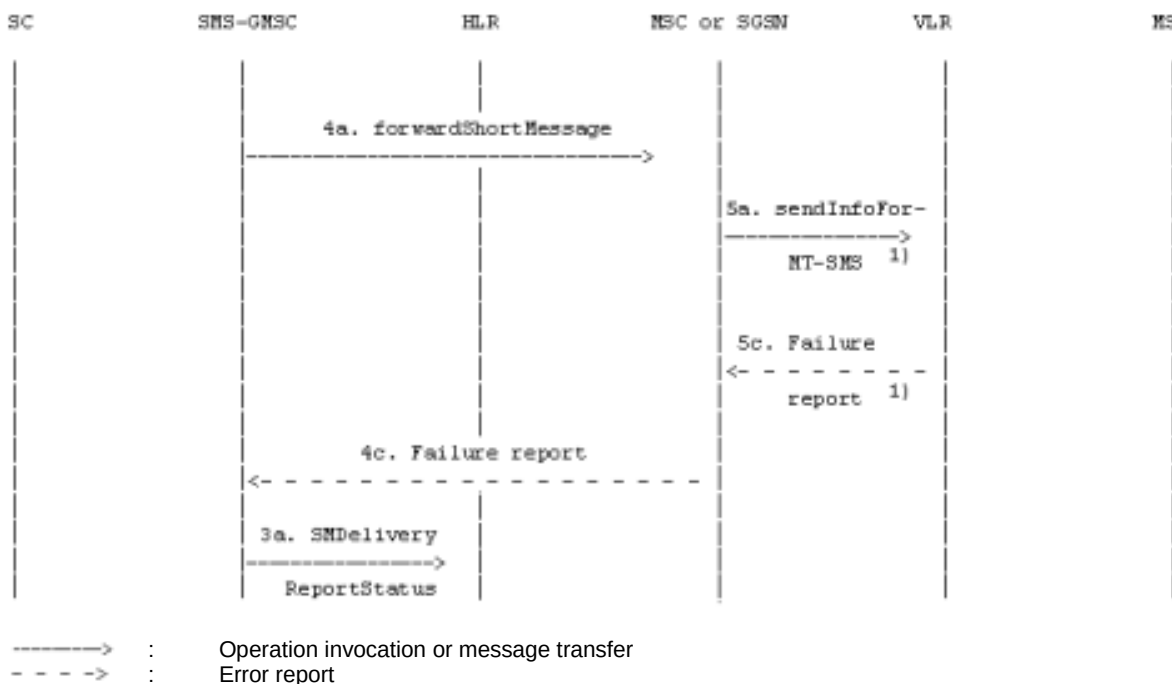


NOTE 1): Described in GSM 04.08 [12] and 3G TS 29.002 [15].

If the SGSN is used, Paging and Authentication are performed from SGSN.

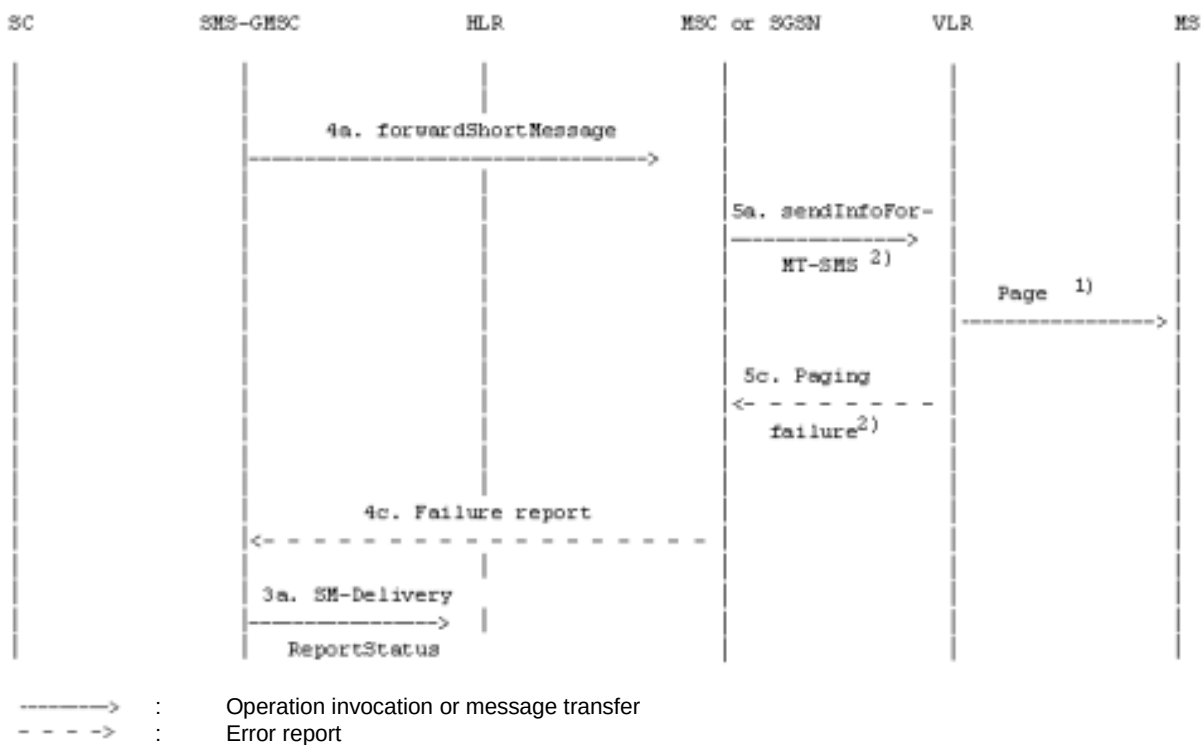
NOTE 2): This operation is not used by the SGSN.

Figure 16a): "Send information for MT SMS" procedure; error free case



NOTE 1): The GPRS DETACH information is in the SGSN.
 This operation is not used by the SGSN.

**Figure 16b): "Send information for MT SMS" procedure;
 erroneous case: absent subscriber (e.g. IMSI DETACH or GPRS DETACH)**



NOTE 1): Described in GSM 04.08 [12] and 3G TS 29.002 [15].
 If the SGSN is used, Paging is performed from SGSN.

NOTE 2): This operation is not used by the SGSN.

**Figure 16c): "Send information for MT SMS" procedure;
 erroneous case: Absent subscriber (e.g. no paging response)**



NOTE 1): Described in GSM 04.08 [12] and 3G TS 29.002 [15].

If the SGSN is used, Paging and Authentication are performed from SGSN.

NOTE 2): This operation is not used by the SGSN.

Figure 16d): "Send information for MT SMS" procedure; incorrect authentication

10.2 Short message mobile originated

The entities involved in this procedure is depicted in figure 17.

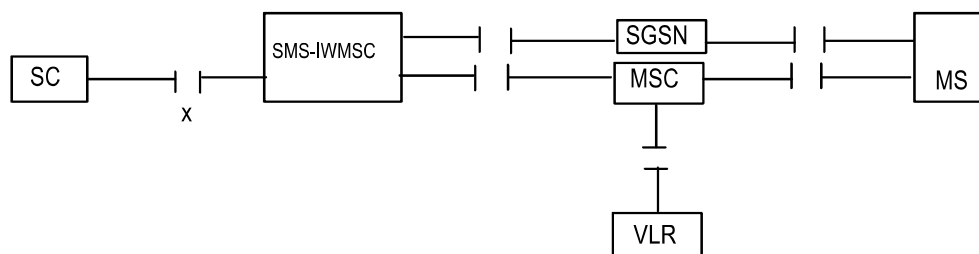


Figure 17: Interfaces involved in the Short message mobile originated procedure

GSM TS 03.02 [5]. X is the interface between an MSC or an SGSN and an SC as defined in clause 5.

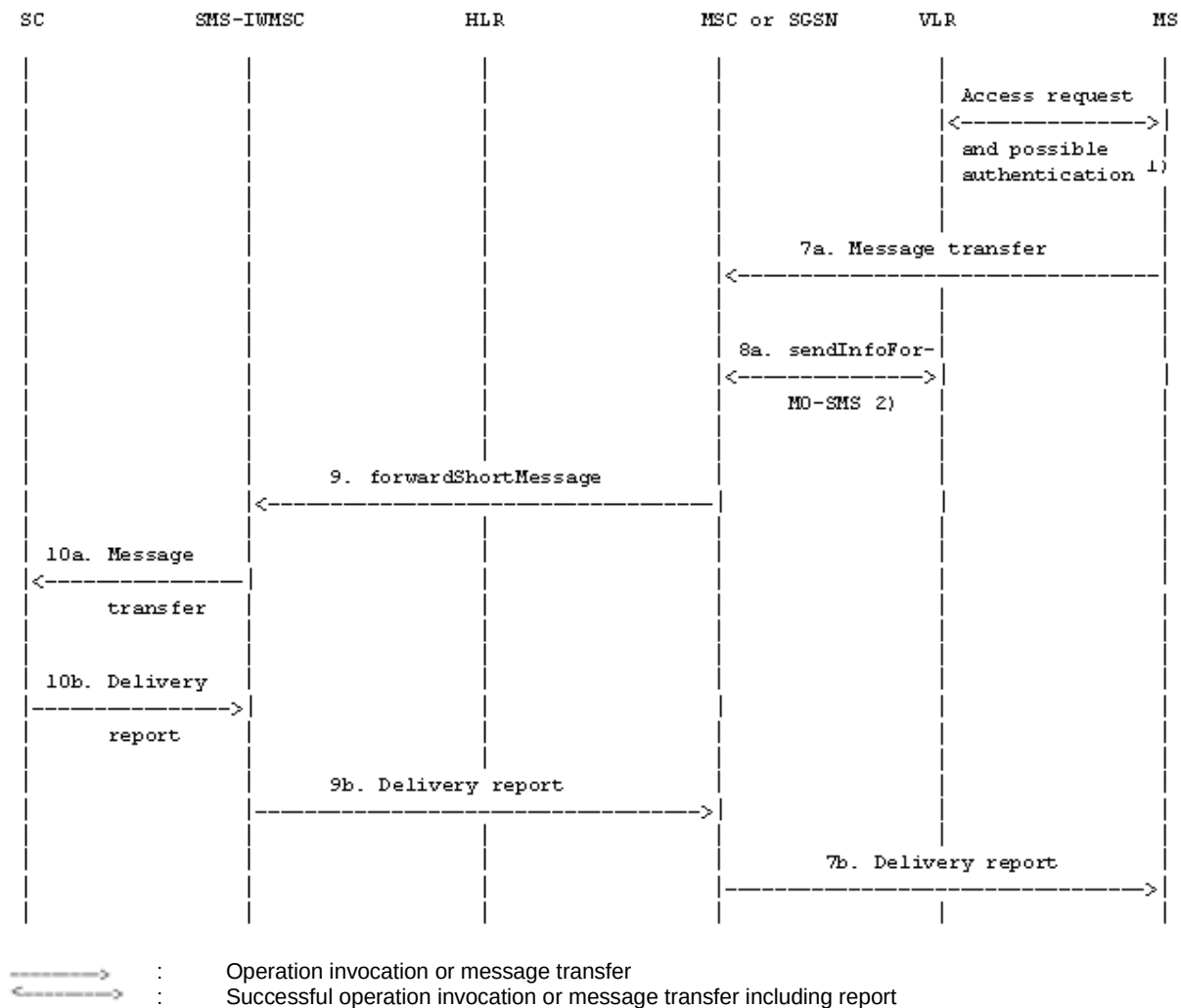
Note that since the short message mobile originated procedure covers the functionality required at SM-RL for transferring TPDUs from SC to MS, the procedure described covers both short message (SMS-SUBMIT) and command (SMS-COMMAND) transfer. The term "short message transfer" therefore in this subclause, covers both cases.

In figure 18, sequence diagrams for the following basic situations of short message mobile terminated transfer attempt:

- Successful short message transfer;
- Short message transfer attempt failing due to error at the MSC or SGSN;

- Short message transfer attempt failing due to negative outcome of VLR information retrieval;
- Short message transfer attempt failing due to error at the SMS-IW MSC;
- Short message transfer attempt failing due to error at the SC.

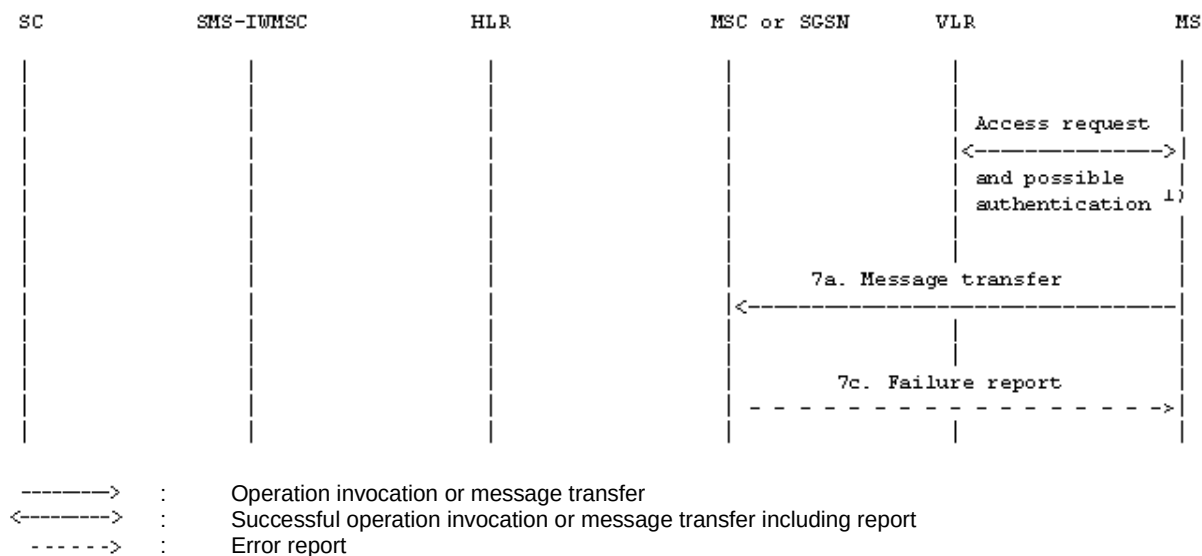
References to the relevant specifications of the different operations are given in clause 4.



NOTE 1): Described in [12] and 3G TS 29.002 [15].

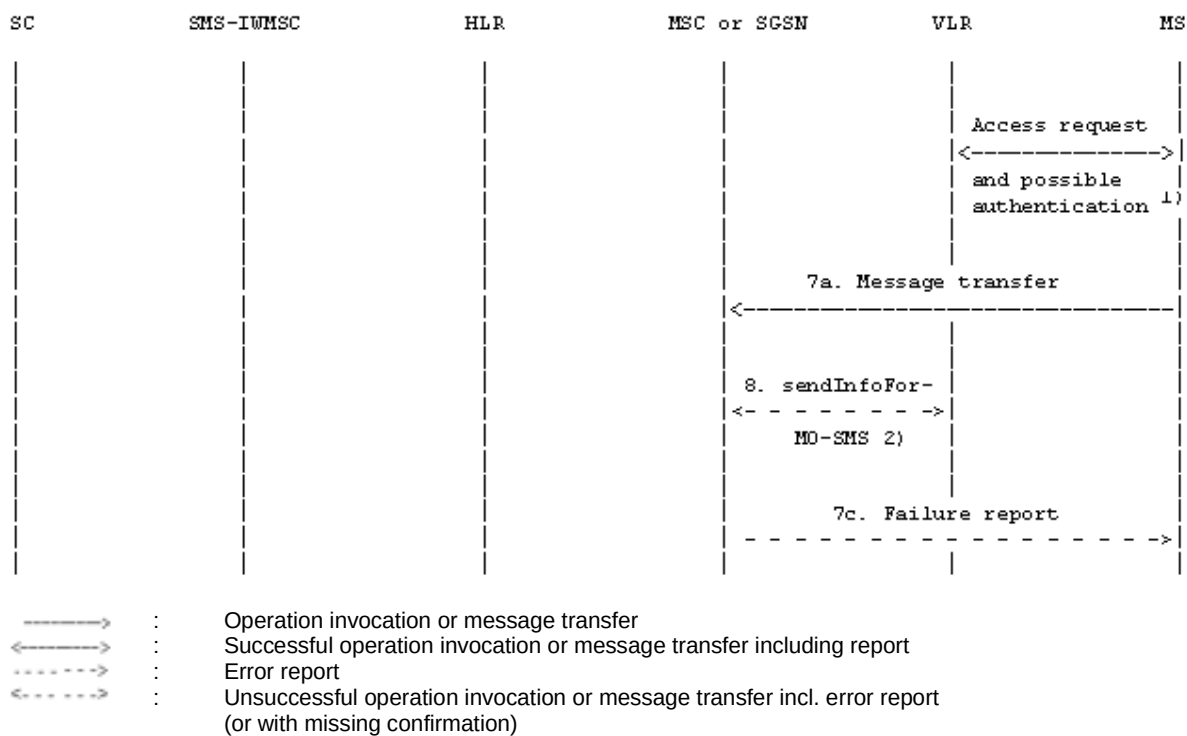
NOTE 2): This operation is not used by the SGSN.

Figure 18a): Successful short message transfer attempt



NOTE 1): Described in GSM 04.08 [12] and 3G TS 29.002 [15].

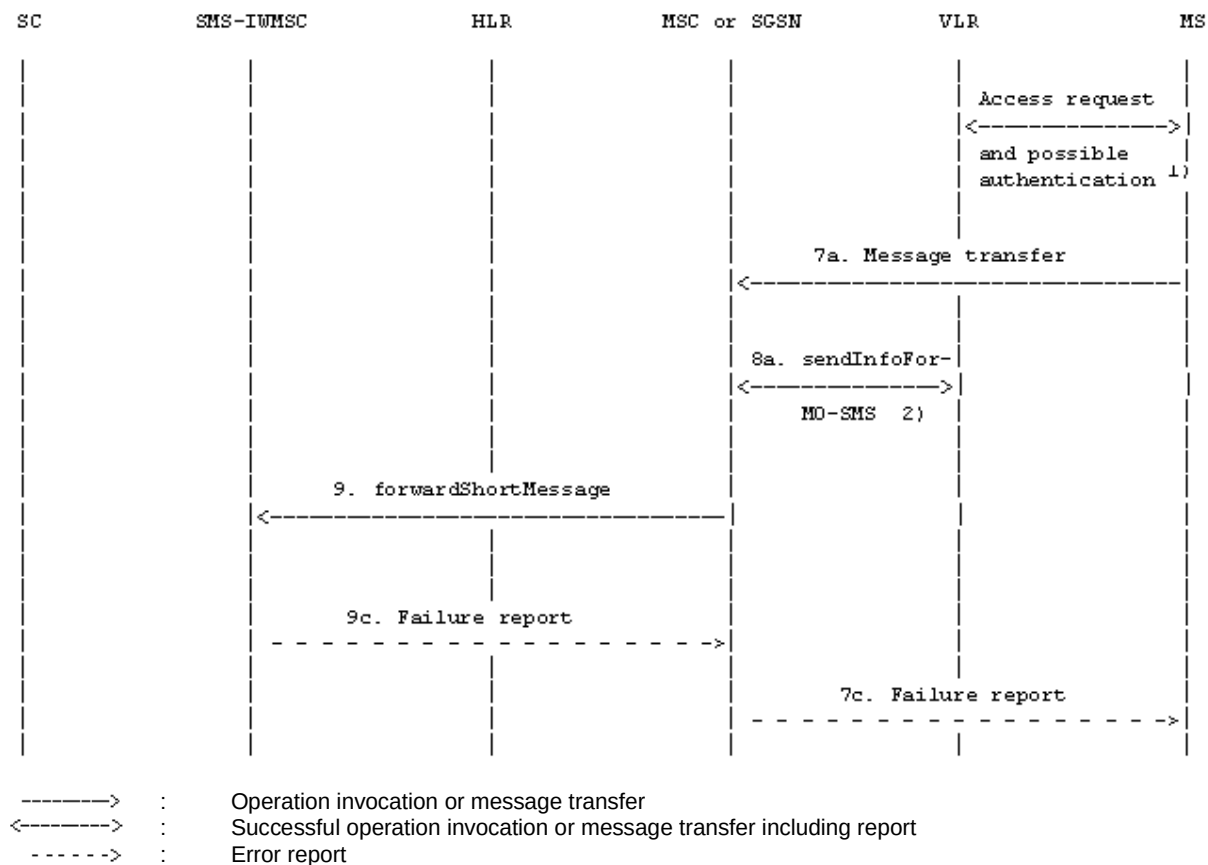
Figure 18b): Short message transfer attempt failing due to error at the MSC or SGSN



NOTE 1): Described in GSM 04.08 [12] and 3G TS 29.002 [15].

NOTE 2): This operation is not used by the SGSN.

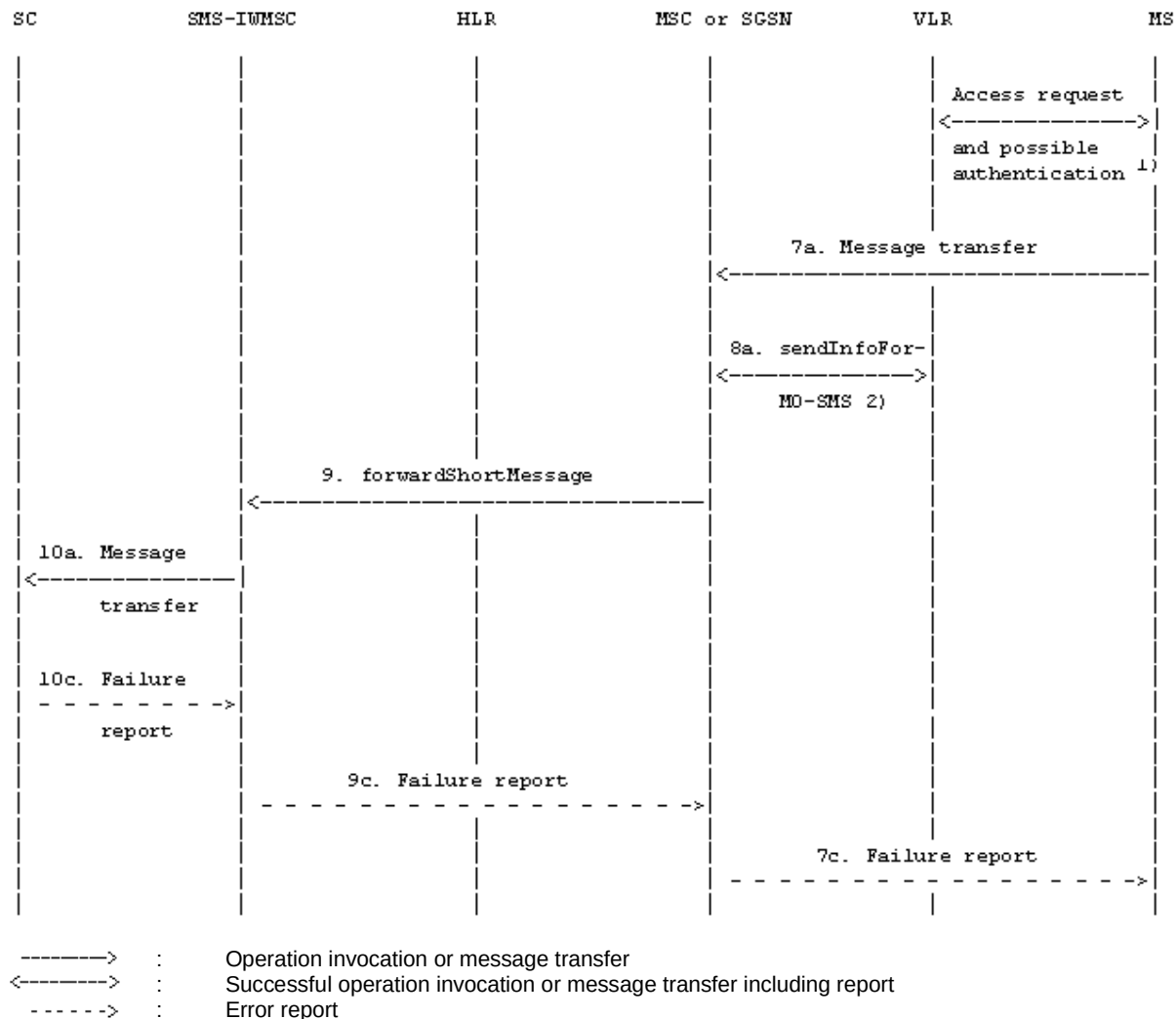
Figure 18c): Short message transfer attempt failing due to negative outcome of VLR information retrieval



NOTE 1): Described in GSM 04.08 [12] and 3G TS 29.002 [15].

NOTE 2): This operation is not used by the SGSN.

Figure 18d): Short message transfer attempt failing due to error at the SMS-IW MSC



NOTE 1): Described in GSM 04.08 [12] and 3G TS 29.002 [15].

NOTE 2): This operation is not used by the SGSN.

Figure 18e): Short message transfer attempt failing due to error at the SC

Operation 7: Message transfer MS -> MSC or MS -> SGSN

The operation is used to transfer a short message from the MS to the MSC or to the SGSN.

Operation 8: sendInfoForMO-SMS

The operation provides a means for the MSC to verify from the VLR that the mobile originated short message transfer does not violate supplementary services invoked or restrictions imposed using the network feature Operator Determined Barring.

A successful VLR response carries the MSISdn of the originating MS being transferred to the SC at SM-RL.

NOTE: This operation is not used by SGSN.

Operation 9: forwardShortMessage

The operation provides a means for the MSC or for the SGSN to transfer a short message to the SMS-IW MSC.

The procedure is required if the serving MSC or SGSN cannot access the SC directly, e.g. because it has no connection to SC (see clause 5).

The procedure works in tandem with the forwarding of the short message from the SMS-IW MSC to the SC. Thus, the outcome of the operation comprises either success, i.e. that the message has been delivered to the SC; or a failure that may be caused by several reasons, e.g. failure in the transfer MSC --> SMS-IW MSC or SGSN --> SMS-IW MSC, SC does not comply.

Operation 10: Message transfer SMS-IW MSC -> SC

The operation is used to transfer a short message from an SMS-IW MSC to an SC, and consists of:

- the transfer of a message containing the TPDU from the SMS-IW MSC to the SC (see "10a. Message transfer" in figure 18); and
- the return of either a "Failure report" (see 10c. in figure 18) or a "Delivery report" (see 10b. in figure 18).

"Failure report" is returned to the MS when the SMS-IW MSC has received indication from the network or the SC that the procedure was unsuccessful.

10.3 Alert transfer

The entities involved in this procedure are depicted in figure 19.

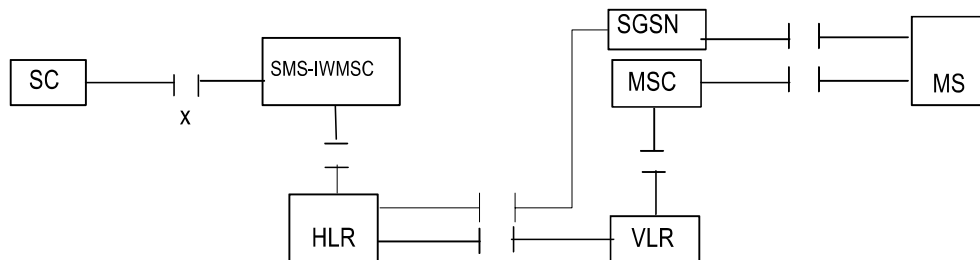


Figure 19: Interfaces involved in the Alert procedure. X is the interface between an SC and an MSC as defined in clause 5

This procedure consists of the operations shown in figure 20.

Three cases are distinguished:

- the MS becomes reachable when the MNRF, MNRG or both are set but the MCEF is not set (figure 20a);
- the MS becomes reachable when the MNRF, MNRG or both, and the MCEF are set (figure 20b);
- the MS notifies the network that it has memory available to receive one or more short messages when the MCEF is set (figure 20c).

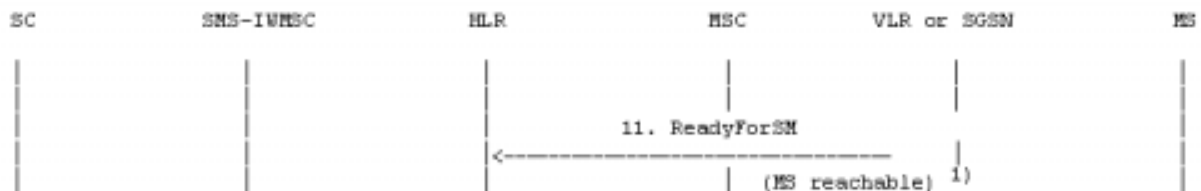
The operations between MSC and VLR, between HLR and VLR or SGSN and between HLR and SMS-IW MSC are specified in 3G TS 29.002 [15]. The operation between MS and MSC or SGSN is specified in 3G TS 24.011 [13]. References to specifications of other operations are given in clause 4.



-----> : Operation invocation or message transfer

NOTE 1): In case ReadyForSM is sent by the SGSN, the reason may be MS reachable via the SGSN, or MS reachable via the SGSN and the MSC (see 3G TS 23.060 [27]).

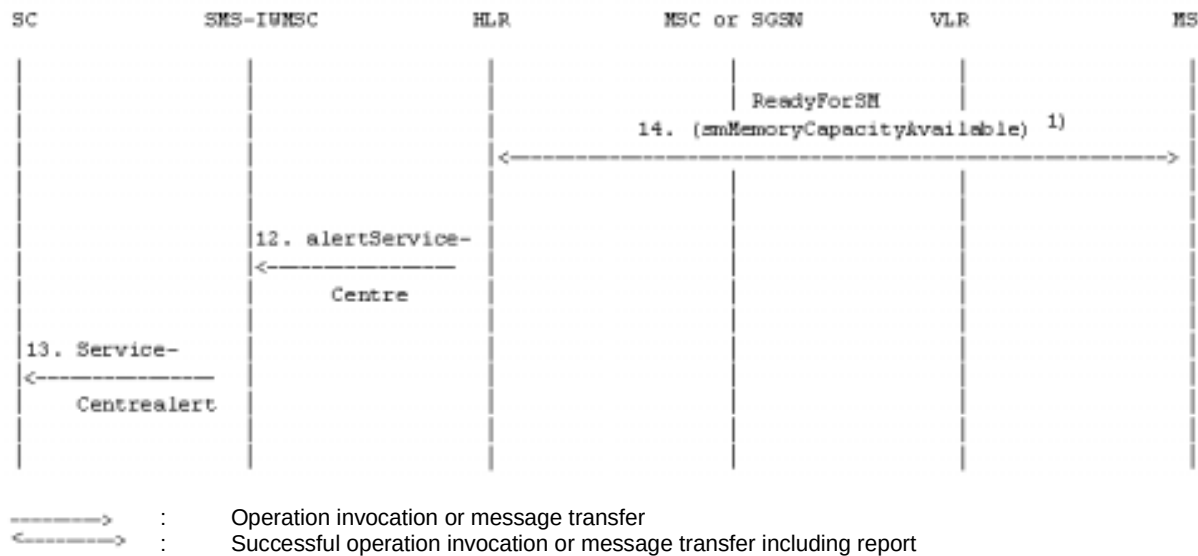
Figure 20a: The alert procedure when the MS becomes reachable, MNRf, MNRg or both are set and MCEF is not set



-----> : Operation invocation or message transfer

NOTE 1): In case ReadyForSM is sent by the SGSN, the reason may be MS reachable via the SGSN, or MS reachable via the SGSN and the MSC (see 3G TS 23.060 [27]).

Figure 20b: The alert procedure when the MS becomes reachable, MNRf, MNRg or both are set and MCEF is set



NOTE 1): Described in 3G TS 24.011 [13] and 3G TS 29.002 [15].

Figure 20c: The alert procedure when the MS notifies the network that it has memory available to receive one or more short messages and MCEF is set

Operation 11: ReadyForSM (MS reachable)

The operation provides a means to transfer alert information from VLR or SGSN to HLR.

The procedure is activated when the VLR or the SGSN detects that the MS is active, i.e. when the MS responds to a paging request.

Operation 12: alertServiceCentre

The operation provides a means to transfer alert information from HLR to MSC.

Operation 13: ServiceCentreAlert

The operation provides a means to transfer alert information from an SMS-IW MSC to an SC.

The operation consists of transfer of a message ("RP-ALERT-SC") from the SMS-IW MSC to the SC.

Operation 14: ReadyForSM (smMemoryCapacityAvailable)

The operation provides a means for the MS to notify the network that it has memory available to receive one or more short messages.

The following applies if the memory capacity available notification flag is implemented in the (U)SIM.

The operation consists of transfer of a message ("RP-SM-MEMORY-AVAILABLE") from the MS to the HLR, and the return of an acknowledgement to the MS. When the MS rejects a short message due to lack of available memory capacity the need to transfer notification shall be stored in the (U)SIM. After a attempt to transfer the RP-SM-Memory-Available message the following applies:

If the MS receives a positive acknowledgement it shall unset the memory capacity exceeded notification flag in the (U)SIM and exit this procedure.

If the MS receives a negative acknowledgement indicating a permanent failure condition (as specified in 3G TS 24.011 [13]) it shall unset the memory capacity exceeded notification flag in the (U)SIM and exit the procedure.

If the MS receives a negative acknowledgement indicating a temporary failure condition (as specified in 3G TS 24.011 [13]) or receives no acknowledgement or an indication of failure by lower layers, it shall repeat the attempt to transfer the message in accordance with procedures defined in 3G TS 24.011 [13]. If these repeat procedures fail, the mobile shall unset the memory capacity exceeded notification flag in the (U)SIM and exit this procedure.

If memory capacity has become available because memory is cleared, the value of the memory capacity exceeded notification flag is read. If the flag is set, the MS notifies the network that memory capacity is now available as described above.

When the mobile is powered up or the SIM / UICC is inserted, the mobile shall check the memory capacity exceeded notification flag in the (U)SIM; if the flag is set and the (U)SIM has memory available to receive a short message the mobile shall attempt to notify the network that it has memory available, as described above.

11 Mapping of error causes between RP layers

This clause describes the interworking between the relay layers on the radio interface (i.e. between the servicing MSC/SGSN and the mobile station), and within the network (i.e. between servicing MSC/SGSN, VLR, HLR, or GMSC).

11.1 Mobile Terminated short message transfer

If errors are indicated by the VLR after invocation of the "sendInfoFor-MT-SMS" operation, the appropriate error information is returned to the SMS-GMSC in a failure report as specified in 3G TS 29.002 [15] (negative outcome of "forwardShortMessage" see clause 10),

If errors are detected by the MSC or by the SGSN during the transfer on the radio interface, the error cause returned in the return error of the MAP procedure ForwardShortMessage shall be set as follows:

Failure at the MSC or SGSN	Return error to be included in the MAP-proc
RP-ERROR message with error cause: 22 Memory capacity exceeded Other error causes	SM_DeliveryFailure with cause "MemoryCapacityExceeded" ¹⁾ SM_DeliveryFailure with cause "equipmentProtocolError" ¹⁾
CP or lower layer error (e.g. RR, layer 2 failure) ²⁾ Mobile has no SM capability	SM_DeliveryFailure with cause "equipmentProtocolError" ¹⁾ SM_DeliveryFailure with cause "equipmentNotSM-Equipped" ¹⁾ 0
TR1N timeout ²⁾ MNSMS-error-ind (No SAPI 3)	SM_DeliveryFailure with cause "equipmentProtocolError" ¹⁾

1) For definition of MAP error SM_DeliveryFailure and its parameter "cause" see 3G TS 29.002 [15].

2) The error causes of the RP-ERROR message, the CP layer and timer TR1N are defined in 3G TS 24.011 [13].

11.2 Memory available notification

If errors are indicated by the HLR (via the VLR or the SGSN) after invocation of the "ReadyForSM" operation, the MSC or the SGSN shall return the appropriate error information to the MS in a failure report (i.e. a RP-ERROR message) containing the following error cause:

Return error from ReadyForSM (Alert Reason is "memory available")	Cause value in the RP-ERROR message
DataMissing UnexpectedDataValue UnknownSubscriber FacilityNotSupported System Failure	38 Network out of order 38 Network out of order 30 Unknown Subscriber 69 Requested facility not implemented 38 Network out of order
Local or lower layer failure (e.g. reject condition, timer expired or transaction abort)	38 Network out of order

NOTE: The coding and the use of the RP-ERROR message is specified in 3G TS 24.011 [13].

11.3 Mobile Originated short message transfer

If errors are indicated by the VLR after invocation of the "sendInfoForMO-SMS" operation.(see clause 10), the MSC shall return the appropriate error information to the MS in a failure report (i.e. a RP-ERROR message) containing the following error cause:

Return error from SendInfoForMO-SMS	Cause value in the RP-ERROR message
DataMissing	38 Network out of order
UnexpectedDataValue	38 Network out of order
TeleserviceNotProvisioned	50 Requested facility not subscribed
CallBarred	
- barringServiceActive	10 Call barred
- operatorBarring	8 Operator determined barring

NOTE: The coding and the use of the RP-ERROR message is specified in 3G TS 24.011 [13]. The operation SendInfoForMO-SMS is not used by the SGSN.

If errors are indicated by the SMS-IWMSC (negative outcome of the "forwardShortMessage),) the MSC or the SGSN shall send a failure report (i.e. a RP-ERROR message) to the MS, with the error cause coded as follows:

Return error from ForwardShortMessage	Cause value in the RP-ERROR message
DataMissing	38 Network out of order
FacilityNotSupported	69 Requested facility not implemented
UnexpectedDataValue	38 Network out of order
SM-DeliveryFailure cause: unknownSC	1 Unassigned number
SM-DeliveryFailure cause: SC-Congestion	42 Congestion
SM-DeliveryFailure cause: invalidSME-Addr	21 Short message transfer rejected
SM-DeliveryFailure cause: subscriberNotSC-Subscriber	28 Unidentified subscriber
Local or lower layer failure (e.g. reject condition, timer expired or transaction abort)	38 Network out of order

NOTE: The coding and the use of the RP-ERROR message is specified in 3G TS 24.011 [13].

Annex A (informative): Protocol stacks for interconnecting SCs and MSCs

No mandatory protocol between the Service Centre (SC) and the Mobile Switching Centre (MSC) below the transfer layer is specified by GSM/UMTS specifications; this is a matter of agreement between SC and PLMN operators.

Some example protocols are provided in GSM TS 03.47 [11] to assist SC and PLMN operators. These are based on the following principles, which SC and PLMN operators are recommended to follow even if they choose not to use one of the examples given in GSM TS 03.47 [11]:

The protocol(s) between SC and MSC below transfer layer should:

- a) provide the service defined for SM-RL (see Subclause 9.3);
- b) be based on widely accepted telecommunications protocols in the public domain;
- c) permit open interconnection.

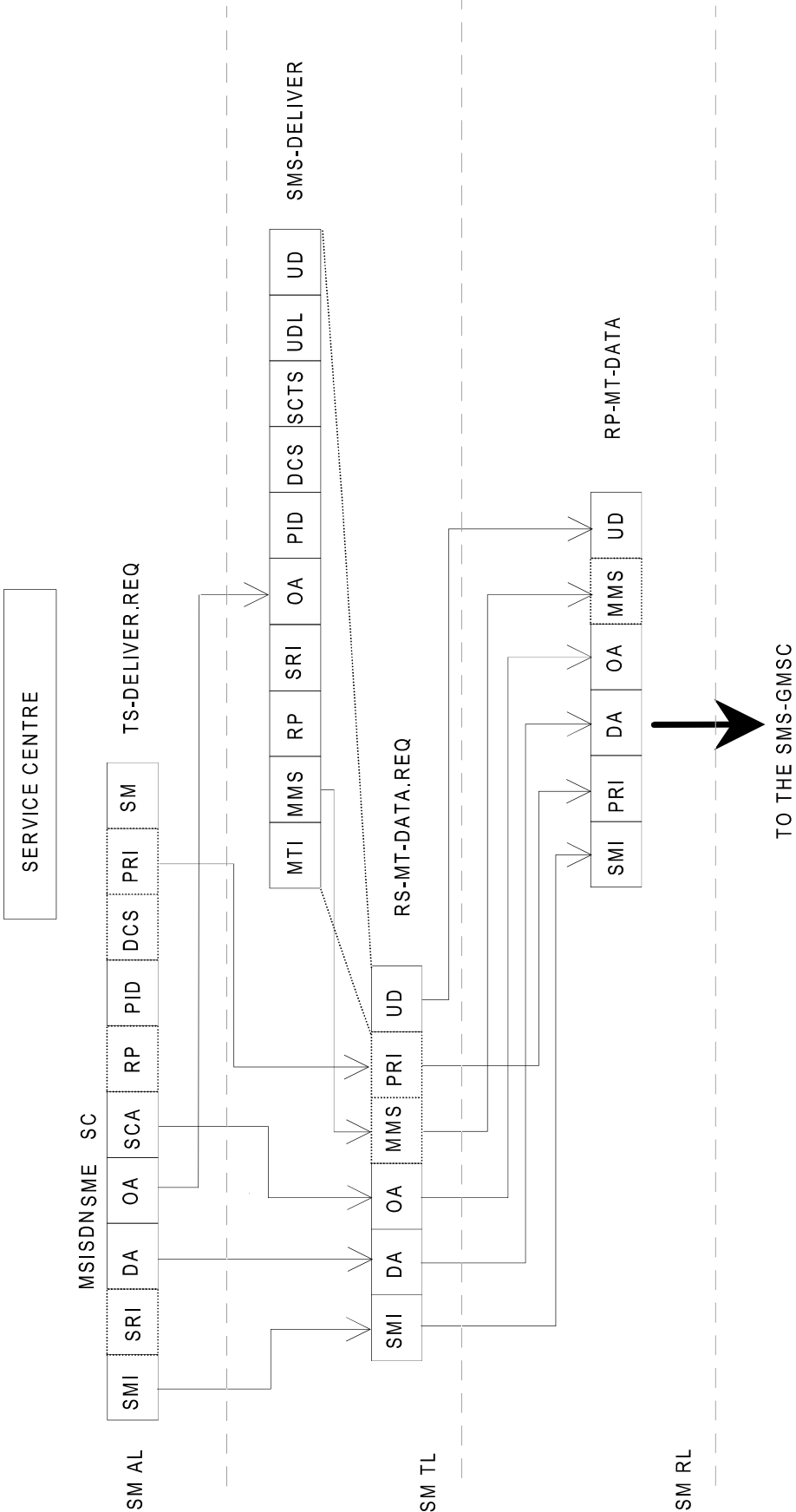
Annex B (informative): Information now contained in 3G TS 23.038 [9]

Annex B held information that is now contained in 3G TS 23.038 [9].

Annex C (informative): Short message information flow

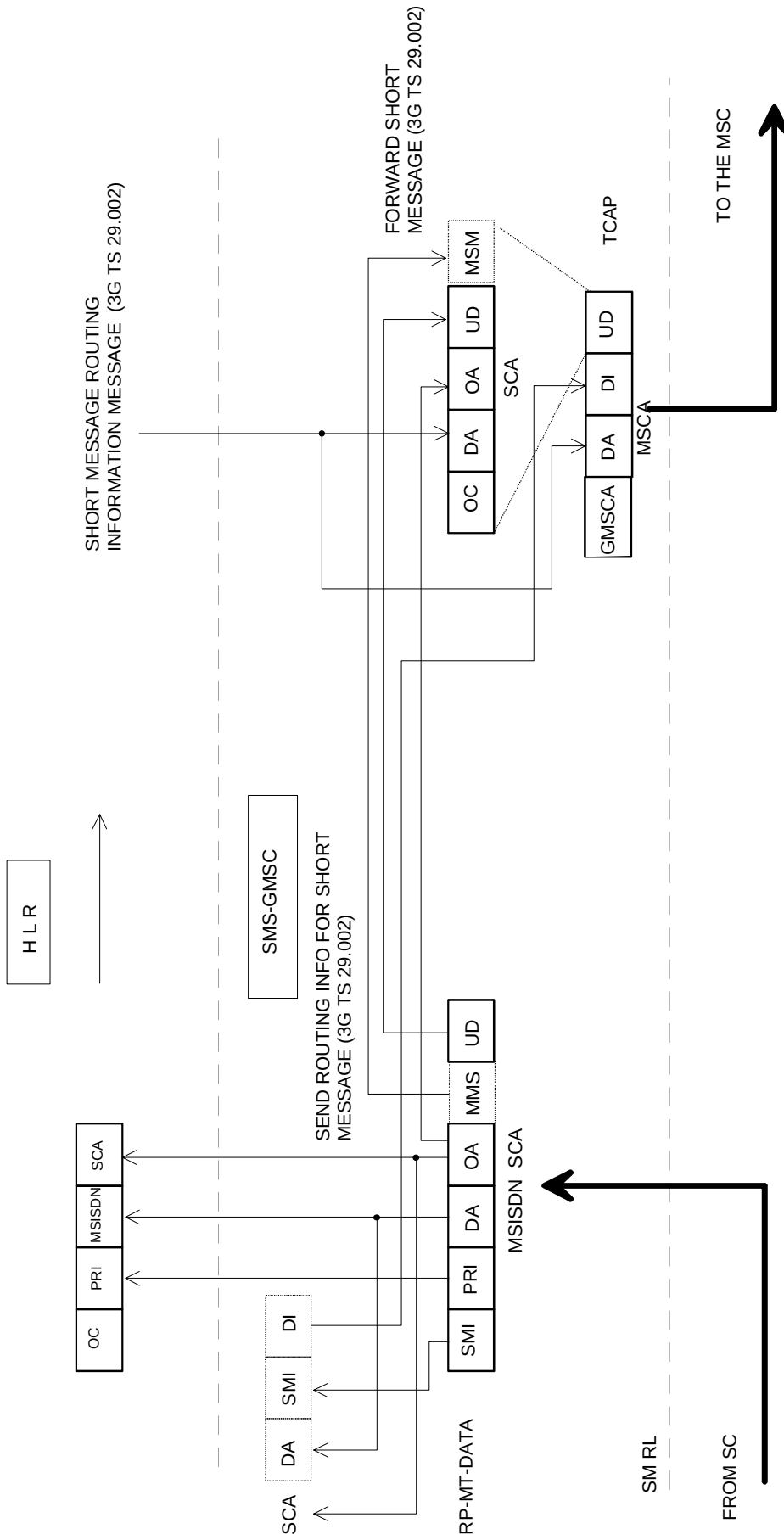
The diagrams in this annex describe the flow of primitives and parameters during the short message transfer. These diagrams refer to specifications 3G TS 23.040, 3G TS 24.011[13] and 3G TS 29.002 [15]. The parameters in dotted lines are optional. The abbreviations used in diagrams are listed below. The relevant specifications are given in parentheses. (*) stands for a common GSM/UMTS abbreviations and (-) for a general abbreviation.

CM	Call Management (*)
CS	CauSe (-)
DA	Destination Address (-)
DCS	Data Coding Scheme (3G TS 23.040)
DI	Dialogue Identifier TCAP
GMSCA	Gateway MSC Address
GPRS	General Packet Radio Services 3G TS 23.060 [27])
HLR	Home Location Register (*)
IMSI	International Mobile Subscriber Identity (*)
MAL	MSISdn-Alert (3G TS 23.040)
MMS	More Messages to Send (3G TS 23.040)
MR	Message Reference (3G TS 23.040)
MS	Mobile Station (*)
MSC	Mobile services Switching Centre (*)
MSCA	MSC Address
MSI	Mobile waiting Set Indication (3G TS 23.040)
MSISdn	Mobile Station ISDN number (*)
MSM	More Short Messages (3G TS 29.002 [15])
MSRN	Mobile Station Roaming Number (*)
MT	Message Type (3G TS 24.011[13])
MTI	Message Type Indicator (3G TS 24.011[13])
MWS	Message Waiting Set (3G TS 23.040)
OA	Originating Address (-)
OC	Operation Code (3G TS 29.002 [15])
PCI	Protocol Control Information (-)
PDI	Protocol Discriminator (*)
PRI	PRiority (3G TS 23.040)
RCT	ReCeption Time (3G TS 23.040)
REA	REcipient Address (3G TS 23.040)
RL	ReLay function (3G TS 24.011[13])
RP	Reply Path (3G TS 23.040)
SC	Service Centre (3G TS 23.040)
SCA	Service Centre Address (3G TS 23.040)
SCTS	Service Centre Time Stamp (3G TS 23.040)
SGSN	Serving GPRS Support Node (3G TS 23.060 [27])
SM	Short Message (3G TS 23.040)
SM-AL	Short Message Application Layer (3G TS 23.040)
SME	Short Message Entity (3G TS 23.040)
SMI	Short Message Identifier (3G TS 23.040)•
SM-RL	Short Message Relay Layer (3G TS 23.040, 24.011[13])
SMS-GMSC	Short Message Service Gateway MSC (3G TS 23.040)
SMS-IW MSC	Short Message Service Interworking MSC (3G TS 23.040)
SoR	Status of Report (3G TS 23.040)
SM-TL	Short Message Transfer Layer (3G TS 23.040)
SRI	Status Report Indication (3G TS 23.040)
SRR	Status Report Request (3G TS 23.040)
TCAP	Transaction Capabilities Application Part (-)
TID	Transaction Identifier (*)
UD	User Data (-)
UDL	User Data Length (3G TS 23.040)
VLR	Visitor Location Register (*)
VP	Validity Period (3G TS 23.040)
VPF	Validity Period Format (3G TS 23.040)



NOTE: SMI is not carried via SM-RL of subclause 9.3.5 but is carried via the relay service between the SC and GMSC (see subclause 9.3.4.1).

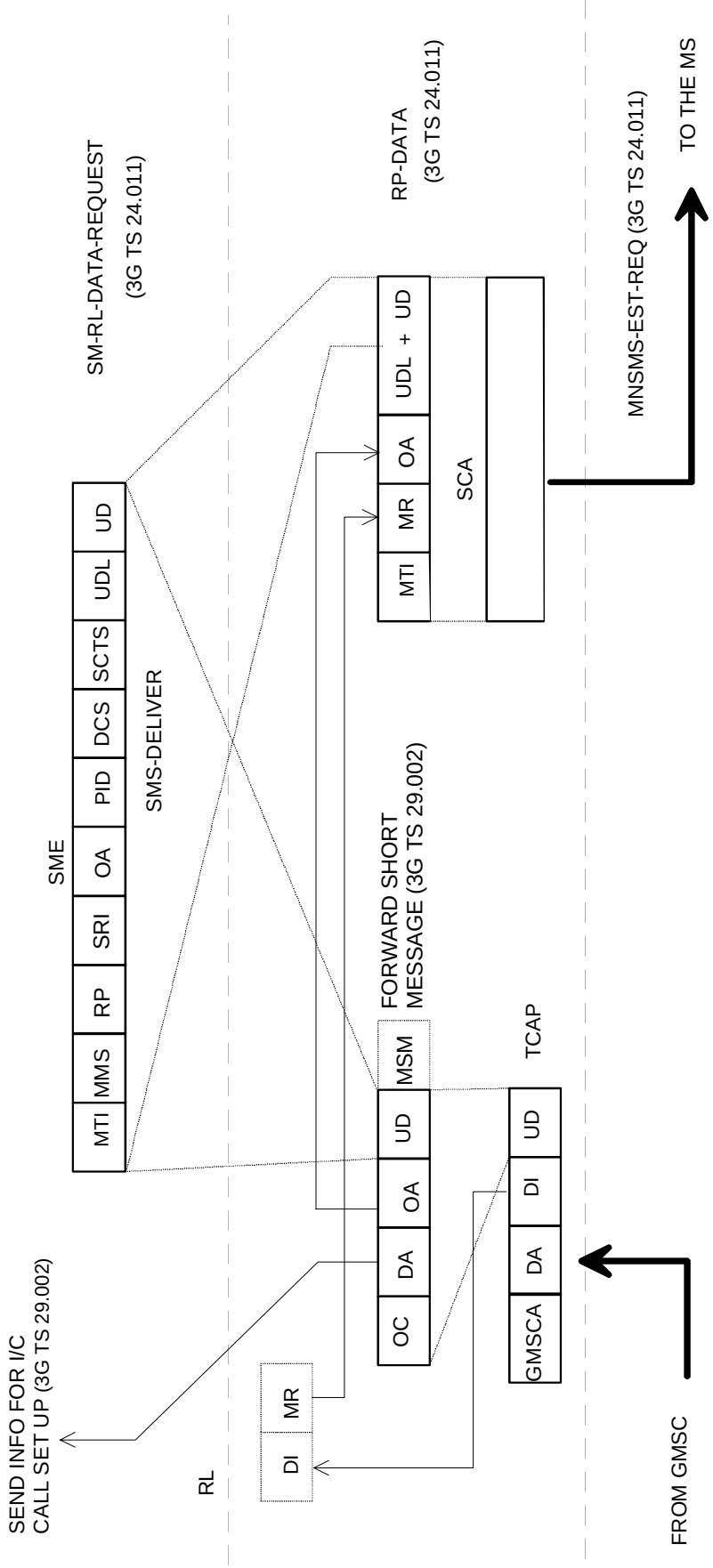
Figure C.1: Mobile terminated short message



NOTE: A sequence of short messages shall have MMS set to 1 in each RP-MT-DATA except the last (last shall have MMS set to 0). Each RP-MT-DATA shall be carried via FORWARD SHORT MESSAGE via TCAP and shall be assigned the same Dialogue Identifier as previous RP-MT-DATAS in the sequence.

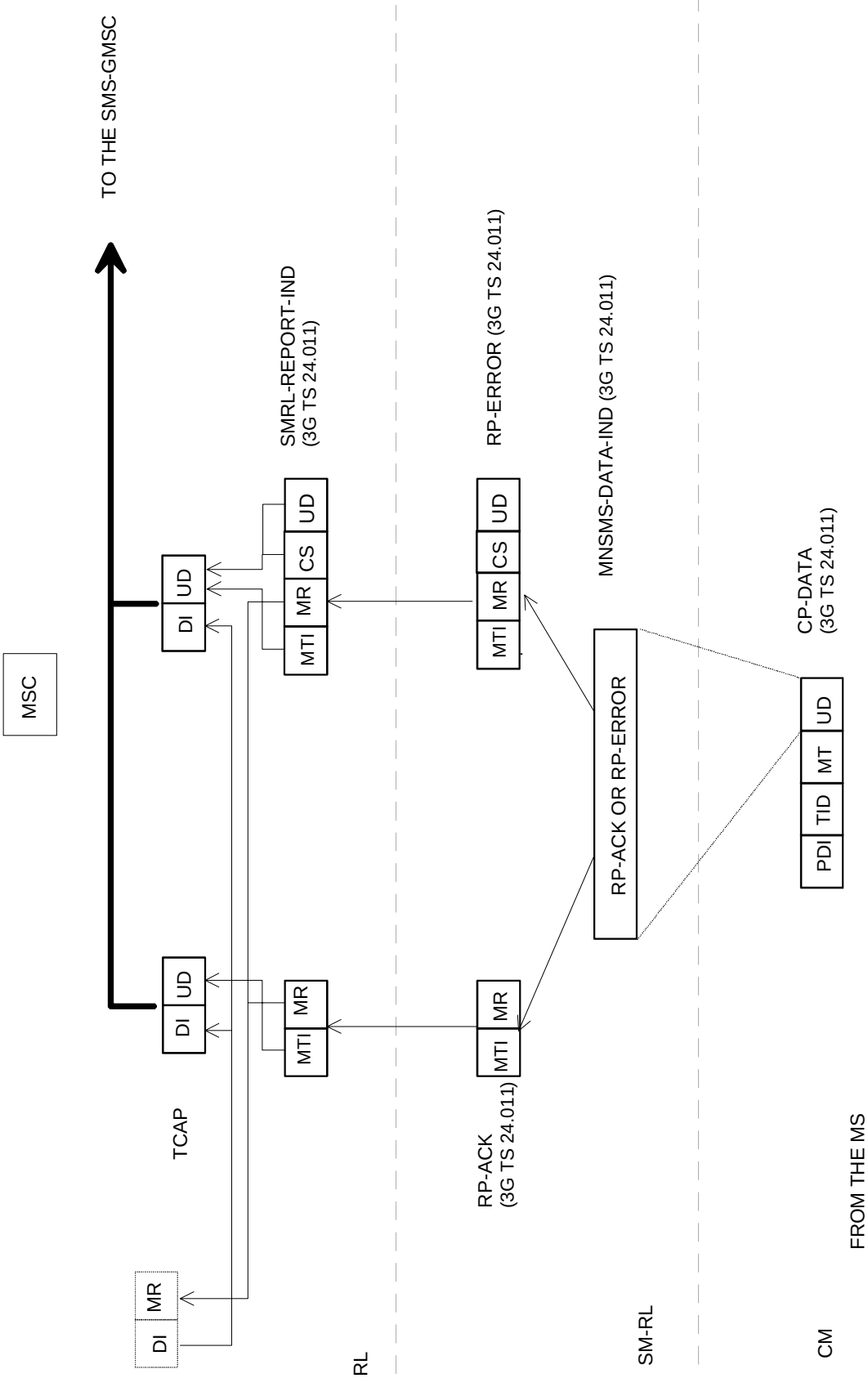
Figure C.2: Mobile terminated short message

MSC



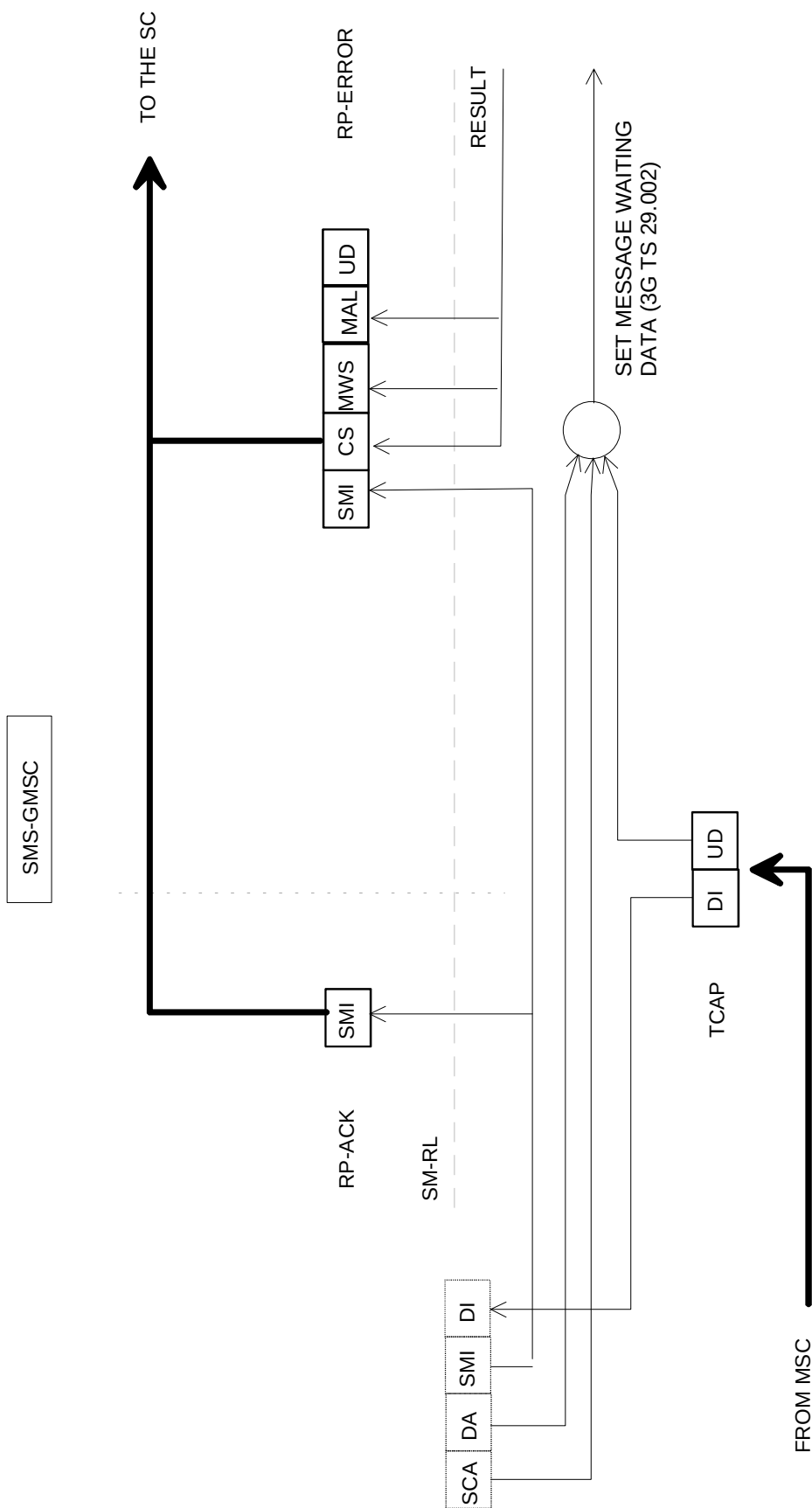
NOTE: MR is of local significance to the MSC/MS interface and is not the value supplied to the MSC.

Figure C.3: Mobile terminated short message



NOTE: The cause carried via UD of TCAP is not the cause supplied via RP-ERROR but is the cause resulting from application of the mapping specified by table 8.5 of 24.011[13].

Figure C.6: Acknowledgement in the MT case



NOTE 1: The MAP operation "SetMessageWaitingData" is invoked only if a cause "Absent Subscriber" is carried in TCAP UD.

NOTE 2: The cause delivered to the SC is not necessarily the cause carried via TCAP but is one of the set specified by table 03.40/1.

Figure C.7: Acknowledgement in the MT case

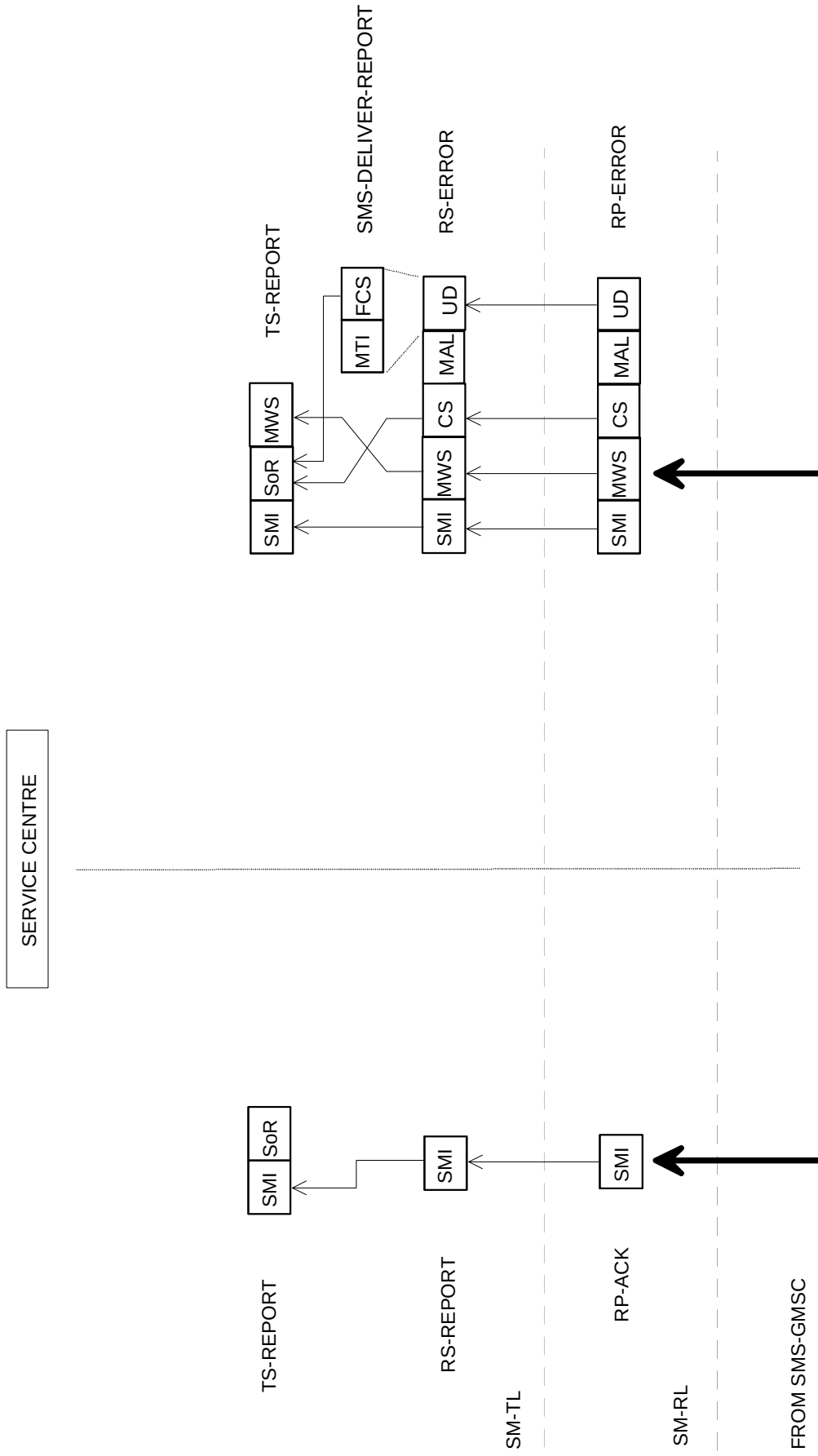


Figure C.8: Acknowledgement in the MT case

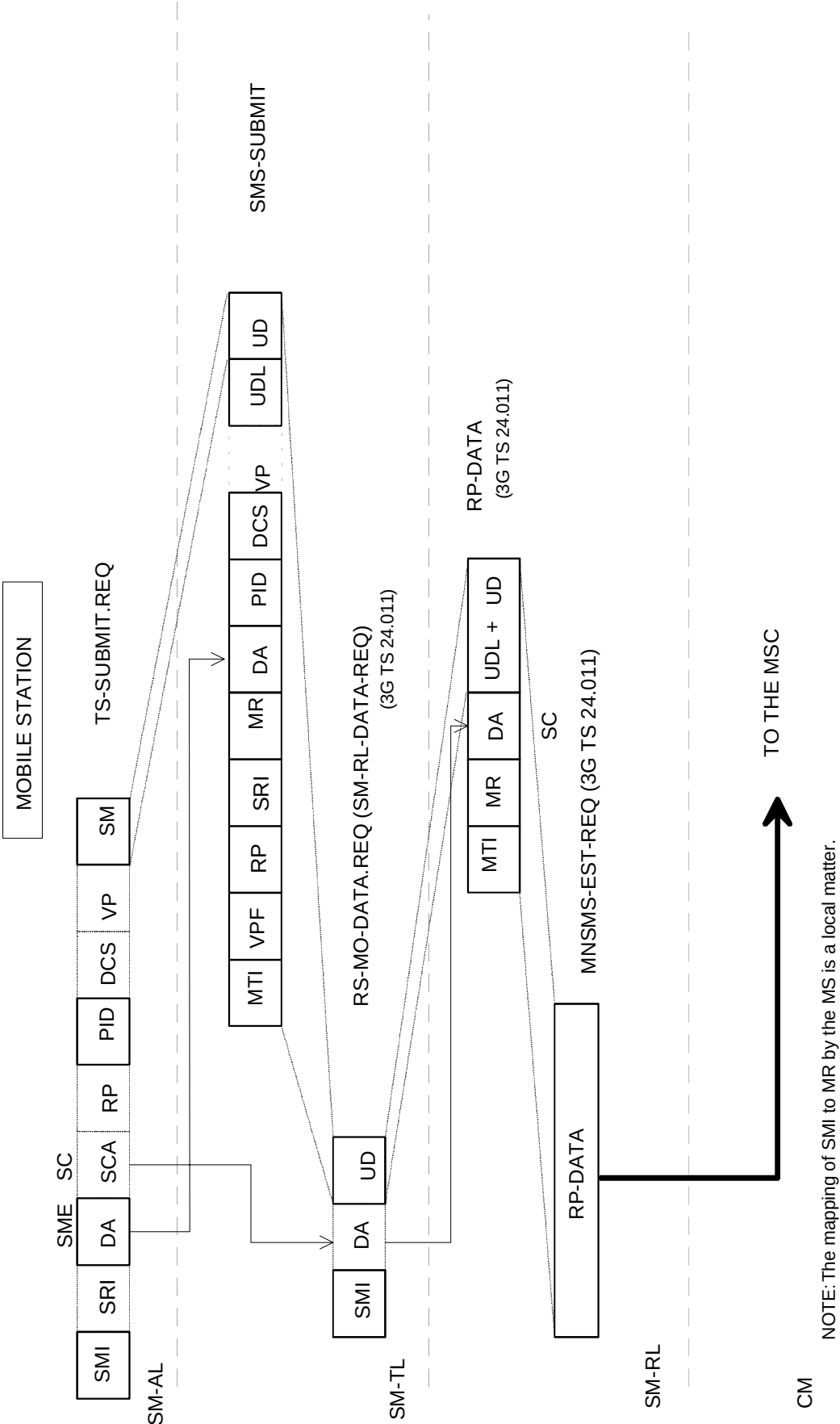


Figure C.9: Mobile originated short message

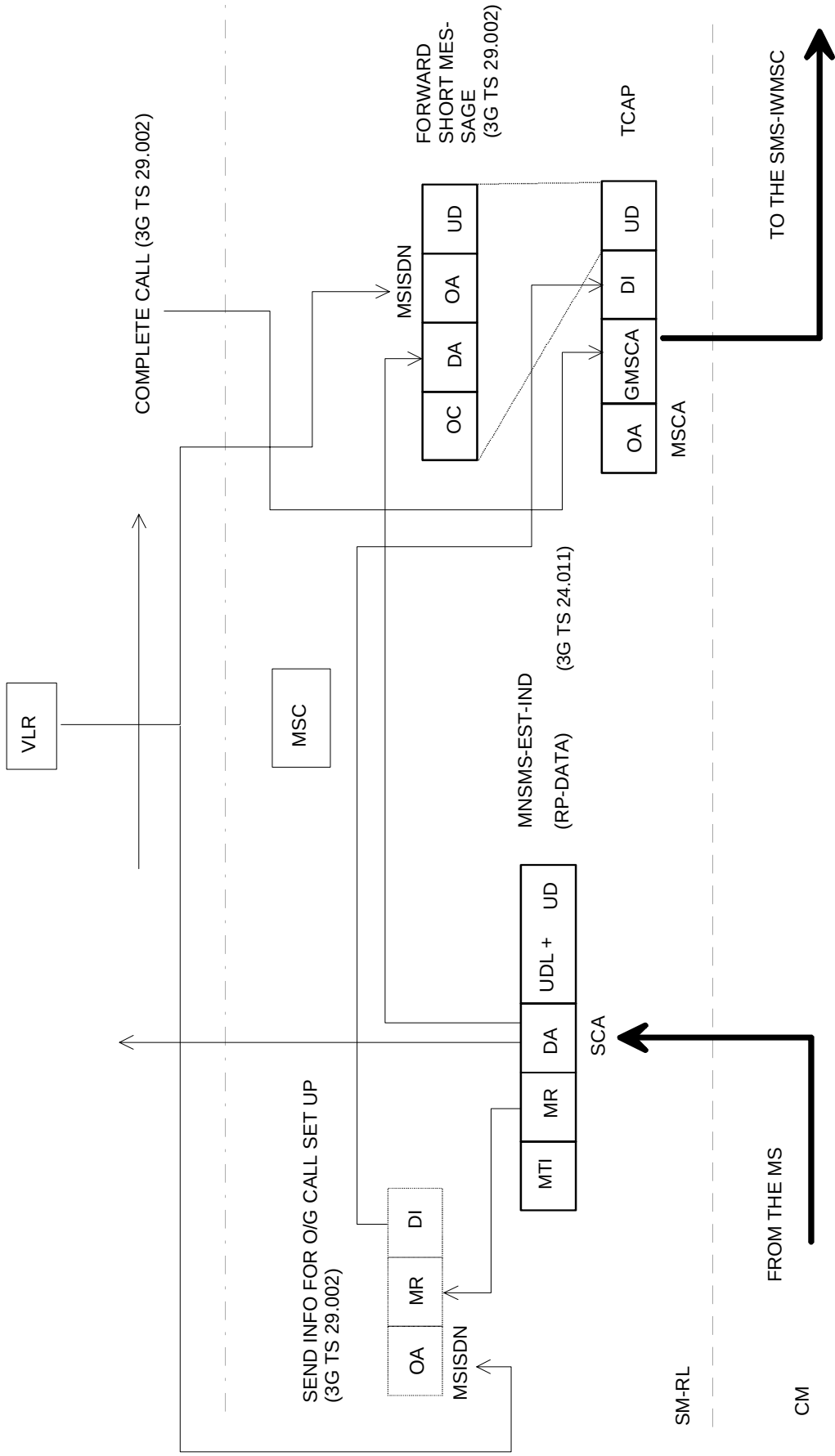
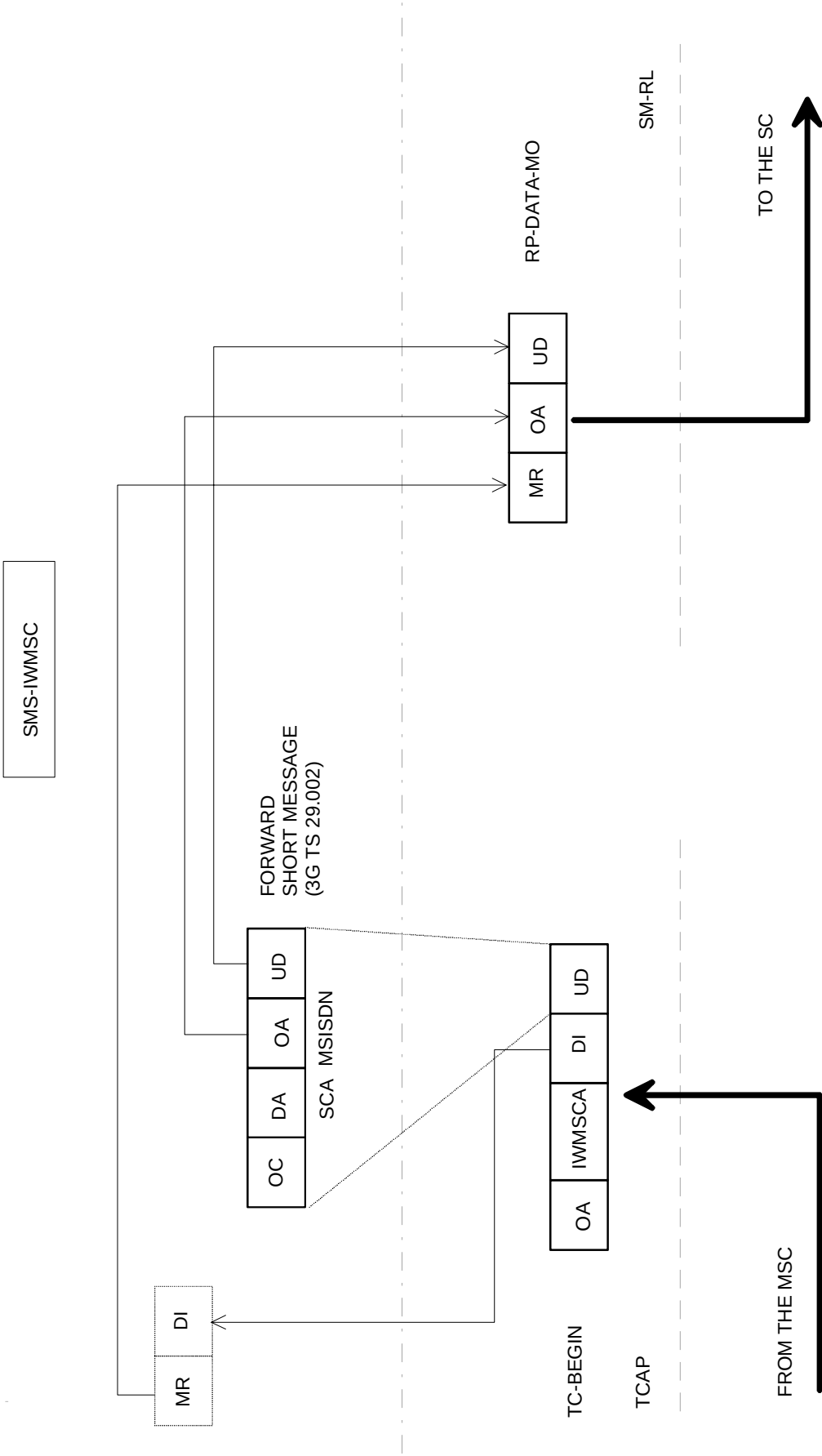


Figure C.10: Mobile originated short message



NOTE: MR is of local significance to the IWMSC/SC interface and is not the value supplied by the MS via the MS/MSC interface.

Figure C.11: Mobile originated short message

SERVICE CENTRE

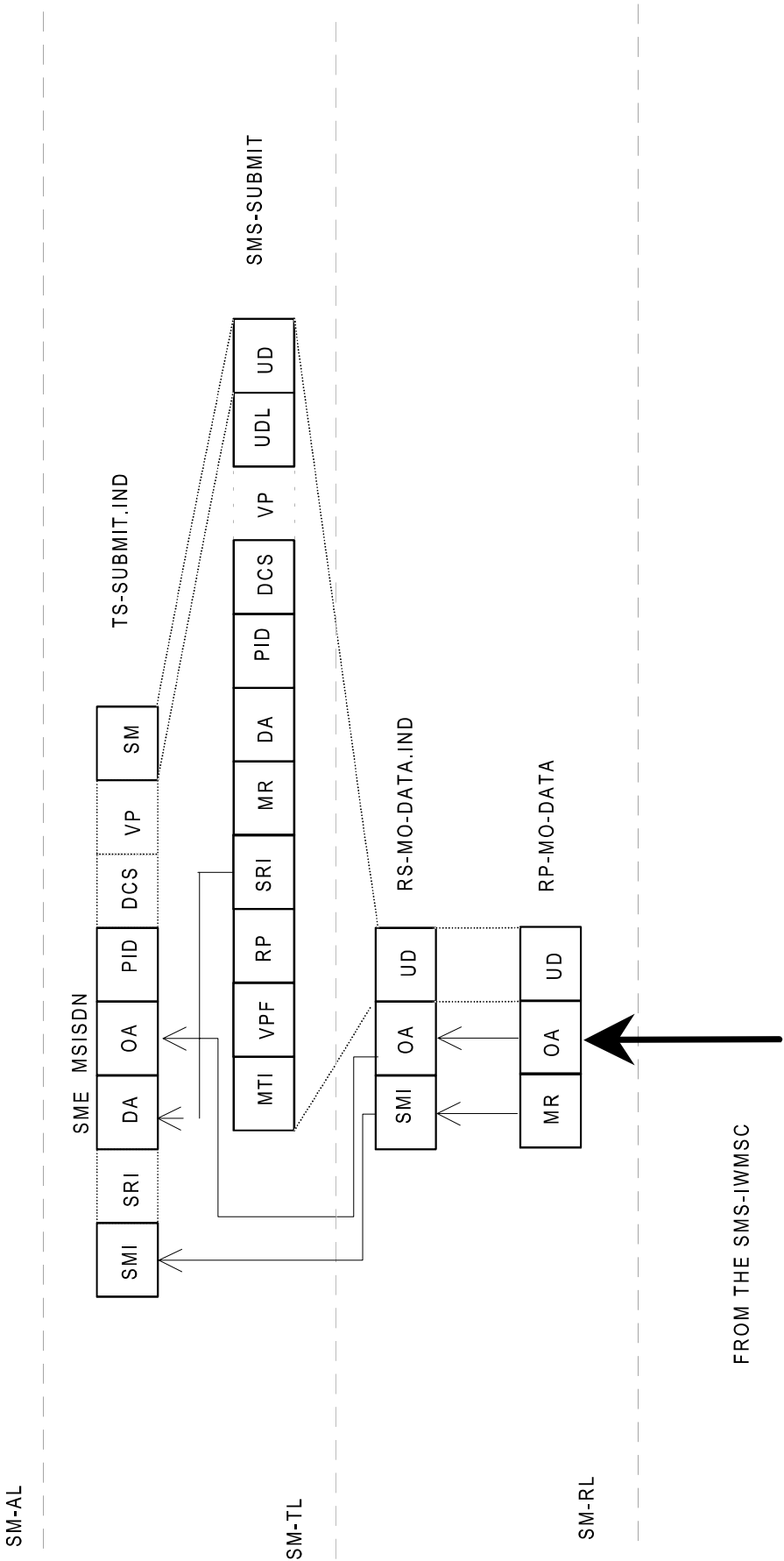


Figure C.12: Mobile originated short message

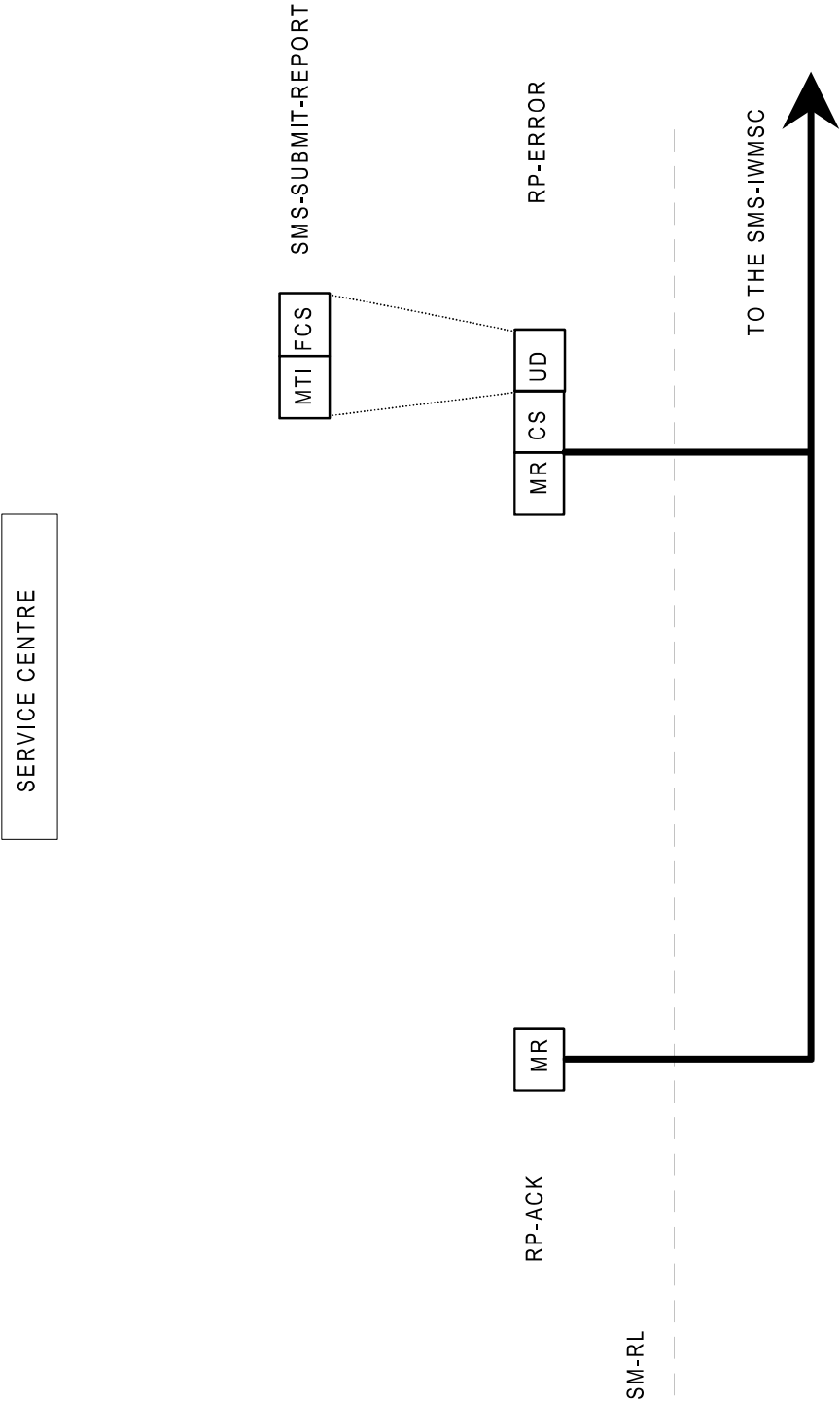


Figure C.13: Acknowledgement in the MO case

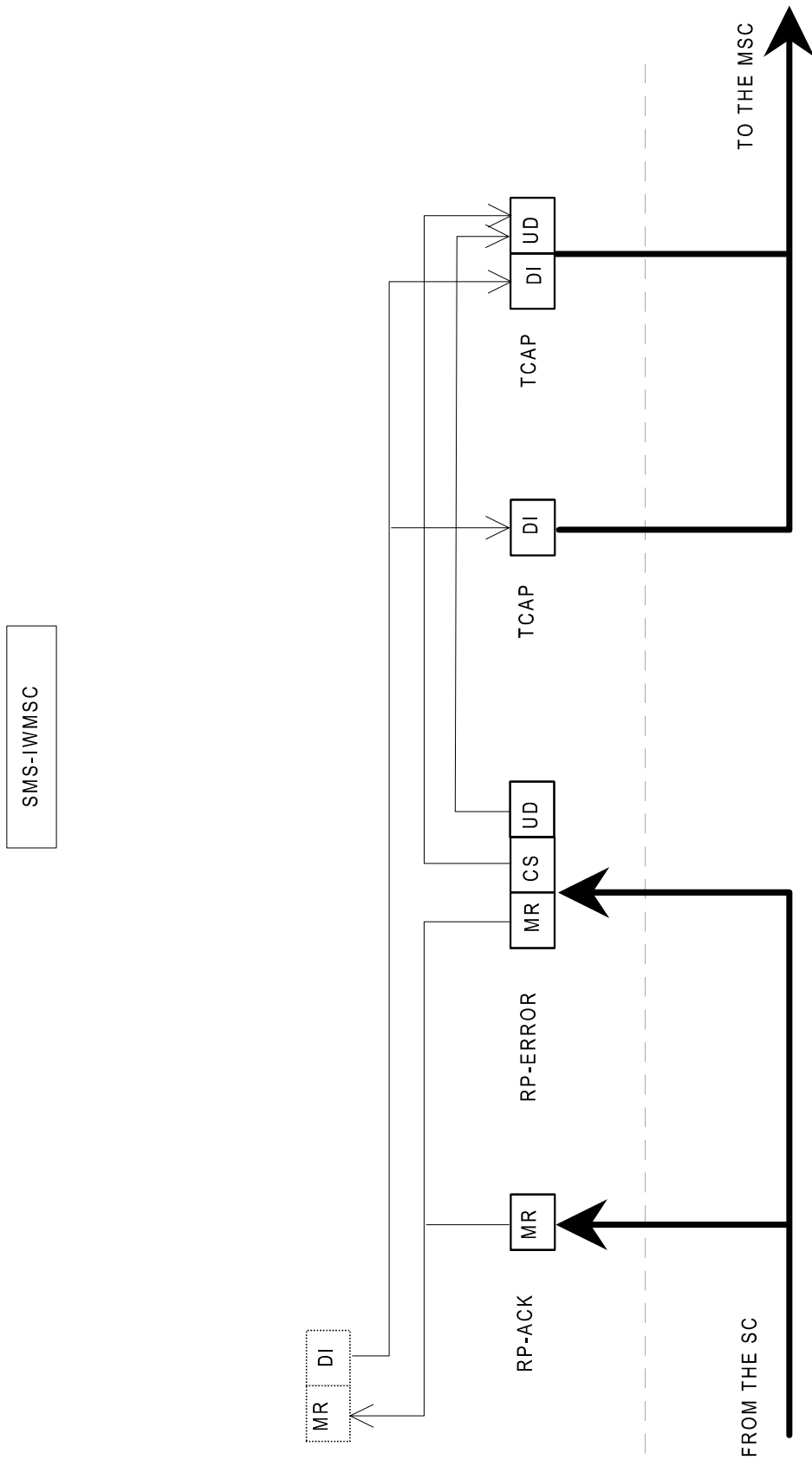


Figure C.14: Acknowledgement in the MO case

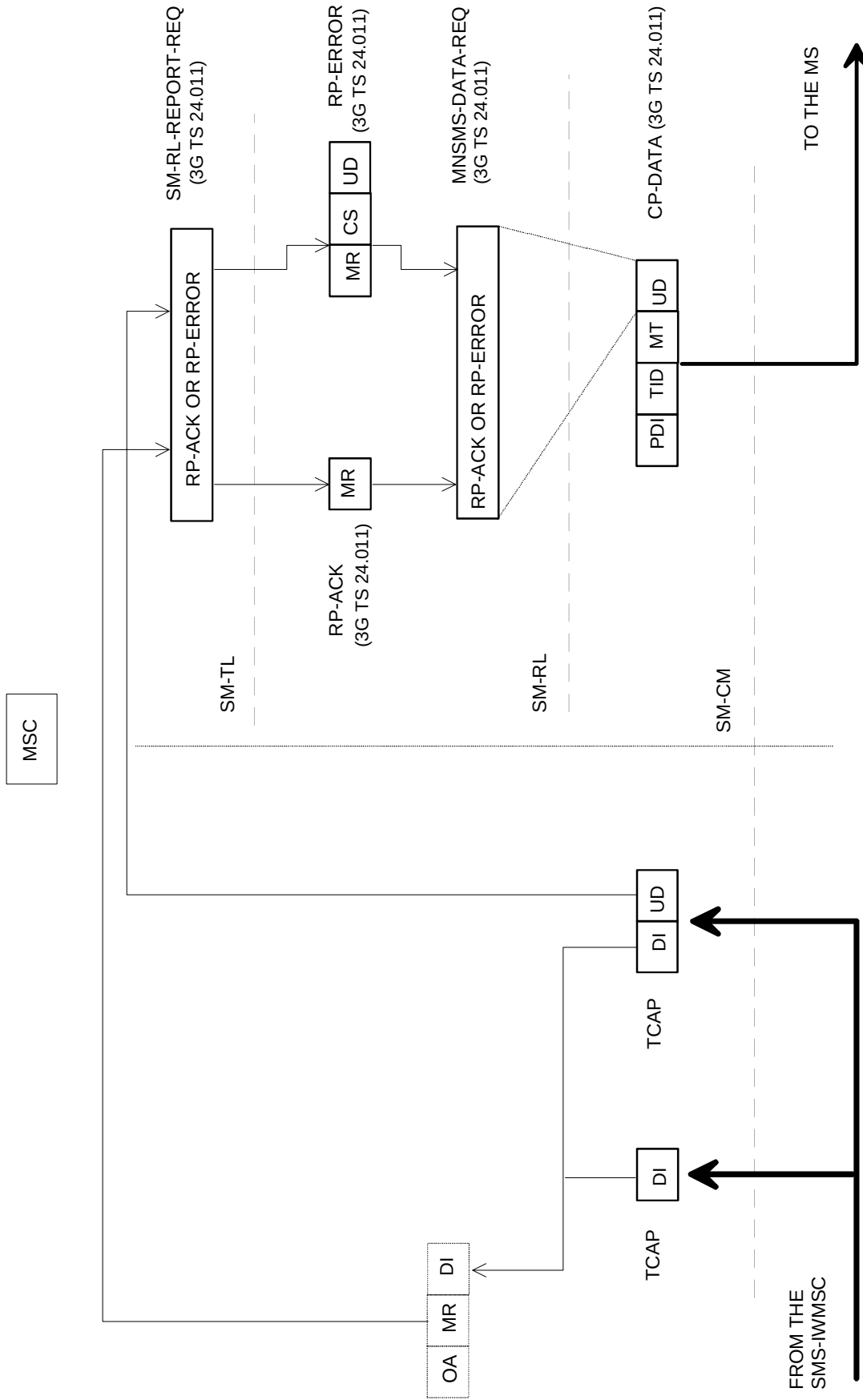


Figure C.15: Acknowledgement in the MO case

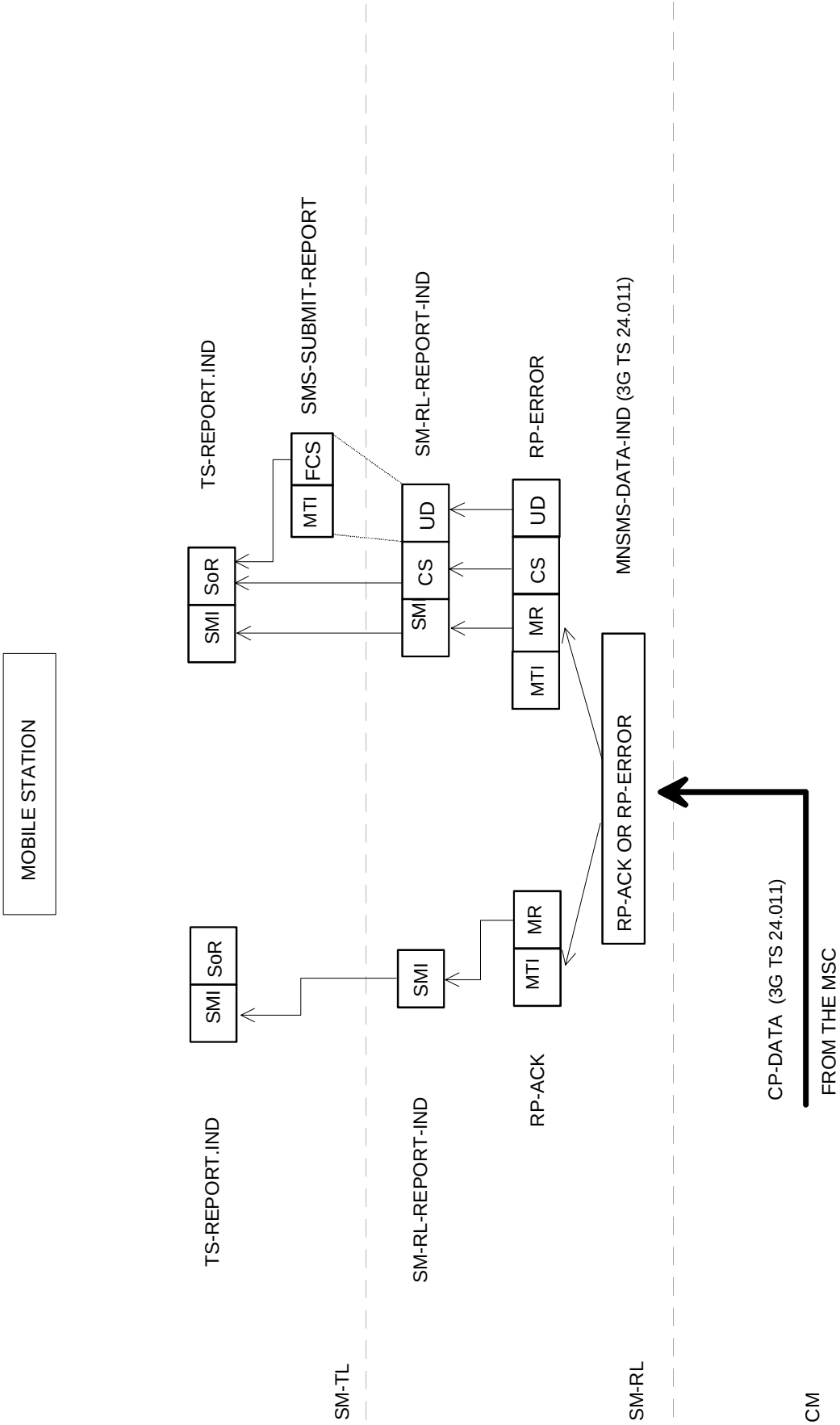


Figure C.16: Acknowledgement in the MO case

Annex D (informative): Mobile Station reply procedures

D.1 Introduction

The reply procedures specified in this annex should be followed by a mobile station when replying to a short message, i.e. when generating a MO SM in response to a received MT SM, addressed to the originator of that MT SM. The main purpose of this annex is to specify how the MS selects the service centre for delivering that MO SM: an arbitrary SME may only be reached by submitting the reply SM to a specific SC, known to be able of delivering to that SME.

D.2 The scope of applicability

The reply procedures in clauses 5 and 6 of this annex should be followed by every MS which fulfils the following criteria:

- 1) The MS automatically selects the value for the RP-Destination-Address parameter in RP-MO-DATA, or the MS has the SC address within the SM-RL entity. (That is to say: the human user is not obliged to manually key in the SC address for every MO short message).
- 2) The MS or an application within it supports some form of replying to a MT SM with a MO SM. (That is to say: in the process of generating the reply MO SM, any reference whatsoever, implicit or explicit, is made to the original MT SM).
- 3) The replying support of (2) is to be equally available towards every SME.

When an SME submits an SM to an SC for delivery, it may request that the SC sets the TP-Reply-Path parameter in the SM to be delivered. If the submitting SME is an MS, the reply path requesting procedure; in clause 4 of this annex may be applied. However, an SC may support the reply procedures without supporting the reply path requesting procedure; in that case, the SC sets the TP-Reply-Path parameter on another basis, which must be the case if the SM originates from an SME which is not an MS.

D.3 Terminology

An originating SME submits an original SM to an original SC, which delivers the original MT SM to a replying MS. The replying MS sends back a reply MO SM, a MO SM which is generated (automatically or by human operations) in response to the original MT SM, and which is addressed to the originating SME.

If the originating SME is an MS, the original MT SM is submitted within an SMS-SUBMIT PDU; we say that reply path is requested if the TP-Reply-Path parameter is set in the SMS-SUBMIT PDU of the original MT SM.

We say that reply path exists if the TP-Reply-Path parameter was set in the SMS-DELIVER PDU of the original MT SM; we say that reply path does not exist otherwise.

The replying MS may have a default SC which is normally used for delivering all the MO short messages originated from the replying MS. Alternatively, a human user or automatic application may specify a selected SC for delivering a particular SM (thus the term selected SC refers to an SC address selected for one short message only).

D.4 The reply path requesting procedure

The discussion in this clause applies to cases when the originating SME is a mobile station only. The reply procedures discussed in the clauses to follow this one are independent of the type of the originating SME.

The reply path is requested by the originating SME (an MS) by setting the TP-Reply-Path parameter in the SMS SUBMIT PDU of the original SM. If the original SC supports reply path requesting for the originating SME (an MS), it

shall take notice of the TP-Reply-Path parameter in the SMS-SUBMIT PDU and set the TP-Reply-Path parameter in the SMS-DELIVER PDU of the original MT SM towards the replying MS. Hence, reply path exists for the replying MS towards the originating SME (an MS).

D.5 The reception of an original MT SM

When a replying MS receives an original MT SM, it then has:

- 1) originating SME = TP-Originating-Address in the SMS-DELIVER PDU,
- 2) original SC = RP-Originating-Address in RPS-MT-DATA, and
- 3) reply path exists / reply path does not exist = TP-Reply-Path in SMS-DELIVER PDU (set / not set).

D.6 The submission of the reply MO SM

According to clause 5, the replying MS knows if:

- a) reply path exists; or
- b) reply path does not exist.

We then specify that when submitting the reply MO SM, the replying MS should use parameters as follows:

- 1) TP-Destination-Address in SMS-SUBMIT PDU = originating SME,
- 2a) If reply path exists:
RP-Destination-Address in RP-MO-DATA = original SC,
- 2b) If reply path does not exist:
RP-Destination-Address in RS-MO-DATA = selected SC or default SC or original SC,
- 3a) If reply path exists:
after submitting one reply MO SM, the reply path does not exist any more.

In case (2b), it is allowed to use the original SC or the default SC, but then there is no guarantee that the original/default SC shall deliver the reply MO SM. (The original SC may refuse to deliver, if the replying MS is not its subscriber; the default SC may be unable to deliver, if it has no access path to the originating SME.)

Requirement (3a) states that the case (a), reply path exists, holds for one reply MO SM only (per original MT SM).

D.7 Usage of SCs for replying

The specification in this annex supports the following way of replying.

The original MT SM and the reply MO SM are delivered by the same SC, the original SC. This principle maximizes the probability that the SC can e.g. route the reply MO SM to the proper data network for reaching the originating SME; this principle is a must, if the originating SME is integrated within the original SC.

If the original SC by any means whatsoever knows that it is both willing and able to deliver one (potential) reply MO SM, it may indicate this fact by setting the TP-Reply-Path parameter in the original MT SM. The original SC thus commits itself to delivering one reply MO SM; let us call this reply delivery commitment.

One reason for the SC to make the reply delivery commitment may be the reply path requesting procedure specified in clause 4 on this annex.

The reply path commitment is not valid forever, but the original SC may have e.g. a time limit for maintaining this commitment.

D.8 Replying possibilities for Phase 1 mobile stations

The Phase 2 mobile stations should support the procedures in this annex (if they fulfil the criteria in clause 2 of it). Yet, Phase 1 mobile stations, too, may apply steps (1) and (2a) in clause 6 of this annex, i.e. reply via the original SC, automatically or manually (by choosing selected SC = original SC), despite the fact that the TP-Reply-Path parameter shall be ignored by them. The delivery of the reply MO SM cannot be guaranteed in this case, yet the possibility of delivery may be improved (especially if the originating SME is not an MS.)

D.9 The resulting service for originating SMEs

As the consequence of the replying procedures specified in this annex, all SMEs and applications within them may assume that replying from all mobile stations is always possible, provided that the mobile stations do support the proper replying mechanism itself (human response in context with the original MT SM, automatic replying by an application, application level protocols, etc.).

Annex E (informative): Change history

TSG	TSG TDoc	Vers	CR	Rev	Ph	Cat	Subject	New Vers	Work Item
T#4	TP-99126	2.0.0	New				Creation of 3GPP 23.040 v3.0.0 out of GSM 03.40 v7.1.0	3.0.0	
T#4	TP-99124	3.0.0	001		R99	A	Clarification concerning SMSC address checking in the MS for concatenated messages and replace message types	3.1.0	TEI
T#4	TP-99146	3.0.0	002		R99	A	Guidance regarding the SMSC address in a Status Report	3.1.0	TEI
T#5	TP-99177	3.1.0	003		R99	A	Change to reserved port number range for SMS	3.2.0	TEI
T#5	TP-99177	3.1.0	004		R99	B	New TP-PID value for delivery of ANSI-136 Short Messages	3.2.0	SMS
T#5	TP-99177	3.1.0	005		R99	D	IEI values in concatenated SM's	3.2.0	SMS
T#6	TP-99237	3.2.0	007		R99	F	Adaptations for UMTS	3.3.0	TEI
T#6	TP-99237	3.2.0	006		R99	C	Duplicate messages	3.3.0	TEI
T#6	TP-99237	3.2.0	008		R99	A	Concatenated Short Message	3.3.0	TEI
T#7	TP-000024	3.3.0	009		R99	B	Enhancement of the Message Content in SMS	3.4.0	MMS
T#7	TP-000024	3.3.0	010		R99	B	Multiple Information Elements	3.4.0	TEI
T#7	TP-000024	3.3.0	011		R99	B	SMS E-MAIL PARAMETERS	3.4.0	TEI
-	-	3.4.0	-	-	R99	-	Editorial graphics update to make visible	3.4.1	-
T#8	TP-000073	3.4.1	012		R99	F	Alignment in Enhanced Messaging Service	3.5.0	EMS
T#8	TP-000073	3.4.1	014		R99	F	Correction to text on SMS TimeZone	3.5.0	TEI
T#8	TP-000073	3.4.1	015		R99	F	Correction of TP-PID	3.5.0	TEI

History

Document history		
V3.3.0	January 2000	Publication
V3.4.1	April 2000	Publication
V3.5.0	July 2000	Publication