UNITED STATES INTERNATIONAL TRADE COMMISSION WASHINGTON, D.C. 20436

In the Matter of

CERTAIN WIRELESS DEVICES WITH 3G CAPABILITIES AND COMPONENTS THEREOF

Investigation No. 337-TA-800

INITIAL DETERMINATION Administrative Law Judge David P. Shaw

Pursuant to the notice of investigation, 76 Fed. Reg. 54252 (Aug. 31, 2011), this is the Initial Determination in *Certain Wireless Devices with 3G Capabilities and Components Thereof*, United States International Trade Commission Investigation No. 337-TA-800.

It is held that a violation of section 337 of the Tariff Act, as amended, has not occurred in the importation into the United States, the sale for importation, or the sale within the United States after importation, of certain wireless devices with 3G capabilities, or components thereof, with respect to asserted claims asserted claims 1, 2, 3, and 5 of U.S. Patent 7,706,830; asserted claims 1, 2, 4, 6, 7, and 8 of U.S. Patent No. 8,009,636; asserted claims 6, 13, 20, 26, and 29 of U.S. Patent No. 7,502,406; asserted claims 2, 3, 4, 7, 8, 9, 10, 11, 14, 22, 23, 24, and 27 of U.S. Patent No. 7,706,332; asserted claims 1, 2, 3, 4, 5, 6, and 7 of U.S. Patent No. 7,970,127; asserted claims 16, 17, 18, and 19 of U.S. Patent No. 7,536,013; or asserted claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, and 18 of U.S. Patent No. 7,616,970.

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The following abbreviations may be used in this Initial Determination:

ACK	Acknowledgement
ALJ	Administrative Law Judge
APC	Adaptive Power Control
ASIC	Application Specific Integrated Circuit
CDMA	Code Division Multiple Access
CDX	Complainants' Demonstrative Exhibit
CPX	Complainants' Physical Exhibit
CX	Complainants' Exhibit
Dep.	Deposition
DPCCH	Dedicated Physical Control Channel
DPDCH	Dedicated Physical Data Channel
EDIS	Electronic Document Imaging System
E-DPDCH	Enhanced Dedicated Physical Data Channels
ETSI	European Telecommunications Standards Institute
FRAND	Fair, Reasonable and Non-Discriminatory
HSDPA	High Speed Downlink Packet Access
HS-PDSCH	High Speed Physical Downlink Shared Channel
HS-SCCH	High Speed Shared Control Channel
IMT-2000	International Mobile Telecommunications-2000 Standard
INPADOC	International Patent Document Center
ITU	International Telecommunications Union
ЛDХ	Joint Demonstrative Exhibit

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JPX	Joint Physical Exhibit
JX	Joint Exhibit
MPEP	Manual of Patent Examining Procedure
PRACH	Physical Random Access Channel
РТО	U.S. Patent and Trademark Office
RAND	Reasonable and Non-Discriminatory
RDX	Respondents' Demonstrative Exhibit
RF	Radio Frequency
RPX	Respondents' Physical Exhibit
RWS	Rebuttal Witness Statement
RX	Respondents' Exhibit
SDX	Staff's Demonstrative Exhibit
SPX	Staff's Physical Exhibit
SX	Staff's Exhibit
SSO	Standard-Setting Organization
TIA	Telecommunications Industry Association
TPC	Transmit Power Control
Tr.	Transcript
UE	User Equipment
UE ID	User Equipment Identification
UMTS	Universal Mobile Telecommunications System
WCDMA / W-CDMA	Wideband Code Division Multiple Access
WLAN / W-I AN	Wireless Local Area Network

W-LAN

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WS	Witness Statement
3G	Third Generation
3GPP	Third Generation Partnership Project
3GPP2	Third Generation Partnership Project 2

I. Background

A. Institution of the Investigation; Procedural History

By publication of a notice in the Federal Register on August 31, 2011, pursuant to

subsection (b) of section 337 of the Tariff Act of 1930, as amended, the Commission instituted

this investigation to determine:

[W]hether there is a violation of subsection (a)(1)(B) of section 337 in the importation into the United States, the sale for importation, or the sale within the United States after importation of certain wireless devices with 3G capabilities and components thereof that infringe one or more of claims 1-15 of the '540 patent [U.S. Patent No. 7,349,540]; claims 1, 2, 6-9, 13, 15-16, 20-22, 26, 28-30, 34-36, and 40 of the '406 patent [U.S. Patent No. 7,502,406]; claims 1-19 of the '013 patent [U.S. Patent No. 7,536,013]; claims 1-18 of the '970 patent [U.S. Patent No. 7,616,970]; claims 1-27 of the '332 patent [U.S. Patent No. 7,706,332]; claims 1-3, 5-8, 10, 16-18, 20-23, and 25 of the '830 patent [U.S. Patent No. 7,706,830]; and claims 1-14 of the '127 patent [U.S. Patent No. 7,970,127], and whether an industry in the United States exists as required by subsection (a)(2) of section 337.

76 Fed. Reg. 54252 (Aug. 31, 2011).

The Commission named as complainants InterDigital Communications, LLC of King of

Prussia, Pennsylvania;¹ InterDigital Technology Corporation of Wilmington, Delaware; and IPR

Licensing, Inc. of Wilmington, Delaware. Id.

The Commission named as respondents Huawei Technologies Co., Ltd. of Shenzhen,

China; FutureWei Technologies, Inc. d/b/a Huawei, Technologies (USA) of Plano, Texas

The InterDigital entities will be referred to collectively as "InterDigital."

¹ InterDigital Communications, LLC subsequently moved to amend the Complaint and Notice of Investigation to reflect the fact that it converted from a Pennsylvania limited liability company to a Delaware corporation, and changed its name to InterDigital Communications, Inc. to reflect the change in corporate form. The administrative law judge granted this motion in an initial determination. *See* Order No. 91 (Jan. 17, 2013), *aff*^{*}d, Notice of Commission Determination Not to Review an Initial Determination Granting Complainants' Motion for Leave to Amend the Complaint and Notice of Investigation (Feb. 4, 2013).

(together, "Huawei"); Nokia Corporation of Espoo, Finland; Nokia Inc. of White Plains, New York (together, "Nokia"); ZTE Corporation of Shenzhen, China; and ZTE (USA) Inc. of Richardson, Texas (together, "ZTE") (collectively, "Respondents"). *Id.*

The Office of Unfair Import Investigations ("OUII" or "Staff") was also named as a party to this investigation. *Id*.

The target date for completion of this investigation was set at approximately 18 months, *i.e.*, February 28, 2013. Order No. 6 at 1 (Oct. 14, 2011), *aff'd*, Notice of Commission Determination Not to Review an Initial Determination Setting an 18-Month Target Date for Completion of the Investigation (Nov. 2, 2011).

InterDigital moved to amend the complaint and notice of investigation (1) to add allegations of infringement of claims 1-4, 6-9, and 29-31 of U.S. Patent No. 8,009,636 ("the '636 patent") and (2) to name LG Electronics, Inc.; LG Electronics U.S.A., Inc.; and LG Electronics Mobilecomm U.S.A., Inc. (together, "LG") as respondents. The administrative law judge granted InterDigital's motion in an initial determination. *See* Order No. 5 (Dec. 5, 2011), *aff*°*d*, Notice of Commission Determination Not to Review an Initial Determination Granting Complainants' Motion for Leave to Amend the Complaint and Notice of Investigation (Dec. 21, 2011).

InterDigital, Nokia, Huawei, and ZTE subsequently moved to extend the target date of this investigation by four months.² The administrative law judge granted the parties' motion in an initial determination, and extended the target date to June 28, 2013. *See* Order No. 13 (Jan. 6,

 $^{^{2}}$ LG did not join or otherwise respond to the motion. See Order No. 13. The Staff did not oppose the motion. See id.

2012), *aff*'d, Notice of Commission Determination Not to Review an Initial Determination Extending the Target Date for Completion of the Investigation (Jan. 25, 2012).

Pursuant to the Supplement to the Strategic Human Capital Plan 2009-2013, issued by the Commission on January 18, 2011, the Staff provided notice that its participation in this investigation "will be limited to issues relating to U.S. Patent Nos. 7,349,540, 7,536,013, and 7,970,127, as well as issues relating to Respondents' patent misuse and/or FRAND defenses." *See* Commission Investigative Staff's Notice of Partial Participation (Jan 18, 2012).

InterDigital filed a motion to amend the complaint and notice of investigation to add Huawei Device USA, Inc. as a respondent. The administrative law judge granted InterDigital's motion in an initial determination. *See* Order No. 19 (Apr. 11, 2012), *aff'd*, Notice of Commission Determination Not to Review an Initial Determination Granting Complainants' Motion for Leave to Amend the Complaint and Notice of Investigation (May 1, 2012).³

LG filed a motion pursuant to 19 C.F.R § 210.21(a)(2) to terminate the investigation as to LG based on an arbitration agreement. The administrative law judge granted LG's motion in an initial determination. *See* Order No. 30 (June 4, 2012), *aff*^{*}d, Notice of Commission Determination Not to Review an Initial Determination Terminating Certain Respondents From the Investigation (July 6, 2012). InterDigital appealed LG's termination from this investigation, and the Federal Circuit recently issued an opinion reversing the termination. *InterDigital Commc'ns, LLC v Int'l Trade Comm'n*, No. 2012-1628 (Fed. Cir. June 7, 2013).

InterDigital moved to terminate this investigation in part, *i.e.*, as to claims 1-15 of the '013 patent; claims 8-14 of the '127 patent; all claims of the '540 patent; claims 1, 2, 9, 16, 28,

³ "Huawei" hereinafter refers collectively to Huawei Technologies Co., Ltd.; FutureWei Technologies, Inc. d/b/a Huawei, Technologies (USA); and Huawei Device USA, Inc.

30, 34-36, and 40 of the '406 patent; claims 5, 6, 12, 13, 15-20, 25, and 26 of the '332 patent; and claims 16-18, 20-23, and 25 of the '830 patent. The administrative law judge granted InterDigital's motion in an initial determination. *See* Order No. 38 (July 24, 2012), *aff'd*, Notice of Commission Determination Not to Review an Initial Determination Terminating Certain Claims From the Investigation (Aug. 9, 2012).

On August 14, 2012, a prehearing conference was held to discuss discovery and scheduling matters.

In response to a joint motion filed by the private parties, the administrative law judge issued an initial determination extending the target date for this investigation to October 28, 2013. *See* Order No. 63 (Sept. 10, 2010), *aff'd*, Notice of Commission Determination Not to Review an Initial Determination Extending the Target Date for Completion of the Investigation (Oct. 1, 2012). The due date for the Initial Determination on violation is therefore June 28, 2013. Order No. 63 at 2.

InterDigital moved to terminate this investigation in part, *i.e.*, as to claims 7, 8, 15, 21, and 22 of the '406 patent; claims 1 and 21 of the '332 patent; and claims 6-8 and 10 of the '830 patent. The administrative law judge granted InterDigital's motion in an initial determination. *See* Order No. 87 (Jan. 3, 2013), *aff'd*, Notice of Commission Determination Not to Review an Initial Determination Terminating Certain Claims From the Investigation (Jan. 23, 2013).

A prehearing conference was held on February 12, 2013, with the evidentiary hearing in this investigation commencing immediately thereafter. The hearing concluded on February 22, 2013. *See* Order No. 62; Hearing Tr. 1-2542. The private parties were requested to file post-hearing briefs not to exceed 600 pages in length, and to file reply briefs not to exceed 300

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pages in length. Hearing Tr. 14. The Staff was requested to file a post-hearing brief not to exceed 200 pages in length, and to file a reply brief not to exceed 100 pages in length. *Id.*

B. The Private Parties; Assignment of Patents

InterDigital Communications, Inc. is a Pennsylvania limited liability company with its principal place of business in King of Prussia, Pennsylvania. *See* Third Am. Compl. at 2, \P 2.1. InterDigital Technology Corporation is a Delaware corporation with its principal place of business in Wilmington, Deleware. *Id.* at 2, \P 2.2. IPR Licensing, Inc. is a Delaware corporation with its principal place of business in Wilmington, Deleware. *Id.* at 2, \P 2.3. InterDigital Communications, Inc.; InterDigital Technology Corporation; and IPR Licensing, Inc. are subsidiaries of InterDigital Inc., a Pennsylvania corporation. *Id.*

Huawei Technologies Co., Ltd. is a corporation organized and existing under the laws of the People's Republic of China with its principal place of business in Shenzhen, China. Resp. of Huawei Techs. Co., Ltd. to Third Am. Compl. at 3-4, \P 3.1. FutureWei Technologies, Inc. d/b/a Huawei, Technologies (USA) is a Texas corporation with a principal place of business in Plano, Texas. Resp. of Futurewei Techs., Inc. to Third Am. Compl. at 4, \P 3.2. Huawei Device USA, Inc. is a Texas corporation with a principal place of business. Resp. of Huawei Device USA, Inc. to Third Am. Compl. at 4, \P 3.3.

Nokia Corporation is a Finnish corporation with its principal place of business in Espoo, Finland. See Third Am. Compl. at 6, \P 3.4; Nokia's Resp. to Third Am. Compl. at 4, \P 3.3. Nokia Inc. is a Delaware corporation with its principal place of business in White Plains, New York. See Third Am. Compl. at 6, \P 3.5; Nokia's Resp. to Third Am. Compl. at 4, \P 3.4

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ZTE Corporation is a Chinese corporation with a principal place of business in Shenzhen, China. See ZTE Resp. to Third Am. Compl. at 5, \P 3.6. ZTE (USA) Inc. is a New Jersey corporation with a principal place of business in Richardson, Texas. See id. at 5, \P 3.7.

The '830 patent is assigned to InterDigital Technology Corporation. JX-0006 ('830 patent).

The '636 patent is assigned to InterDigital Technology Corporation. JX-0007 ('636 patent).

The '406 patent is assigned to InterDigital Technology Corporation. JX-0001 ('406 patent).

The '332 patent is assigned to InterDigital Technology Corporation. JX-0002 ('332 patent).

The '970 patent is assigned to IPR Licensing, Inc. JX-0005 ('970 patent).

The '013 patent is assigned to InterDigital Technology Corporation. JX-0003 ('013 patent).

The '127 patent is assigned to InterDigital Technology Corporation. JX-0004 ('127 patent).

C. The Accused Products

The accused products in this investigation are listed in a joint filing required by the procedural schedule. *See* Order No. 18 (requiring a "joint statement regarding identification of accused products"). By listing a product in the joint filing, Respondents have not admitted infringement. Nevertheless, the joint filing indicates the final extent of InterDigital's accusations in this investigation. *See* Joint Statement Regarding Identification of Accused Products (EDIS

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Doc. No. 486154) ("Joint Statement of Accused Products"); Order No. 86 (granting leave to amend the Joint Statement of Accused Products); Order No. 94 (same).

The products and technology at issue in this investigation concern wireless communications devices with Third Generation ("3G") cellular capabilities, and components thereof. *See, e.g.*, CX-1310C (Prucnal WS) at Q58. 3G describes a family of technologies that fulfills the International Mobile Telecommunications-2000 specifications ("IMT-2000") defined by the International Telecommunication Union ("ITU"). *Id.* Two of the most widely adopted 3G systems are based on code division multiple access ("CDMA") technology, *i.e.*, Wideband CDMA ("WCDMA") developed by the Third Generation Partnership Project ("3GPP") and CDMA2000 developed by the Third Generation Partnership Project 2 ("3GPP2"). *Id.* at Q59.

InterDigital accuses a total of 150 devices of infringement in this investigation. Each accused product is designed to operate with either the WCDMA standard, the CDMA2000 standard, or both standards. *See, e.g.*, CX-1310C (Prucnal WS) at Q118. The accused functionalities needed to comply with the relevant standards are generally implemented in a baseband processor, which is also referred to as a baseband ASIC,⁴ chip, or chipset. *See id.* The accused products can be grouped into three categories according to the baseband processor used in the device: the "Qualcomm accused products" use baseband processors developed by Qualcomm, the "Nokia/TI accused products" use baseband processors developed by Nokia and manufactured by Texas Instruments, and the [

]. See Compls. Br. at 13.

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⁴ ASIC is an acronym for application-specific integrated circuit.

1. The Accused Nokia Products

There are 51 Nokia devices at issue in this investigation, and they include Nokia-branded phones, Vertu-branded phones, and a mini laptop. *See* Compls. Br. at 13. Of these accused products, 10 use baseband processors developed by Qualcomm, and 41 use baseband processors developed by Nokia and manufactured by []. *Id.* at 13-14. The following table sets forth the Nokia devices at issue in this investigation, the baseband processor used in each device, including the baseband manufacturer and model identifier, and whether the device is designed to operate in accordance with the WCDMA or CDMA2000 standards:

Device Name	Baseband Processor Developer	Baseband Processor Model	WCDMA and/or CDMA2000
500 ([WCDMA
700()			WCDMA
701()			WCDMA
6350 ()	-		WCDMA
6700 Slide ()			WCDMA
Astound C7 ()		:	WCDMA
Astound C7 ()			WCDMA
C3-01()			WCDMA
C5-03 (-		WCDMA
C5-04 ()			WCDMA
C6-01 (WCDMA
E5 ()			WCDMA
E6 ()	C.04		WCDMA
E7 (· ·	WCDMA
E72 (WCDMA
E73 ()]			WCDMA

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Device Name	Baseband Processor Developer	Baseband Processor Model	WCDMA and/or CDMA2000
N8 [()	·		WCDMA
n9-00 (WCDMA
N900 ()			WCDMA
Pureview 808 (WCDMA
Vertu ()			WCDMA
Vertu ()	1		WCDMA
Vertu ()	(20-		WCDMA
Vertu ()			WCDMA
X3-02 ()			WCDMA
X7-00 ()			WCDMA
5230 ()			WCDMA
5230 ()			WCDMA
6790 Slide ()			WCDMA
6790 Slide ()			WCDMA
C6-00 ()			WCDMA
E71 (WCDMA
N97 (WCDMA
N97 mini (WCDMA
X6 (· · · ·		WCDMA
E63-2 (WCDMA
2730 (WCDMA
3710 (WCDMA
7230 ()			WCDMA
C2-01 (WCDMA
Vertu ()			WCDMA
710 Lumia			WCDMA

Device Name	Baseband Processor Developer	Baseband Processor Model	WCDMA and/or CDMA2000
[800 Lumia ()			WCDMA; CDMA2000
900 Lumia ()			WCDMA
Booklet 3G (.)			WCDMA
Lumia 719 ()			WCDMA; CDMA2000
Lumia 810 ()	2	WCDMA
Lumia 820 ()		WCDMA
Lumia 822 ()		WCDMA
Lumia 920 ()		WCDMA
7705 Twist ()]	CDMA2000

Compls. Br. at 14-15 (citing CX-1065C (7/25/12 Nokia's Resp. to Compls. Interrog. No. 38); CX-0104C; CX-0627C; CX-0151; CX-0152; CX-0153; CX-0154; CX-0155; CX-0156; CX-0158C; CX-0159C; CX-0160C; CX-0161C; CX-0185; CX-0186; CX-0187; CX-0188; CX-0189; CX-0190; CX-0191; CX-0192; CX-0193; CX-0194; CX-0195; CX-0196; CX-0197; CX-0198; CX-0199; CX-0200; CX-0201; CX-0202; CX-0203; CX-0204; CX-0205; CX-0206; CX-0207; CX-0208; CX-0209; CX-0210; CX-0211; CX-0212C; CX-0213C; CX-0214C; CX-0215C; CX-0216C; CX-0217C; CX-0218C; CX-0219C; CX-0290; CX-0294; CX-0295; CX-0296; CX-0297; CX-0298).

2. The Accused Huawei Products

There are 65 Huawei devices at issue in this investigation, and they include smartphones, feature phones, tablets, Mobile WiFi (a.k.a. "MiFi") devices, USB laptop sticks, wireless

⁵ []. CX-0157C (Nokia Booklet Configuration Chart, at NK800IDC04303985).

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gateways, a fixed wireless terminal, and 3G modules. See Compls. Br. at 15-16. Of these accused products, [

]. Id. at 16. The following table sets

forth the Huawei devices at issue in this investigation, the baseband processor used in each device, including the baseband manufacturer and model identifier, and whether the device is designed to operate in accordance with the WCDMA or CDMA2000 standards:





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Compls. Br. at 16-17 (citing by CX-1109C (10/24/12 Huawei's Resp. to Compls. Interrog. No. 61); CX-1113C (10/29/12 Replacement Ex. D to Huawei's Resp. to Compls. Interrog. No. 61); CX-1111C (10/29/12 Huawei's Resp. to Compls. Interrog. No. 152); CX-1112C (10/29/12 Huawei's Resp. to Compls. Interrog. No. 152); CX-1112C (10/29/12 Huawei's Resp. to Compls. Interrog. No. 152); CX-0164C; CX-0165; CX-0166; CX-0167; CX-0221C; CX-0222C).

3. The Accused ZTE Products

There are 34 ZTE devices at issue in this investigation, and they include smartphones, feature phones, tables, MiFi devices, USB laptop sticks, 3G modules, and a wireless home phone device. *See* Compls. Br. at 18. All 34 ZTE accused devices use baseband processors developed by Qualcomm. *Id.* The following table sets forth the ZTE devices at issue in this investigation, the baseband processor used in each device, including the baseband manufacturer and model identifier, and whether the device is designed to operate in accordance with the WCDMA or CDMA2000 standards:

Model Number (Device	Baseband Processor	Baseband	WCDMA and/or
	Developer	Processor Model	CDMA2000
AC30 (Fivespot)	Qualcomm	MSM7625	WCDMA; CDMA2000

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Model Number (Device	Baseband Processor	Baseband	WCDMA and/or
Name)	Developer	Processor Model	CDMA2000
EuFi890 (Jetpack EuFi890)	Qualcomm	MDM9600	WCDMA; CDMA2000
F160 / P622F2 (F160)	Qualcomm	QSC6240 or QSC6270	WCDMA
F555 / P671A91 (Wombat)	Qualcomm	QSC6270	WCDMA
MF61 (4G Hotspot)	Qualcomm	MDM8200A	WCDMA
MF683 (Rocket 3.0)	Qualcomm	MDM8220	WCDMA
P671B30 (Z331 / Morgan)	Qualcomm	QCS6270	WCDMA
P671B40 (Z221 / Michael)	Qualcomm	QCS6270	WCDMA
P736T (Avail)	Qualcomm	MSM7227	WCDMA
WF720 (WF720)	Qualcomm	QSC6270	WCDMA
Z431 (Spider)	Qualcomm	QSC6270	WCDMA
Z990 (Merit)	Qualcomm	MSM7227	WCDMA
A210 (CAPTR II)	Qualcomm	QSC6055-CS3	CDMA2000
A310 (MSGM8 II)	Qualcomm	QSC6055-CS3	CDMA2000
A410 (TXTM8 3G)	Qualcomm	QSC6075	CDMA2000
A415 (Memo)	Qualcomm	QSC6075	CDMA2000
A605	Qualcomm	QSC6085	CDMA2000
AC3781 (Cradlepoint)	Qualcomm	QSC6085	CDMA2000
D930 (Chorus)	Qualcomm	MSM7627	CDMA2000
F350 (Salute)	Qualcomm	QSC6055-CS3	CDMA2000
F450 (Adamant)	Qualcomm	QSC6155	CDMA2000
MC2261 (Wombat)	Qualcomm	QSC1110	CDMA2000
MC2718 (Wombat)	Qualcomm	MDM'6085	CDMA2000
N850 (Fury)	Qualcomm	MSM8655	CDMA2000
N859 (Render (aka "Tania"))	Qualcomm	MSM7627A	CDMA2000
N860 (Warp)	Qualcomm	MSM8655	CDMA2000
N910 (Anthem (LTE))	Qualcomm	MSM8660	CDMA2000
V55 (Optik)	Qualcomm	MSM8660	CDMA2000
X500 (Score (aka "Score M"))	Qualcomm	MSM7627	CDMA2000
N861 (Warp II)	Qualcomm	MSM8655, MDM9600	CDMA2000
V66 (Turbine 7.0)	Qualcomm	MSM8660, MDM9600	CDMA2000
V8000 (Engage)	Qualcomm	MSM8655	CDMA2000
X501 (Groove)	Qualcomm	MSM7627A	CDMA2000
N9500 (Flash)	Qualcomm	MSM8960	CDMA2000

Compls. Br. at 18-19 (citing CX-1140C (10/19/12 ZTE's Resp. to Compls. Interrog. No. 38); CX-1138C (8/13/12 ZTE's Corrected Resp. to Compls. Interrog. No. 11); CX-0169C; CX-0170C; CX-0171C; CX-0172C; CX-0173C; CX-0174; CX-0175C; CX-0176C; CX-0177C; CX-0178C; CX-0179C; CX-0180C; CX-0181C; CX-0182C; CX-0183C).

II. Jurisdiction

No party has contested the Commission's personal jurisdiction over it. *See, e.g.*, Compls. Br. at 19-20; Resps. Br at 22; Staff Br. at 20. Indeed, all parties appeared at the evidentiary hearing, and presented evidence. It is found that the Commission has personal jurisdiction over all parties.

No party has specifically contested the Commission's *in rem* jurisdiction over the accused products. *See, e.g.*, Compls. Br. at 19-20; Resps. Br at 22; Staff Br. at 20. InterDigital has based its importation arguments on completed acts of importation. Further, as discussed below, Respondents have stipulated to acts of importation with respect to the products accused under the asserted patents. Accordingly, it is found that the Commission has *in rem* jurisdiction over all products accused under the asserted patents.

No party has contested the Commission's jurisdiction over the subject matter of this investigation. *See, e.g.*, Compls. Br. at 19-20; Resps. Br at 22; Staff Br. at 20. Indeed, as indicated in the Commission's notice of investigation, discussed above, this investigation involves the alleged importation of products that infringe United States patents in a manner that violates section 337 of the Tariff Act, as amended. Accordingly, it is found that the Commission has subject matter jurisdiction over this investigation.

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III. Importation

As indicated in the notice of investigation, quoted above, this investigation was instituted to determine whether a violation of section 337 has occurred in "the importation into the United States, the sale for importation, or the sale within the United States after importation" of certain products. *See* 76 Fed. Reg. 54252 (Aug. 31, 2011); 19 U.S.C. § 1337(a)(1)(B) (making unlawful, in certain circumstances, the "importation into the United States, the sale for importation, or the sale within the United States after importation by the sale for importation, or the sale within the United States after importation by the owner, importer, or consignee, of articles that . . . infringe a valid and enforceable United States patent"). It has long been recognized that an importation of even one accused product can satisfy the importation requirement of section 337. *See Certain Trolley Wheel Assemblies*, Inv. No. 337-TA-161, Comm'n Op. at 7-8, USITC Pub. No. 1605 (Nov. 1984) (deeming the importation requirement satisfied by the importation of a single product of no commercial value).

In this investigation, it is uncontested that the importation requirement is satisfied with respect to the products alleged to infringe the asserted patents. *See* JX-0023C (Joint Stipulation Between InterDigital Complainants and Huawei Respondents Regarding Importation of Accused Products); JX-0024C (Joint Stipulation Between Nokia and InterDigital Regarding Importation of Accused Products); JX-0025C (Joint Stipulation Between ZTE Respondents and InterDigital Regarding Importation of Accused Products).

IV. The Power Ramp-Up ('830 and '636) Patents

A. Overview of the Patents and Asserted Claims

1. The '830 Patent

Asserted U.S. Patent No. 7,706,830 ("the '830 patent") is titled, "Method and Subscriber Unit for Performing an Access Procedure." JX-0006 ('830 patent). The '830 patent issued on

April 27, 2010, and the named inventors are Fatih M. Ozluturk and Gary R. Lomp. Id. The '830

patent relates generally to the way in which a subscriber unit gains access to a cellular CDMA

system. Id. at Abstract. The '830 patent is related to the asserted '636 patent; these two patents

together are also referred to as the "Power Ramp-Up" patents. The specifications of the '830 and

'636 patents are substantially the same.

InterDigital asserts independent claim 1 and dependent claims 2, 3, and 5 of the '830

patent. These claims read as follows:

1. A wireless code division multiple access (CDMA) subscriber unit comprising:

a transmitter configured such that, when the subscriber unit is first accessing a CDMA network and wants to establish communications with a base station associated with the network over a communication channel to be indicated by the base station, the transmitter successively sends transmissions prior to the subscriber unit receiving from the base station an indication that at least one of the successively sent transmissions has been detected by the base station;

wherein each of the successively sent transmissions is produced using a sequence of chips, wherein the sequence of chips is not used to increase bandwidth;

the transmitter further configured such that the transmitter sends to the base station a message indicating to the base station that the subscriber unit wants to establish the communications with the base station over the communication channel to be indicated by the base station, the message being sent only subsequent to the subscriber unit receiving the indication;

wherein at least two of the successively sent transmissions are produced using different sequences of chips;

wherein each of the successively sent transmissions is shorter than the message; and

wherein each of the successively sent transmissions and the message are produced using portions of a same sequence of chips, wherein the same sequence of chips is not used to increase bandwidth.

2. The wireless code division multiple access (CDMA) subscriber unit of claim 1 wherein a beginning of each one of the successively sent transmissions, other than a first one of the successively sent transmissions, is at a higher power level with respect to a beginning of a prior one of the successively sent transmissions.

3. The wireless code division multiple access (CDMA) subscriber unit of claim 1 wherein each one of the successively sent transmissions, other than a first one of the successively sent transmissions, is sent at a power level that is higher than the power level of a prior one of the successively sent transmissions.

5. The wireless code division multiple access (CDMA) subscriber unit of claim 1 wherein the successively sent transmissions are sent until receipt of the indication that at least one of the successively sent transmissions has been detected by the base station.

JX-0006 at col. 10, ln. 54 – col. 11, ln. 28; col. 11, lns. 32-36.

2. The '636 Patent

Asserted U.S. Patent No. 8,009,636 ("the '636 patent") is titled, "Method and Apparatus

for Performing an Access Procedure." JX-0007 ('636 patent). The '636 patent issued on August

30, 2011, and the named inventors are Fatih Ozluturk and Gary R. Lomp. Id. The '636 patent

relates generally to the way in which a subscriber unit gains access to a cellular CDMA system.

Id. at Abstract. The '636 patent is related to the asserted '830 patent; these two patents together

are also referred to as the "Power Ramp-Up" patents. The specifications of the '830 and '636

patents are substantially the same.

InterDigital asserts independent claim 1 and dependent claims 2, 4, 6, 7, and 8 of the '636

patent. These claims read as follows:

1. A wireless code division multiple access (CDMA) subscriber unit comprising:

a transmitter configured such that, when the subscriber unit is first accessing a CDMA network, the transmitter successively sends transmissions wherein each of the transmissions are derived from a first length of a plurality of chips until the subscriber unit receives

from a base station associated with the network an indication that at least one of the transmissions has been detected by the base station; and

the transmitter further configured such that, subsequent to the subscriber unit receiving the indication, the transmitter sends a subsequent transmission derived from a second length of the plurality of chips, wherein the first length is less than the second length.

2. The subscriber unit of claim 1 wherein at least two of the successively sent transmissions are different.

4. The subscriber unit of claim 1 wherein the plurality of chips are chips that are not used for spreading.

6. The subscriber unit of claim 1 wherein the successive transmissions facilitate power control when the subscriber unit is first accessing the network.

7. The subscriber unit of claim 6 wherein the power control of the successive transmissions is not closed loop power control.

8. The subscriber unit of claim 1 wherein the subsequent transmission is not closed loop power controlled.

JX-0007 at col. 10, lns. 49-65; col. 11, lns. 1-2; col. 11, lns. 5-12.

B. Claim Construction

1. General Principles of Law⁶

Claim construction begins with the plain language of the claim.⁷ Claims should be given

their ordinary and customary meaning as understood by a person of ordinary skill in the art,

⁶ The legal principles set forth in this section apply equally to the construction of the other patents asserted in this investigation.

⁷ Only those claim terms that are in controversy need to be construed, and only to the extent necessary to resolve the controversy. *Vanderlande Indus. Nederland BV v. Int'l Trade Comm.*, 366 F.3d 1311, 1323 (Fed. Cir. 2004); *Vivid Tech., Inc. v. American Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

viewing the claim terms in the context of the entire patent.⁸ Phillips v. AWH Corp., 415 F.3d 1303, 1312-13 (Fed. Cir. 2005), cert. denied, 546 U.S. 1170 (2006).

In some instances, claim terms do not have particular meaning in a field of art, and claim construction involves little more than the application of the widely accepted meaning of commonly understood words. *Phillips*, 415 F.3d at 1314. "In such circumstances, general purpose dictionaries mayabe helpful." *Id*.

In many cases, claim terms have a specialized meaning, and it is necessary to determine what a person of skill in the art would have understood the disputed claim language to mean. "Because the meaning of a claim term as understood by persons of skill in the art is often not immediately apparent, and because patentees frequently use terms idiosyncratically, the court looks to 'those sources available to the public that show what a person of skill in the art would have understood disputed claim language to mean." *Id.* (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1116 (Fed. Cir. 2004)). The public sources identified in *Phillips* include "the words of the claims themselves, the remainder of the specification, the prosecution history, and extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art." *Id.*

In cases in which the meaning of a claim term is uncertain, the specification usually is the best guide to the meaning of the term. *Id.* at 1315. As a general rule, the particular examples or embodiments discussed in the specification are not to be read into the claims as limitations.

⁸ Factors that may be considered when determining the level of ordinary skill in the art include: "(1) the educational level of the inventor; (2) type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; and (6) educational level of active workers in the field." *Environmental Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 696 (Fed. Cir. 1983), *cert. denied*, 464 U.S. 1043 (1984).

Markman v. Westview Instruments, Inc., 52 F.3d 967, 979 (Fed. Cir. 1995) (en banc), aff'd, 517 U.S. 370 (1996). The specification is, however, always highly relevant to the claim construction analysis, and is usually dispositive: *Phillips*, 415 F.3d at 1315 (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). Moreover, "[t]he construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be, in the end, the correct construction." *Id.* at 1316.

Claims are not necessarily, and are not usually, limited in scope to the preferred embodiment. *RF Delaware, Inc. v. Pacific Keystone Techs., Inc.*, 326 F.3d 1255, 1263 (Fed. Cir. 2003); *Decisioning.com, Inc. v. Federated Dep't Stores, Inc.*, 527 F.3d 1300, 1314 (Fed. Cir. 2008) ("[The] description of a preferred embodiment, in the absence of a clear intention to limit claim scope, is an insufficient basis on which to narrow the claims."). Nevertheless, claim constructions that exclude the preferred embodiment are "rarely, if ever, correct and require highly persuasive evidentiary support." *Vitronics*, 90 F.3d at 1583. Such a conclusion can be mandated in rare instances by clear intrinsic evidence, such as unambiguous claim language or a clear disclaimer by the patentees during patent prosecution. *Elekta Instrument S.A. v. O.U.R. Sci. Int'l, Inc.*, 214 F.3d 1302, 1308 (Fed. Cir. 2000); *Rheox, Inc. v. Entact, Inc.*, 276 F.3d 1319 (Fed. Cir. 2002).

If the intrinsic evidence does not establish the meaning of a claim, then extrinsic evidence may be considered. Extrinsic evidence consists of all evidence external to the patent and the prosecution history, and includes inventor testimony, expert testimony, and learned treatises. *Phillips*, 415 F.3d at 1317. Inventor testimony can be useful to shed light on the relevant art. In evaluating expert testimony, a court should discount any expert testimony that is clearly at odds with the claim construction mandated by the claims themselves, the written description, and the

prosecution history, in other words, with the written record of the patent. *Id.* at 1318. Extrinsic evidence may be considered if a court deems it helpful in determining the true meaning of

language used in the patent claims. Id.

2. Level of Ordinary Skill

A person of ordinary skill in the art of the asserted '830 and '636 patents is someone with an undergraduate degree in electrical engineering, or an equivalent subject, together with three to five years of postgraduate experience in cellular communications, or comparable training.⁹ See CX-1309C (Jackson WS) at Q504-Q505; CX-1524C (Haas RWS) at Q35.

3. Construction of Disputed Claim Terms¹⁰

a. "successively sends transmissions" ('830 and '636 patents)

Below is a chart showing the parties' proposed claim constructions.

Claim Term/Phrase	InterDigital's Construction	Respondents' Construction
successively sends transmissions	sends transmissions one after the other	transmits to the base station, one after the other, codes that are shorter than a regular length code

⁹ Respondents propose that a person of ordinary skill in the art at the time of the filing of the asserted '830 and '636 patents would have at least a Bachelor's degree in electrical engineering, computer science or mathematics, with some working experience in CDMA communications. Resps. Br. at 285-86. The parties have not identified any way in which differences in their proposed definitions of the level of ordinary skill in the art affect issues in this investigation. *See* Compls. Br. at 35; Resps. Br. at 285-86.

¹⁰ This Initial Determination addresses only the disputed claim terms identified by the parties as needing construction. *See* Joint Outline of the Issues to Be Decided in the Final Initial Determination (EDIS Doc. No. 505468) ("GR12 Filing"). The parties identified the claim terms for construction in a joint filing required by Ground Rule 12, which provides: "On the same day the initial posthearing briefs are due, the parties shall file a <u>comprehensive</u> joint outline of the issues to be decided in the final Initial Determination. The outline shall refer to specific sections of the posthearing briefs. Moreover, the claim terms briefed by the parties must be <u>identical</u>. The construction of any part of a disputed claim term that is not briefed is waived." Ground Rule 12 (emphasis original) (attached to Order No. 35 (Issuance of Amended Ground Rules)).

The claim term "successively sends transmissions" appears in asserted independent claim 1 of the '830 patent, as well as in asserted independent claim 1 of the '636 patent. JX-0006 at col. 10, ln. 54 – col. 11, ln. 16; JX-0007 at col. 10, lns. 49-63.

InterDigital construes this term to mean "sends transmissions one after the other." Compls. Br. at 38-40. Respondents construe this term to mean "transmits to the base station, one after the other, codes that are shorter than a regular length code." Resps. Br. at 291-93. The parties do not dispute the construction of "successively sends," which the parties agree means "sends one after the other." *See* Compls. Br. at 38-40; Resps. Br. at 291-93. The dispute between the parties instead centers on the proper construction of "transmissions."

As proposed by Respondents, the term "successively sends transmissions" is construed to mean "transmits to the base station, one after the other, codes that are shorter than a regular length code."

The intrinsic evidence supports Respondents' proposed construction. The '830 specification describes the claimed "transmissions" from the subscriber unit to the base station as follows: "As the base station 14 transmits the pilot code 40 (step 100), the base station 14 searches (step 101) for an 'access code' 42 transmitted by a subscriber unit 16. The access code 42 is a known spreading code transmitted from a subscriber unit 16 to the base station 14 during initiation of communications and power ramp-up." JX-0006 at col. 6, lns. 14-20. With reference to a preferred embodiment of the claimed invention, the specification further teaches: "The preferred embodiment of the present invention utilizes 'short codes' and a two-stage communication link establishment procedure to achieve fast power ramp-up without large power overshoots. The spreading code transmitted by the subscriber unit 16 is much shorter than the rest of the spreading codes (hence the term short code), so that the number of phases is limited

and the base station 14 can quickly search through the code. The short code used for this purpose carries no data." *Id.* at col. 7, lns. 36-44.

These passages from the '830 specification make clear that the claimed "transmissions" from the subscriber unit to the base station comprise codes. At no point does the specification indicate that the claimed transmissions are generalized "RF emissions," as proposed by InterDigital. *See* Complet Br. at 38-39.

The Power Ramp-Up patents also disclose that the codes successively transmitted during the random access process (*i.e.*, the short codes) are neither modulated with data, nor used to modulate data. RX-3526C (Lanning WS) at Q69,Q92-95, Q130-132; CX-1309C (Jackson WS) at Q625; Jackson Tr. 119, 177, 178; Haas Tr. 1822, 1823-1826; RX-3999C (Lanning RWS) at Q132-134, Q141-143; *see also InterDigital Commc'ns, LLC v. Int'l Trade Comm'n*, 690 F.3d 1318, 1326 (Fed. Cir. 2012) ("As noted, the specification describes various codes, such as pilot codes and short codes, as 'spreading codes' even though they carry no data and are not intended to do so."); *id.* at 1326 (finding that experts confirmed that the short codes and the access codes described in the specification do not spread, or modulate, data). In other words, the "codes" themselves are what are successively transmitted, not codes modulated with data.

InterDigital argues against Respondents' proposed construction by contending, *inter alia*, that Respondents' expert Mr. Lanning defines the term "code" as used in Respondents' construction as a specific type of code, specifically one that is "not modulated by data." Compls. Br. at 37. This argument is not persuasive. In particular, the phrase "not modulated by data" does not appear in any of Respondents' proposed constructions, and Mr. Lanning does not distinguish codes that can be modulated by data from those that cannot be modulated by data. Instead, Mr. Lanning testified that a code modulated by data is no longer a code, *i.e.*, the

transmission of a code modulated by data is not the transmission of a code. RX-3999C (Lanning RWS) at Q152.

InterDigital further argues that Respondents' proposed construction excludes a preferred embodiment of the claimed invention that uses short codes and access codes. *See* Compls. Br. at 37-38. This argument is also not persuasive. The teachings of the patents make clear that the claimed "successively sent transmissions" are the short codes of the preferred embodiment, and that the claimed "same sequence of chips" and "the plurality of chips" are the access code of the preferred embodiment. *See* Compls. Br. at 95; Resps. Br. at 295, 362; CX-1309C (Jackson WS) at Q740 ("The 'same sequence of chips' in a preferred embodiment . . . is the access code (*i.e.*, LAXPT).").

Accordingly, the claim term "successively sends transmissions" is construed to mean "transmits to the base station, one after the other, codes that are shorter than a regular length code."

b. "sequence of chips" ('830 patent)

Claim Term/Phrase	InterDigital's Construction	Respondents' Construction
sequence of chips	chips in a particular order	code or portion of a code

The claim term "sequence of chips" appears in asserted independent claim 1 of the '830 patent. JX-0006 at col. 10, ln. 54 - col. 11, ln. 16.

InterDigital construes this term to mean "chips in a particular order." Compls. Br. at 40-41. Respondents construe this term to mean "code or portion of a code." Resps. Br. at 293-94.

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As proposed by InterDigital, the claim term "sequence of chips" is construed to mean "chips in a particular order," which is the ordinary meaning of the term as understood by a person of ordinary skill in the art. *See* CX-1390C (Jackson WS) at Q714, Q719.

A person of ordinary skill in that art would understand that a sequence is "an order," and that a CDMA chip is simply a binary value at the chip rate. *See* Lanning Tr. 1089; CX-1309C (Jackson WS) at Q714-7¹8. Moreover, the specification of the '830 patent does not indicate that anything other than the plain meaning of the term was intended. *See* CX-1309C (Jackson WS) at Q719.

Respondents argue that, inasmuch as the claimed "transmissions" from the subscriber unit to the base station comprise codes, the codes "corresponding to the successively sent transmissions under Respondents' proposed constructions must be created by a 'code.'" Resps. Br. at 294. This argument is not persuasive. Although it has been determined above that the claimed "transmissions" comprise codes, the intrinsic evidence does not suggest that these transmitted codes are necessarily "produced using" another code or portion of a code. *See* JX-0006 at col. 10, lns. 65-67 (relevant lines of claim 1). The '830 specification does not exclude the possibility that the transmitted codes are producing using a generic sequence of chips, which is the construction proposed by InterDigital.

Accordingly, the claim term "sequence of chips" is construed to mean "chips in a particular order."

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Claim Term/Phrase	InterDigital's Construction	Respondents' Construction
same sequence of chips	individual sequence of chips	a known code containing the different sequences of chips used to produce the at least two successively sent transmissions

"same sequence of chips" ('830 patent)

c.

The claim term "same sequence of chips" appears in asserted independent claim 1 of the *830 patent. JX-0006 at col. 10, lns. 54 - col. 11, ln. 16.

InterDigital construes this term to mean "individual sequence of chips." Compls. Br. at 41-42. Respondents construe this term to mean "a known code containing the different sequences of chips used to produce the at least two successively sent transmissions." Resps. Br. at 294-95.

As proposed by InterDigital, the claim term "same sequence of chips" is construed to mean "individual sequence of chips," which is the plain meaning of the term as understood by a person of ordinary skill in the art. *See* CX-1309C (Jackson WS) at Q714, Q719. In particular, the claim language states that "each of the successively sent transmissions and the message are produced using portions of a same sequence of chips." JX-0006 at col. 11, lns. 12-14. The term therefore refers to an individual sequence of chips, portions of which are used to produce the successively sent transmissions and the message.

In support of their proposed construction that the claimed "sequence of chips" must comprise "a known code," Respondents argue: "[T]he specification of the Power Ramp-up Patents discloses only one 'sequence of chips' -- the access code (LAXPT) – from which the successively sent transmissions (i.e., the short codes (SAXPT)) are produced. Thus, the 'same sequence of chips' used to produce the message and the successively sent transmissions *must* be

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the same sequence used to produce the successively sent transmissions." Resps. Br. at 295 (emphasis original). As discussed above with respect to the claim term "sequence of chips," however, the '830 specification neither requires that the claimed "transmissions" be "produced using" a code, nor does the specification exclude the possibility that the transmitted codes are producing using a generic sequence of chips that do not comprise a code. *See* JX-0006 at col. 11, lns. 13-16 (relevant lifes of claim 1).

Accordingly, the claim term "same sequence of chips" is construed to mean "individual sequence of chips."

d. "wants to establish" ("	830 patent)
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Claim Term/Phrase	InterDigital's Construction	Respondents' Construction
wants to establish	wants to initiate	requests

The claim term "wants to establish" appears in asserted independent claim 1 of the '830 patent. JX-0006 at col. 10, lns. 54 - col. 11, ln. 16.

InterDigital construes this term to mean "wants to initiate." Compls. Br. at 43. Respondents construe this term to mean "requests." Resps. Br. at 287-88.

As proposed by Respondents, the claim term "wants to establish" is construed to mean "requests."

A person of ordinary skill in the art would understand that the word "wants" suggests a desire, which inanimate objects such as the claimed subscriber unit do not have. RX-3526C (Lanning WS) at Q101. Therefore, when the claimed subscriber unit "wants to establish a communications channel," a person of ordinary skill in the art would understand that it is requesting a communications channel. *Id.* By contrast, InterDigital's proposed construction

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further anthropomorphizes an inanimate object to suggest that the subscriber unit "wants" to establish or initiate a communications channel.

InterDigital argues that its proposed construction should be adopted inasmuch as it reflects the plain meaning of the claim term, but does not identify how Respondents' proposed construction is incorrect. *See* Compls. Br. at 43. InterDigital's proposed construction fails to clarify the meaning of the claim term, because it merely substitutes the word "initiate" for "establish," and does not address the issue of how an non-human, inanimate subscriber unit can "want" anything.

Accordingly, the claim term "wants to establish" is construed to mean "requests."

e. "communication	channel"	('830)	patent))
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Claim Term/Phrase	InterDigital's Construction	Respondents' Construction
communication channel	channel for communication between a subscriber unit and a base station	two-way voice channel

The claim term "communication channel" appears in asserted independent claim 1 of the *830 patent. JX-0006 at col. 10, ln. 54 - col. 11, ln. 16.

InterDigital construes this term to mean "channel for communication between a subscriber unit and a base station." Compls. Br. at 43-46. Respondents construe this term to mean "two-way voice channel." Resps. Br. at 288-89.

As proposed by InterDigital, the term "communication channel" is construed to mean "channel for communication between a subscriber unit and a base station." This construction comports with the intrinsic evidence and reflects the understanding of a person of ordinary skill in the art. *See* CX-1309C (Jackson WS) at Q553-556.

The '830 specification does not provide a special definition of "communication channel," but often refers to a "communication channel" as a "channel for communication" between a subscriber unit and a base station. *See JX*-0006 at col. 3, lns. 35-38 ("Accordingly, it is an object of the present invention to provide an improved technique for controlling power ramp-up during establishment of a communication channel between a CDMA subscriber unit and base station."); col. 4, lns. 50-53 ("A two-way communication channel (link) 18 comprises a signal transmitted 21 (Tx) from the base station 14 to the subscriber unit 16 and a signal received 23 (Rx) by the base station 14 from the subscriber unit 16."). Although the '830 specification indicates that the claimed "communication channel" is two-way, the specification does not limit the claimed channel to a voice channel. *See id.* at col. 4, lns. 50-53.

Respondents argue that their proposed construction should be adopted because, "[a]t the time of the invention, a person of ordinary skill in the art would have understood 'communication channel' to be referring *only* to a two-way voice channel." Resps. Br. at 288 (citing RX-3526C (Lanning WS) at Q105-115). Respondents further argue:

The Power Ramp-Up Patents are wireless local-loop systems, which replace the "last mile" connection to the two-way voice channels of the PSTN (Public Switched Telephone Network). . . . The PSTN, though it can convey data, is exclusively composed of two-way voice channels and is the only external network disclosed in the Power Ramp-up and 010 Patents; there is no discussion of a direct connection to any networks other than two-way voice channel networks. . . . Thus, all data transmissions in the Power Ramp-Up Patents are accomplished over two-way voice channels.

Resps. Br. at 288 (citations omitted).

Respondents' argument is not persuasive, inasmuch as the two-way voice channels of the PSTN discussed in the '830 specification are not related to the claimed "communication channel" between the subscriber unit and the base station. *See* JX-0006 at col. 4, lns. 21-25

("The communication network 10 may also be connected to a public switched telephone network (PSTN) 22, wherein the base station controller 20 also coordinates communications between the base stations 14 and the PSTN 22."). The PSTN's two-way voice channels do not connect the subscriber unit and the base station, but rather connect the base station with the land lines of the PSTN. *See id.* at Fig. 1.

Accordingly, the term "communication channel" is construed to mean "channel for communication between a subscriber unit and a base station."

f. "produced	using"	(*830	patent)	
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Claim Term/Phrase	InterDigital's Construction	Respondents' Construction
produced using	generated using	selected from [a] pre-existing

The claim term "produced using" appears in asserted independent claim 1 of the '830 patent. JX-0006 at col. 10, ln. 54 – col. 11, ln. 16.

InterDigital construes this term to mean "generated using." Compls. Br. at 46-49. Respondents construe this term to mean "selected from [a] pre-existing." Resps. Br. at 296-97.

As proposed by InterDigital, the claim term "produced using" is construed to mean "generated using."

Inasmuch as the term "produced using" does not appear in the '830 specification, the plain meaning of the term should control. *See Toshiba Corp. v. Imation Corp.*, 681 F.3d 1358, 1369 (Fed. Cir. 2012) ("Absent disclaimer or lexicography, the plain meaning of the claim controls.") (citation omitted). "Generated using," the construction proposed by InterDigital, reflects the plain and ordinary of the term as understood by a person of ordinary skill in the art. CX-1309C (Lanning WS) at Q745-747.

Respondents argue that their proposed construction, "selected from [a] pre-existing," "is

required by the system disclosed in the Power Ramp-up Patents." See Resps. Br. at 296.

Respondents' argument is as follows:

The successively sent transmissions (i.e., the short codes) disclosed in the Power Ramp-up Patents are simply selected from a longer sequence of chips (*i.e.*, the access code) and *must* be selected in this manner for the system to function . . . In other words, the successively sent transmissions *must* be transmitted without being modulated by data in order for any of the disclosed embodiments to operate. The reason for this is quite simple: if the sequence of chips for the successively sent transmissions (i.e., the short codes) are not selected form the access code, the base station would not recognize these transmissions and the disclosed system would not work . . . In addition, if the successively sent transmissions and the longer code from which it is selected *are* modulated by data (or used to modulate data) the base station would not recognize them as either the successively sent transmissions (*i.e.*, short codes) or the access code

Id. (emphasis original; citations and footnotes omitted). Respondents further argue that their "proposed construction is further supported by the disclosure in the Power Ramp-up Patents that short codes are selected from portions of the access code (LAXPT) and stored and repeatedly transmitted every 3 milliseconds – thus, the short code transmissions or successively sent transmissions are selected from a 'pre-existing' sequence of chips." *Id.* at 296 n.4.

Respondents' primary argument is not persuasive, inasmuch as it relies on a hypothetical system in which the handset modulates the codes before transmission, even though the base station can only detect unmodulated codes. Respondents' secondary argument, that "the short codes are selected from portions of the access code (LAXPT)," is also unavailing, inasmuch as the LAXPT is generated on the fly, and is not stored either before or after the initial access procedure has been performed. *See* CX-1390C (Jackson WS) at Q757. Accordingly, Respondents' proposed construction both limits the claims to a hypothetical, undisclosed configuration, and excludes an embodiment of the invention.

Therefore, the claim term "produced using" is construed to mean "generated using."

g. "message being sent only subsequent to the subscriber unit receiving the indication" ('830 patent)

Claim Term/Phrase	InterDigital's -Construction	Respondents' Construction
subsequent to the subscriber	the subscriber unit receives	message being the next transmission from the subscriber
unit receiving the indication	the indication	unit after receiving the indication

The claim term "message being sent only subsequent to the subscriber unit receiving the indication" appears in asserted claim 1 of the '830 patent. JX-0006 at col. 10, ln. 54 – col. 11, ln. 16.

InterDigital construes this term to mean "message is sent only after the subscriber unit receives the indication." See Compls. Br. at 49-51. Respondents construe this term to mean "message being the next transmission from the subscriber unit after receiving the indication." See Resps. Br. at 297-98.

As proposed by InterDigital, the term "message being sent only subsequent to the subscriber unit receiving the indication" is construed to mean "message is sent only after the subscriber unit receives the indication," which reflects the ordinary meaning of the term as understood by a person of ordinary skill in the art. *See* CX-1309C (Jackson WS) at Q762-763; Lanning Tr. 1095.

Respondents argue that InterDigital's proposed construction "places no temporal limitation on when the message is transmitted following the indication," but this argument ignores the claim language surrounding the disputed term. *See* Resps. Br. at 297. Specifically, claim 1 of the '830 patent provides that the transmitter sends the message "when the subscriber

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unit is first accessing a CDMA network and wants to establish communications with a base station associated with the network over a communication channel to be indicated by the base station." JX-0006 at col. 10, lns. 56-60. Respondents' argument that adopting InterDigital's proposed construction would permit the subscriber unit from transmitting the message at any time is therefore incorrect.

Moreover, Respondents' proposed construction adds a limitation that the subscriber unit cannot send any transmissions between the indication and the message, but have not shown that such a limitation is supported by the intrinsic evidence. Therefore, Respondents' proposed construction is incorrect.

Accordingly, the claim term "message being sent only subsequent to the subscriber unit receiving the indication" is construed to mean "message is sent only after the subscriber unit receives the indication."

h.	"message indicating to the base station that the subscriber unit
	wants to establish the communications with the base station"
	('830 patent)

Claim Term/Phrase	InterDigital's Construction	Respondents' Construction
message indicating to the base	transmission having data	message indicating to the
station that the subscriber unit	indicating to the base station	base station that the
wants to establish the	that the subscriber unit wants to	subscriber unit requests
communications with the base	establish communications with	communications with the
station	the base station	base station

The claim term "message indicating to the base station that the subscriber unit wants to establish the communications with the base station" is recited in asserted claim 1 of the '830 patent. JX-0006 at col. 10, ln. 54 – col. 11, ln. 16.

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InterDigital construes this term to mean "transmission having data indicating to the base station that the subscriber unit wants to establish communications with the base station." *See* Compls. Br. at 51-54. Respondents construe this term to mean "message indicating to the base station that the subscriber unit requests communications with the base station."¹¹ *See* Resps. Br. at 289-91.

As proposed by Respondents, the claim term "message indicating to the base station that the subscriber unit wants to establish the communications with the base station" is construed to mean "message indicating to the base station that the subscriber unit requests communications with the base station," which reflects the plain and ordinary meaning of this term as understood by a person of ordinary skill in the art. *See* RX-3526C (Lanning WS) at Q119.

InterDigital argues that the term "message" should be construed as a "transmission having data" because the "message" must be sent to the base station, but this argument is not persuasive. *See* Compls. Br. at 51-52. As explained by Mr. Lanning, a person of ordinary skill in the art would understand that the term "message" in the context of the claim refers to the underlying data that is transmitted, rather than to the actual "transmission." *See* RX-3526C (Lanning WS) at Q123; RX-3999C (Lanning RWS) at Q115.

Accordingly, the term "message indicating to the base station that the subscriber unit wants to establish the communications with the base station" is construed to mean "message indicating to the base station that the subscriber unit requests communications with the base station."

¹¹ InterDigital represents that Respondents seeks to construe "message" to mean "data stored in memory." *See* Compls. Br. at 51. Respondents' proposed construction for "message," however, is "message." *See* Resps. Br. at 290; Resps. Reply at 117 n.24 (citing JX-0022C (Joint Chart of Proposed Claim Constructions) at 7).

"plurality of chips" ('636 patent)

i.

Claim Term/Phrase	InterDigital's Construction	Respondents' Construction
plurality of chips	two or more chips	code or portion of a code

The claim term "plurality of chips" appears in asserted claims 1 and 4 of the '636 patent. JX-0007 at col. 10, lns. 49-63; col. 11, lns. 1-2.

InterDigital construes this claim to mean "two or more chips." *See* Compls. Br. at 54-55. Respondents construe this term to mean "code or portion of a code." *See* Resps. Br. at 299; Resps. Reply at 122-23.

As proposed by InterDigital, the term "plurality of chips" is construed to mean "two or more chips," which is the plain meaning of the term. *See* Lanning Tr. 1089.

Respondents argue that their proposed construction should be adopted for the same reasons that their proposed construction for the '830 claim term "sequence of chips," discussed above, should be adopted. Respondents' arguments are rejected for the reasons set forth previously with respect to the term "sequence of chips."

Accordingly, the term "plurality of chips" is construed to mean "two or more chips."

Claim Term/Phrase	InterDigital's Construction	Respondents' Construction
subsequent	transmission that is later	known code transmitted to the base station
transmission	in time	during power ramp-up

j. "subsequent transmission" ('636 patent)

The claim term "subsequent transmission" is recited in asserted claims 1 and 8 of the '636 patent. JX-0007 at col. 10, lns. 49-63; col. 11, lns. 11-12.

InterDigital construes this term to mean "transmission that is later in time." See Compls. Br. at 55-58. Respondents construe this term to mean "known code transmitted to the base station during power ramp-up." See Resps. Br. at 299-301.

As proposed by Respondents, "subsequent transmission" is construed to mean "known code transmitted to the base station during power ramp-up." As discussed above with respect to the claim term "successively sends transmissions," the claimed invention relates to transmissions of codes from the subscriber unit to the base station during a power ramp-up sequence. A person of ordinary skill in the art would therefore understand that the claimed "subsequent transmission" also takes place during the power ramp-up sequence. *See* RX-3526C (Lanning WS) at Q194-198. By contrast, InterDigital's proposed construction is incorrect to the extent it leaves open the possibility that the "subsequent transmission" occurs after the power ramp-up sequence has completed.

Accordingly, the claim term "subsequent transmission" is construed to mean "known code transmitted to the base station during power ramp-up."

k.	"derived from	[a]/[the]"	('636 patent)
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Claim Term/Phrase	InterDigital's Construction	Respondents' Construction
derived from [a]/[the]	produced using	selected from [a]/[the] pre-existing

The claim term "derived from [a]/[the]" appears in asserted claim 1 of the '636 patent. JX-0007 at col. 10, lns. 49-63.

InterDigital construes this term to mean "produced using." *See* Compls. Br. at 58. Respondents construe this term to mean "selected from [a]/[the] pre-existing." *See* Resps. Br. at 298-99.

Respondents argue that the '636 term "derived from [a]/[the]" should be construed the same as the '830 term "produced using," discussed above, and for the same reasons. *See* Resps. Br. at 298-99. Respondents' argument is rejected for the same reasons discussed above.

InterDigital's proposal, that the '636 term "derived from [a]/[the]" should be construed to mean "produced using," would create a circular construction if it were adopted, inasmuch as the '830 term "produced using" has been construed above to mean "generated using." Therefore, InterDigital's proposed construction of "produced using" will not be adopted. Instead, the term "derived from [a]/[the]" is construed to mean "generated using."

C. Infringement

1. General Principles of Law¹²

a. Direct Infringement

Under 35 U.S.C. § 271(a), direct infringement consists of making, using, offering to sell, or selling a patented invention without consent of the patent owner. The complainant in a section 337 investigation bears the burden of proving infringement of the asserted patent claims by a "preponderance of the evidence." *Certain Flooring Products*, Inv. No. 337-TA-443, Comm'n Notice of Final Determination of No Violation of Section 337, 2002 WL 448690, at *59, (Mar. 22, 2002); *Enercon GmbH v. Int'l Trade Comm'n*, 151 F.3d 1376 (Fed. Cir. 1998).

Literal infringement of a claim occurs when every limitation recited in the claim appears in the accused device, *i.e.*, when the properly construed claim reads on the accused device

¹² The legal principles set forth in this section apply equally to the infringement analysis of the other patents asserted in this investigation.

exactly.¹³ Amhil Enters., Ltd. v. Wawa, Inc., 81 F.3d 1554, 1562 (Fed. Cir. 1996); Southwall Tech. v. Cardinal IG Co., 54 F.3d 1570, 1575 (Fed Cir. 1995).

If the accused product does not literally infringe the patent claim, infringement might be found under the doctrine of equivalents. "Under this doctrine, a product or process that does not literally infringe upon the express terms of a patent claim may nonetheless be found to infringe if there is 'equivalence' between the elements of the accused product or process and the claimed elements of the patented invention." *Warner-Jenkinson Co., Inc. v. Hilton Davis Chemical Co.*, 520 U.S. 17, 21 (1997) (citing *Graver Tank & Mfg. Co. v. Linde Air Products Co.*, 339 U.S. 605, 609 (1950)). "The determination of equivalence should be applied as an objective inquiry on an element-by-element basis."¹⁴ *Id.* at 40.

"An element in the accused product is equivalent to a claim limitation if the differences between the two are insubstantial. The analysis focuses on whether the element in the accused device 'performs substantially the same function in substantially the same way to obtain the same result' as the claim limitation." *AquaTex Indus. v. Techniche Solutions*, 419 F.3d 1374, 1382 (Fed. Cir. 2005) (quoting *Graver Tank*, 339 U.S. at 608); *accord Absolute Software*, 659 F.3d at 1139-40.¹⁵

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¹³ Each patent claim element or limitation is considered material and essential. London v. Carson Pirie Scott & Co., 946 F.2d 1534, 1538 (Fed. Cir. 1991). If an accused device lacks a limitation of an independent claim, the device cannot infringe a dependent claim. See Wahpeton Canvas Co. v. Frontier, Inc., 870 F.2d 1546, 1552 n.9 (Fed. Cir. 1989).

Absolute Software, Inc. v. Stealth Signal, Inc., 659 F.3d 1121, 1130 (Fed. Cir. 2011).

¹⁵ "The known interchangeability of substitutes for an element of a patent is one of the express objective factors noted by *Graver Tank* as bearing upon whether the accused device is substantially the same as the patented invention. Independent experimentation by the alleged infringer would not always reflect upon the objective question whether a person skilled in the art

Prosecution history estoppel can prevent a patentee from relying on the doctrine of equivalents when the patentee relinquished subject matter during the prosecution of the patent, either by amendment or argument. *AquaTex*, 419 F.3d at 1382. In particular, "[t]he doctrine of prosecution history estoppel limits the doctrine of equivalents when an applicant makes a narrowing amendment for purposes of patentability, or clearly and unmistakably surrenders subject matter by arguments made to an examiner." *Id.* (quoting *Salazar v. Procter & Gamble Co.*, 414 F.3d 1342, 1344 (Fed. Cir. 2005)).

b. Induced Infringement

With respect to induced infringement, section 271(b) of the Patent Act provides: "Whoever actively induces infringement of a patent shall be liable as an infringer." 35 U.S.C. § 271(b). "To prevail on a claim of induced infringement, in addition to inducement by the defendant, the patentee must also show that the asserted patent was directly infringed." *Epcon Gas Sys. v. Bauer Compressors, Inc.*, 279 F.3d 1022, 1033 (Fed. Cir. 2002). Further, "[s]ection 271(b) covers active inducement of infringement, which typically includes acts that intentionally cause, urge, encourage, or aid another to directly infringe a patent." *Arris Group v. British Telecomms. PLC*, 639 F.3d 1368, 1379 n.13 (Fed. Cir. 2011). The Supreme Court recently held that "induced infringement under § 271(b) requires knowledge that the induced acts constitute patent infringement." *Global-Tech Appliances, Inc. v. SEB S.A.*, -- U.S. --, 131 S. Ct. 2060, 2068 (2011). The Court further held: "[g]iven the long history of willful blindness[] and its wide acceptance in the Federal Judiciary, we can see no reason why the doctrine should not apply in

would have known of the interchangeability between two elements, but in many cases it would likely be probative of such knowledge." *Warner-Jenkinson*, 520 U.S. at 36.

civil lawsuits for induced patent infringement under 35 U.S.C. § 271(b)." 131 S. Ct. at 2060 (footnote omitted).

c. Contributory Infringement

As for contributory infringement, section 271(c) of the Patent Act provides: "Whoever offers to sell or sells within the United States or imports into the United States a component of a patented machine, manufacture, combination or composition, or a material or apparatus for use in practicing a patented process, constituting a material part of the invention, knowing the same to be especially made or especially adapted for use in an infringement of such patent, and not a staple article or commodity of commerce suitable for substantial noninfringing use, shall be liable as a contributory infringer." 35 U.S.C. § 271(c).

Section 271(c) "covers both contributory infringement of system claims and method claims." *Arris*, 639 F.3d at 1376 (footnotes omitted). To hold a component supplier liable for contributory infringement, a patent holder must show, *inter alia*, that (a) the supplier's product was used to commit acts of direct infringement; (b) the product's use constituted a material part of the invention; (c) the supplier knew its product was especially made or especially adapted for use in an infringement" of the patent; and (d) the product is not a staple article or commodity of commerce suitable for substantial noninfringing use. *Id*.

d. Infringement of Method Claims under *Electronic Devices*

The Commission's opinion in *Certain Electronic Devices with Image Processing* Systems, Components Thereof, and Associated Software, Inv. No. 337-TA-724, Comm'n Op. (Dec. 21, 2011) ("*Electronic Devices*"), holds that the practice of an asserted method claim within the United States after importation cannot serve as the basis for an exclusion order.

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Electronic Devices, Comm'n Op. at 17. As discussed in Electronic Devices, section 337

prohibits:

(B) The importation into the United States, the sale for importation, or the sale within the United States after importation by the owner, importer, or consignee, of articles that –

(i) infringe a valid and enforceable United States patent or a valid and enforceable United States copyright registered under title 17; or
(ii) are made, produced, processed, or mined under, or by means of, a process covered by the claims of a valid and enforceable United States patent.

19 U.S.C. § 1337(a)(1)(B).

The statute is violated only by the importation, sale for importation, or sale after importation of articles that either infringe a valid U.S. patent claim or are made by a method covered by a valid U.S. patent claim. An article, standing alone, cannot directly infringe a method claim. *Electronic Devices*, Comm'n Op. at 17; *see also Cardiac Pacemakers, Inc. v. St. Jude Medical, Inc.*, 576 F.3d 1348, 1364 (Fed. Cir. 2009). A method claim is infringed only where someone performs all of the claimed method steps. *See NTP v. Research in Motion, Ltd.*, 418 F.3d 1282, 1318 (Fed. Cir. 2005) ("[T]he use of a [claimed] process necessarily involves doing or performing each of the steps recited."); *Joy Techs., Inc. v. Flakt, Inc.*, 6 F.3d 770, 775 (Fed. Cir. 1993) ("A method claim is directly infringed only by one practicing the patented method.").

In *Electronic Devices*, the Commission ruled that complainant did not have a legally cognizable claim that respondent violated the statute by using articles within the United States when infringement allegedly occurred by virtue of that use. *Electronic Devices*, Comm'n Op. at 19 ("domestic use of such a method, without more, is not a sufficient basis for a violation of Section 337(a)(1)(B)(i)"). Relying expressly on the statutory language of section 337 and

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applicable Federal Circuit law, the Commission ruled that the act of importation "is not an act that practices the steps of the asserted method claim," and "[m]erely importing a device that may be used to perform a patented method does not constitute direct infringement of a claim to that method." *Id.* at 17-18 (citing *Cardiac Pacemakers*, 576 F.3d at 1364; *NTP*, 418 F.3d at 1319; *Ricoh Co., Ltd. v. Quanta Computer Inc.*, 550 F.3d 1325, 1335 (Fed. Cir. 2008) ("[A] party that sells or offers to sell software containing instructions to perform a patented method does not infringe the patent under § 271(a)."); *Joy Techs.*, 6 F.3d at 773 ("The law is unequivocal that the sale of equipment to perform a process is not a sale of the process within the meaning of section 271(a).")).

The Commission stated:

[S]ection 337(a)(1)(B)(i) covers imported articles that directly or indirectly infringe when it refers to "articles that – infringe." We also interpret the phrase "articles that – infringe" to reference the status of the articles at the time of importation. Thus, infringement, direct or indirect, must be based on the articles as imported to satisfy the requirements of section 337.

Electronic Devices, Comm'n Op. at 13-14. The Commission determined that the importation requirement was not met in that case by the respondent's post-importation performance of a claimed method. *Id.* at 18. Nevertheless, the Commission stated that the complainant "might have proved a violation of section 337 if it had proved indirect infringement" of the method claim. *Id.* The Commission cited, as an example, *Certain Chemiluminescent Compositions, and Components Thereof and Methods of Using, and Products Incorporating the Same*, Inv. No. 337-TA-285, USITC Pub. No. 2370, Order No. 25 (Initial Determination) at 38 n.12 (March 1991), in which "the ALJ found that the 'importation and sale' of the accused articles constituted

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contributory and induced infringement of the method claim at issue in that investigation." Electronic Devices, Comm'n Op. at 18 n.11.

2. The Accused Power Ramp-Up Products

The devices accused of infringing the '830 and '636 patents ("WCDMA Accused Products") are [] See CX-1309C (Jackson WS) at Q787-817. The WCDM: Accused Products can be grouped by the manufacturer of the baseband processor in the device: []. See Compls. Br. at 59. The specific model numbers of the WCDMA Accused Products are listed in the following [exhibits: CX-0289C ; CX-0291C (; CX-0292C); CX-0293C ; CX-0299C

See Compls. Br. at 59, nn.18-19]

InterDigital alleges that [

] See Compls. Br. at 59. [

CX-1309C

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] -	
RPX-3794C		
¹⁶ [5865-r	RPX-3790C,

CX-1309C

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n:

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CX-1309C

] *Id*.

3. InterDigital's Reliance on the WCDMA Standard

As in initial matter, Respondents argue that InterDigital's infringement proof is insufficient as a matter of law, inasmuch as [

] See

Resps. Br. at 301-03. Respondents argue, *inter alia*, that "InterDigital took a shortcut to proving infringement by arguing [

] Resps. Br. at 301 (citing CX-1309C (Jackson WS) at Q937-939). It is argued that InterDigital's reliance on the 3GPP WCDMA standard is not legally sufficient to prove infringement because "the 3GPP WCDMA Standard does not provide the level of specificity required to establish that practicing the standard would always result in infringement." *Id.* at 302. [

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] See id.

In response to Respondents' arguments, InterDigital argues that, "for their 'failure of proof' defense, Respondents resort to mischaracterizing InterDigital's infringement evidence.

] See Compls. Reply at 12-13 (citing CX-1309C (Jackson WS) at Q498, Q1131; Jackson Tr. 194, 209; CX-0301C; CX-0324C; CX-0325C; CX-0326C; CX-0309C (Source Materials Exhibits)) (emphasis original). It is argued that [

] Compls.

Reply at 13; see Compls. Br. at 60-61.

Having considered the arguments of the parties, it is determined that InterDigital has adduced evidence to support its infringement case in addition to the accused WCDMA Accused Products' [_______] Accordingly, Respondents' argument that reliance on the standard alone is legally insufficient to prove infringement under the circumstances of this investigation is not persuasive.

Respondents further argue that InterDigital has not met its burden to provide evidence of infringement because, *inter alia*, "Dr. Jackson's witness statement (CX-1309C) does not contain any analysis of the source code that describes the actual design and operation of the Accused Products." Resps. Br. at 303. As discussed above, however, Dr. Jackson has testified that he relied on the source code to determine how the products work. To the extent Respondents argue

that InterDigital is required to provide an infringement analysis based on the source code for each separate accused product or product grouping, Respondents are incorrect. Source code is generally useful in proving an infringement case, but it has not been shown in this instance that documentary and testimonial evidence standing alone, without the addition of source code, is insufficient to prove infringement by a preponderance of the evidence. Therefore, it is determined that, to the extent that InterDigital did not provide a source code analysis for every accused product, that alleged failure is not enough, by itself, to preclude a finding of infringement. The ultimate burden of proving infringement remains, of course, upon InterDigital.

4. Global Infringement Issues

In their infringement analyses, the parties address several issues that apply to multiple claims and/or both the '830 and '636 patents. These global issues will be addressed first, followed by a claim-by-claim infringement analysis.

a. The "sequence of chips" ('830 Patent) and "plurality of chips" ('636 Patent) Limitations

The '830 asserted claims require that "each of the successively sent transmissions and the message are produced using portions of a same sequence of chips." *See, e.g.*, JX-0006 at col. 11, lns. 13-16. The '636 asserted claims require that each "successively sent transmission" is "derived from a first length of a plurality of chips," and that the "subsequent transmission" is "derived from a second length of the plurality of chips." *See, e.g.*, JX-0007 at col. 10, lns. 49-63. InterDigital argues that[

See Compls. Br. at 65-70.

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Respondents argue that the accused products do not meet the "sequence of chips" and "plurality of chips" limitations because [

] Id.

] See Resps. Br. at 307.¹⁷

] Id. at 308.

] Id. at 308 (emphasis original).

Turning first to Respondents' argument that [

[

[

] The 3GPP WCDMA

standard explicitly identifies c_{long,1,n} as a "long scrambling sequence" and depicts it as an output of the "uplink scrambling sequence generator." CX-1309C (Jackson WS) at Q1074 (citing CX-0023 (3GPP TS 25.213 v5.6.0); CDX-0003.0173). Respondents' expert Mr. Lanning, as

¹⁷ Although Respondents' brief has a separate section addressing the "plurality of chips" limitation from the '636 patent, that section refers to the section addressing the "same sequence of chips" limitation from the '830 patent, Resps. Br. at 315-16.

well as several fact witnesses, [

[RX-3996C

See, e.g.,

CX-1241C

CX-1242C

CX-0305C

] Lanning Tr. 1054-1055. [

] CX-1309 (Jackson WS) at Q930; see also CX-0023 (3GPP Standard)

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[

Respondents' other arguments are not persuasive, inasmuch as they rely on Respondents' proposed construction of "produced using" and "derived from," *i.e.*, "selected from a pre-existing." As discussed above, Respondents' proposed construction was rejected, and InterDigital's proposed construction, *i.e.*, "generated using," was adopted.

]

The '830 asserted claims require using "portions of a same sequence of chips," while the '636 asserted claims require using a "first length" and a "second length" of a plurality of chips, to generate the claimed transmissions. Under InterDigital proposed constructions, [

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.'

The | | WCDMA Accused Products.

RPX-3837C

RX-3999C

5

RPX-3837C

RPX-3837C

CX-1309C

The | | WCDMA Accused Products.

Jackson Tr. 214-215; RPX-3910C

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RX-4029C

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RPX-3730C

RX-4029C

CX-1352C CX-1309C

RX-3999C

(RPX-3727C)

CX-1309C

CX-1309C

52

RPX-3727C

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[

b. The "successively sends transmissions" ('830 and '636 Patent) Limitations

Each asserted claim of the Power Ramp-Up patents requires that the claimed transmitter "successively sends transmissions." Under the adopted construction for this term, the WCDMA Accused Products do not infringe the "successively sends transmissions" element.¹⁸

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] InterDigital identifies [

] See, e.g., Compls. Br. at

65-70. Under the adopted construction of "successively sends transmissions," *i.e.*, "transmits to the base station, one after the other, codes that are shorter than a regular length code," [

] do not infringe this limitation [

RX-3999C

.]

[

RX-3999C

] RX-3964 (3GPP TS 25.331)

at §§ 10.3.6.52-10.3.6.55; see also Certain 3G Mobile Handsets and Components Thereof, Inv. No. 337-TA-613, USITC Pub. No. 4145, Initial Determination at 92 ("[T]he administrative law judge finds that the PRACH preamble is modulated by data as the signal as modulated by the scrambling code uniquely identifies the cell."). Inasmuch as the adopted construction of

¹⁸ As discussed above, Respondents' proposed construction of the term, *i.e.*, "transmits to the base station, one after the other, codes that are shorter than a regular length code," was adopted. InterDigital's proposed construction is "sends transmissions one after the other."

"successively sends transmissions" requires that the transmissions comprise codes, and inasmuch as [________] it is determined that the WCDMA Accused Products do not satisfy this claim limitation under the adopted construction because the [______]

Turning now to an analysis under InterDigital's proposed construction, it is determined that the WCDMA Accused Products would satisfy the "successively sends transmission" limitation if InterDigital's proposed construction were adopted, [

c. The "produced using" ('830 Patent) and "derived from" ('636 Patent) Limitations

]

The '830 asserted claims require: (i) that "each of the successively sent transmissions is produced using a sequence of chips," and (ii) that "each of the successively sent transmissions and the message are produced using portions of a same sequence of chips." *See, e.g.*, JX-0006 at col. 10, ln. 54 – col. 11, ln. 16. The '636 asserted claims require: (i) that "each of the transmissions are derived from a first length of a plurality of chips," and (ii) "a subsequent transmission derived from a second length of the plurality of chips." *See, e.g.*, JX-0007 at col. 10, lns. 49-63. As shown above, [

It is therefore determined that the WCDMA Accused Products satisfy these claim limitations under the adopted claim constructions.

Microsoft Corporation Exhibit 1/01 1-00065

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¹⁹ As discussed above, the claim terms "produced using" and "derived from" have been construed to mean "generated using."

Respondents argue that the accused products do not meet the "produced using" / "derived from" limitations because [

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] See Resps. Br. at 312-14. Inasmuch as Respondents'

proposed constructions have not been adopted, Respondents' arguments fail.

If Respondents' proposed constructions were adopted, however, the evidence demonstrates that these claim limitations would not be satisfied. Specifically, [the

CX-1309C

]

Microsoft Corporation Exhibit 1011-00066

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d. The "message" and "first accessing a CDMA network" ('830 Patent) Limitations

The '830 asserted claims require that when the subscriber unit is "first accessing a CDMA network," it sends to the base station a "message indicating to the base station that the subscriber unit wants to establish the communications with the base station over the communication channel to be indicated by the base station." *See JX*-0006 at col. 10, ln. 54 – col. 11, ln. 16.

InterDigital argues that "[T]he WCDMA Accused Products meet this limitation because

] Compls. Br. at 76 (citing CX-1309C (Jackson WS) at Q1012-1043); see

also id. at 76-83.

Ĺ

Respondents argue that the WCDMA Accused Products do not satisfy the "message" limitation [

(citing RX-3999C

] Nevertheless, the evidence demonstrates that this claim limitation is satisfied.

] See CX-1309C (Jackson WS) at Q1070. [

] *Id*. [

56

] *Id.* This process aligns with the preferred embodiments disclosed in the '830 specification. Therefore, the WCDMA Accused Products send the claimed "message."

Respondents also argue that the WCDMA Accused Products do not satisfy the "first accessing a CDMA network" limitation, inasmuch as [

] See Resps. Br. at 314 (citing RX-3999C

(Lanning RWS) at Q343-359). The record evidence, however, indicates otherwise. Respondents' expert Mr. Lanning testified at the hearing that [

] Lanning Tr. at 1063; see also CX-1242C (Lanning Dep. from Inv. No. 337-601) at 464-465 [

CX-1240C

÷.

CX-1376

57

[

]

Mr. Lanning's testimony is consistent with the testimony of several fact witnesses. See, e.g., [CX-1356C

CX-0306C

CX-0304C

Accordingly, it is determined that the WCDMA Accused Products satisfy the "first accessing a CDMA network" limitation of the '830 patent.

As discussed above, Respondents' proposed construction of "subsequent transmission," *i.e.*, "known code transmitted to the base station during power ramp-up," was adopted. Applying this construction, the WCDMA Accused Products do not satisfy this claim limitation.

The "subsequent transmission" ('636 Patent) Limitation

InterDigital identifies the.

e.

] See RX-3999C (Lanning RWS) at

]

Q377-378.

58

5. '830 P	atent – Claim 1	
а.	"A wireless code division multiple a unit comprising:"	ccess (CDMA) subscriber
Γ		
1 077 12000		r
J CX-1309C	(Jackson WS) at Q787-818, Q949-950.	L
]. <i>Id.</i> at Q]. <i>Id.</i> at Q950. [
]. <i>Id</i> .		
[]. See Resps. Br. at
307-15.		
b.	a transmitter configured such that, when the subscriber unit is first accessing a CDMA network and wants to establish communications with a base station associated with the network over a communication channel to be indicated by the base station, the transmitter successively sends transmissions prior to the subscriber unit receiving from the base station an indication that at least one of the successively sent transmissions has been detected by the base station;	
] (CX-1309C (Jackson WS) at
Q951; Lanning Tr. 1049-105	0. [
	CX-1309C	CX-0304C
	CX-0950C	
CX-0306C		
	59	

]



c. wherein each of the successively sent transmissions is produced using a sequence of chips, wherein the sequence of chips is not used to increase bandwidth;

]. See CX-1309C (Jackson WS) at Q1004-1011. [Specifically, each of the WCDMA

] *Id.* at

Q1005: [

[

]."

[

]

T.

60

	[CX-1351
]
	[].
		d.	the transmitter further configured such that the transmitter sends to the base station a message indicating to the base station that the subscriber unit wants to establish the communications with the base station over the communication channel to be indicated by the base station, the message being sent only subsequent to the subscriber unit receiving the indication;
	[
] Lanning Tr. 1054 [
] CX-1309C (Jackson WS) at
[CX-0305C	
			CY 1200C (Inclusor WS) of
0052	964 01	014-1020.	CX-1309C (Jackson WS) at
Q952	-904, QI].
		e.	wherein at least two of the successively sent transmissions are produced using different sequences of chips;
	[· · ·
]. C2	K-1309C (Jack	at Q1056-1060. [
[
] Id. at Q1056. The WCDMA
			61
Ε			
--------------------------	---	-------------------	
] <i>Id.</i> at Q1056-1058; []	
[
] CX 30	09C (Jackson WS) at Q1056-1058.		
[].		
f.	wherein each of the successively sent transmi than the message; and	ssions is shorter	
[].	
CX-1390C (Jackson WS) at	Q1061. [
] Specifically, each	h [
	<i>Id.</i> ; CX-1352C		
]			
g.	wherein each of the successively sent transmi message are produced using portions of a san		

message are produced using portions of a same sequence of chips, wherein the same sequence of chips is not used to increase bandwidth.

]. CX-1390C (Jackson WS) at Q1062-1081. [

[

62

CX-1351C

			CX-1309C	
		CX-1309C]	
б.	'830	Patent – Claim 2		
' .	а.	"The wireless code div subscriber unit of clair	ision multiple access (CDMA) n 1"	
Inasmuch a	s the WC	CDMA Accused Products of	lo not infringe independent claim 1, it is	
further determined	that they	v do not infringe dependent	t claim 2.	
	b.	"wherein a beginning of each one of the successively sent transmissions, other than a first one of the successively sent transmissions, is at a higher power level with respect to a beginning of a prior one of the successively sent transmissions."		
[

CX-1309C

Id.

] *Id*. [

63

].

7. '830 Patent – Claim 3

a. The wireless code division multiple access (CDMA) subscriber unit of claim 1

Inasmuch as the WCDMA Accused Products do not infringe independent claim 1, it is

further determined that they do not infringe dependent claim 3.

b. wherein each one of the successively sent transmissions, other than a first one of the successively sent transmissions, is sent at a power level that is higher than the power level of a prior one of the successively sent transmissions.

[

]. See CX-1309C

(Jackson WS) at Q1084.

- 8. '830 Patent Claim 5
 - a. The wireless code division multiple access (CDMA) subscriber unit of claim 1

Inasmuch as the WCDMA Accused Products do not infringe independent claim 1, it is

further determined that they do not infringe dependent claim 5.

- b. wherein the successively sent transmissions are sent until receipt of the indication that at least one of the successively sent transmissions has been detected by the base station.
- [

CX-1309C

T

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9. '636 Patent – Claim 1

]

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a. A wireless code division multiple access (CDMA) subscriber unit comprising:

]. See RX-3999C (Lanning RWS) at

Q365-387.

[

b. a transmitter configured such that, when the subscriber unit is first accessing a CDMA network, the transmitter successively sends transmissions wherein each of the transmissions are derived from a first length of a plurality of chips until the subscriber unit receives from a base station associated with the network an indication that at least one of the transmissions has been detected by the base station; and

[

Microsoft Corporation

Exhibit 1011-00076

CX-1309C

3

[

[

]

c. the transmitter further configured such that, subsequent to the subscriber unit receiving the indication, the transmitter sends a subsequent transmission derived from a second length of the plurality of chips, wherein the first length is less than the second length.

CX-1309C

CX-1309C

]

10. '636 Patent – Claim 2

a. The subscriber unit of claim 1

Inasmuch as the WCDMA Accused Products do not infringe independent claim 1, it is further determined that they do not infringe dependent claim 2.

66

b. wherein at least two of the successively sent transmissions are different.

] CX-1309C

Id.

[

11. '636 Patent – Claim 4

 δ_{i}

a. The subscriber unit of claim 1

Inasmuch as the WCDMA Accused Products do not infringe independent claim 1, it is

further determined that they do not infringe dependent claim 4.

- b. wherein the plurality of chips are chips that are not used for spreading.
- E

CX-1309C

] *Id*. [

]

] *Id*.

12. '636 Patent – Claim 6

a. The subscriber unit of claim 1

Inasmuch as the WCDMA Accused Products do not infringe independent claim 1, it is

further determined that they do not infringe dependent claim 6.

b. wherein the successive transmissions facilitate power control when the subscriber unit is first accessing the network.

CX-1309C

[

Id.; CX-0305C

]

~

13. '636 Patent – Claim 7

a. The subscriber unit of claim 6

Inasmuch as the WCDMA Accused Products do not infringe claim 6, it is further determined that they do not infringe dependent claim 7.

b. wherein the power control of the successive transmissions is not closed loop power control.

CX-1309C

[

Id.

]

[

.

14. '636 Patent – Claim 8

a. The subscriber unit of claim 1

Inasmuch as the WCDMA Accused Products do not infringe independent claim 1, it is

further determined that they do not infringe dependent claim 8.

b. wherein the subsequent transmission is not closed loop power controlled.

,'

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]

D. Validity

1. General Principles of Law²⁰

One cannot be held liable for practicing an invalid patent claim. See Pandrol USA, LP v. AirBoss Railway Prods., Inc., 320 F.3d 1354, 1365 (Fed. Cir. 2003). Nevertheless, each claim of a patent is presumed to be valid, even if it depends from a claim found to be invalid. 35 U.S.C. § 282; DMI Inc. v. Deere & Co., 802 F.2d 421 (Fed. Cir. 1986).

A respondent that has raised patent invalidity as an affirmative defense must overcome the presumption of patent validity by "clear and convincing" evidence of invalidity. *Checkpoint Systems, Inc. v. United States Int'l Trade Comm'n*, 54 F.3d 756, 761 (Fed. Cir. 1995).

In this investigation, Respondents raise the following validity defenses: anticipation, obviousness, indefiniteness, and lack of written description. *See* GR12 Filing.

a. Anticipation

Anticipation under 35 U.S.C. § 102 is a question of fact. *z4 Techs., Inc. v. Microsoft Corp.*, 507 F.3d 1340, 1347 (Fed. Cir. 2007). Section 102 provides that, depending on the circumstances, a claimed invention may be anticipated by variety of prior art, including publications, earlier-sold products, and patents. *See* 35 U.S.C. § 102 (*e.g.*, section 102(b) provides that one is not entitled to a patent if the claimed invention "was patented or described in

²⁰ The legal principles set forth in this section apply equally to the validity analysis of the other patents asserted in this investigation.

a printed publication in this or a foreign country or in public use or on sale in this country, more

than one year prior to the date of the application for patent in the United States").

The general law of anticipation may be summarized, as follows:

A reference is anticipatory under § 102(b) when it satisfies particular requirements. First, the reference must disclose each and every element of the claimed invention, whether it does so explicitly or inherently. Eli Lilly & Co. v. Zenith Goldline Pharms., Inc., 471 F.3d 1369, 1375 (Fed.Cir.2006). While those elements must be "arranged or combined in the same way as in the claim," Net MoneyIN, Inc. v. VeriSign, Inc., 545 F.3d 1359, 1370 (Fed.Cir.2008), the reference need not satisfy an ipsissimis verbis test, In re Bond, 910 F.2d 831, 832-33 (Fed.Cir.1990). Second, the reference must "enable one of ordinary skill in the art to make the invention without undue experimentation." Impax Labs., Inc. v. Aventis Pharms. Inc., 545 F.3d 1312, 1314 (Fed.Cir.2008); see In re LeGrice, 49 C.C.P.A. 1124, 301 F.2d 929, 940-44 (1962). As long as the reference discloses all of the claim limitations and enables the "subject matter that falls within the scope of the claims at issue," the reference anticipates -- no "actual creation or reduction to practice" is required. Schering Corp. v. Geneva Pharms., Inc., 339 F.3d 1373, 1380-81 (Fed.Cir.2003); see In re Donohue, 766 F.2d 531, 533 (Fed.Cir.1985). This is so despite the fact that the description provided in the anticipating reference might not otherwise entitle its author to a patent. See Vas-Cath Inc. v. Mahurkar, 935 F.2d 1555, 1562 (Fed.Cir.1991) (discussing the "distinction between a written description adequate to support a claim under § 112 and a written description sufficient to anticipate its subject matter under § 102(b)").

In re Gleave, 560 F.3d 1331, 1334 (Fed. Cir. 2009).

b. Obviousness

Under section 103 of the Patent Act, a patent claim is invalid "if the differences between

the subject matter sought to be patented and the prior art are such that the subject matter as a

whole would have been obvious at the time the invention was made to a person having ordinary

skill in the art to which said subject matter pertains."²¹ 35 U.S.C. § 103. While the ultimate determination of whether an invention would have been obvious is a legal conclusion, it is based on "underlying factual inquiries including: (1) the scope and content of the prior art; (2) the level of ordinary skill in the art; (3) the differences between the claimed invention and the prior art; and (4) objective evidence of nonobviousness." *Eli Lilly and Co. v. Teva Pharmaceuticals USA, Inc.*, 619 F.3d 1329 (Fed Qir. 2010).

The objective evidence, also known as "secondary considerations," includes commercial success, long felt need, and failure of others. *Graham v. John Deere Co.*, 383 U.S. 1, 13-17 (1966); *Dystar Textilfarben GmbH v. C.H. Patrick Co.*, 464 F.3d 1356, 1361 (Fed. Cir. 2006). "[E]vidence arising out of the so-called 'secondary considerations' must always when present be considered en route to a determination of obviousness." *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1538 (Fed. Cir. 1983). Secondary considerations, such as commercial success, will not always dislodge a determination of obviousness based on analysis of the prior art. *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 426 (2007) (commercial success did not alter conclusion of obviousness).

"One of the ways in which a patent's subject matter can be proved obvious is by noting that there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent's claims." *KSR*, 550 U.S. at 419-20. "[A]ny need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed." *Id*.

Specific teachings, suggestions, or motivations to combine prior art may provide helpful

²¹ The standard for determining whether a patent or publication is prior art under section 103 is the same as under 35 U.S.C. § 102, which is a legal question. *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1568 (Fed. Cir. 1987).

insights into the state of the art at the time of the alleged invention. *Id.* at 420. Nevertheless, "an obviousness analysis cannot be confined by a formalistic conception of the words teaching, suggestion, and motivation, or by overemphasis on the importance of published articles and the explicit content of issued patents. The diversity of inventive pursuits and of modern technology counsels against limiting the analysis in this way." *Id.* "Under the correct analysis, any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed." *Id.* A "person of ordinary skill is also a person of ordinary creativity." *Id.* at 421.

Nevertheless, "the burden falls on the patent challenger to show by clear and convincing evidence that a person of ordinary skill in the art would have had reason to attempt to make the composition or device, or carry out the claimed process, and would have had a reasonable expectation of success in doing so." *PharmaStem Therapeutics, Inc. v. ViaCell, Inc.*, 491 F.3d 1342, 1360 (Fed. Cir. 2007); *see KSR*, 550 U.S. at 416 (a combination of elements must do more than yield a predictable result; combining elements that work together in an unexpected and fruitful manner would not have been obvious).²²

c. Indefiniteness

The definiteness requirement of 35 U.S.C. § 112 ensures that the patent claims particularly point out and distinctly claim the subject matter that the patentee regards to be the invention. See 35 U.S.C. § 112, ¶ 2; Metabolite Labs., Inc. v. Lab. Corp. of Am. Holdings, 370 F.3d 1354, 1366 (Fed. Cir. 2004). If a claim's legal scope is not clear enough so that a person of ordinary skill in the art could determine whether or not a particular product infringes, the claim is

²² Further, "when the prior art teaches away from combining certain known elements, discovery of a successful means of combining them is more likely to be nonobvious." *KSR*, 550 U.S. at 416 (citing *United States v. Adams*, 383 U.S. 39, 52 (1966)).

indefinite, and is, therefore, invalid. Geneva Pharm., Inc. v. GlaxoSmithKline PLC, 349 F.3d

1373, 1384 (Fed. Cir. 2003).²³

Thus, it has been found that:

When a proposed construction requires that an artisan make a separate infringement determination for every set of circumstances in which the composition may be used, and when such determinations are likely to result in differing outcomes (sometimes infringing and sometimes not), that construction is likely to be indefinite.

Halliburton Energy Servs. v. M-I LLC, 514 F.3d 1244, 1255 (Fed. Cir. 2008).

d. Lack of a Written Description

The issue of whether a patent is invalid for failure to meet the written description requirement of 35 U.S.C. § 112, ¶ 1 is a question of fact. *Bard Peripheral Vascular, Inc. v. W.L. Gore & Assocs., Inc.*, 670 F.3d 1171, 1188 (Fed. Cir. 2012). A patent's written description must clearly allow persons of ordinary skill in the art to recognize that the inventor invented what is claimed. The test for sufficiency of a written description is "whether the disclosure of the application relied upon reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date." *Id.* (quoting *Ariad Pharm., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (*en banc*)).

2. Anticipation and Obviousness

Respondents assert three references as prior art against the '830 and '636 patents: a version of a CDMA standard called IS-95 (RX-0077) ("IS-95"); U.S. Patent No. 5,430,760 to Dent (RX-0248) ("Dent"); and a document titled "Synchronisation Procedure in Up & Down-Link in the CoDIT Testbed" (RX-0250) ("Lucas").

²³ Indefiniteness is a question of law. IGT v. Bally Gaming Int'l, Inc., 659 F.3d 1109 (Fed. Cir. 2011).

All three references were considered by the PTO, and the asserted claims of the '830 and '636 patents were determined patentable over each of these references. *See* CX-1524C (Haas RWS) at Q46-49; Lanning Tr. 1098.

a. IS-95-A

i. Overview

In the 1990s, as the telecommunications industry developed a standard for interoperability of CDMA networks and products, *i.e.*, IS-95, the industry issued interim IS-95 standards, including the TIA-EIA Interim Standard: Mobile Station – Base Station Compatibility Standard for Dual-Mode Wideband Spread Spectrum Cellular System (May 1995) (RX-0077 (IS-95-A)). Though this standard evolved between the originally proposed and the finally adopted standard, the sections relevant here remained substantively constant through IS-95-A.

IS-95-A details a random access procedure for a CDMA system, wherein a mobile transmits access probes at increasing power levels to a base station until acknowledged. RX-0077 at 6-108-110, 6-112:14-20, 6-113:21-25; RX-3526C (Lanning WS) at Q227-230. Once the mobile receives an acknowledgement it may request a traffic channel. RX-0077 at 6-104:31-33, 6-105:11-18, 6-122:30-39, B-1, Appendix B; RX-3526C (Lanning WS) at Q241-242.

An IS-95-A mobile starts a random access procedure by sending access probes over the Access Channel. RX-0077 at 6-105:11-18, 6-111:7-16. Each access probe has a preamble and a message capsule. RX-0077 at 6-109; RX-3526C (Lanning WS) at Q210. The maximum number of frames for a message capsule ranges from 3 to 10. The maximum number of frames is determined based on a constant "MAX_CAP_SZ," which the base station can set from 0 to 7.

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RX-0077 at 6-97, 6-109; RX-3526C (Lanning WS) at Q267, 272; CX-1524C (Haas RWS) at

Q109. The general structure of an IS-95-A access probe is illustrated below:



IS-95-A Access Probe (RX-0077 at 6-109)

Within an access attempt (*e.g.*, an attempt to register the mobile), access probes are grouped into access probe sequences, as shown below:

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Figure 6.6.3.1.1.1-1A. Access Channel Request and Response Attempts

IS-95-A Access Probes (RX-0077 at 6-108)

Although MAX_CAP_SZ places an upper limit on the maximum possible number of frames in an access channel message capsule, the actual number of frames in a message capsule is based on the calculated number "CAP_SZ." RX-0077 at 6-188; RX-3526C (Lanning WS) at Q267, Q272; CX-1524C (Haas RWS) at Q108-09, Q122). Mobiles calculate CAP_SZ according to the formula below:

- 5 6.7.1.2 Access Channel Message Structure
- 2 An Access Channel message capsule consists of an Access Channel message and padding,
- as shown in Figure 6.7.1.2-1. The length of the Access Channel message capsule shall be
- an integer number of Access Channel frames given by

$$CAP_SZ = \begin{bmatrix} 8 + Message Body Length + 30 \\ 88 \end{bmatrix}.$$

- Each Access Channel message shall consist of a length field (MSG_LENGTH), a message
- v body, and a CRC, in that order. The message body size shall be selected so that CAP_SZ
- does not exceed 3 + MAX_CAP_SZ. The mobile station shall transmit the Access Channel
- message immediately following the preamble.

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2

- The mobile station shall transmit padding consisting of zero or more 'O' bits immediately
 following the Access Channel message. The length of the padding shall be such that
 - 8 + Message Body Length + 30 + Padding Length = 88 × CAP_SZ.

IS-95-A CAP SZ (RX-0077 at 6-188)

The following explains the arithmetic used by a mobile to calculate CAP_SZ (line 5 on page 6-188). The first step is to sum 8 + Message Body Length + 30, where Message Body Length is the number of bits in the particular message. RX-3526C (Lanning WS) at Q268. This sum is divided by 88, which is the number of information bits in each access channel frame. *Id.* CAP_SZ is finally calculated by rounding the result of this division up to the nearest integer, *e.g.*, 1.81 is rounded to 2, and 2.31 is rounded to 3. *Id.*

The second formula shown above in line 12 is used to calculate the value of "Padding Length," which is the number of '0' bits added to the particular message capsule to complete the last partial frame that contains message information. Padding Length ensures that the total bits in the message capsule, *i.e.*, including the padding bits, equals the number of bits needed to fill CAP_SZ frames. RX-3526C (Lanning WS) at Q271. For example, a CAP_SZ of two (2) frames requires 176 total bits (2 x 88). Padding Length will add enough '0' bits so that the total bits equals 176. The formulas above do not depend on the value of MAX_CAP_SZ because "[t]he message body shall be selected so that CAP_SZ does not exceed 3 + MAX_CAP_SZ."

RX-0077 at 6-188. Thus, MAX_CAP_SZ only affects the maximum transmission length. IS-95-A does not have a minimum transmission length. RX-3526C (Lanning WS) at Q273.

After calculating CAP_SZ and Padding Length, the padded access probes are repeatedly transmitted until the mobile receives an acknowledgement from the base station. RX-0077 at 6-108-110, 6-112:14-20, 6-113:21-25; RX-3526C (Lanning WS) at Q210, Q227. As shown at page 6-108, the access probes are transmitted at increasing power levels, without feedback from a base station. RX-3526C (Lanning WS) at Q210, Q226. Thus, the random access probes are not closed-loop power controlled, but are instead open-loop power controlled. CX-1524C (Haas RWS) at Q42.

For every access probe sequence, the mobile device uses a random number called "RA" as its "Access Channel Number" ("ACN"). RX-0077 at 6-109; 6-111:7-16; RX-3526C (Lanning WS) at Q252. The ACN determines the starting state of the long PN code, which is used to spread the access channel information. RX-0077 at 6-111:7-16; RX-3526C (Lanning WS) at Q254. A different value for ACN will cause the access channel information between successive access probe sequences to be spread with different chips. Inasmuch as there are 32 possible values for RA, there is a 31 out of 32 likelihood that the chips of successive access probe sequences will be different. *See* RX-0077 at 6-109; RX-3526C (Lanning WS) at Q255.

Once the base station detects an access probe, it sends an acknowledgement. RX-0077 at 6-112:14-20, B-1; RX-3526C (Lanning WS) at Q210). In response to the acknowledgement, and depending on the subsequent task, the mobile can transmit one of several possible messages to the base station. Two of these messages are relevant to the issues in this investigation: "Registration" and "Origination."

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A Registration Message is used to register the mobile with the network under various circumstances. For example, IS-95-A requires a mobile to register with the network when it first powers up, *i.e.*, is turned on. RX-0077 (IS-95-A) at 6-156:22-34; RX-3526C (Lanning WS) at Q220. The mobile must register on power-up, and the registration must be successfully completed, before the mobile can receive or originate, *i.e.*, make, a call. RX-0077 (IS-95-A) at 6-156:22-34; *see also id* at 6-104:31-33, 6-105:11-18; RX-3526C (Lanning WS) at Q210. An Origination Message indicates that the subscriber unit wants to establish communications with the base station. RX-0077 (IS-95-A) at 6-104:31:-33, 6-105:11-18; RX-3526C (Lanning WS) at Q222. The base station responds and allocates a voice communication channel. RX-0077 (IS-95-A) at 6-104:31-33, 6-105:11-18; RX-3526C (Lanning WS) at Q222.

As described above, CAP_SZ is the actual number of frames transmitted in a particular access channel message capsule, and varies with the message type. A Registration Message results in CAP_SZ of 2 frames, and an Origination Message results in 3 frames. RX-0077 (IS-95-A) at 6-108, 6-199, 6-207-208; RX-3526C (Lanning WS) at Q259-261).

The access probes of Registration and Origination Messages are all spread with the same spreading code, defined in IS-95-A as the "Long Code," and scrambled with the same pilot PN sequences, defined in the IS-95-A as the "Short Code" or short PN scrambling code. RX-0077 (IS-95-A) at 6-8, 6-22-23; RX-3526C (Lanning WS) at Q231-235, Q284.

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ii. Anticipation Analysis of the '830 Patent

The "only subsequent to the subscriber unit receiving the indication" Limitation.

IS-95 does not anticipate the asserted claims of the '830 patent, inasmuch as it does not disclose the limitation that the supposed "message" is sent "only subsequent to the subscriber unit receiving the indication." Both parties' construction of this limitation, including the construction adopted above, require a temporal order to these events, *i.e.*, event A occurs before event B. *See* Haas Tr. 1852-1853. This temporal order is not disclosed in IS-95.

As taught by IS-95, when a handset wants to establish a channel to make a call, it transmits an Origination Message. CX-1524C (Haas RWS) at Q88; RX-0077 (IS-95) at 6-122. In contrast, the handset sends a Registration Message to send registration information to a base station when registering on the network. CX-1524C (Haas RWS) at Q84. IS-95-A does not require a separate registration message before a handset can make a call. The handset can send the Origination Message before the Registration Message, after the Registration Message and before the acknowledgement, or after the acknowledgement. *Id.* at 83. Inasmuch as IS-95-A does not disclose that receiving the acknowledgement of a Registration Message and sending the Origination Message are interrelated events, *i.e.*, one must occur before the other, the "only subsequent to" limitation is not disclosed in IS-95. *Id.*

<u>The "each of the successively sent transmissions and the message are produced</u> using portions of a same sequence of chips" Limitation.

Respondents point to the I-channel short PN code disclosed in IS-95, or to the Q-channel short PN code, as being the claimed "same sequence of chips." RX-3526C (Lanning WS) at Q282-283. This argument ignores the requirement that "each of the successively sent transmissions and the message are produced using portions of a same sequence of chips."

JX-0006 ('830 patent) at cl. 1. A handset in IS-95-A produces the Registration and Mobile Origination Message access probes using multiple repetitions of the I and Q-channel short PN codes, *i.e.*, the entirety, and not just portions, of those sequences. CX-1524C (Haas RWS) at Q100. Indeed, Mr. Lanning testified that each sequence is repeated 2.25 times when scrambling the Mobile Origination Message capsule. Lanning Tr. 1106-1107. Assuming that the Registration Message capsule can be two frames long, even the shorter Registration Message capsule requires 1.5 repetitions of the short PN code sequence. CX-1524C (Haas RWS) at Q102. This is because the short PN codes (at 26.667 milliseconds long) are shorter than each access probe message capsule (40 or 60 milliseconds long). *Id.* at Q100, Q102; Lanning Tr. 1103, 1106. Multiple repetitions of a code cannot be considered a "portion" of that code.

<u>The "each of the successively sent transmissions is shorter than the message"</u> <u>Limitation.</u>

IS-95 fails to show, clearly and convincingly, that a person of ordinary skill in the art would have understood the Registration Message access probes to be shorter than the Mobile Origination Message access probes. Respondents' expert Mr. Lanning testified that the capsule for the Registration Message is two frames long, and the capsule for the Mobile Origination Message is three frames long. RX-3526C (Lanning WS) at Q269. This, however, is not the only reasonable interpretation of the disclosures of IS-95 regarding message length. In fact, the experts for both parties, textbook authors, and other inventors came to a different interpretation of what IS-95 discloses regarding the lengths of the Registration and Mobile Origination Message access probes. CX-1524C (Haas RWS) at Q103-122. Under this alternate interpretation, the Registration and Mobile Origination Message access probes are the same length, because the capsules for both messages are the minimum length of three frames long. *Id.*

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Inasmuch as person skilled in the art differ as to the message length disclosed in IS-95, the evidence is neither clear nor convincing that one message length is shorter than the other.

iii. Obviousness Analysis of the '830 Patent

<u>Claim 1.</u>

Respondents' theory that IS-95 alone renders obvious '830 Claim 1 fails for three independent reasons. First, this argument was expressly rejected by Judge Luckern in the 613 Investigation. Respondents argue that it would be obvious to separate the IS-95 "preamble from the message capsule . . . result[ing] in the preambles and Registration message being transmitted separately, such that the Registration message would be sent only subsequent to the indication of receipt of a preamble." RX-3526C (Lanning WS) at Q388. This is directly contrary to two explicit holdings of Judge Luckern in the 613 Investigation: (i) "as the IS-95 references specifically state that the preamble and message cannot be sent separately, the [ALJ] finds that the IS-95 references do not make it obvious that the preamble and the message could be sent separately," and (ii) "an additional acknowledgement, which does not exist in IS-95, would be required in the IS-95 system if the access probe preamble and message capsule were separately transmitted." CX-0866C (613 ID) at 148. Respondents' position is therefore merely a restatement of a previously rejected argument.

Second, Respondents' theory ignores the express teachings of IS-95, which are the same teachings on which Judge Luckern relied in finding that "the IS-95 references do not permit the UE to first transmit the access probe preamble, then wait for an 'acknowledgement' or 'indication' from the [base station] before transmitting the access probe message capsule." CX-0866C (613 ID) (citing "[IS-95] at 6.7.1.1 ("The mobile station shall transmit an Access Channel message capsule immediately following the preamble."), 6.7.1.2; [IS-95] at 6, n.16

("'Shall' and 'shall not' identify requirements to be followed strictly to conform to the standard and from which no deviation is permitted.")). Moreover, the system in IS-95 would be inoperable if the preamble and message were split, because the base station uses the preamble initially to detect the access code, and then as a timing reference. CX-1524C (Haas RWS) at Q133-134; *see* RX-0077 (IS-95) at 6.1.3.2.2.1 at 6-28 ("The Access Channel preamble is transmitted to aid the base station in acquiring an Access Channel Transmission."). Respondents' proposed modification contradicts both Judge Luckern's findings in the 613 investigation and the express teachings of IS-95.

Third, Respondents do not point to a single reference that did, in fact, send the preambles separately from the message. Both IS-95 and Dent, discussed below, send the random access message and its preambles together, in a single transmission. Futhermore, Lucas does not even disclose a message.

<u>Claims 2 and 3.</u>

With respect to Respondents' argument that claims 2 and 3 of the '830 patent are obvious, their expert Mr. Lanning testified that:

[I]t would be obvious to one of skill in the art that the power ramping could continue across two different access probe sequences such that the power of each access probe was constantly increasing. This would have been quite obvious to one of skill in the art at the time of the invention as an alternative scheme, and would require insignificant modification to implement because all of the required functionality is already present in the mobile device.

RX-3526C (Lanning WS) at Q291, Q296.

Mr. Lanning fails to cite to evidence supporting Respondents' position. He also fails to explain why a person of ordinary skill in the art would have thought to modify IS-95 in this way.

Accordingly, Respondents have not met their burden to adduce clear and convincing evidence that claims 2 and 3 are obvious.

Additional claim limitations.

Even if Respondents were correct that it would have been obvious to modify IS-95 as discussed above, IS-95 as modified would still not disclose several claim elements needed for invalidation. First, the Registration Message of IS-95 is not the claimed "message." Claim 1 requires that the message indicates that the handset wants to establish a communication channel with the base station. JX-0006 ('830 patent) at cl. 1. The Registration Message provides no such indication. CX-1524C (Haas RWS) at Q124. In fact, Mr. Lanning agrees that "IS-95-A discloses that a mobile device sends a Mobile Origination Message when the user places a call," and that "[t]he Mobile Origination [M]essage sent in IS-95-A results in the establishment of a two-way voice channel," which "is a channel for communication between a subscriber unit and a base station." RX-3526C (Lanning WS) at Q222-223. Conversely, Mr. Lanning agrees that "IS-95-A states that registration is the process by which the mobile station notifies the base station of its location, status, identification, slot cycle, etc." *Id.* at Q220 (internal citations omitted). Therefore, the Registration Message cannot be the claimed "message."

Second, IS-95 as modified still would not disclose the "portions of a same sequence of chips" limitation because, as discussed above, the I and Q channel short PN codes need to be repeated multiple times to produce the Registration Message. CX-1524C (Haas RWS) at Q102. Therefore, even with their proposed modifications to IS-95, Respondents have not shown that IS-95 renders obvious the asserted claims of the '830 patent.

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iv. Anticipation Analysis of the '636 Patent

The "subsequent to the subscriber unit receiving the indication" Limitation.

IS-95 does not disclose a transmission sent "subsequent to the subscriber unit receiving the indication." The Registration Message and the Mobile Origination Message are independent events. CX-1524C (Haas RWS) at Q83. As shown above, a handset in IS-95 may send the Mobile Origination Message before, or independent of, a Registration Message during (i) implicit registration, (ii) aborted registration, and (iii) disabled/delayed power-up registration. IS-95 therefore fails to disclose this limitation of the asserted '636 patent claims.

<u>The "each of the transmissions is derived from a first length of a plurality of chips"</u> and "a subsequent transmission derived from a second length of the plurality of chips" <u>Limitations.</u>

The '636 asserted claims require that each of the successively sent transmissions is "derived from a first length of a plurality of chips," and that the subsequent transmission is "derived from a second length of the plurality of chips." JX-0007 ('636 Patent) at cl. 1. Respondents' arguments regarding the validity of limitations is the same as their theory for the "portions" limitation of the '830 patent, and thus fails for similar reasons. Respondents point to the I or Q-channel short PN code taught in IS-95 as being the "plurality of chips." *See* RX-3526C (Lanning WS) at Q318. As shown above, assuming that the Registration Message capsule can be two frames long, 1.5 and 2.25 repetitions of the I and Q-channel short PN codes would be used to produce the Registration and Mobile Origination Message capsules, respectively. Inasmuch as the claims require that "the first length is less than the second length," they also require that the Registration Messages be derived from a portion of the "plurality of chips" that is shorter than the plurality's entire length. In fact, each Registration Message is

derived from multiple repetitions of the I and Q-channel short PN codes, and IS-95 therefore does not disclose that each of the "successively sent transmissions" is derived from a "first length" of the "plurality of chips" or that the "subsequent transmission" is derived from a "second length" of the "plurality of chips."

The "wherein the first length is less than the second length" Limitation.

Each of the asserted claims of the '636 patent requires "a subsequent transmission derived from a second length of a plurality of chips, wherein the first length is less than the second length." As discussed above, Respondents contend that IS-95 teaches this limitation because the Registration Message capsule is only two frames, whereas the Origination Message capsule is three frames. RX-3526C (Lanning WS) at Q352. Nevertheless, it has not been shown that a person of ordinary skill in the art would have understood these message capsules to be different lengths, inasmuch as the evidence shows disagreement as to the length of these message capsules. *See* CX-1524C (Haas RWS) at Q162.

v. Obviousness Analysis of the '636 Patent

With respect to Respondents' obviousness position for the '636 claims, it is argued that a person of ordinary skill in the art would have found it obvious to split the preamble from the message. *See* RX-3526C (Lanning WS) at Q388. This argument fails for the same reasons it failed with respect to the alleged obviousness of the '830 claims discussed above, *i.e.*, (i) it was rejected by Judge Luckern in the 613 Investigation, (ii) it ignores the express teachings of IS-95, and (iii) the record evidence does not show, clearly and convincingly, that the claims at issue are obvious.

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b. Lucas in Combination with IS-95-A

Another reference on which Respondents rely to show invalidity of the '830 asserted claims is an article teaching a random access procedure, "Synchronisation Procedure in Up & Down-Link in the CoDiT Testbed Reference" by P. Lucas, which was presented at the RACE Mobile Telecommunications Workshop in Amsterdam on May 17-19, 1994 (RX-0250)

("Lucas").²⁴

Lucas provides a general outline of a synchronization procedure used in a testbed. CX-1524C (Haas RWS) at Q181. Respondents argue that if IS-95 fails to disclose the "only subsequent" and "message" limitations of the '830 asserted claims, it would have been obvious to combine Lucas with IS-95 so that the preambles of Lucas are used for the "successive transmissions," and the "normal IS-95 procedure" of sending the Registration Message is used for the subsequently sent "message." *See* RX-3526C (Lanning WS) at Q527. Respondents' argument fails for several reasons.

First, combining Lucas with IS-95 creates leads to two deficiencies as to claim limitations: (i) the preambles of Lucas are not "produced using different sequences of chips," and (ii) the preambles of Lucas and the Registration Message of IS-95 are not produced using "portions of a same sequence of chips." As determined by Judge Luckern in the 613

²⁴ The testimony of Dr. Esa Malkamaki (RX-3525), along with the exhibits discussed in his testimony (RX-0728 (RACE Mobile Workshop, Amsterdam, May 17-19, 1994, Volume 1); RX-3432 (Preparation of Amsterdam RACE Mobile Workshop); RX-3433 (Facsimile Confirmation of Registration at RACE Mobile Workshop); RX-3434 (Entry for RACE Mobile Telecommunications Workshop Publication from Catalog)), demonstrate that the Lucas reference (RX-0250) was publicly available, inasmuch as it was part of RX-0728 (RACE Mobile Workshop, Amsterdam, May 17-19, 1994, Volume 1), which was publicly distributed in May 1994. Moreover, Chief Judge Luckern concluded that the Lucas reference (RX-0250) was prior art to the '004 patent (RX-2951), which is a parent patent to the Power Ramp-up patents. *See* RX-0183 (613 ID) at ZTE800IDC-EXR00005773. No party contests that the Lucas reference is prior art to the Power Ramp-up patents in this investigation.

Investigation, "the Lucas reference discloses a single code sent by the handset during random access." CX-0866C (613 ID) at 135; CX-1524C (Haas RWS) at Q185 (the preambles disclosed in Lucas each use the same Gold code). The Lucas preambles therefore are not produced using different sequences of chips. In addition, Respondents have not shown how the Lucas preambles produced with the Gold code, and the IS-95 Registration Message produced with the I and Q-channel short PN codes, meet the requirement that the "successively sent transmissions" and the "message" be produced from portions of a "same sequence of chips." *See* RX-3526C (Lanning WS) at Q526-527.

Second, the combination of Lucas with IS-95 still does not satisfy the "portions" or "message" limitations. As discussed above, the Registration Message capsules of IS-95 are produced using the entirety of the I and Q-channel short PN codes. Similarly, the Lucas preambles are produced using the entirety, and not just a portion of, the Gold code sequence. RX-0250 (Lucas) at 5-6; CX-1524C (Haas RWS) at Q182-183. Further, as discussed above, the Registration Message of IS-95 does not indicate that the handset wants to establish a communication channel. CX-1524C (Haas RWS) at Q192.

Third, as with their IS-95 obviousness theories, Respondents provide no evidence to show it would have been obvious to a person of ordinary skill in the art to combine IS-95 and Lucas. It is opined that "it would have been obvious to a person of ordinary skill in the art to try the random access procedures developed by Lucas with IS-95-A, as the combinations would have yielded predictable results with reasonable expectations of success," but this assertion does not rise to the level of clear and convincing, which is required for a finding of invalidity. RX-3536C (Lanning WS) at ¶ 526.

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c. Dent

Respondents also rely on U.S. Patent No. 5,430,760 to Dent (RX-0248) ("Dent" or "Dent '760") to show obviousness of the asserted Power Ramp-Up patent claims. *See* Resps. Br. at 344-54. Dent was cited by the examiner during the prosecution of the '830 and '636 patents, and the asserted claims were found patentable over Dent. *See* CX-1546 ('830 file history) Notice of Allowance at 3; CX-1547 ('636 file history) Notice of Allowance at 2. Indeed, even in combination with IS-95, Dent discloses the standard prior art approach of sending the preamble along with the message. *See* CX-1524 (Haas WS) at Q61, Q213.

i. Obviousness Analysis of the '830 Patent

<u>The "each of the successively sent transmissions is shorter than the message"</u> <u>Limitation.</u>

The "successively sent transmissions" are not shorter than the "message" because the "call initiation message" and the "uplink acknowledgement message," and in fact, every random access message in Dent, are the same length. RX-0248 (Dent) at col. 8, Ins. 38-44; CX-1524C (Haas RWS) at Q221-223. Respondents admit that the random access messages of Dent are the same length, but argue that it would be obvious to vary their lengths. RX-3526C (Lanning WS) at Q459-460. To the contrary, Dent explicitly teaches away from varying the message lengths. RX-0248 (Dent) at col. 8, Ins. 38-44; CX-1524C (Haas RWS) at Q221-223. Dent teaches that the messages must all be the same length in order for the messages to match the length of the speech coder frame and to thereby simplify the system. RX-0248 (Dent) at col. 8, Ins. 38-44; CX-1524C (Haas RWS) at Q221-223. Respondents point to the codeword "BB" messages that are shorter in length, but these are irrelevant. RX-3526C (Lanning WS) at Q463. Dent discloses that these "BB" messages are used only when transmitting speech traffic after the random access

attempt is complete, not during a random access attempt. RX-0248 (Dent) at col. 8, lns. 41-51; CX-1524C (Haas RWS) at Q228-229.

The "portions of the same sequence of chips" Limitation.

Dent does not disclose that the "call initiation message" and the "uplink acknowledgement message" are produced using "portions of the same sequence of chips," as required by the asserted \$30 claims. Dent instead discloses that "each message is scrambled before transmission using a scrambling code," and that different scrambling codes are available. RX-0248 (Dent) at col. 3, lns. 2-5; Fig. 3B. Respondents' argument for why the same scrambling code would be used for both messages is that "[a] person of ordinary skill in the art would understand that once a mobile selects a scrambling code for a random access procedure, the subscriber unit would maintain that scrambling code for all of the associated random access messages." RX-3526C (Lanning WS) at Q481. Notwithstanding the fact that this argument is not supported by the evidence, Respondents have not shown that each random access message is scrambled with only a portion of that same scrambling code. CX-1524C (Haas RWS) at Q254.

ii. Obviousness Analysis of the '636 Patent

As for the '636 patent, Dent does not disclose: (i) that the "successively sent transmissions" are "derived from a first length of a plurality of chips," (ii) that the "subsequent transmission" is "derived from a second length of the plurality of chips," and (iii) that "the first length is less than the second length." The first two limitations are not disclosed for the same reasons, discussed above, that the "portions of a same sequence of chips" limitation of the '830 claims is not disclosed. The remaining limitation is not disclosed for the same reasons that the limitation "each of the successively sent transmissions is shorter than the message" of the '830 claims is not disclosed, as discussed above.

d. Secondary Considerations

With respect to secondary considerations of nonobviousness, InterDigital argues the following:

Even if Respondents could make out a prima facie case of obviousness and they cannot—Respondents' obviousness defense cannot stand in the face of the overwhelming evidence of secondary considerations of nonobviousness. First, the initial access procedure of asserted claims has been adopted in the 3GPP WCDMA standard, which shows industry acceptance and praise. "CX-1524C (Haas) at ¶ 291. Second, there was a "long felt but unsolved need," for the claimed inventions as evidenced by the failed CODIT and ATDMA projects by major telecommunications companies. Id. at 294-305. The commercial success of the claimed inventions is evidenced by InterDigital's ability [

] *Id.* at 306-308. These secondary considerations have gone unrebutted by Respondents. *See generally* RX-3526C (Lanning); Resp. PHB.

Compls. Br. at 127.

The evidence cited by InterDigital fails to establish the requisite nexus between the

secondary considerations and the Power Ramp-Up patents. Nevertheless, inasmuch as

Respondents have not shown by clear and convincing evidence that the asserted claims are

anticipated or rendered obvious in light of the cited prior art references, the secondary

considerations play only a minor role in the validity analysis of the '830 and '636 patents.

3. Lack of Written Description

Respondents argue that certain claim limitations of the '830 and '636 patents lack written

description support or are outside the scope of the invention. Resps. Br. at 354-73. These

disputed claim limitations are addressed in turn below.

a. "successively sent transmissions" and "successively sends transmissions" ('830 and '636 Patents)

Respondents take the position that the claim limitations "successively sent transmissions" and "successively sends transmissions" of claim 1 of the '830 patent and claim 1 of the '636

patent lack written description support "if they are interpreted to cover transmission of a code modulated by data." *See* Resps. Br. at 362-66. As discussed above, the terms "successively sent transmissions" and "successively sent transmissions" were construed to mean "transmits to the base station, one after the other, codes that are shorter than a regular length code." The adopted constructions make clear that the claimed "transmissions" comprise codes which, as discussed above regarding the alleged infringement of these limitations, are not modulated by data. Inasmuch as the terms "successively sent transmissions" and "successively sent transmissions" are not interpreted to cover transmission of a code modulated by data, Respondents' written description arguments are moot.

Nevertheless, if the terms "successively sent transmissions" and "successively sent transmissions" were interpreted to cover transmission of a code modulated by data, it is determined that such an interpretation would not be supported by the specification, for the same reasons discussed above with respect to the construction of the claim terms.

b. "message ... produced using ... a same sequence of chips" ('830 Patent) and "subsequent transmission derived from a second length of the plurality of chips" ('636 Patent)

Respondents argue that, inasmuch as the '830 and '636 patents are directed to "initial power ramp-up and synchronization during the establishment of a communication channel," the claim terms "message . . . produced using . . . a same sequence of chips" from the '830 patent and "subsequent transmission derived from a second length of the plurality of chip" from the '636 patent are outside the scope of the invention because the claimed "message" and "subsequent transmission" are not part of the power ramp-up process. *See* Resps. Br. at 366-67 (citing JX-0006 ('830 patent) at col. 4, ln. 67 – col. 5, ln. 3). Respondents also argue that "there is no support in the Power Ramp-up Patents for limitations that are directed to complex

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relationships between the chips of a 'message' and the chips of a 'successively sent transmission,'" inasmuch as "The Power Ramp-up Patents . . . provide *no* disclosure regarding a sequence of chips common to a 'successively sent transmission' and 'message." *Id.* at 367 (emphasis original).

With respect to Respondents' first argument, that the "message" limitation is outside the scope of the '830 patent, the specification itself makes clear that the claimed invention is directed to "initial power ramp-up and synchronization during the establishment of a communication channel." See JX-0006 at col. 4, ln. 63 - col. 5, ln. 3. As disclosed by the specification, the claimed "message" is used during the establishment of a communication channel between the subscriber unit and the base station, and is therefore within the scope of the invention. See, e.g., col. 10, lns. 44-45. Accordingly, Respondents' argument is rejected.

As for Respondents' second argument, the evidence demonstrates that the '830 and '636 patents do in fact disclose using a portion of the access code to product the message. For example, Respondents' expert Mr. Lanning testified that Figure 10 of the patents shows that the access code is modulated by the data of the call setup message. *See* CX-1240C (Lanning Dep. from Inv. No. 337-TA-613) at 204-206; JX-0006 ('830 patent) at col. 10, lns. 8-11 ("The signals output by the data transmitter 88 and the short code and access code transmitter 90 are combined"). Moreover, InterDigital's experts Drs. Jackson and Haas identified passages from the patents disclosing that the access code and spread call setup message are added together and then transmitted. *See* CX-1309C (Jackson WS) at Q620-621, Q623-686; CX-1524C (Haas RWS) at Q323-357. Accordingly, the record evidence shows that Respondents' written description argument is not persuasive.

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V. The Closed-Loop Power Control ('406 and '332) Patents

A. Overview of the Patents and Asserted Claims

1. The '406 Patent

Asserted U.S. Patent No. 7,502,406 ("the '406 patent") is titled, "Automatic Power

Control System for a Code Division Multiple Access (CDMA) Communications System."

JX-0001 ('406 patent). The '406 issued on March 10, 2009, and the named inventors are Gary Lomp, Fatih Ozluturk, and John Kowalski. *Id.* The '406 patent relates generally to automatic power control for a CDMA system. *Id.* at Abstract. The '406 patent is related to the asserted '332 patent; these two patents together are also referred to as the "Power Control" patents.

InterDigital asserts independent claim 29 of the '406 patent. InterDigital also asserts dependent claims 6, 13, 20, and 26, which depend respectively from independent claims 1, 7, 15,

and 21, and dependent claim 22. The relevant claims read as follows:

1. A method for controlling transmission power levels of a code division multiple access (CDMA) subscriber unit, the method comprising:

receiving by the subscriber unit a power control bit on a downlink control channel, the power control bit indicating either an increase or decrease in transmission power level;

transmitting a plurality of channels by the subscriber unit, the plurality of channels including a traffic channel and a reverse control channel;

in response to the received power control bit, adjusting a transmission power level of both the traffic channel and the reverse control channel, wherein the transmission power level of the traffic channel and the reverse control channel are different; and

transmitting the traffic channel and the reverse control channel at their respective adjusted transmit power levels.

6. The method of claim 1 wherein the reverse control channel carries at least one power command.

7. A method for controlling transmission power levels of a code division multiple access (CDMA) subscriber unit, the method comprising:

receiving by the subscriber unit a series of power control bits on a downlink channel, each power control bit indicating either an increase or decrease in transmission power level;

transmitting a plurality of channels by the subscriber unit, the plurality of channels including a traffic channel and a reverse control channel;

adjusting a transmission power level of both the traffic channel and the reverse control channel in response to the same bits in the received series of power control bits, wherein the transmission power level of the traffic channel and the reverse control channel are different; and

transmitting the traffic channel and the reverse control channel at their respective adjusted transmit power levels.

13. The method of claim 7 wherein the reverse control channel carries at least one power command.

15. A code division multiple access (CDMA) subscriber unit comprising:

a despreading and demultiplexing device configured to recover a power control bit from a downlink control channel, wherein the power control bit has a value indicating a command to either increase or decrease transmission power level; and

gain devices configured, in response to the received power control bit, to adjust a transmission power level of both a traffic channel and a reverse control channel prior to transmission by the subscriber unit, wherein the transmission power level of the traffic channel and the reverse control channel are different.

20. The CDMA subscriber unit of claim 15 wherein the reverse control channel carries at least one power command.

21. A code division multiple access (CDMA) subscriber unit comprising:

a despreading and demultiplexing device configured to recover a series of power control bits from a downlink channel, wherein each power control bit has a value indicating a command to either increase or decrease transmission power level; and

gain devices configured, in response to the received series of power control bits, to adjust a transmission power level of both a traffic channel and a reverse control channel in response to same bits in the

received series of power control bits prior to transmission by the subscriber unit, wherein the transmission power level of the traffic channel and the reverse control channel are different.

22. The CDMA subscriber unit of claim 21 wherein the downlink channel is a downlink control channel.

26. The CDMA subscriber unit of claim 22 wherein the reverse control channel carries at least one power command.

29. A method for controlling transmission power levels of a code division multiple access (CDMA) subscriber unit, the method comprising:

receiving by the subscriber unit a power control bit on a downlink control channel, the power control bit indicating either an increase or decrease in transmission power level;

transmitting a plurality of channels by the subscriber unit, the plurality of channels including a traffic channel and a reverse control channel;

in response to the received power control bit, adjusting a transmission power level of both the traffic channel and the reverse control channel,

separately adjusting the transmission power level of the traffic channel and the reverse control channel; and

transmitting the traffic channel and the reverse control channel at their respective adjusted transmit power levels.

JX-0001 at col. 14, ln. 58 - col. 15, ln. 8; col. 15, lns. 26-45; col. 15, lns. 66-67; col. 16, lns. 4-

16; col. 16, lns. 32-48; col. 16, lns. 63-64; col. 17, lns. 5-22.

2. The '332 Patent

Asserted U.S. Patent No. 7,706,332 ("the '332 patent") is titled, "Method and Subscriber

Unit for Performing Power Control." JX-0002 ('322 patent). The '332 patent issued on April

27, 2010, and the named inventors are Fatih Ozluturk and Gary Lomp. Id. The '332 patent

relates generally to the way subscriber units and base stations communicate to control the power

level of transmissions from the base station to a subscriber unit within a cellular CDMA system.
Id. at Abstract. The '332 patent is related to the asserted '406 patent; these two patents together . are also referred to as the "Power Control" patents.

InterDigital asserts dependent claims 9, 10, 11, and 14, as well as independent claim 8 from which the claims depend. InterDigital also asserts dependent claims 2, 3, 4, 7, 22, 23, 24, and 27. These claims depend from non-asserted independent claims 1 and 21. The relevant claims read as follows:

1. A code division multiple access subscriber unit comprising:

a circuit, operatively coupled to an antenna, configured to generate power control bits that are included on only one of an in-phase (I) channel or a quadrature (Q) channel; and

the antenna configured to output a radio frequency signal derived at least in part from the I and Q channels.

2. A code division multiple access subscriber unit in accordance with claim 1, wherein the circuit is further configured to combine the I and Q channels with a complex sequence.

3. A code division multiple access subscriber unit in accordance with claim 2, wherein the combining is by multiplication.

4. A code division multiple access subscriber unit in accordance with claim 2, wherein the complex sequence comprises at least two pseudo noise sequences.

7. A code division multiple access subscriber unit in accordance with claim 1, wherein the circuit is further configured to generate pilot bits; wherein the radio frequency signal is derived at least in part from the pilot bits.

8. A code division multiple access subscriber unit, comprising:

an antenna configured to receive a first radio frequency signal; and

a circuit, operatively coupled to the antenna, configured to generate power control bits in response to the first radio frequency signal, wherein the circuit is further configured to establish an in-phase (I) pre-spread channel and a quadrature (Q) pre-spread channel, such that

the power control bits are included on only one of the I pre-spread channel or the Q pre-spread channel;

wherein a second radio frequency signal output by the code division multiple access subscriber unit is derived at least in part from the I and Q pre-spread channels.

9. A code division multiple access subscriber unit in accordance with claim 8, wherein the circuit is further configured to combine the I and Q pre-spread channels with a complex sequence.

10. A code division multiple access subscriber unit in accordance with claim 9, wherein the combining is by multiplication.

11. A code division multiple access subscriber unit in accordance with claim 9, wherein the complex sequence comprises at least two pseudo noise sequences.

14. A code division multiple access subscriber unit in accordance with claim 8, wherein pilot bits are included on at least one of the I and the Q pre-spread channels.

21. A code division multiple access subscriber unit comprising:

circuitry configured to receive a first radio frequency signal and generate power control bits in response to the first radio frequency signal; wherein the circuitry is further configured to produce an inphase (I) channel and a quadrature (Q) channel; wherein only one of the I channel or the Q channel includes the power control bits; wherein the circuitry is further configured to produce a second radio frequency signal including an I component and a Q component derived from the I channel and the Q channel; wherein the circuitry is further configured to transmit the second radio frequency signal.

22. A code division multiple access subscriber unit in accordance with claim 21, wherein the circuitry is further configured to combine the I and Q channels with a complex sequence.

23. A code division multiple access subscriber unit in accordance with claim 22, wherein the combining is performed by multiplication.

24. A code division multiple access subscriber unit in accordance with claim 22, wherein the complex sequence comprises at least two pseudo noise sequences.

27. A code division multiple access subscriber unit in accordance with claim 21, wherein the circuitry is further configured to generate pilot bits;

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wherein the second radio frequency signal is derived at least in part from the pilot bits.

JX-0002 at col. 101, lns. 6-22; col. 101, lns. 33-60; col. 102, lns. 4-6; col. 102, lns. 39-63; col. 104, lns. 1-4.

B. Claim Construction

1. Level of Ordinary Skill

A person of ordinary skill in the art in the asserted '406 and '332 patents would have at least an undergraduate or postgraduate degree in electrical engineering (or an equivalent subject), together with at least two years of postgraduate experience in CDMA communications, such as academia or industry, or equivalent training. *See* CX-1310C (Prucnal WS) at Q84.²⁵

2. Construction of Disputed Claim Terms

a. "power control bit" ('406 and '332 patents)

Claim Term/Phrase	InterDigital's Construction	Respondents' Construction
power control bit	binary information relating to power control	single-bit power control information transmitted at an APC data rate equivalent to the APC update rate

The term "power control bit" appears in all asserted claims of the '406 and '332 patents. See, e.g., JX-0001 ('406 patent) at col. 14, ln. 58 – col. 15, ln. 8 (claim 1); JX-0002 ('332 patent) at col. 101, lns. 6-13 (claim 1).

²⁵ Respondents contend that a person of ordinary skill in the art of the '406 and '332 patents would have a Ph.D. in electrical engineering or an equivalent degree, with four years of work experience in the design of wireless communications systems. *See* Resps. Br. at 168. The parties have not identified any way in which differences in their proposed definitions of the level of ordinary skill in the art affect issues in this investigation. See Compls. Br. at 129; Resps. Br. at 168.

InterDigital construes this term to mean "binary information relating to power control." See Compls. Br. at 129-31. Respondents construe this term to mean "single-bit power control information transmitted at an APC^[26] data rate equivalent to the APC update rate." See Resps. Br. at 169-74; Compls. Br. at 129.

As proposed by Respondents, the term "power control bit" is construed to mean

"single-bit power control information transmitted at an APC data rate equivalent to the APC update rate." This construction is supported by the language of the claims, as well as by the intrinsic evidence.

Although the specifications of the '406 and '332 patents do not contain the specific term "power control bit," they do describe the way in which the claimed invention conveys power control, or APC, information:

The APC signal is transmitted as one bit signals on the APC channel. The one-bit signal represents a command to increase (signal is logic-high) or decrease (signal is logic-low) the associated transmit power. In the described embodiment, the 64 kbps APC data stream is not encoded or interleaved.

JX-0001 ('406 patent) at col. 6, lns. 47-51.

APC information is always conveyed as a single bit of information, and the APC Data Rate is equivalent to the APC update rate. The APC update rate is 64 kb/s.

JX-0001 at col. 9, lns. 46-48; JX-0002 at col. 67, lns. 43-45.

The APC bits are transmitted as one bit up or down signals on the APC channel.

JX-0002 ('332 patent) at col. 64, lns. 11-13.

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²⁶ "APC" is an acronym for "adaptive power control." *See, e.g.*, JX-0001 at col. 5, lns. 48-50; JX-0002 at col. 3, lns. 26-28.

Moreover, the flow chart depicted in Figure 4 of the '406 patent indicates that "RCS^[27] transmits the APC bit to SU^[28] in the forward APC channel," "SU modem receives the single APC bit," and "SU increases or decreases its transmit power according to the APC bit received." JX-0001 at Fig. 4. Similarly, Figure 27 of the '332 patent teaches that "SU modem hard limits the combined error signal to form a single APC bit," "SU transmits the APC bit to RCS in the reverse APC channel," and "RCS modem receives the single APC bit." JX-0002 at Fig. 27.

Not only do the specifications of the '406 and '332 patents support Respondents' proposed construction of "power control bit," but their proposed construction is also consistent with the language of the claims. For example, claim 1 of the '406 patent, from which asserted claim 6 depends, requires that the claimed invention adjust the transmission power of the mobile device "in response to *the* received power control bit." JX-0001 at col. 14, ln. 58 – col. 15, ln. 8 (emphasis added). Further, claim 7 of the '406 patent, from which asserted claim 13 depends, claims a method in which a subscriber unit receives "a series of power control bits on a down link channel, each power control bit indicating either an increase or decrease in transmission power level." JX-0001 at col. 15, lns. 28-45.

Accordingly, the claims and specifications of the '406 and '332 patents make clear that the claimed "power control bit" comprises a single bit of power control information, and that this single bit is transmitted at an APC data rate equivalent to the APC update rate.

InterDigital argues that Respondents' proposed construction for "power control bit" improperly imports limitations from the specifications of the '406 and '332 patents, and that InterDigital's proposed construction should be adopted instead. *See* Compls. Br. at 129. It is

²⁷ "RCS" is an acronym for "radio carrier station." JX-0001 at col. 3, lns. 48-51.
²⁸ "SU" is an acronym for "subscriber unit." JX-0001 at col. 3, lns. 46-47.

argued, *inter alia*, that InterDigital's proposed construction represents the plain and ordinary meaning of "power control bit" as understood by a person of ordinary skill in the art, and that "even Respondents' expert (Dr. Williams) agreed that a bit 'is simply a representation of a piece of information that has two states." *Id.* at 129-30 (citing Williams Tr. 1204). It is further argued that Respondents' reliance on portions of the specifications (quoted above) to support their proposed construction is improper, inasmuch as the portions "never even [use] the term power control bit or power control bit 'means." *Id.* at 130. InterDigital's arguments are not persuasive, however.

InterDigital's proposed construction seeks to construe the term "bit" to include any type of binary information, even when that information is not a "bit." InterDigital therefore argues that "a single bit of information is not limited to a single bit," but does not explain why the express language in the claim term "power control bit" should be rewritten to include power control information that is not in the form of a bit. *See* Compls. Br. at 131. Moreover, even though Respondents' expert Dr. Williams did state that a bit is "a representation of a piece of information that has two states," the fact that a bit can represent binary information does not mean that any representation of binary information comprises a bit. *See id.* at 130.

Accordingly, the term "power control bit" from the asserted '406 and '332 patents is construed to mean "single-bit power control information transmitted at an APC data rate equivalent to the APC update rate."

Claim Term/Phrase	InterDigital's Construction	Respondents' Construction
in response to the received	adjusting a transmission power	separately adjusting the
power control bit, adjusting a	level of both the traffic channel	transmission power level
transmission nower level of both	and the reverse control in	of both the traffic channel

b. "... separately adjusting" ('406 patent)

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the traffic channel and the	response to the received power	and the reverse control
reverse control channel,	control bit and separately	channel in response to the
separately adjusting the	adjusting the transmission power	received power control
transmission power level of the	level of the traffic channel and	bit
traffic channel and the reverse	the reverse control channel	
control channel		

Asserted claim 29 of the '406 patent includes the following two paragraphs:

in response to the received power control bit, adjusting a transmission power level of both the traffic channel and the reverse control channel,

separately adjusting the transmission power level of the traffic channel and the reverse control channel;

See JX-0001 at col. 17, lns. 5-22.

InterDigital construes the "adjusting" and "separately adjusting" limitations of these paragraphs to mean "adjusting a transmission power level of both the traffic channel and the reverse control in response to the received power control bit and separately adjusting the transmission power level of the traffic channel and the reverse control channel." *See* Compls. Br. at 132-35. Respondents take the position that these limitations should be construed to mean "separately adjusting the transmission power level of both the traffic channel and the reverse control channel in response to the received power control bit." Resps. Br. at 174-78. The dispute between the parties centers on whether the phrase "in response to" modifies "separately adjusting" as well as "adjusting."

As proposed by InterDigital, the claim term "in response to the received power control bit, adjusting a transmission power level of both the traffic channel and the reverse control channel, separately adjusting the transmission power level of the traffic channel and the reverse control channel" is construed to mean "adjusting a transmission power level of both the traffic channel and the reverse control in response to the received power control bit and separately

adjusting the transmission power level of the traffic channel and the reverse control channel." This construction is supported by the language of the claim itself, as well as by the intrinsic evidence.

The contested portions of claim 29 comprise two paragraphs: the first requires "in response to the received power control bit, adjusting a transmission power level of both the traffic channel and the reverse control channel," and the second requires "separately adjusting the transmission power level of the traffic channel and the reverse control channel." JX-0001 at col. 17, lns. 15-19. These two paragraphs are separated by a comma, line break, and first line indent, signifying that the two paragraphs describe separate limitations. *See id.* Accordingly, "in response to," which is located in the first paragraph, does not modify "separately adjusting," which is located in the second paragraph. Moreover, in the event that "in response to" were read to modify "separately adjusting," the "adjusting" step would be rendered superfluous, inasmuch as requiring both adjustment and separate adjustment in response to the received power control bit is the same as requiring only the latter. As stated by the Federal Circuit, "claims are interpreted with an eye toward giving effect to all terms in the claim." *Cat Tech LLC v. TubeMaster, Inc.*, 528 F.3d 871, 885 (Fed. Cir. 2008) (citation omitted).

InterDigital's proposed construction is also consistent with the preferred embodiments of the '406 patent described in the specification. In particular, Figure 5B of the '406 patent shows that the reverse traffic and control channels are separately adjusted by amplifiers 555 and 552, respectively. JX-0001 at col. 12, lns. 15-20. These channels are then combined by adder 556 and input to variable gain amplifier ("VGA") 554. *Id.* The VGA adjusts the transmission power level of the combined signal, *i.e.*, the transmission power level of the reverse traffic and control channels, in response to the received power control bit based on the output of integrator 543. *Id.*

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at col. 11, lns. 45-49; col. 12, lns. 19-21. By contrast, Respondents' proposed construction does not cover this embodiment of the '406 invention, and Respondents do not contend otherwise. *See* Resps. Br. at 174-78; Resps. Reply at 64-68.

In opposition to InterDigital's proposed construction, Respondents argue that "[g]iven the ['406] patent's exclusive focus on closed loop power control, one of ordinary skill in the art would understand that the claimed separate adjustment of the transmission power level of the traffic channel and the reverse control channel would necessarily be in response to the received power control bit because responding to such feedback is what distinguishes closed loop power control from open loop power control." Resps. Br. at 175. Respondents do not provide, however, any factual or legal basis for construing claim limitations based on the "exclusive focus" of a patent. *See id.*

Respondents also argue that the prosecution history of the '406 patent weighs in favor of adopting their proposed construction rather than InterDigital's proposed construction, inasmuch as "the examiner initially allowed the claims on the basis that the prior art did not show 'in response to the received power control bit, adjusting a transmission power level of both the traffic channel and the reverse control channel, wherein the power level of the traffic channel and the reverse control channel are separately adjusted." Resps. Br. at 175-76 (citing JX-0008 ('406 file history) at IDC-ITC-016382366-71) (emphasis omitted). A reading of the prosecution history, however, shows that Respondents' argument is not persuasive.

On January 29, 2007, the applicants amended original claim 15 of the application for the '406 patent as follows:

in response to the received power control bit, adjusting a transmission power level of both the traffic channel and the reverse control channel, wherein <u>the power level of the traffic channel and the reverse control</u>

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<u>channel are separately adjusted</u> a required signal to interference ration (SIR) for the traffic channel and the reverse control channel differ;

JX-0008 ('406 file history) at IDC-ITC-016382354. In the remarks accompanying this

amendment, the applicants stated, "With respect to the new language, separate adjustment of the

channels is supported, such as by, Figure 5b elements 552-555." JX-0008 at

IDC-ITC-016382352. The examiner allowed the amended claim in April 2007, stating as

follows:

The present invention relates to method and apparatus for power controlling in the reversed channel. Particularly, prior art of record, taking individually or collectively, fails to fairly teach such method and apparatus, including "in response to the received power control bit, adjusting a transmission power level of both the traffic channel and the reverse control channel, wherein the power level of the traffic channel and the reverse control channel are separately adjusted", as claimed in independent claim 15....

Id. at IDC-ITC-016382370. Neither the applicants nor the examiner indicated that the claim element required separate adjustment to the traffic channel and the reverse control channel in response to the received power control bit.

After the allowance described above, but before the '406 patent issued, the applicants amended the pending claims. First, the "separately adjusted" language was removed from pending claim 15, which was later renumbered as issued claim 1. JX-0008 at IDC-ITC-016383499. Second, new claim 29 was added, and included the two paragraphs at issue in this claim construction dispute. *Id.* at IDC-ITC-016383505. The examiner allowed these claims in January 2008, again without indicating that the claims required separate adjustment to the traffic channel and the reverse control channel in response to the received power control bit. *Id.* at IDC-ITC-016385109.

Accordingly, the claim term "in response to the received power control bit, adjusting a transmission power level of both the traffic channel and the reverse control channel, separately adjusting the transmission power level of the traffic channel and the reverse control channel" is construed to mean "adjusting a transmission power level of both the traffic channel and the reverse control in response to the received power control bit and separately adjusting the transmission power level of the traffic channel and the reverse control in response to the received power control bit and separately adjusting the transmission power level of the traffic channel and the reverse control channel."

c. "in response to . . . wherein the transmission power level of the traffic channel and the reverse control channel are different" ('406 patent)

Claim Term/Phrase	InterDigital's Construction	Respondents' Construction
in response to wherein the transmission power level of the traffic channel and the reverse control channel are different (claims 6, 13, 20, 26)	These claims do not require different transmission power levels in response to the received power control bit.	These limitations require setting different transmission power levels for the traffic channel and the reverse control channel in response to the received power control bit(s).

The independent claims from which asserted claims 6, 13, 20, and 26 of the '406 patent

depend include limitations specifying that "the transmission power level of the traffic channel

and the reverse control channel are different." The relevant claim limitations are as follows:

Claim 1 (from which claim 6 depends):

in response to the received power control bit, adjusting a transmission power level of both the traffic channel and the reverse control channel, wherein the transmission power level of the traffic channel and the reverse control channel are different;

Claim 7 (from which claim 13 depends):

adjusting a transmission power level of both the traffic channel and the reverse control channel in response to the same bits in the received series of power control bits, wherein the transmission power level of the traffic channel and the reverse control channel are different;

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Claim 15 (from which claim 20 depends):

gain devices configured, in response to the received power control bit, to adjust a transmission power level of both a traffic channel and a reverse control channel prior to transmission by the subscriber unit, wherein the transmission power level of the traffic channel and the reverse control channel are different.

Claim 21 (from which claim 26 depends):

gain devices configured, in response to the received series of power control bits, to adjust a transmission power level of both a traffic channel and a reverse control channel in response to same bits in the received series of power control bits prior to transmission by the subscriber unit, wherein the transmission power level of the traffic channel and the reverse control channel are different.

See JX-0001 at col. 14, ln. 58 – col. 15, ln. 8; col. 15, lns. 28-45; col. 16, lns. 4-16; col. 16, lns. 34-48.

The parties dispute whether the difference in the transmission power level of the traffic and control channels must be "in response to" the claimed power control bits. InterDigital takes the position that "[the] claims do not require different transmission power levels *in response to* the received power control bit." *See* Compls. Br. at 136-37 (emphasis original). Respondents take the position that "these limitations require setting *different* transmission power levels for the traffic channel and the reverse control channel *in response to the received power control bit(s)*." *See* Resps. Br. at 178-80 (emphasis original).

The parties' arguments with respect to these disputed limitations mirror their arguments with respect to the "... separately adjusting ..." limitation discussed above. *See* Compls. Br. at 136-37; Resps. Br. at 178-80. Accordingly, for the same reasons set forth in the section discussing the "... separately adjusting ..." limitation, these disputed limitations are construed in accordance with InterDigital's proposed construction, *i.e.*, they do not require different transmission power levels in response to the received power control bit(s).

d. "gain devices configured . . . to adjust a transmission power level of both a traffic channel and a reverse control channel" ('406 patent)

Claim Term/Phrase	InterDigital's Construction	_Respondents' Construction
gain devices configured to adjust a transmission power level of both a traffic channel and a reverse control channel (claims 20, 26)	These claims do not require that the transmission power levels be adjusted separately.	To the extent the parties dispute the construction of these limitations, these limitations require setting transmission power levels for the traffic channel and the reverse control channel separately.

Claims 15 and 21 of the '406 patent, from which asserted claims 20 and 26 depend, recite

the following limitations:

<u>Claim 15 (from which claim 20 depends):</u>

gain devices configured, in response to the received power control bit, to adjust a transmission power level of both a traffic channel and a reverse control channel . . .

Claim 21 (from which claim 26 depends):

gain devices configured, in response to the received series of power control bits, to adjust a transmission power level of both a traffic channel and a reverse control channel...

See JX-0001 at col. 16, lns. 4-16; col. 16, lns. 34-48.

With respect to these limitations, InterDigital argues:

Claims 20 and 26 do not require that the gain devices adjust the transmission power level of the reverse traffic and control channels individually in response to one or more received power control bits. Respondents incorrectly import the word 'individually' into the claims. But nothing in the claims requires the gain devices to adjust the transmission power level of the channels individually. To the contrary the claims say 'gain devices configured, in response to the received [series of] power control bit[s], to adjust a transmission power level of both a traffic channel and a reverse control channel.'"

Compls. Br. at 138.

Respondents disagree that these limitations need construction: "Neither party has proposed a construction of 'gain devices', and to the extent the parties dispute the meaning of the 'gain devices' limitations as they relate to Respondents' non-infringement arguments, the dispute is fully addressed above as part of the 'in response to' limitations." Resps. Br. at 180.

Inasmuch as the parties' arguments with respect to these limitations mirror their arguments with respect to the "... separately adjusting ..." and "in response to ..." limitations discussed above, these disputed limitations are construed in accordance with InterDigital's proposed construction, *i.e.*, they do not require that the transmission power levels of the traffic and control channels be adjusted separately.

C. Infringement

1. The '406 and '332 Accused Products

InterDigital argues that all accused products in this investigation infringe asserted claims of the '406 and '332 patents. *See* Compls. Br. at 139-41. The accused products can be divided into two groups based on the 3G standard they support, *i.e.*, WCDMA or CDMA2000. *See id.* at 139. InterDigital accuses the WCDMA products of infringing claims 13 and 26 of the '406 patent, and accuses the CDMA2000 products of infringing claims 6, 20, and 29 of the '406 patent. *Id.* InterDigital further accuses all products of infringing claims 2-4, 7-11, 14, 22-24, and 27 of the '332 patent. *Id.*

The accused WCDMA products comply with technical specifications set forth by the Third Generation Partnership Project ("3GPP"), and include Qualcomm-based WCDMA products, Huawei HiSilicon products, Nokia RapuYama products, Nokia Rapido Yawe Products, and Nokia RAP3G products. *See* Compls. Br. at 139 (citing CX-1310C (Prucnal WS) at Q450

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(RapuYama), Q763 (RapidoYawe), Q1083 (RAP3G), Q1400, Q1645, Q1655 (Qualcomm), Q1672 (HiSilicon)).

The specific model numbers of the Nokia WCDMA products accused of infringing the '406 and '332 patents are as follows: Vertu (RM-389V), Vertu (RM-582V), 6350 (RM-455), C5-03 (RM-697; RM-719), C5-04 (RM-720), E6 (RM-609), 500 (RM-750; RM-751), C6-01 (RM-601; RM-718), 701 (RM-774), n9-00 (RM-696; RM-716), X3-02 (RM-639), E73 (RM-658), C3-01 (RM-640), N900 (RX-51), E72 (RM-515; RM-529; RM-530), Vertu (RM-681V), X7-00 (RM-659; RM-707), E7 (RM-626; RM-664), Astound C7 (RM-675), Astound C7 (RM-691), Vertu (RM-589V), N8 (RM-596), E5 (RM-634), 700 (RM-670), 6700 Slide (RM-577), Pureview 808 (RM-807), X6 (RM-559; RM-551), N97 (RM-505; RM-507), 6790 Slide (RM-492), 6790 Slide (RM-599), E71 (RM-346; RM-357), N97 mini (RM-555; RM-553), 5230 (RM-594), 5230 (RM-593), E63-2 (RM-437; RM-449), C6-00 (RM-624; RM-612), C2-01 (RM-721; RM-722), Vertu (RM-266V), 2730 (RM-579; RM-578), 710 Lumia (RM-809), 800 Lumia (RM-801; RM-819), 900 Lumia (RM-808; RM-823), 7230 (RM-598), 3710 (RM-509; RM-510), Lumia 810 (RM-878), Lumia 820 (RM-824), Lumia 822 (RM-845), Lumia 920 (RM-820), and Booklet 3G (RX-75). Compls. Br. at 139-40 (citing CX-1310C (Prucnal WS) at Q15-16).

The specific model numbers of the WCDMA Huawei products accused of infringing the '406 and '332 patents are as follows: U9000, U9000-81 (IDEOS X6, Ascend X), Elom, MU509, U2800A, U3200, U3200-9, M865, E366, E368, EM820U, EM820W, B683, EM770U, EM770W, Ernié (UMTS), B890-66, Gobi3000, (UMTS), E392, MediaPAD (S7-303u), MediaPAD (S7-Pro), U8800, U8800-51, UMG587 (E587u-5), U8680 (MyTouch), U8730 (U8730+), U8651T (Prism), U8652 (Fusion), Ascend Y200 (U8655), Ascend Y201 (U8666), Y210 (U8686), U8500, U8500-3, W1 (U8835), MediaPad 10 FHD (S10-102u), S7 (S7-104), S7-

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Slim (S7-202U), MediaPad 7 Lite (S7-932u), U8651s (Summit), and the U8665 (Fiji). Compls. Br. at 140 (citing CX-1310C (Pruenal WS) at Q20-21).

The specific model numbers of the WCDMA ZTE products accused of infringing the '406 and '332 patents are as follows: AC30 (Fivespot), F160 (P622F2), F555/P671A91 (Wombat), MF683, P671B30 (Z331) (Morgan), P671B40 (Z221) (Michael), P736T (Avail), Z431 (Spider), WF720, MF61 (4G Hotspot), and Z990 (Merit). Compls. Br. at 140 (citing CX-1310C (Pruenal WS) at Q25-26).

The accused CDMA2000 products comply with technical specifications set forth by the Third Generation Partnership Project 2 ("3GPP2"), and all include Qualcomm baseband and radio frequency ("RF") chips. *See* Compls. Br. at 140 (citing CX-1310C (Prucnal WS) at Q2240, Q2510).

The specific model numbers of the CDMA2000 Nokia products accused of infringing the '406 and '332 patents are as follows: 7705 Twist (RM-526), Lumia 719 (RM-817), and Lumia 800C (RM-802). Compls. Br. at 141 (citing CX-1310C (Pruenal WS) at Q15-16).

The specific model numbers of the CDMA2000 Huawei products accused of infringing the '406 and '332 patents are as follows: M865, M920 (Huawei Activa), M650 (Express), M660, Y210 (C8686), MediaPAD (S7-303u), MediaPAD (S7-Pro), E397u-53, E397Bu-502, C6070 (M615; Pillar), C6071 (M635), F256, F259, FT2260 (Verizon HomePhoneConnect), M735, EC5072, EC5805, M886 (C8860), EC1705, EM660, MC509, MC323, Ernie (CDMA), Gobi3000 (CDMA), F253, M835, M931 (sunshine), and Y300C. Compls. Br. at 140-41 (citing CX-1310C (Prucnal WS) at Q20-21).

The specific model numbers of the CDMA2000 ZTE products accused of infringing the '406 and '332 patents are as follows: A210 (CAPTR II), A310 (MSGM8 II), A410 (TXTM8

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3G), A415 (Memo), A605, AC30 (Fivespot), AC3781 (Cradlepoint), D930 (Chorus), EuFi890
(Jetpack EuFi890), F350 (Salute), F450 (Adamant), MC2261 (Wombat), MC2718 (Wombat),
N850 (Fury), N859 (Render (aka "Tania")), N860 (Warp), N910 (Anthem (LTE)), V55 (Optik),
X500 (Score (aka "Score M")), N861 (Warp II), V66 (Turbine 7.0), V8000 (Engage), N9500
(Flash), and X501 (Groove). Compls. Br. at 141 (citing CX-1310C (Prucnal WS) at Q25-26).

2. Operation of the WCDMA Products

[

]. See CX-0023 (3GPP TS 25.213) at § 3.2; CX-0234 (3GPP TS 25.214) at § 5.1.2.1 (["

"]). [

]." CX-0327 (3GPP TR 21.801) at § 3.1,

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Annex E.

[

]. CX-0232 (3GPP TS 25.211) at §§ 5.2.1, 5.3.2; Bims Tr. at 1295; RX-3998C (Bims WS) at Q102-105, 109, Q112-114. [

]. CX-0232 (3GPP TS 25.211) at § 5.3.2. Any channel transmitted by subscriber units is an uplink channel. *Id.* at § 5.2.1. [

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Table 13: TPC Bit Pattern

TPC Bit Pattern		Transmitter power	
NTPC = 2	NTPC = 4	NTPC = 8	control command
11	1111	11111111	1
00	0000	00000000	0

Id. at § 5.3.2. [

].

CX-0234 (3GPP TS 25.214) at §§ 5.1.2.2.1-.3. [

]. Id. at § 5.1.2.2.2. [

]. Id. at § 5.1.2.2.3.

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CX-0232 (3GPP TS 25.211) at § 5.2.1 (NTPC = 2). [

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Figure 1: Spreading for uplink DFCCH, DPDCHs and HS-DPCCH

CX-0023 (3GPP TS 25.213) at § 4.2.1. [

]. Id. at §§ 4.1,

4.2.1. [

]. Id.

[

]. CX-0023 (3GPP TS 25.213) at §§ 4.1, 4.2.1; see

RX-3529C (Williams WS) at Q100. [

]. Id. at § 4.2.1; CX-0232 (3GPP TS 25.211) at §5.3.2. [

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]. CX-0234 (3GPP TS 25.214) at §§ 5.1.2.1, 5.1.2.5.

]. CX-0234 (3GPP TS 25.214) at §§ 5.1.2.1, 5.1.2.5.

]

[

]. CX-0023 (3GPP TS

25.213) at §§ 4.1, 4.2.1, 4.3.2. [

] Id. at §§ 4.2.1, 4.4.2. [

] Id. at §§ 4.1, 4.2.1; see RX-3994C (Williams RWS) at Q68-69. [

] CX-0023 (3GPP TS 25.213) at §§ 4.1, 4.2.1; *see* RX-3994C (Williams RWS) at Q68-69.

[



Figure 7: Uplink modulation

Microsoft Corporation Exhibit 1011-00130

]

CX-0023 (3GPP TS 25.213) at § 4.4.2. [

[

[

[

] See CX-1310C (Prucnal WS) at Q292.

] See CX-1310C

]

] See CX-0017

]

(Prucnal WS) at Q2517-\$522; CX-1068C (Supp. Ex. A to Nokia's Resp. to InterDigital's 1st Interrogs.); CX-1112C (Ex. C to Huawei Supp. Resp. to InterDigital's 1st Interrogs.); CX-1138C (Corrected Ex. A to ZTE's Amended Supp. Resp. to InterDigital's 1st Interrogs.); CX-0101 (3GPP TS 34.121-1) at §§ 5.4.2, 7.8. [

3. Operation of the CDMA2000 Products

(3GPP2 C.S0002) at §§ 1.1, 2.1.2.3 [

[

] *Id.* at xl.

] CX-0017 (3GPP2 C.S0002) at § 1.1. [

] Id. at § 1.1. [

]

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[

] CX-0017

(3GPP2 C.S0002) at § 1.1 [

][

]

Id. at § 3.1.3.1.10. [

§ 2.1.2.3.2 (Closed Loop Output Power). [

Id. at § 2.1.2.3.1.5. [

. .

] Id. at § 2.1.2.3.3.2. [

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] *Id.* at

]

Id. at § 2.1.2.3.3.2. [

[

] See, e.g.,

CX-1310C (Pruenal WS) at Q2056. [

] *Id*.

]

] CX-0017 (3GPP2 C.S0002) at §§ 1.1, 2.1.3.1.10 [

] Id. at § 2.1.3.1.10 [

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Figure 2.1.3.1.10.1-1. Reverse Pilot Channel Showing the Power Control Subchannel Structure

Id. at fig.2.1.3.1.10.1-1, §§ 2.1.3.1.10.1, 2.1.3.2.2. [

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Figure 2.1.3.1.1.1-10. I and Q Mapping for Reverse Pilot Channel, Enhanced Access Channel, Reverse Common Control Channel, and Reverse Traffic Channel with Radio Configurations 3 and 4

Id. at fig.2.1.3.1.1.1-10. [

] Id. at fig.2.1.3.1.1.1-10.

[

] Id. at fig.2.1.3.1.1.1-10. [

] Id. at

fig.2.1.3.1.1.1-10.

[

] See RX-3529C (Williams WS) at Q100, Q109. [

] See RX-3994C (Williams RWS) at

Q75; CX-0017 (3GPP2 C.S0002) at § 2.1.3.1.10, fig.2.1.3.1.1.1-10. [

] See, e.g., CX-1310C (Prucnal WS) at Q2059-2061, Q2124-2127 (discussing, e.g., CX-0017 (3GPP2 C.S0002) at §§ 2.1.2.3, figs.2.1.3.1.1.1-10, 2.1.3.1.1.2-7).

[·

] CX-0017 (3GPP2 C.S0002) at fig. 2.1.3.1.1.1-10. [

] *Id*. at

fig.2.1.3.1.1.1-10; see RX-3529C (Williams WS) at Q100, Q109. [

] See RX-3994C (Williams RWS) at Q75-76;

CX-0017 (3GPP2 C.S0002) at fig.2.1.3.1.1.1-10. [

] See RX-3994C (Williams RWS)

at Q75-76; CX-0017 (3GPP2 C.S0002) at fig.2.1.3.1.1.1-10.

[

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] See, e.g., CX-1310C (Prucnal WS) at Q2056. [

] CX-0017 (3GPP2 C.S0002) at §§ 2.1.2.3.1.5, 2.1.2.3.3.2. [

] See CX-1310C (Prucnal

WS) at Q2140-2142.

[

] CX-1310C

(Prucnal WS) at Q2517-2520, Q2523-2524; CX-1068C (Supp. Ex. A to Nokia's Resp. to InterDigital's 1st Interrogs.); CX-1112C (Huawei Supp. Resp. to InterDigital's 1st Interrogs.); CX-1138C (ZTE's Amended Supp. Resp. to InterDigital's 1st Interrogs.); CX-0018C (3GPP2 C.S0011-B) at §§ 3.4.4, 3.4.5, 3.4.7, 3.4.9, 4.4.4. [

]

4. Global Infringement Issues

In their infringement analyses, the parties address several issues that apply to multiple claims and/or both the '406 and '332 patents. These global issues will be addressed first, followed by a claim-by-claim infringement analysis.

a. The "power control bit" ('406 and '332 Patents) Limitations

All the asserted claims of the '406 patent require receiving a "power control bit" "indicating either an increase or decrease in transmission power level." *See, e.g.*, JX-0001 ('406

patent) at col. 14, ln. 58 – col. 15, ln. 8 (claim 1). All the asserted claims of the '332 patent require the generation of "power control bits" by the subscriber unit. *See, e.g.*, JX-0002 ('332 patent) at col. 101, lns. 6-13. As explained above, the term "power control bit" is construed to mean "single-bit power control information transmitted at an APC data rate equivalent to the APC update rate." Applying this adopted construction,[

RX-3994C (

RX-3994C

see RX-3531

See

] Goldberg Tr. 249.

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] Id. 318-320.²⁹

[

] See CX-0017

(3GPP2 C.S0002) § 2.1.3.1.10.1. [

10. J

] See Prucnal Tr. 320; RX-3994C (Williams RWS) at Q24-25;

CX-0017 (3GPP2 C.S0002) § 3.1.3.1.10. [

] See RX-3994C (Williams RWS) at

Q210-213, Q216.

Inasmuch as power is not adjusted more than once every two bits in WCDMA and CDMA2000 compliant devices, "each power control bit" does not "indicat[e] either an increase or decrease in transmission power level," as required by the adopted claim construction. RX-3994C (Williams RWS) at Q14, Q19, Q23-25.

In addition, [

] Prucnal Tr. 320-321; RX-3994C (Williams RWS)

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²⁹ The TPC Bit Pattern transmitted by WCDMA-compliant handsets to the base station also includes two bits. *See* CX-1310C (Prucnal WS) at Q189; Prucnal Tr. 319.

at Q11, Q15-17, Q20, Q22, Q25-27; *see* RX-3531 (3GPP TS 25.211) at Fig. 13; CX-0017 (3GPP2 C.S0002) § 3.1.3.1.10.

InterDigital argues that the accused devices satisfy the "power control bit" limitations of the asserted '406 claims even under the adopted construction proposed by Respondents. *See* Compls. Br. at 157-58. The evidence adduced by InterDigital, however, [

] Accordingly, it is determined that InterDigital has not met its burden to show that the "power control bit" limitations are satisfied, as that term is properly construed.

InterDigital further argues that the WCDMA products "at a minimum practice this limitation under the doctrine of equivalents because [

] Compls. Br. at 158. It is argued that [

] *Id.*

InterDigital's doctrine of equivalents argument is not persuasive, however, inasmuch as InterDigital disavowed multi-bit power control commands, [

] in both the '406 and '332 specifications by stating "APC information is *always* conveyed as a single bit of information." *See JX*-0002 ('332 patent) at col. 67, lns. 43-45 (emphasis added). Given the clear disavowal of "power control bit," InterDigital is precluded from extending the '332 and '406 patent claims to capture [

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]

Furthermore, the evidence demonstrates that the differences between the claims of the '332 and '406 patents and the accused products are substantial. One of the main goals for both the '332 and '406 patents was to maximize the speed at which the system could update power in response to power control requests. RX-3529C (Williams WS) at Q131, Q546. The claims for both patents thus disclose using single-bit power control commands that allow for rapid adjustment of transmission power and minimize the required bandwidth overhead for transmitting the power control commands. *Id.* By contrast, [

] RX-3994C (Williams RWS) at Q554-546. [

] *Id.*

Therefore, InterDigital has not shown that the accused products satisfy the "power control bit" limitation under the doctrine of equivalents.

Analysis under alternate claim constructions.

In the event that InterDigital's proposed construction of "power control bit," *i.e.*, "binary information relating to power control" were adopted, the record evidence demonstrates that the accused products would satisfy this claim limitation of the '406 patent.

[

] See, e.g., CX-1310C (Prucnal WS) at

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Q2045-2050 (standard), Q2256-2266 (Qualcomm); CX-0017 (3GPP2 C.S0002) at § 3.1.3.1.10.

] See, e.g., CX-1310C (Prucnal WS) at Q132-145, Q163 (standard),

Q484-488 (RapuYama), Q790-792 (RapidoYawe), Q1107-1109 (RAP3G), [

] CX-1307C (Goldberg WS) at Q212 (RAP3G/RapidoYawe/RapuYama), [] CX-0232 (3GPP

TS 25.211) at § 5.3.2; CX-0234 (3GPP TS 25.214) at §§ 5.1.2.2.1 – .3.

Therefore, it is determined that the accused WCDMA and CDMA2000 products would satisfy these claim limitations under InterDigital's proposed construction.

b. The "in response to . . . wherein the transmission power level of the traffic channel and the reverse control channel are different" ('406 Patent) Limitations

The independent claims from which asserted claims 6, 13, 20, and 26 of the '406 patent depend contain the limitation "in response to . . . wherein the transmission power level of the traffic channel and the reverse control channel are different." As discussed above, this limitation is construed to mean that the different transmission power levels of the traffic channel and reverse control channel do not have to be in response to the received power control bit(s).

Under this adopted construction, the WCDMA and CDMA2000 products satisfy this claim limitation.

] See, e.g., CX-1310C (Prucnal WS) at

Q146-152; CX-0232 (3GPP TS 25.211) at § 5.2.1; RX-3994C (Williams RWS) at Q28. [

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] See, e.g., CX-1310C (Prucnal WS) at Q2116-2118; CX-0017

(3GPP2 C.S0002) at §§ 2.1.3.1.1, 2.1.3.1.10; RX-3994C (Williams RWS) at Q28.

] See Resps. Br.

at 186; RX-3994C (Williams RWS) at Q28 [

[

] CX-1310C (Prucnal WS) at Q166-185 (WCDMA), Q2059-2064 (CDMA2000); CX-0023 (3GPP TS 25.213) at § 4.2.1; CX-0017 (3GPP2 C.S0002) at fig.2.1.3.1.1.1-10. [

] CX-0234 (3GPP TS 25.214) at § 5.1.2.5.1; CX-0017 (3GPP2 C.S0002) at §§ 2.1.2.3.1.5, 2.1.2.3.3.2. [

]

Accordingly, it is determined that the WCDMA Products practice this limitation because
[] It is further
determined that the CDMA2000 Products practice this limitation because [

Analysis under alternate claim constructions.

Respondents' proposed construction of these claim limitations requires that the transmission power level of the traffic channel and the reverse control channel be different in

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]

response to the received power control bits. *See* Resps. Br. at 186. Under Respondents' proposed construction, the accused WCDMA and CDMA2000 products do not satisfy these limitations.

[

] See Resps. Br.

at 186. [

] Pruenal Tr. 324-325;

RX-3994C (Williams RWS) at Q28.

For instance, in the WCDMA standard, power control commands received by the subscriber device result in the overall gain of the transmitted signal by the mobile being adjusted (Prucnal Tr. 324:16 – 325:7; RX-3994C (Williams RWS WS) at Q. 30-31. Thus, the power control bits have no impact on whether the separate power levels of the reverse control channel and traffic channels are different or not.

As for the CDMA2000 standard, the power commands received from the base station result in power adjustments applied at a gain device appearing after all of the channels have been summed together, and thus do not affect the individual gains of the individual channels or cause the power level of one channel to be different from another. *See* CX-1310C (Prucnal WS) at Q2056.

Therefore, the accused WCDMA and CDMA2000 products would not satisfy these claim limitations under Respondents' proposed constructions.

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c. The "gain devices configured . . . to adjust a transmission power level of both a traffic channel and a reverse control channel" ('406 Patent) Limitations

Independent claims 15 and 21 of the '406 patent, from which asserted claims 20 and 26 depend, recite "gain devices configured, in response to the received [series of] power control bit[s], to adjust a transmission power level of both a traffic channel and a reverse control channel." JX-0001 at control at control (power control bit); col. 16, lns. 41-44 (series of power control bits). As discussed above, this limitation is construed to mean that the transmission power levels of the traffic and control channels do not have to be adjusted separately. Applying this construction, the record evidence demonstrates that the accused WCDMA and CDMA2000 devices satisfy this claim limitation.

[

] See, e.g., RX-3994C (Williams RWS) at Q30, Q35. [

] *Id.*

Analysis under alternate claim constructions.

In the event that Respondents' proposed construction of this claim limitation were adopted, such that the transmission power levels of the traffic and control channels must be adjusted separately in response to the received power control bits, the accused WCDMA and CDMA2000 products would not satisfy this claim limitation. [

] See, e.g., RX-3994C

(Williams RWS) at Q30, Q35. [

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]

d. The "... separately adjusting ... " ('406 Patent) Limitation

Claim 29 of the '406 patent includes the following two paragraphs:

in response to the received power control bit, adjusting a transmission power level of both the traffic channel and the reverse control channel,

separately adjusting the transmission power level of the traffic channel and the reverse control channel:

JX-0001 ('406 Patent) at col. 17, lns. 15-19. As discussed above, this claim language is construed to mean "adjusting a transmission power level of both the traffic channel and the reverse control in response to the received power control bit and separately adjusting the transmission power level of the traffic channel and the reverse control channel." Applying this adopted construction, the record evidence shows that the CDMA2000 products satisfy these limitations.

[

] CX-1310C (Prucnal WS)

at Q2124-2127 (standard), [] CX-0017 (3GPP2 C.S0002) at fig. 2.1.3.1.1.1-10; CX-0136C [

] at 4-491 to 4-494.

Analysis under alternate claim constructions.

In the event that Respondents' proposed construction of this claim limitation were adopted, such that infringement would require "separately adjusting the transmission power level of both the traffic channel and the reverse control channel in response to the received power control bit," the accused WCDMA and CDMA2000 products would not satisfy this claim

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limitation. [

] See, e.g., RX-3994C (Williams RWS) at Q30, Q35. [

]

e. The "only one of an in-phase (I) channel or a quadrature (Q) channel" ('332 Patent) Limitations

Independent claims 1 and 21 of the '332 patent, from which multiple asserted claims

depend, require including power control bits on only one of an in-phase (I) channel or a

quadrature (Q) channel.

The relevant passage of claim 1 reads as follows:

a circuit, operatively coupled to an antenna, configured to generate power control bits that are included on only one of an in-phase (I) channel or a quadrature (Q) channel;

JX-0002 at col. 101, lns. 8-11.

The relevant passage of claim 21 reads as follows:

circuitry configured to receive a first radio frequency signal and generate power control bits in response to the first radio frequency signal; wherein the circuitry is further configured to produce an in-phase (I) channel and a quadrature (Q) channel; wherein only one of the I channel or the Q channel includes the power control bits;

JX-0002 at col. 102, lns. 41-48.

As discussed above, the power control information generated by the WCDMA and

CDMA2000 products does not satisfy the "power control bit" limitation of these claims under

the construction adopted above.³⁰ If, however, the limitation "power control bit" were understood to mean power control information, then the record evidence demonstrates that the WCDMA and CDMA2000 products would satisfy the "only one of an in-phase (I) channel or a quadrature (Q) channel" limitations.

[

1

See, e.g., CX-1310C (Prucnal WS) at Q300, Q2146; Williams Tr. 1213-1214 (referring to WCDMA uplink spreading fig.1); CX-0023 (3GPP TS 25.213) at §§ 4.1, 4.2.1; CX-0017 (3GPP2 C.S0002) at fig. 2.1.3.1.1.1-10.

] See CX-1310C (Prucnal WS) at Q300, Q2146; RX-3529C (Williams WS) at Q100. [

] See CX-1310C (Prucnal WS) at Q285-294,

Q2134-2139; RX-3994C (Williams RWS) at Q67-69, Q75-76. [

] See Compls. Br. at 161-67. [

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]

³⁰ As further explained above, the WCDMA and CDMA20000 products would satisfy the "power control bit" limitation of these claims under InterDigital's proposed construction of the limitation.

] See Resps. Br. 202-11; RX-3994C (Williams

RWS) at Q65. The evidence supports InterDigital's position.

.

] See, e.g., CX-1310C (Prucnal WS) at Q285-294 (standard), Q580-592

. . ..

(RapuYama), Q880-892; RapidoYawe), Q1192-1203 (RAP3G), [

] CX-1307C (Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79

(RapidoYawe), Q117 (RapuYama), [

[

] This proposition is

supported by the WCDMA standard, including the following Figure 1:



Figure 1: Spreading for uplink DPCCH, DPDCHs and HS-DPCCH

CX-0023 (3GPP TS 25.213) at § 4.2.1.

The WCDMA standard itself labels these inputs to complex multiplication I and Q, and the TPC Bits and TPC Bit Patterns are included only on the Q input. CX-0023 (3GPP TS 25.213) at fig. 1; CX-0232 (3GPP TS 25.211) at fig. 1, table 5. Moreover, only the Q input includes quadrature (Q) channels such as DPCCH. CX-0023 (3GPP TS 25.213) at fig. 1. [

See, e.g., CX-1310C (Prucnal WS) at Q580-592 (RapuYama), Q880-892 (RapidoYawe),
 Q1192-1203 (RAP3G), [] CX-1307C
 (Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama), [] CX-0311C (WCDMA TX_r2 Module Spec.) at 72-74, 80-83
 (RapuYama); CX-0312C (YAWE TX Module Spec.) at 13-15, 63-65, 70-71 (RapidoYawe);
 CX-0010C (VooDoo Rel. 3 TX Spec.) at 33-35, 71-74, 80-81 (RapidoYawe/RAP3G);
 CX-0925C [] at 7-28 to 7-32; [CX-0131C

CX-0318C

CX-1307C (

CX-1307C

CX-1310C

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RX-4029C

CX-0318C

]

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]

The CDMA2000 products also practice this limitation, inasmuch as [



proposition is supported by the CDMA standard:





CX-0017 (3GPP2 C.S0002) at fig. 2.1.3.1.1.1-10.

The CDMA2000 standard labels the inputs to complex multiplication I-Channel Data and

Q-Channel Data, and power control information is included only on the I-Channel Data input,

which includes in-phase channels such as the Reverse Power Control Subchannel. CX-0017

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]

] This

(3GPP2 C.S0002) at figs. 2.1.3.1.1.1-10, 2.1.3.1.10.1-1. [

] See, e.g., CX-1310C (Prucnal WS) at Q2355-2363; CX-1307C

(Goldberg WS) at Q496; CX-0134C [

] at 9-2; CX-0136C [

] at 4-491 to 4-494. [

3

CX-1307C

]

Accordingly, it is determined that the WCDMA and CDMA2000 products include power control information on only one of an in-phase (I) or quadrature (Q) channel as required by '332 patent claims.

f. The "only one of the I pre-spread channel or the Q pre-spread channel" ('332 Patent) Limitation

Independent claim 8 of the '332 patent, from which multiple asserted claims depend, requires including power control bits on only one of an in-phase (I) pre-spread channel or a quadrature (Q) pre-spread channel. As discussed above, the power control information generated by the WCDMA and CDMA2000 products does not satisfy the "power control bit" limitation of these claims under the construction adopted above. If however, the limitation "power control bit" were understood to mean power control information, then the record evidence demonstrates that the WCDMA and CDMA2000 products would satisfy the "only one of the I pre-spread channel or the Q pre-spread channel" limitation.

The evidence shows that WCDMA products practice this limitation because [

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] See, e.g., CX-1310C (Prucnal WS) at Q335-342 (standard), Q653-662

(RapuYama), Q961-970 (RapidoYawe), Q1268-1276 (RAP3G), [

] CX-1307C (Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79

]

(RapidoYawe), Q117 (RapuYama), [

] CX-0023 (3GPP TS

]

25.213) at fig.1; CX-0232 (3GPP TS 25.211) at fig.1, tbl.5. [

The CDMA2000 Products practice this limitation because [

] See, e.g., CX-1310C (Prucnal WS) at Q2174-2177 (standard), [] CX-1307C (Goldberg WS) at Q496; CX-0017 (3GPP2 C.S0002) at fig.2.1.3.1.10.1-1, §§ 2.1.3.1.10.1, 2.1.3.2.2. [

5. '406 Patent – (Nonasserted) Claim 1

Claim 1 of the '406 patent is not asserted in this investigation, but is the parent claim to asserted dependent claim 6. The record evidence demonstrates that the accused CDMA2000 products do not satisfy all elements of claim 1.

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A method for controlling transmission power levels of a code a. division multiple access (CDMA) subscriber unit, the method comprising:

The parties do not dispute that [

] See Compls. Br. at 169 (citing CX-1310C (Prucnal WS) at Q2043-2044 (Standard),

[] CX-0017 (3GPP2 C.S0002) at § 1,1; CX-0017 (3GPP2 C.S0002) at

§§ 2.1.2.3.2, 3.1.3.1.10); Resps. Br. at 180-98.

b. receiving by the subscriber unit a power control bit on a downlink control channel, the power control bit indicating either an increase or decrease in transmission power level;

As discussed above, the power control information received by the CDMA2000 products

does not satisfy the "power control bit" limitation of this claim. It is not disputed, however, that

[

Γ

See CX-1310C (Prucnal WS) at ¶ 2045-2050 (Standard), Q2256-2266 (Qualcomm); CX-0017

Respondents allege that InterDigital has failed to show direct infringement of asserted method claims 6, 13, and 29 because, inter alia, "a respondent does not directly infringe a patented method in violation of Section 337 merely by importing devices capable of performing the claimed method," and "InterDigital provides no evidence that 'the act of importation is [] an act that practices the steps of the asserted method claim." See Resps. Br. at 180-81 (citing Electronic Devices at 12, 17).

In response, InterDigital does not contest that *Electronic Devices* would bar a finding of direct infringement if there were no record evidence showing that the accused devices practice the claimed method at the time of importation. See Compls. Reply at 74. InterDigital does argue that, inasmuch as "Respondents do not dispute that that the WCDMA and CDMA2000 Products are actually used in the United States after importation," "Respondents are at least liable for indirect infringement that constitutes a violation of Section 337." Id. (emphasis original). The issue of indirect infringement will be addressed below.

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³¹ Five method claims from the '406 patent are at issue in this investigation. Asserted claims 6 and 13 are dependent claims that depend from nonasserted independent claims 1 and 7, respectively. Claim 29 is an asserted independent claim.

(3GPP2 C.S0002) at §§ 1.1, 3.1.3.1.10; CX-0136C [] at 4-242; CX-0132C
[] at 12-4 to 12-5, []
c. transmitting a plurality of channels by the subscriber unit, the plurality of channels including a traffic channel and a reverse control channel;

The parties do not dispute that the accused CDMA2000 products satisfy the claim element "transmitting a gurality of channels by the subscriber unit, the plurality of channels including a traffic channel and a reverse control channel." *See* Compls. Br. at 169 (citing CX-1310C (Prucnal WS) at Q2051-2053 (Standard), [CX-1307C

Resps. Br. at 180-98.

(

d. in response to the received power control bit, adjusting a transmission power level of both the traffic channel and the reverse control channel, wherein the transmission power level of the traffic channel and the reverse control channel are different; and

] CX-0017 (3GPP2 C.S0002) at §§ 2.1.3.1.1, 2.1.3.1.10);

For the reasons discussed above in the section addressing global infringement issues with respect to the "in response to . . . wherein the transmission power level of the traffic channel and the reverse control channel are different" claim limitation, InterDigital has shown that the CDMA2000 products practice this claim element.

e. transmitting the traffic channel and the reverse control channel at their respective adjusted transmit power levels.

The evidence adduced at the hearing demonstrates that this claim limitation is satisfied by the CDMA2000 products. In particular, the CDMA2000 products [

] See, e.g.,

 CX-1310C (Pruenal WS) at Q2062-2064 (Standard), [

] CX-0017

 (3GPP2 C.S0002) at § 2.1.2.3.2; CX-0132C [

] at 12-4 to 12-5.

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6. '406 Patent – Claim 6

a. The method of claim 1

Inasmuch as the CDMA2000 products do not infringe independent claim 1, they also do not infringe dependent claim 6.

b. wherein the reverse control channel carries at least one power command.

The parties do not dispute that the accused CDMA2000 products satisfy the additional claim 6 element "wherein the reverse control channel carries at least one power command." *See* Compls. Br. at 170 (citing CX-1310C (Prucnal WS) at Q2065-2067 (Standard), [

CX-1307C] CX-0017 (3GPP2 C.S0002) at

§ 2.1.3.1.10.1); Resps. Br. at 180-98.

7. '406 Patent – (Nonasserted) Claim 7

Claim 7 of the '406 patent is not asserted in this investigation, but is the parent claim to asserted dependent claim 13. The record evidence demonstrates that the accused WCDMA products do not satisfy all elements of claim 7.

a. A method for controlling transmission power levels of a code division multiple access (CDMA) subscriber unit, the method comprising:

The parties do not dispute that [

] See

Compls. Br. at 170 (citing CX-1310C (Prucnal WS) at Q130-131 (Standard), Q471-473

(RapuYama), Q780-782 (RapidoYawe), Q1098-1099 (RAP3G), [

] CX-0232 (3GPP TS 25.211) at § 3.2; CX-0234 (3GPP TS 25.214) at

§§ 5.1.2.1, 5.1.2.2); Resps. Br. at 180-98.

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b. receiving by the subscriber unit a series of power control bits on a downlink channel, each power control bit indicating either an increase or decrease in transmission power level;

As discussed above, the TPC Bits received by the WCDMA products do not satisfy the "power control bits" limitation of this claim. It is not disputed, however, that [

[] See, e.g., CX-1310C (Pruenal WS) at Q132-145, Q163 (standard), Q474-488 (RapuYama), Q783-792 (Rapido Yawe), Q1100-1109 (RAP3G), [CX-1307C (Goldberg WS) at Q159 (RAP3G/Rapido Yawe), Q195 (RapuYama), Q212 (RAP3G/Rapido Yawe/ RapuYama), [] CX-0232 (3GPP TS 25.211) at § 5.3.2; CX-0234 (3GPP TS 25.214) at

§§ 5.1.2.2.1, 5.1.2.2.2, 5.1.2.2.3.

c. transmitting a plurality of channels by the subscriber unit, the plurality of channels including a traffic channel and a reverse control channel;

The parties do not dispute that the accused WCDMA products satisfy the claim element "transmitting a plurality of channels by the subscriber unit, the plurality of channels including a traffic channel and a reverse control channel." *See* Compls. Br. at 171 (citing CX-1310C (Prucnal WS) at Q146-152 (Standard), Q489-497 (RapuYama), Q793-800 (RapidoYawe), Q1110-1116 (RAP3G), [] CX-1307C

(Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama), [

] CX-0232 (3GPP TS 25.211) at § 5.2.1); Resps. Br. at 180-98.

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d. adjusting a transmission power level of both the traffic channel and the reverse control channel in response to the same bits in the received series of power control bits, wherein the transmission power level of the traffic channel and the reverse control channel are different; and

For the reasons discussed above with respect to the "in response to . . . wherein the transmission power level of the traffic channel and the reverse control channel are different" claim limitation, InterDigital has shown that the WCDMA products practice this claim element.

e. transmitting the traffic channel and the reverse control channel at their respective adjusted transmit power levels.

The evidence shows that the accused WCDMA products satisfy the claim limitation "transmitting the traffic channel and the reverse control channel at their respective adjusted transmit power levels." *See, e.g.*, CX-1310C (Prucnal WS) at Q146-152 (Standard), Q489-497 (RapuYama), Q793-800 (RapidoYawe), Q1110-1116 (RAP3G), [

] CX-1307C (Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79

(Rapido Yawe), Q117 (Rapu Yama), Q358 (HiSilicon), [] CX-0232 (3GPP TS 25.211) at § 5.2.1.

8. '406 Patent – Claim 13

a. The method of claim 7

Inasmuch as the WCDMA products do not infringe independent claim 7, they also do not infringe dependent claim 13.

b. wherein the reverse control channel carries at least one power command.

The parties do not dispute that the accused WCDMA products satisfy the claim limitation "wherein the reverse control channel carries at least one power command." *See* Compls. Br. at 171-72 (citing CX-1310C (Prucnal WS) at Q186-191 (Standard), Q520-526 (RapuYama),

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Q824-829 (RapidoYawe), Q1139-1144 (RAP3G), [

] CX-1307C (Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama), [] CX-0232 (3GPP TS 25.211) at

§ 5.2.1); Resps. Br. at 180-98.

9. '406 Patent – (Nonasserted) Claim 15

Claim 15 of the 406 patent is not asserted in this investigation, but is the parent claim to asserted dependent claim 20. The record evidence demonstrates that the accused CDMA2000 products do not satisfy all elements of claim 15.

a. A code division multiple access (CDMA) subscriber unit comprising:

The parties do not dispute that the accused CDMA2000 products satisfy the claim limitation "[a] code division multiple access (CDMA) subscriber unit." *See* Compls. Br. at 172 (citing CX-1310C (Prucnal WS) at Q2043-2044 (Standard), [] CX-0017 (3GPP2 C.S0002) at § 1.1); Resps. Br. at 180-98.

b. a despreading and demultiplexing device configured to recover a power control bit from a downlink control channel, wherein the power control bit has a value indicating a command to either increase or decrease transmission power level; and

As discussed above, the power control information received by the CDMA2000 products do not satisfy the "power control bits" limitation of this claim. The record evidence does show, however, that [

] See, e.g., CX-1310C (Prucnal WS) at Q2088-2094 (standard), [(Goldberg WS) at Q582; CX-0017 (3GPP2 C.S0002) at § 3.1.3.1.10, figs. 3.1.3.1.1.1-16, 3.1.3.1.1.1-17, 3.1.3.1.1.1-18; CX-0136C [] at 4-242; CX-0132C [

] at [

][

] See, e.g.,

CX-1310C (Prucnal WS) at Q2088-2094 (standard), [] CX-1307C

(Goldberg WS) at Q623-624; CX-0017 (3GPP2 C.S0002) at § 3.1.3.1.10.

c. gain devices configured, in response to the received power control bit, to adjust a transmission power level of both a traffic channel and a reverse control channel prior to transmission by the subscriber unit, wherein the transmission power level of the traffic channel and the reverse control channel are different.

For the reasons discussed above in the section addressing global infringement issues with respect to the "gain devices configured . . . to adjust a transmission power level of both a traffic channel and a reverse control channel" claim limitation, InterDigital has shown that the CDMA2000 products practice this claim element.

10. '406 Patent - Claim 20

a. The CDMA subscriber unit of claim 15

Inasmuch as the CDMA2000 products do not infringe independent claim 15, they also do not infringe dependent claim 20.

b. wherein the reverse control channel carries at least one power command.

The parties do not dispute that the accused CDMA2000 products satisfy the claim

limitation "wherein the reverse control channel carries at least one power command." See

Compls. Br. at 173 (citing CX-1310C (Prucnal WS) at Q2103-2105 (Standard), [

CX-1307C] CX-0017 (3GPP2 C.S0002) at

§ 2.1.3.1.10.1); Resps. Br. at 180-98.

11. '406 Patent – (Nonasserted) Claim 21

Claim 21 of the '406 patent is not asserted in this investigation, but is the parent claim to asserted dependent claim 26. The record evidence demonstrates that the accused WCDMA products do not satisfy all elements of claim 21.

a. A code division multiple access (CDMA) subscriber unit comprising:

The parties do nor dispute that the accused WCDMA products satisfy the claim limitation "[a] code division multiple access (CDMA) subscriber unit." *See* Compls. Br. at 173 (citing CX-1310C (Prucnal WS) at Q130-131 (Standard), Q471-473 (RapuYama), Q780-782 (RapidoYawe), Q1098-1099 (RAP3G), [] CX-0232 (3GPP TS 25.211) at § 3.2); Resps. Br. at 180-98.

> b. a despreading and demultiplexing device configured to recover a series of power control bits from a downlink channel, wherein each power control bit has a value indicating a command to either increase or decrease transmission power level; and

As discussed above, the TPC Bits received by the WCDMA products do not satisfy the "power control bits" limitation of this claim. It is not disputed, however, that [

] See, e.g., CX-1310C (Prucnal WS) at Q239-247 (Standard), Q530-540 (RapuYama), Q833-842 (RapidoYawe), Q1148-1157] CX-1307C (Goldberg WS) at (RAP3G), [Q159 (RAP3G/RapidoYawe), Q195 (RapuYama), [1 CX-0232 (3GPP TS 25.211) at § 5.3.2; CX-0023 (3GPP TS 25.213) at § 5.1.

c. gain devices configured, in response to the received series of power control bits, to adjust a transmission power level of both a traffic channel and a reverse control channel in response to same bits in the received series of power control bits prior to transmission by the subscriber unit, wherein the transmission power level of the traffic channel and the reverse control channel are different.

As discussed above, the WCDMA accused products satisfy this claim limitation under the adopted constructions proposed by InterDigital. *See, e.g.*, CX-1310C (Prucnal WS) at Q248-270 (Standard), Q541-556 (RapuYama), Q843-860 (RapidoYawe), Q1158-1171 (RAP3G), [] CX-1307C (Goldberg WS) at

Q21 (RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama), Q212

(RAP3G/RapidoYawe/ RapuYama), [

] CX-0023 (3GPP TS 25.213) at § 4.2.1; CX-0234 (3GPP TS 25.214) at

§§ 5.1.2.1, 5.1.2.2, 5.1.2.5, 5.1.2.5.1.

12. '406 Patent – (Nonasserted) Claim 22

a. The CDMA subscriber unit of claim 21

Inasmuch as the WCDMA products do not infringe independent claim 21, they also do not infringe dependent claim 22.

b. wherein the downlink channel is a downlink control channel.

The record evidence demonstrates that the accused WCDMA products satisfy this

additional limitation of claim 22. See, e.g., CX-1310C (Prucnal WS) at Q271-273 (Standard),

Q560-566 (RapuYama), Q864-867 (RapidoYawe), Q1175-1179 (RAP3G), [

] CX-0232 (3GPP TS 25.211) at § 5.3.2.

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13. '406 Patent – Claim 26

a. The CDMA subscriber unit of claim 22

Inasmuch as the WCDMA products do not infringe claim 22, they also do not infringe dependent claim 26.

b. wherein the reverse control channel carries at least one power command.

The parties do nowdispute that the accused WCDMA products satisfy the claim limitation "wherein the reverse control channel carries at least one power command." *See* Compls. Br. at 174 (citing CX-1310C (Prucnal WS) at Q274-279 (Standard), Q570-576 (RapuYama), Q871-876 (RapidoYawe), Q1183-1188 (RAP3G), [] CX-1307C (Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama), []] CX-0232 (3GPP TS 25.211) at § 5.2.1);

Resps. Br. at 180-98.

14. '406 Patent – Claim 29

a. A method for controlling transmission power levels of a code division multiple access (CDMA) subscriber unit, the method comprising:

The parties do not dispute that the accused CDMA2000 products are capable of controlling transmission power levels of a code division multiple access (CDMA) subscriber unit. See Compls. Br. at 169 (citing CX-1310C (Prucnal WS) at Q2043-2044 (Standard), [] CX-0017 (3GPP2 C.S0002) at § 1.1; CX-0017 (3GPP2 C.S0002) at

§§ 2.1.2.3.2, 3.1.3.1.10), 174; Resps. Br. at 180-98.

b. receiving by the subscriber unit a power control bit on a downlink control channel, the power control bit indicating either an increase or decrease in transmission power level;

As discussed above, the power control information received by the CDMA2000 products does not satisfy the "power control bit" limitation of this claim. It is not disputed, however, that

]
See CX-1310C (Prucnal WS) at ¶ 2045-2050 (Standard), [] CX-0017
(3GPP2 C.S0002) at §§ 1.1, 3.1.3.1.10; [CX-0136C	CX-0132C

c. transmitting a plurality of channels by the subscriber unit, the plurality of channels including a traffic channel and a reverse control channel;

The parties do not dispute that the accused CDMA2000 products satisfy the claim limitation "transmitting a plurality of channel by the subscriber unit, the plurality of channels including a traffic channel and a reverse control channel." *See* Compls. Br. at 175 (citing CX-1310C (Prucnal WS) at Q2116-2118 (Standard), [

] CX-0017 (3GPP2 C.S0002) at §§ 2.1.3.1.1, 2.1.3.1.10);

]

Resps. Br. at 180-98.

[

d. in response to the received power control bit, adjusting a transmission power level of both the traffic channel and the reverse control channel,

For the reasons discussed above with respect to the "in response to . . . wherein the transmission power level of the traffic channel and the reverse control channel are different" claim limitation, InterDigital has shown that the CDMA2000 products practice this claim element.

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e. separately adjusting the transmission power level of the traffic channel and the reverse control channel; and

For the reasons discussed above with respect to the "... separately adjusting ..." claim limitation, InterDigital has shown that the CDMA2000 products practice this claim element.

f. transmitting the traffic channel and the reverse control channel at their respective adjusted transmit power levels.

The accused CDMA2000 products satisfy the claim limitation "transmitting the traffic channel and the reverse control channel at their respective adjusted transmit power levels." *See* CX-1310C (Pruenal WS) at Q2128-2130 (Standard), [] CX-0017 (3GPP2 C.S0002) at § 2.1.2.3.2; [CX-0132C]

15. '332 Patent – (Nonasserted) Claim 1

Claim 1 of the '332 patent is not asserted in this investigation, but is the parent claim to asserted dependent claims 2, 3, 4, and 7. The record evidence demonstrates that the accused WCDMA and CDMA2000 products do not satisfy all elements of claim 1.

a. A code division multiple access subscriber unit comprising:

The record evidence demonstrates that the accused WCDMA and CDMA2000 products satisfy the claim limitation "[a] code division multiple access subscriber unit." *See, e.g.*, CX-1310C (Prucnal WS) at Q283-284 (WCDMA), Q578-579 (RapuYama), Q878-879 (RapidoYawe), Q1190-1191 (RAP3G), [

] Q2132-2133 (CDMA2000), [] CX-0232 (3GPP TS 25.211) at § 3.2 (WCDMA); CX-0017 (3GPP2 C.S0002) at § 1.1 (CDMA2000).

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b. a circuit, operatively coupled to an antenna, configured to generate power control bits that are included on only one of an in-phase (I) channel or a quadrature (Q) channel; and

As discussed above, the power control information received by the WCDMA and CDMA2000 products does not satisfy the "power control bits" limitation of this claim. For the reasons discussed above with respect to the "only one of an in-phase (I) channel or a quadrature (Q) channel" claim limitation, InterDigital has shown that the WCDMA and CDMA2000 products practice this claim element if the claimed "power control bits" were understood to mean power control information.

c. the antenna configured to output a radio frequency signal derived at least in part from the I and Q channels.

The record demonstrates that the WCDMA and CDMA2000 products practice the claim limitation "the antenna configured to output a radio frequency signal derived at least in part from the I and Q channels." *See, e.g.*, CX-1310C (Prucnal WS) at Q295-297 (WCDMA), Q593-598 (RapuYama), Q893-900 (RapidoYawe), Q1204-1210 (RAP3G), [

] Q2140-2142 (CDMA2000), [

] CX-1307C (Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79 (RapidoYawe),

Q117 (RapuYama), [

] CX-0023 (3GPP TS 25.213) at §§ 4.2.1, 4.4.2; CX-0265 (3GPP TS 25.101) at

§ 6.1 (WCDMA); CX-0017 (3GPP2 C.S0002) at fig. 2.1.3.1.1.1-10, §§ 1.1, 2.1.2 (CDMA2000).

16. '332 Patent – Claim 2

a. A code division multiple access subscriber unit in accordance with claim 1,

Inasmuch as the WCDMA and CDMA2000 products do not infringe independent claim

1, they also do not infringe dependent claim 2.

b. wherein the circuit is further configured to combine the I and Q channels with a complex sequence.

The record evidence shows that the WCDMA and CDMA2000 products satisfy the additional claim 2 limitation "wherein the circuit is further configured to combine the I and Q channels with a complex sequence." *See, e.g.*, CX-1310C (Prucnal WS) at Q298-300 (WCDMA), Q602-606 (RapuYama), Q904-909 (RapidoYawe), Q1214-1218 (RAP3G), [] Q2144-2146 (CDMA2000); [] CX-1307C (Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama), [] CX-0023 (3GPP TS 25.213) at §§ 4.1,

4.2.1, 4.3.2.1 (WCDMA); CX-0017 (3GPP2 C.S0002) at 2-64, 2-68, § 2.1.3.1.12 (CDMA2000).

17. '332 Patent – Claim 3

a. A code division multiple access subscriber unit in accordance with claim 2,

Inasmuch as the WCDMA and CDMA2000 products do not infringe claim 2, they also do not infringe dependent claim 3.

b. wherein the combining is by multiplication.

The evidence adduced by InterDigital shows that the WCDMA and CDMA2000 products satisfy the additional claim 3 limitation "wherein the combining is by multiplication." *See, e.g.*, CX-1310C (Prucnal WS) at Q302-304 (WCDMA), Q610-615 (RapuYama), Q913-919 (RapidoYawe), Q1222-1226 (RAP3G), [

] CX-1307C

(Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama), []

] CX-0023 (3GPP TS

25.213) at §§ 4.1, 4.2.1 (WCDMA); CX-0017 (3GPP2 C.S0002) at 2-64, 2-68 (CDMA2000).

18. '332 Patent – Claim 4

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a. A code division multiple access subscriber unit in accordance with claim 2,

Inasmuch as the WCDMA and CDMA2000 products do not infringe claim 2, they also do not infringe dependent claim 4.

b. wherein the complex sequence comprises at least two pseudo noise sequences.

The evidence adduced by InterDigital shows that the WCDMA and CDMA2000 products satisfy the additional claim 4 limitation "wherein the complex sequence comprises at least two pseudo noise sequences." *See, e.g.*, CX-1310C (Prucnal WS) at Q305-311 (WCDMA), Q619-622 (RapuYama), Q923-928 (RapidoYawe), Q1230-1234 (RAP3G), [

] Q2151-2154 (CDMA2000), [

] CX-1307C (Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79

(RapidoYawe), Q117 (RapuYama), [

] CX-0023 (3GPP TS 25.213) at §§ 4.2.1, 4.3.2 (WCDMA); CX-0017

(3GPP2 C.S0002) at 2-64, 2-68, § 2.1.3.1.12 (CDMA2000).

19. '332 Patent – Claim 7

a. A code division multiple access subscriber unit in accordance with claim 1,

Inasmuch as the WCDMA and CDMA2000 products do not infringe independent claim

1, they also do not infringe dependent claim 7.

b. wherein the circuit is further configured to generate pilot bits; wherein the radio frequency signal is derived at least in part from the pilot bits.

The record evidence demonstrates that the WCDMA and CDMA2000 products practice the claim limitation "wherein the circuit is further configured to generate pilot bits." *See, e.g.*, CX-1310C (Prucnal WS) at Q315-317 (WCDMA), Q626-629 (RapuYama), Q932-936 (RapidoYawe), Q1238-1242 (RAP3G), [] Q2158-2160 (CDMA2000), [] CX-1307C

(Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama), [

] CX-0232 (3GPP TS

25.211) at § 5.2.1 (WCDMA); CX-0017 (3GPP2 C.S0002) at 2-64, 2-68, 2-119 (CDMA2000).

The WCDMA and CDMA2000 products also practice the claim limitation "wherein the radio frequency signal is derived at least in part from the pilot bits." *See, e.g.*, CX-1310C (Prucnal WS) at Q318-320 (WCDMA), Q630-633 (RapuYama), Q937-941 (RapidoYawe), Q1243-1248 (RAP3G), [] Q2161-

2163 (CDMA2000), [] CX-1307C (Goldberg WS) at Q21

(RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama), [

] CX-0023 (3GPP TS 25.213) at

§§ 4.2.1, 4.4.2 (WCDMA); CX-0017 (3GPP2 C.S0002) at 2-64, 2-68 (CDMA2000).

20. '332 Patent - Claim 8

a. A code division multiple access subscriber unit, comprising: The record evidence demonstrates that the accused WCDMA and CDMA2000 products satisfy the claim limitation "[a] code division multiple access subscriber unit." See, e.g.,

CX-1310C (Prucnal WS) at Q283-284 (WCDMA), Q578-579 (RapuYama), Q878-879

(RapidoYawe), Q1190-1191 (RAP3G), [

] Q2132-2133 (CDMA2000), [

] CX-0232

(3GPP TS 25.211) at § 3.2 (WCDMA); CX-0017 (3GPP2 C.S0002) at § 1.1 (CDMA2000).

b. an antenna configured to receive a first radio frequency signal; and

The evidence adduced by InterDigital shows that the WCDMA and CDMA2000 products have "an antenna configured to receive a first radio frequency signal." *See, e.g.*, CX-1310C (Prucnal WS) at Q324-326 (WCDMA), Q637-642 (RapuYama), Q945-950 (RapidoYawe), Q1252-1257 (RAP3G), [] Q2167-2169 (CDMA2000), [] CX-0232 (3GPP TS 25.211) at § 5.3.2; CX-0265 (3GPP TS 25.101) at § 7.1 (WCDMA); CX-0017 (3GPP2 C.S0002) at §§ 1.1, 3.1.3.1 (CDMA2000).

> c. a circuit, operatively coupled to the antenna, configured to generate power control bits in response to the first radio frequency signal, wherein the circuit is further configured to establish an in-phase (I) pre-spread channel and a quadrature (Q) pre-spread channel, such that the power control bits are included on only one of the I pre-spread channel or the Q pre-spread channel;

As discussed above, the power control information received by the WCDMA and CDMA2000 products does not satisfy the "power control bits" limitation of this claim. The evidence does show, however, that [

] See, e.g., CX-1310C (Prucnal WS) at Q327-334 (WCDMA),

Q643-652 (RapuYama), Q951-960 (RapidoYawe), Q1258-1267 (RAP3G), [

] Q2170-2173 (CDMA2000), [

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] CX-1307C (Goldberg WS) at Q204

(RapuYama/RapidoYawe/RAP3G), [

]

[

] See, e.g., CX-1310C (Prucnal WS)

] Q2174-2177

at Q335-342 (WCDMA), Q653-662 (RapuYama), Q961-670 (RapidoYawe), Q1268-1276

(RAP3G), [

(CDMA2000), [

] CX-1307C (Goldberg WS) at Q21

(RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama), [

] CX-0023 (3GPP TS 25.213) at fig. 1;

CX-0232 (3GPP TS 25.211) at fig. 1, table 5 (WCDMA); CX-0017 (3GPP2 C.S0002) at fig.

2.1.3.1.10.1-1, §§ 2.1.3.1.10.1, 2.1.3.2.2 (CDMA2000).

d. wherein a second radio frequency signal output by the code division multiple access subscriber unit is derived at least in part from the I and Q pre-spread channels.

The evidence adduced by InterDigital shows that the WCDMA and CDMA2000 products practice the claim limitation "wherein a second radio frequency signal output by the code division multiple access subscriber unit is derived at least in part from the I and Q pre-spread channels." *See, e.g.*, CX-1310C (Prucnal WS) at Q343-345 (WCDMA), Q663-668 (RapuYama), CARPIC, CQ971-977 (RapidoYawe), Q1277-1286 (RAP3G), [

] Q2178-2180 (CDMA2000), [] CX-

1307C (Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama),
[

21. '332 Patent - Claim 9

a. A code division multiple access subscriber unit in accordance with claim 8,

Inasmuch as the WCDMA and CDMA2000 products do not infringe independent claim 8, they also do not infringe dependent claim 9.

b. wherein the circuit is further configured to combine the I and Q pre-spread channels with a complex sequence.

The record evidence shows that the WCDMA and CDMA2000 products satisfy the additional claim 9 limitation "wherein the circuit is further configured to combine the I and Q channels with a complex sequence." *See, e.g.*, CX-1310C (Prucnal WS) at Q346-349 (WCDMA), Q672-675 (RapuYama), Q981-985 (RapidoYawe), Q1287-1291 (RAP3G), [] Q2181-2184 (CDMA2000),

] CX-1307C (Goldberg WS) at Q21

(RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama), [

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] CX-0023 (3GPP TS 25.213) at §§ 4.1,

4.2.1, 4.3.2.1 (WCDMA); CX-0017 (3GPP2 C.S0002) at 2-64, 2-68, § 2.1.3.1.12 (CDMA2000).

22. '332 Patent – Claim 10

a. A code division multiple access subscriber unit in accordance with claim 9,

Inasmuch as the WCDMA and CDMA2000 products do not infringe claim 9, they also do not infringe dependent claim 10.

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b. wherein the combining is by multiplication.

The evidence adduced by InterDigital shows that the WCDMA and CDMA2000 products satisfy the additional claim 10 limitation "wherein the combining is by multiplication." *See, e.g.*, CX-1310C (Prucnal WS) at Q350-353 (WCDMA), Q679-683 (RapuYama), Q989-993 (RapidoYawe), Q1295-1299 (RAP3G), [

] Q2185-2188 (CDMA2000), [] CX-1307C

(Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama),]

] CX-0023 (3GPP TS

25.213) at §§ 4.1, 4.2.1 (WCDMA); CX-0017 (3GPP2 C.S0002) at 2-64, 2-68 (CDMA2000).

23. '332 Patent – Claim 11

a. A code division multiple access subscriber unit in accordance with claim 9.

Inasmuch as the WCDMA and CDMA2000 products do not infringe claim 9, they also do not infringe dependent claim 11.

b. wherein the complex sequence comprises at least two pseudo noise sequences.

The evidence adduced by InterDigital shows that the WCDMA and CDMA2000 products satisfy the additional claim 11 limitation "wherein the complex sequence comprises at least two pseudo noise sequences." *See, e.g.*, CX-1310C (Prucnal WS) at Q354-360 (WCDMA), Q687-690 (RapuYama), Q997-1001 (RapidoYawe), Q1303-1307 (RAP3G), [

] Q2189-2192 (CDMA2000), Q2441-2444

(Qualcomm CDMA2000); CX-1307C (Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79

(RapidoYawe), Q117 (RapuYama), [

[] CX-0023 (3GPP TS 25.213) at §§ 4.2.1, 4.3.2 (WCDMA); CX-

0017 (3GPP2 C.S0002) at 2-64, 2-68, § 2.1.3.1.12 (CDMA2000).

24. '332 Patent – Claim 14

a. A code division multiple access subscriber unit in accordance with claim 8,

Inasmuch as the WCDMA and CDMA2000 products do not infringe independent claim 8, they also do not infringe dependent claim 14.

b. wherein pilot bits are included on at least one of the I and the Q pre-spread channels.

The record evidence demonstrates that the WCDMA and CDMA2000 products practice the claim limitation "wherein pilot bits are included on at least one of the I and the Q pre-spread channels." *See, e.g.*, CX-1310C (Prucnal WS) at Q364-367 (WCDMA), Q694-697 (RapuYama), Q1005-1009 (RapidoYawe), Q1311-1315 (RAP3G), [

] Q2193-2196 (CDMA2000), Q2448-2451 (Qualcomm CDMA2000);

CX-1307C (Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117

(RapuYama), [

CX-0232 (3GPP TS 25.211) at § 5.2.1; CX-0023 (3GPP TS 25.213) at § 4.2.1 (WCDMA);

CX-0017 (3GPP2 C.S0002) at 2-64, 2-68, 2-119 (CDMA2000).

25. '332 Patent – (Nonasserted) Claim 21

Claim 21 of the '332 patent is not asserted in this investigation, but is the parent claim to asserted dependent claims 22, 23, 24, and 27. The record evidence demonstrates that the accused WCDMA and CDMA2000 products do not satisfy all elements of claim 21.

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a. A code division multiple access subscriber unit comprising:

The record evidence demonstrates that the accused WCDMA and CDMA2000 products

satisfy the claim limitation "[a] code division multiple access subscriber unit." See, e.g.,

CX-1310C (Prucnal WS) at Q283-284 (WCDMA), Q578-579 (RapuYama), Q878-879

(RapidoYawe), Q1190-1191 (RAP3G), [

(3GPP TS 25.211) at § 3.2 (WCDMA); CX-0017 (3GPP2 C.S0002) at § 1.1 (CDMA2000).

b. circuitry configured to receive a first radio frequency signal and generate power control bits in response to the first radio frequency signal; wherein the circuitry is further configured to produce an in-phase (I) channel and a quadrature (Q) channel; wherein only one of the I channel or the Q channel includes the power control bits; wherein the circuitry is further configured to produce a second radio frequency signal including an I component and a Q component derived from the I channel and the Q channel; wherein the circuitry is further configured to transmit the second radio frequency signal.

As discussed above, the power control information received by the WCDMA and CDMA2000 products does not satisfy the "power control bits" limitation of this claim. The

evidence does show, however, that [

] See, e.g., CX-1310C (Prucnal WS) at Q371-378

(WCDMA), Q701-710 (RapuYama), Q1013-1022 (RapidoYawe), Q1319-1328 (RAP3G),

] Q2200-2203 (CDMA2000),

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] CX-1307C (Goldberg WS) at Q204

(RapuYama/RapidoYawe/RAP3G), [

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] CX-0234 (3GPP TS 25.214) at § 5.2.1.2.1, Annex B.2

(WCDMA); CX-0017 (3GPP2 C.S0002) at § 2.1.3.1.10 (CDMA2000).

As discussed above, the WCDMA and CDMA2000 products satisfy the claim limitation "wherein the circuitry is further configured to produce an in-phase (I) channel and a quadrature

(Q) channel." See, e.g., CX-1310C (Prucnal WS) at Q379-83 (WCDMA), Q711-714

(RapuYama), Q1023-1026 (RapidoYawe), Q1329-1333 (RAP3G), [

] Q2204-2206 (CDMA2000), [

] CX-1307C (Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama), [

] CX-0023 (3GPP TS 25.213) at fig.1 (WCDMA); CX-0017 (3GPP2 C.S0002) at fig. 2.1.3.1.1.1-10 (CDMA2000).

[

] See, e.g.,

CX-1310C (Pruenal WS) at Q384-87 (WCDMA), Q715-719 (RapuYama), Q1027-1032 (RapidoYawe), Q1334-1340 (RAP3G), [

] Q2207-2210 [

] CX-1307C

(Goldberg WS) at Q21 (RAP3G/ RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama), [] CX-0232 (3GPP TS

25.211) at fig.1, table 5 (WCDMA); CX-0017 (3GPP2 C.S0002) at fig. 2.1.3.1.10.1-1 (CDMA2000).

The WCDMA and CDMA2000 products further satisfy the claim limitation "wherein the circuitry is further configured to produce a second radio frequency signal including an I component and a Q component derived from the I channel and the Q channel." *See, e.g.*,

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CX-1310C (Pruenal WS) at Q388-390 (WCDMA), Q720-725 (RapuYama), Q1033-1039 (RapidoYawe), Q1341-1347 (RAP3G), [

] Q2211-2213 (CDMA2000), [] CX-1307C

(Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama), [

] CX-0023 (3GPP TS

25.213) at figs.1, 7 (WCDMA); CX-0017 (3GPP2 C.S0002) at fig. 2.1.3.1.1.1-10 (CDMA2000).

Finally, the WCDMA and CDMA2000 products satisfy the claim limitation "wherein the circuitry is further configured to transmit the second radio frequency signal." *See, e.g.*, CX-1310C (Prucnal WS) at Q391-393 (WCDMA), Q726-729 (RapuYama), Q1040-1045 (RapidoYawe), Q1348-1353 (RAP3G), [

] Q2214-2216 (CDMA2000), [] CX-0023

(3GPP TS 25.213) at §§ 4.2.1, 4.4.2 (WCDMA); CX-0017 (3GPP2 C.S0002) at 2-64, 2-68 (CDMA2000).

26. '332 Patent – Claim 22

a. A code division multiple access subscriber unit in accordance with claim 21,

Inasmuch as the WCDMA and CDMA2000 products do not infringe independent claim 21, they also do not infringe dependent claim 22.

b. wherein the circuitry is further configured to combine the I and Q channels with a complex sequence.

The record evidence shows that the WCDMA and CDMA2000 products satisfy the additional claim 22 limitation "wherein the circuit is further configured to combine the I and Q channels with a complex sequence." *See, e.g.*, CX-1310C (Prucnal WS) at Q394-396 (WCDMA), Q733-736 (RapuYama), Q1049-1053 (RapidoYawe), Q1357-1361 (RAP3G),

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[] Q2217-2220 (CDMA2000), [] CX-1307C (Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama), [] CX-0023 (3GPP TS 25.213) at §§ 4.1,

4.2.1, 4.3.2.1 (WCDMA); CX-0017 (3GPP2 C.S0002) at 2-64, 2-68, § 2.1.3.1.12

(CDMA2000).

27. '332 Patent – Claim 23

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a. A code division multiple access subscriber unit in accordance with claim 22,

Inasmuch as the WCDMA and CDMA2000 products do not infringe claim 22, they also do not infringe dependent claim 23.

b. wherein the combining is performed by multiplication.

The evidence adduced by InterDigital shows that the WCDMA and CDMA2000 products satisfy the additional claim 23 limitation "wherein the combining is by multiplication." *See, e.g.*, CX-1310C (Prucnal WS) at Q397-400 (WCDMA), Q740-743 (RapuYama), Q1057-1061

(RapidoYawe), Q1365-1369 (RAP3G), [

] Q2221-2224 (CDMA2000), [

] CX-1307C

(Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama), [] CX-0023 (3GPP TS

25.213) at §§ 4.1, 4.2.1 (WCDMA); CX-0017 (3GPP2 C.S0002) at 2-64, 2-68 (CDMA2000).

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28. '332 Patent - Claim 24

a. A code division multiple access subscriber unit in accordance with claim 22,

Inasmuch as the WCDMA and CDMA2000 products do not infringe claim 22, they also do not infringe dependent claim 24.

b. wherein the complex sequence comprises at least two pseudo noise sequences.

The evidence adduced by InterDigital shows that the WCDMA and CDMA2000 products

satisfy the additional claim 24 limitation "wherein the complex sequence comprises at least two

pseudo noise sequences." See, e.g., CX-1310C (Prucnal WS) at Q401-407 (WCDMA),

Q747-750 (RapuYama), Q1065-1069 (RapidoYawe), Q1373-1377 (RAP3G), [

] Q2225-2228 (CDMA2000), [

] CX-1307C (Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79

(RapidoYawe), Q117 (RapuYama), [

] CX-0023 (3GPP TS 25.213) at §§ 4.2.1, 4.3.2 (WCDMA); CX-0017

(3GPP2 C.S0002) at 2-64, 2-68, § 2.1.3.1.12 (CDMA2000).

- 29. '332 Patent Claim 27
 - a. A code division multiple access subscriber unit in accordance with claim 21,

Inasmuch as the WCDMA and CDMA2000 products do not infringe independent claim

21, they also do not infringe dependent claim 27.

b. wherein the circuitry is further configured to generate pilot bits; wherein the second radio frequency signal is derived at least in part from the pilot bits.

The record evidence demonstrates that the WCDMA and CDMA2000 products practice the claim limitation "wherein the circuit is further configured to generate pilot bits." *See, e.g.*,

CX-1310C (Prucnal WS) at Q435-437 (WCDMA), Q754-757 (RapuYama), Q1073-1077 (RapidoYawe), Q1381-1385 (RAP3G), [

] Q2232-2234 (CDMA2000), [

(Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama), [] CX-0232 (3GPP TS

25.211) at § 5.2.1 (WCDMA); CX-0017 (3GPP2 C.S0002) at 2-64, 2-68, 2-119 (CDMA2000).

The WCDMA and CDMA2000 products also practice the claim limitation "wherein the second radio frequency signal is derived at least in part from the pilot bits." *See, e.g.*, CX-1310C (Prucnal WS) at Q438-440 (WCDMA), Q758-761 (RapuYama), Q1078-1082 (RapidoYawe), Q1386-1390 [

Q2235-2236 (CDMA2000), [

at Q21 (RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama), [

] CX-0023 (3GPP TS 25.213) at

] CX-1307C (Goldberg WS)

] CX-1307C

§§ 4.2.1, 4.4.2 (WCDMA); CX-0017 (3GPP2 C.S0002) at 2-64, 2-68 (CDMA2000).

30. Indirect Infringement ('406 Patent)

InterDigital also alleges that Respondents have violated section 337 by inducing and contributing to the infringement of the '406 patent. Compls. Br. at 184-93; Compls. Reply at 74. Respondents oppose the allegations. Resps. Br. at 227-28; Resps. Reply at 193.

a. Induced Infringement

As an initial matter, it was determined above that there is no direct infringement of any of the asserted claims of the '406 patent, which is a prerequisite to a finding that Respondents are liable for induced infringement. If, however, it were determined that the accused WCDMA and

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CDMA2000 products directly infringe the '406 patent, then the record evidence shows that Respondents would be liable for induced infringement.

i. Nokia

InterDigital argues that Nokia had constructive knowledge of the '406 patent by April 8, 2004, when InterDigital disclosed to ETSI the application that matured into the '406 patent. *See* Compls. Br. at 185. InterDigital also argues that Nokia has actual knowledge of the '406 patent no later than July 26, 2011, which InterDigital filed the complaint in this investigation and provided infringement claim charts to Nokia. *Id.* at 185-86. InterDigital further argues that, "[w]ith knowledge of its infringement of the '406 patent, Nokia continues to import, offer for sale, and sell of each of the Nokia Products and conduct field tests in the United States on those products," that "Nokia intends for end-user consumers to use its WCDMA products on WCDMA networks and CDMA2000 products on CDMA2000 networks in the United States," and that "[t]hus Nokia had knowledge that its testing and/or sale of the Nokia Products for use by end-user customers in the United States constituted patent infringement and actively induces infringement of the '406 patent." *Id.* at 186 (citations omitted).

The evidence adduced by InterDigital shows by a preponderance of the evidence that Nokia would be liable for induced infringement of the '406 patent in the event that direct infringement is found. In particular, the evidence shows that Nokia either had knowledge that the induced acts constitute patent infringement, or took deliberate actions to avoid confirming a high probability of wrongdoing. *See Global-Tech Appliances*, 131 S. Ct. at 2068-71. While it has not been shown how the disclosure of a related patent application to ETSI informed Nokia of potential infringement by purchasers of the accused devices, the same cannot be said of the filing of the complaint in this investigation. If the Commission were to reverse the finding of the

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undersigned that Nokia does not infringe the '406 patent, then it would be hard to avoid the conclusion that the detailed complaint provided knowledge of actual infringement by purchasers of the accused devices, a kind of knowledge that meets even the heightened standard set forth in ... the *Global-Tech* opinion.

ii. Huawei

The arguments and evidence InterDigital presents in support of its claim that Huawei is liable for induced infringement of the '406 patent parallel the arguments and evidence presented with respect to Nokia. *Compare* Compls. Br. at 185-86, *with id.* at 186-88. Respondents' answer to those allegations is also the same. *See* Resps. Br. at 227-28; Resps. Reply at 19. It is determined that InterDigital has adduced evidence showing by a preponderance of the evidence that Huawei is liable for induced infringement of the '406 patent in the event that direct infringement is found.

iii. ZTE

The arguments and evidence InterDigital presents in support of its claim that ZTE is liable for induced infringement of the '406 patent parallel the arguments and evidence presented with respect to Nokia. *Compare* Compls. Br. at 185-86, *with id.* at 188-90. Respondents' answer to those allegations is also the same. *See* Resps. Br. at 227-28; Resps. Reply at 19. It is determined that InterDigital has adduced evidence showing by a preponderance of the evidence that ZTE is liable for induced infringement of the '406 patent in the event that direct infringement is found.

b. Contributory Infringement

As an initial matter, it was determined above that there is no direct infringement of any of the asserted claims of the '406 patent, which is a prerequisite to a finding that Respondents are

liable for contributory infringement. If, however, it were determined that the accused WCDMA and CDMA2000 products directly infringe the '406 patent, then the record evidence shows that Respondents would be liable for contributory infringement.

The record evidence shows that the accused products at issue in this investigation are components of an apparatus for use in practicing the claimed method in the '406 patent, and constitute material parts of the claimed invention. *See* CX-1310C (Prucnal WS) at Q2542-2546.

The Nokia products are especially made or adapted for use in practicing the claimed methods of the '406 patent, as indicated by their compliance with the WCDMA and CDMA2000 standards as described above. *See, e.g.*, CX-1054C (July 10, 2012 Nokia's Supp. Resps. to InterDigital's 1st Set of Interrogs. (Nos. 8, 38 and 61) at 6-110; Exhibit CX-0289C (Chart Showing Nokia WCDMA Devices Using Qualcomm Baseband Processors); CX-1068C (Supp. Exhibit A to Nokia's Response to Interrog. No. 11, 8/17/2012); CX-0293C (Chart Showing Nokia WCDMA Devices Using Nokia/TI Processors); see also, e.g., CX-0151C (Nokia Booklet 3G User Guide); CX-0152C (Nokia Lumina 900 Detailed Specifications); CX-0153C (Device Details Nokia Lumina 810); CX-0154C (Device Details Nokia Lumina 820); CX-0155C (Device Details Nokia Lumina 822); CX-0158C (Nokia Academy Product Data Sheet Nokia Lumina 710); CX-0159C (Nokia Care Academy, Product Data Sheet Nokia Lumina 800); CX-0160C (Test Plan for RM-817); CX-0161C (Nokia RM-817 Product Certification Plan); CX-0290C (Device Details Nokia Lumia 920).

Based on the record evidence, it is determined that there are no substantial non-infringing uses for the Nokia accused products with respect to the '406 patent. Any use of the Nokia

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accused products without WCDMA/CDMA2000 functionality enabled would deprive users of the benefit that the products were intended to provide.³²

Similarly, the Huawei products are also especially made or adapted for use in practicing the claimed methods of the '406 patent. *See, e.g.*, [CX-1111C

CX-1112C

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CX-1113C

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As for ZTE, their accused products are also especially made or adapted for use in practicing the claimed methods of the '406 patent.³³ *See, e.g.*, CX-1138C (ZTE's Corrected Amended Supp. Resps. to InterDigital's Interrog. No. 11); CX-1140C (ZTE's Supp. Resps. and Objections to InterDigital's Interrog. No. 38); CX-1152C (ZTE's Objections and Resps. to InterDigital's 2nd Set of Requests for Admission (Nos. 103-610)).

Moreover, as discussed above, Respondents have known since at least July 26, 2011, when InterDigital filed the complaint in this investigation, that their products are alleged to infringe the '406 patent.

³² Nevertheless, Respondents argue that some, but not all, of Nokia's products are sold with WLAN disabled. *See* Resps. Reply at 193 & n.53 (citing RX-3998C (Bims WS) at Q443, Q545) (concerning the Nokia Pureview 808 products). In the event that the Commission were to reverse the decision of the administrative law judge so as to find infringement by Nokia products, the Commission may still find that indirect infringement has not occurred with respect to Nokia's Pureview 800 products.

³³ Respondents argue that some, but not all, of ZTE's products are sold with WLAN disabled. See Resps. Reply at 193 & n.53 (citing RX-3998C (Bims WS) at Q443, Q545) (concerning the ZTE's Warp products). In the event that the Commission were to reverse the decision of the administrative law judge so as to find infringement by ZTE products, the Commission may still find that indirect infringement has not occurred with respect to ZTE's Warp products.

Therefore, in the event that the accused products are found to infringe the '406 patent, it is determined that Respondents' importation and sale of the accused products contribute to the direct infringement of the infringed claims.

D. Validity

1. Priority Date

The '406 and '332 patents claim priority to U.S. Provisional Patent Application No. 60/000,775 ("the '775 Provisional"), which was filed on June 30, 1995. JX-0001 ('406 patent) at col. 1, Ins. 8-16; JX-0002 ('332 patent) at col. 1, Ins. 7-16; JX-0026 ('775 Provisional). For the reasons explained below, the '775 Provisional discloses the asserted claims of the '406 and '332 patents in a manner consistent with the requirements of 35 U.S.C. § 112, ¶ 1. Accordingly, the '406 and '332 patents have an effective filing date of June 30, 1995 under 35 U.S.C. § 120.

The effective filing date of the '406 and '332 patents is a key issue in this investigation, inasmuch as Respondents have argued that two post-provisional references (Odenwalder '230 and '500) invalidate the asserted claims. InterDigital therefore bears the burden of coming forward with evidence supporting an effective filing date of June 30, 1995. *See Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1327-28 (Fed. Cir. 2008).

The parties dispute whether the '775 Provisional discloses one element in each of the asserted claims. The four implicated claim elements are: (i) wherein the transmission power level of the traffic channel and the reverse control channel are different, (ii) separately adjusting the transmission power level of the traffic channel and the reverse control channel, (iii) power control bits that are included on only one of an in-phase (I) channel or a quadrature (Q) channel, and (iv) power control bits are included on only one of the I pre-spread channel or the Q

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pre-spread channel. The following discussion addresses these limitations first, then turns to showing support in the '775 Provisional for the remaining limitations of the asserted claims.

a. Disputed Elements of the Asserted Claims

The '775 Provisional refers to base stations as radio carrier stations (RCSs) and to subscriber units as FSUs (or, less frequently, as MSUs). See JX-0026 ('775 Provisional) at 2, 6, 8. Figure 15 of the '775 Provisional describes the transmitter section of an enhanced modem (E-Modem) in the modem interface unit (MIU) of a base station (RCS). JX-0026 ('775 Provisional) at 42, NK800IDC07356894; Williams Tr. 1228-1229. Figure 16 is the receiver portion of the same E-Modem. JX-0026 ('775 Provisional) at 42, NK800IDC07356895. Dr. Pruchal testified that the '775 Provisional teaches in at least two places that the same E-Modem is used in subscriber units (SUs). Prucnal Tr. 2020-2025, 2027-2029, 2064-2065; see also CX-1525C (Prucnal RWS) at Q117 (discussing CDX-0008.0001 and JX-0026 ('775 Provisional) at 42, 131). More specifically, in the section providing a detailed structural description of the subscriber unit, the '775 Provisional states that the subscriber unit "includes . . . a modem section (as described as the modem in the MIU of the RCS)." JX-0026 ('775 Provisional) at 131. Moreover, under the heading "Enhanced Modern Overview" in the section titled "The CDMA Modem," the '775 Provisional states that "[t]he e-modem has a common interface to support all types of FSUs 106 as well as the MIU 1218." JX-0026 at 42. Accordingly, as a person of ordinary skill in the art at the time of the inventions would have understood, the '775 Provisional describes that the E-Modem transmitter and receiver sections illustrated in Figures 15 and 16, and described elsewhere in the '775 Provisional, are included in both subscriber units and base stations. Prucnal Tr. 2020-2025, 2027-2029, 2064-2065; CX-1525C (Prucnal RWS) at Q117.

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i. The "wherein the transmission power level of the traffic channel and the reverse control channel are different" Limitation ('406 Patent)

The '775 Provisional supports the limitation "wherein the transmission power level of the traffic channel and the reverse control channel are different" of claims 6, 13, 20, and 26 of the '406 patent. CX-1525C (Prucnal RWS) at Q126-131, Q476-485 (referencing CDX-0008.0023). Respondents argue that the '775 Provisional does not support this limitation for two reasons: (i) power levels of the channels do not differ in response to a power control bit and (ii) the supporting figures and corresponding text identified by InterDigital relate to a base station instead of a subscriber unit. *See* RX-3529C (Williams WS) at Q199. The evidence is to the contrary.

First, as explained above with respect to the discussion regarding the construction of this limitation, this limitation does not require different transmission power levels in response to a power control bit. Second, Figure 15 of the '775 Provisional shows an E-Modem transmitter that transmits traffic channels (B1 and B2) and a control channel (D channel multiplexed with power control information RAPC). *See* JX-0026 ('775 Provisional) at 42-43, NK800IDC07356894. The '775 Provisional describes that each channel is combined at a programmable weight, such as in Combiner 1524 of Figure 15. *Id.* at 43. The '775 Provisional also describes that the control channel can be sent at a lower transmission power level compared to the traffic channels because the power control information is overhead and, unlike traffic data, can be received in error occasionally (referred to as a higher bit error rate). *Id.* at 21, 79.

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The "separately adjusting the transmission power level of the traffic channel and the reverse control channel" Limitation ('406 Patent)

The '775 Provisional supports the limitation "separately adjusting the transmission power level of the traffic channel and the reverse control channel" from claim 29 of the '406 patent. CX-1525C (Prucnal RWS) at Q268-275, Q502-505 (referencing CDX-0008.0024). Respondents argue that the '775 Provisional does not support this limitation largely for the same two reasons as the different power level limitation: (i) there is no separate power adjustment of the channels in response to a power control bit and (ii) the supporting figures and corresponding text identified by InterDigital relate to a base station instead of a subscriber unit. See RX-3529C (Williams WS) at Q210. These arguments are not supported by the evidence. First, as explained above with respect to the claim construction of the asserted claims, this limitation does not require separate adjustment in response to a power control bit. Second, it is undisputed that the E-Modem Combiner in Figure 15 separately adjusts the transmission power level of the traffic and control channels by weighing these channels with respective programmable weights and then combining them. See JX-0026 ('775 Provisional) at 43; CX-1525C (Prucnal RWS) at Q502, Q504; RX-3529C (Williams WS) at Q199. As explained at the beginning of the discussion regarding priority, Figure 15 and corresponding text in the '775 Provisional describe the E-Modem transmitter in both subscriber units and base stations.

iii. The "power control bits that are included on only one of an in-phase (I) channel or a quadrature (Q) channel" Limitation ('332 Patent)

The '775 Provisional supports the limitation "power control bits that are included on only one of an in-phase (I) channel or a quadrature (Q) channel" found in claims 2-4 and 7 of the '332 patent, as well as and analogous limitation in claims 22-24 and 27. CX-1525C (Prucnal RWS) at

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Q5195-32 (including demonstratives), Q299-304, Q437-438. The '775 Provisional discloses two embodiments of this limitation in the context of a *subscriber unit* e-modem in or relating to Figure 15 and corresponding text. CX-1525C (Prucnal RWS) at Q527-528 (describing time and code multiplexed embodiments); CX-1525.1C (Prucnal RWS Errata) at 3; CDX-0008.0017. Respondents argue that the '775 Provisional does not support this limitation for three reasons: (i) the supporting figures and corresponding text identified by InterDigital relate to a base station instead of a subscriber unit, (ii) there are no I and Q channels to the left of Combiner 1524 in Figure 15, and (ii) assuming that the outputs of multiplexer 1520 are I and Q channels, the power control bits would not necessarily be included on only one of those outputs. *See* RX-3529C (Williams WS) at Q155-181. The evidence demonstrates otherwise.

First, Figure 15 and corresponding text describe the E-Modem transmitter in both subscriber units and base stations as explained above.

Second, as discussed above regarding the construction of the disputed claim terms for this patent, Respondents misconstrue the terms I and Q channels as referring only to components of a transmitted analog radiofrequency ("RF") QPSK signal or, at most, the digital signals that get upconverted to analog RF components. *See, e.g.*, RX-3529C (Williams WS) at Q100. There is no indication in the '775 Provisional that the terms I and Q channels are so limited, particularly given that the outputs of Combiner 1524 in Figure 15 are labeled I and Q, but are not RF components. *See JX*-0026 ('775 Provisional) at NK800IDC07356894. As InterDigital's expert Dr. Prucnal explained in his witness statement and at the hearing, the '332 patent consistently refers to I and Q channels more broadly. For example, claim 21 distinguishes I and Q components of the transmitted RF signal from I and Q channels in the digital domain. Prucnal Tr. 345; JX-0002 ('332 patent) at col. 102, lns. 45-51. Figure 14 includes ½-rate convolutional

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encoders, the output of which the specification describes, and Figure 16 shows, as in-phase (I) and quadrature (Q) channels. *See, e.g.*, Prucnal Tr. 356-359; JX-0002 ('332 patent) at Fig.16; col. 45; lns. 13-21; CX-1525C (Prucnal RWS) at Q518; CX-1525.1C (Prucnal RWS Errata) at 3. In addition, Dr. Prucnal explained that the following language from the specification describes the inputs to complex spreading (known also as complex multiplication or scrambling) in Figure 14 as QPSK signals comprised of in-phase (I) and quadrature (Q) channels:

The logical channels are initially converted to QPSK signals, which are mapped as constellation points as is well known in the art. The in-phase and quadrature channels of each QPSK signal form the real and imaginary parts of the complex data value. Similarly, two spreading codes are used to form complex spreading chip values. The complex data are spread by being multiplied by the complex spreading code.

Prucnal Tr. 346-349, 352; *see* JX-0002 ('332 patent) at col. 23, lns. 61-67. The evidence shows that power control bits (labeled APC) are included on a single spreader input in Figure 14 and thus included on only one of an in-phase or quadrature channel of the QPSK signal. *See, e.g.*, CX-1525C (Prucnal RWS) at Q514, Q518; CX-1525.1C (Errata) at 3. The specification even explicitly describes an embodiment having "APC information on, for example, the in-phase channel and the OW information on the quadrature channel of the QPSK signal." JX-0002 ('332 patent) at col. 67, lns. 61-64; Williams Tr. 1225. Thus there is overwhelming evidence regarding the broad meaning of I and Q channels in the context of the '332 patent claims, and specifically as these terms concern inputs to complex spreading (*i.e.*, complex multiplication or scrambling).

Third, Respondents argue that the power control information (labeled RAPC) in Figure 15 is not necessarily included on only one of the multiplexor outputs. *See* RX-3529C (Williams WS) at Q171. This argument, however, is contradicted by Dr. Prucnal's explanation as to why and how the power control information would be included on only one of the multiplexor

outputs. See CX-1525C (Prucnal RWS) at Q519-527; CX-1525.1C (Prucnal RWS Errata) at 3. Dr. Prucnal discussed a person of ordinary skill in the art's understanding that multiplexors combine multiple inputs to form a single output, as well as engineering textbooks that support his opinion. See id. (discussing RX-3453 (Introduction to Electronics), RX-3452 (Fundamentals of Digital Logic), and RX-0924 (Digital Communications)); CX-1525.1C (Errata) at 3; Prucnal Tr. 2030, 2035-2038 (discussing CDX-0008.0007 to .0009). According to Dr. Prucnal, the power control information would necessarily be included on only one of the multiplexor outputs and thus on only one of an in-phase (I) or quadrature (Q) channel. See CX-1525C (Prucnal RWS) at Q519-527; CX-1525.1C (Prucnal RWS Errata) at 3. A contrary result, Dr. Prucnal explained, would require demultiplexing or creating copies of the power control information. See, e.g., Prucnal Tr. at 2040, 2041, 2043, 2048-2049.

Furthermore, Dr. Prucnal described a second (preferred) embodiment in the '775 Provisional for which power control bits are included on only one of an in-phase (I) or quadrature (Q) channel. *See* CX-1525C (Prucnal RWS) at Q528-532 (discussing CDX-0008.0011 to .0016). The '775 Provisional states that "the preferred way is to put [power control] on a code multiplexed channel because it allows you to eliminate the latency or the delay that's involved in time multiplexing." JX-0026 ('775 Provisional) at 114. Referring to this "code multiplexing approach," the '775 Provisional also states that "putting the power control on its own code is unique." JX-0026 ('775 Provisional) at 21. Both Drs. Prucnal and Williams testified that this description refers to putting power control on its own spreading code. *See* CX-1525C (Prucnal RWS) at Q528; RX-3529C (Williams WS) at Q157-158. In other words, Figure 15 would be modified to show RAPC input to its own spreader rather than to multiplexor 1520. *See, e.g.*, CX-1525C (Prucnal RWS) at Q528. In this embodiment, the power

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control information would be included on a single input to a spreader, and thus on only one of an I or Q channel, as shown in CDX-0008.0015 and compared with Figure 14 of the '332 patent in CDX-0008.0016. *See* CX-1525C (Prucnal RWS) at Q528.

iv. The "power control bits are included on only one of the I pre-spread channel or the Q pre-spread channel" Limitation ('332 Patent)

The '775 Provisional supports the limitation "power control bits are included on only one of the I pre-spread channel or the Q pre-spread channel" found in claims 8-11 and 14 of the '332 patent. CX-1525C (Prucnal RWS) at Q537-546. Respondents argue that the '775 Provisional does not support this limitation by cross-referencing their arguments made regarding the other '332 patent asserted claims and arguing specifically that none of the channels prior to the spreaders in Figure 15 are I or Q channels. See RX-3529C (Williams WS) at Q187. These arguments fail for all of the reasons discussed above in the context of these other '332 patent asserted claims. Moreover, as Dr. Prucnal explained, the '775 Provisional describes that the spreading codes applied by Spreaders 1522 to the traffic and control channels can be complex or real sequences. CX-1525C (Prucnal RWS) at Q542-546; see JX-0026 ('775 Provisional) at 81-82, Fig.15, NK800IDC07356894, NK800IDC07357590. This fact is significant because, as Dr. Prucnal explained, the Spreader outputs must be I and Q channels in order for the Combiner outputs to be I and Q channels, and they are labeled as such. CX-1525C (Prucnal RWS) at Q546 ("A combiner combines, and in this case weights signals, but a combine[r] does not create I and Q channels."). "The only way to obtain I and Q outputs from multiplying a real sequence is to have a complex-valued input. Therefore the two inputs into the spreaders are I and Q pre-spread channels." Id. In short, starting from the ¹/₂-rate convolutional encoders and moving right or

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starting from the combiner outputs and moving left, a person of ordinary skill in the art would understand that the intermediate arrows in Figure 15 are in-phase (I) or quadrature (Q) channels.

b. Undisputed Elements of the Asserted Claims

The parties do not dispute that the '775 Provisional supports the remaining elements of the asserted claims of the '406 and '332 patents. The parties also do not dispute that the '775 Provisional discloses the claimed "power control bits" under either both parties' proposed construction, including the construction adopted above. JX-0026 ('775 Provisional) at 79; CX-1525C (Prucnal RWS) at Q89-92.

i. '406 Patent – Claim 6

The '775 Provisional discloses claim 6 of the '406 patent. CX-1525C (Prucnal RWS) at Q93-143. The '775 Provisional discloses "[a] method for controlling transmission power levels of a code division multiple access (CDMA) subscriber unit." JX-0026 ('775 Provisional) at 80-81; CX-1525C (Prucnal RWS) at Q94-103. The '775 Provisional discloses "receiving by the subscriber unit a power control bit on a downlink control channel, the power control bit indicating either an increase or decrease in transmission power level." JX-0026 ('775 Provisional) at 79; CX-1525C (Prucnal RWS) at Q104-111. The '775 Provisional discloses "transmitting a plurality of channels by the subscriber unit, the plurality of channels including a traffic channel and a reverse control channel." JX-0026 ('775 Provisional) at NK800IDC07357102; CX-1525C (Prucnal RWS) at Q112-117. The '775 Provisional discloses "in response to the received power control bit, adjusting a transmission power level of both the traffic channel and the reverse control channel." JX-0026 ('775 Provisional) at 33, 127, and NK800IDC07356891; CX-1525C (Prucnal RWS) at Q118-125. The next element from claim 6, "wherein the transmission power level of the traffic channel and the reverse control channel."

different" is disputed and is disclosed by the '775 Provisional as explained previously. The '775 Provisional discloses "transmitting the traffic channel and the reverse control channel at their respective adjusted transmit power levels." JX-0026 ('775 Provisional) at 42, 43, 131, and NK800IDC07356894; CX-1525C (Prucnal RWS) at Q132-135. The '775 Provisional discloses "wherein the reverse control channel carries at least one power command." JX-0026 ('775 Provisional) at 42, 43, 131 and NK800IDC07356894; CX-1525C (Prucnal RWS) at Q132-135.

ii. '406 Patent - Claim 13

The '775 Provisional discloses claim 13 of the '406 patent. CX-1525C (Prucnal RWS) at Q144-180. The '775 Provisional discloses "A method for controlling transmission power levels of a code division multiple access (CDMA) subscriber unit." JX-0026 ('775 Provisional) at 80-81; CX-1525C (Prucnal RWS) at Q145, Q94-103. The '775 Provisional discloses "receiving by the subscriber unit a series of power control bits on a downlink channel, each power control bit indicating either an increase or decrease in transmission power level." JX-0026 ('775 Provisional) at 77; CX-1525C (Prucnal RWS) at Q147-156. The '775 Provisional discloses "transmitting a plurality of channels by the subscriber unit, the plurality of channels including a traffic channel and a reverse control channel." JX-0026 ('775 Provisional) at NK800IDC07357102; CX-1525C (Pruenal RWS) at Q157-158, Q112-117. The '775 Provisional discloses "adjusting a transmission power level of both the traffic channel and the reverse control channel in response to the same bits in the received series of power control bits." JX-0026 ('775 Provisional) at 74-75, 77, NK800IDC07356915; CX-1525C (Prucnal RWS) at Q159-172. The next element from claim 13, "wherein the transmission power level of the traffic channel and the reverse control channel are different" is disputed and is disclosed by the '775 Provisional as explained previously. The '775 Provisional discloses "transmitting the traffic channel and the

reverse control channel at their respective adjusted transmit power levels." JX-0026 ('775 Provisional) at 42, 43, 131, and NK800IDC07356894; CX-1525C (Prucnal RWS) at Q175-176, Q132-135. The '775 Provisional discloses "wherein the reverse control channel carries at least one power command." JX-0026 ('775 Provisional) at 42, 43, 131 and NK800IDC07356894; CX-1525C (Prucnal RWS) at Q179-180, Q138-142.

iii. '406 Patent – Claim 20

The '775 Provisional discloses claim 20 of the '406 patent. CX-1525C (Prucnal RWS) at Q181-224. The '775 Provisional discloses "[a] code division multiple access (CDMA) subscriber unit." JX-0026 ('775 Provisional) at 6, 16, NK800IDC07356861-862; CX-1525C (Prucnal RWS) at Q182-185. The '775 Provisional discloses "a despreading and demultiplexing device configured to recover a power control bit from a downlink control channel, wherein the power control bit has a value indicating a command to either increase or decrease transmission power level." JX-0026 ('775 Provisional) at 74-75, NK800IDC07356915; CX-1525C (Prucnal RWS) at Q186-199. The '775 Provisional discloses "gain devices configured, in response to the received power control bit, to adjust a transmission power level of both a traffic channel and a reverse control channel prior to transmission by the subscriber unit." JX-0026 ('775 Provisional) at 33, 127, or NK800IDC07356891; Williams Tr. 1221-1222; CX-1525C (Prucnal RWS) at Q200-218, Q506-513; CX-1525.1C (Prucnal RWS Errata) at 2-3; CX-1401 (CGY120 Description); Williams Tr. 1222, 1223; CX-1456 (Williams Multiple Stage Amplifier Drawing); CX-1405 (HP GaAs MMIC Amplifiers), CX-1404 (Agilent GaAs MMIC Amplifiers), CX-1403 (Technical and Commercial Aspects of GaAs MMICs), CX-1406 (RF Amplifier Design). The next element from claim 20, "wherein the transmission power level of the traffic channel and the reverse control channel are different" is disputed and is disclosed by the '775 Provisional as

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explained previously. The '775 Provisional discloses "wherein the reverse control channel carries at least one power command." JX-0026 ('775 Provisional) at 42, 43, 131, and NK800IDC07356894; CX-1525C (Prucnal RWS) at Q223-224, Q138-142.

iv. '406 Patent – Claim 26

The '775 Provisional discloses claim 26 of the '406 patent. CX-1525C (Prucnal RWS) at Q225-258. The '775 Provisional discloses "[a] code division multiple access (CDMA) subscriber unit." JX-0026 ('775 Provisional) at 6, 16, NK800IDC07356861-862; CX-1525C (Prucnal RWS) at Q225, Q182-185. The '775 Provisional discloses "a despreading and demultiplexing device configured to recover a series of power control bits from a downlink channel, wherein each power control bit has a value indicating a command to either increase or decrease transmission power level." JX-0026 ('775 Provisional) at 74-75, NK800IDC07356915; CX-1525C (Prucnal RWS) at Q226-241. The '775 Provisional discloses "gain devices configured, in response to the received series of power control bits, to adjust a transmission power level of both a traffic channel and a reverse control channel in response to same bits in the received series of power control bits prior to transmission by the subscriber unit." JX-0026 ('775 Provisional) at 33, 127, or NK800IDC07356891; Williams Tr. 1221-1222; CX-1525C (Prucnal RWS) at Q242-243, Q200-218, Q506-513; CX-1525.1C (Prucnal RWS Errata) at 2-3; CX-1401 (CGY120 Description); Williams Tr. 1222, 1223; CX-1456 (Williams Multiple Stage Amplifier) Drawing); CX-1405 (HP GaAs MMIC Amplifiers); CX-1404 (Agilent GaAs MMIC Amplifiers); CX-1403 (Technical and Commercial Aspects of GaAs MMICs); CX-1406 (RF Amplifier Design). The next element from claim 26, "wherein the transmission power level of the traffic channel and the reverse control channel are different" is disputed and is disclosed by the '775 Provisional as explained previously. The '775 Provisional discloses "wherein the downlink

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channel is a downlink control channel." JX-0026 ('775 Provisional) at 74-75, 80-81; CX-1525C (Prucnal RWS) at Q249-254, Q186-199. The '775 Provisional discloses "wherein the reverse control channel carries at least one power command." JX-0026 ('775 Provisional) at 42, 43, 131 and NK800IDC07356894; CX-1525C (Prucnal RWS) at Q257-258, Q138-142.

v. '406 Patent – Claim 29

The '775 Provisional discloses claim 29 of the '406 patent. CX-1525C (Prucnal RWS) at Q259-277. The '775 Provisional discloses "A method for controlling transmission power levels of a code division multiple access (CDMA) subscriber unit." JX-0026 ('775 Provisional) at 80-81; CX-1525C (Prucnal RWS) at Q260-261, Q94-103. The '775 Provisional discloses "receiving by the subscriber unit a power control bit on a downlink control channel, the power control bit indicating either an increase or decrease in transmission power level." JX-0026 ('775 Provisional) at 77; CX-1525C (Prucnal RWS) at Q262-263, Q147-156. The '775 Provisional discloses "transmitting a plurality of channels by the subscriber unit, the plurality of channels including a traffic channel and a reverse control channel." JX-0026 ('775 Provisional) at NK800IDC07357102; CX-1525C (Prucnal RWS) at Q264-65, Q112-117. The '775 Provisional discloses "in response to the received power control bit, adjusting a transmission power level of both the traffic channel and the reverse control channel." JX-0026 ('775 Provisional) at 33, 127, NK800IDC07356891; CX-1525C (Prucnal RWS) at Q266-267, Q200-218; CX-1525.1C (Prucnal RWS Errata) at 2. The next element from claim 29, "separately adjusting the transmission power level of the traffic channel and the reverse control channel" is disputed and is disclosed by the '775 Provisional as explained above. The '775 Provisional discloses "transmitting the traffic channel and the reverse control channel at their respective adjusted

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transmit power levels." JX-0026 ('775 Provisional) at 42, 43, 131, and NK800IDC07356894; CX-1525C (Pruenal RWS) at Q276-277, Q132-135.

vi. '332 Patent – Claim 2

The '775 Provisional discloses claim 2 of the '332 patent. CX-1525C (Prucnal RWS) at Q283-317. The '775 Provisional discloses "[a] code division multiple access subscriber unit." JX-0026 ('775 Provisional) at 6, 16, NK800ITC07356861-862; CX-1525C (Prucnal RWS) at Q283-287. The '775 Provisional discloses "a circuit, operatively coupled to the antenna, configured to generate power control bits." JX-0026 ('775 Provisional) at 43, 131, NK800IDC07356895; CX-1525C (Prucnal RWS) at Q288-298. As explained above, the disputed limitation from claim 2, power control bits that "are included on only one of an in-phase (I) channel or a quadrature (Q) channel" is disclosed by the '775 Provisional. The '775 Provisional discloses "the antenna configured to output a radio frequency signal derived at least in part from the I and Q channels." JX-0026 ('775 Provisional) at 42-43, 131, NK800IDC07356894; CX-1525C (Prucnal RWS) at Q305-307. The '775 Provisional discloses "wherein the circuit is further configured to combine the I and Q channels with a complex sequence." JX-0026 ('775 Provisional) at 42-43, 81-82, 131, NK800IDC07356894, NK800IDC07357590; CX-1525C (Prucnal RWS) at Q311-317.

vii. '332 Patent – Claim 3

Claim 3 of the '332 patent depends from claim 2, disclosed as stated previously. CX-1525C (Prucnal RWS) at Q318-320. The '775 Provisional discloses "wherein the combining is by multiplication." JX-0026 ('775 Provisional) at 81-82, NK800IDC07356894, NK800IDC07357590; CX-1525C (Prucnal RWS) at Q321-327.

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viii. '332 Patent – Claim 4

Claim 4 of the '332 patent depends from claim 2, disclosed as shown above. CX-1525C (Prucnal RWS) at Q328-330. The '775 Provisional discloses "wherein the complex sequence comprises at least two pseudo noise sequences." JX-0026 ('775 Provisional) at 44, 46, NK800IDC07356897; CX-1525C (Prucnal RWS) at Q331-337.

ix. '332 Patent – Claim 7

Claim 7 of the '332 patent depends from claim 1, disclosed as shown above. CX-1525C (Prucnal RWS) at Q338-340. The '775 Provisional discloses "wherein the circuit is further configured to generate pilot bits; wherein the radio frequency signal is derived at least in part from the pilot bits." JX-0026 ('775 Provisional) at 42-43, 131, NK800IDC07356894; CX-1525C (Prucnal RWS) at Q341-347; CX-1525.1C (Prucnal RWS Errata) at 2-3.

x. '332 Patent – Claim 8

The '775 Provisional discloses claim 8 of the '332 patent. CX-1525C (Prucnal RWS) at Q348-380. The '775 Provisional discloses "[a] code division multiple access subscriber unit." JX-0026 ('775 Provisional) at 6, 16, NK800ITC07356861-862; CX-1525C (Prucnal RWS) at Q349-350, Q283-287. The '775 Provisional discloses "an antenna configured to receive a first radio frequency signal." JX-0026 ('775 Provisional) at 131, NK800IDC07356941; CX-1525C (Prucnal RWS) at Q351-357. The '775 Provisional discloses "a circuit, operatively coupled to the antenna, configured to generate power control bits in response to the first radio frequency signal." JX-0026 ('775 Provisional) at 43, 131, NK800IDC07356895; CX-1525C (Prucnal RWS) at Q358-366. The '775 Provisional discloses "wherein the circuit is further configured to establish an in-phase (I) pre-spread channel and a quadrature (Q) pre-spread channel." JX-0026 ('775 Provisional) at 42-43, 131, NK800IDC07356895; JX-0002 ('332 patent) col. 45, Ins.