

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
TEXARKANA DIVISION**

MAXELL, LTD., <i>Plaintiff,</i> v. HUAWEI DEVICE USA INC. and HUAWEI DEVICE CO., LTD., <i>Defendants.</i>	Case No. 5:18-cv-0033-RWS LEAD CASE JURY TRIAL DEMANDED
MAXELL, LTD., <i>Plaintiff,</i> v. ZTE CORPORATION and ZTE USA INC., <i>Defendants.</i>	Case No. 5:18-cv-0034-RWS JURY TRIAL DEMANDED

DEFENDANTS' INVALIDITY CONTENTIONS

Pursuant to the Court's Scheduling Order, Defendants Huawei Device USA Inc. and Huawei Device Co., Ltd. ("Huawei"); and ZTE Corporation and ZTE USA Inc. ("ZTE") (collectively, "Defendants") serve their Disclosures Under Local Patent Rule 3-3 on Plaintiff Maxell, Ltd. ("Maxell"). These Invalidity Contentions relate to the following U.S. Patent Nos. and claims:

U.S. Patent 7,324,487 ("the '487 Patent"): claims 1-5;

U.S. Patent 7,068,503 ("the '503 Patent"): claims 1-3, 6, 10-12, 15, 19-21, and 24-26;

U.S. Patent 8,982,086 ("the '086 Patent"): claims 1-4;

U.S. Patent 6,928,306 ("the '306 Patent"): claims 2, 5, 6, and 13-15;

U.S. Patent 6,983,140 ("the '140 Patent"): claim 1, 3, 4;

U.S. Patent 7,515,810 (“the ’810 Patent”): claim 1¹;

U.S. Patent 7,995,897 (“the ’897 Patent”): claims 10-12;

U.S. Patent 6,347,068 (“the ’068 Patent”): claims 1 and 2;

U.S. Patent 6,973,334 (“the ’334 Patent”): claims 4 and 6; and

U.S. Patent 9,544,517 (“the ’517 Patent”): claims 8-11 (collectively, “Asserted Patents”).

RESERVATIONS AND SCOPE

Defendants’ Invalidity Contentions reflect present knowledge and contentions, and Defendants reserve all rights to modify and supplement these contentions without prejudice in the event that additional invalidity or unenforceability grounds are identified. Defendants’ Invalidity Contentions are not, and should not be seen as, admissions or adoptions as to any particular claim scope or construction, or as any admission that any particular element is met in any particular way. Defendants object to any attempt to imply claim constructions from any identification or description of potential prior art. In addition, Defendants’ Invalidity Contentions may rely upon Maxell’s improper assertions of infringement and improper applications of the claims, but Defendants do not agree with those applications and deny infringement.

Defendants expressly rely on and incorporate by reference, as if originally set forth herein, all invalidity positions (including all associated prior art, claim charts, motivations to combine, expert reports and declarations, and related documents) asserted against Maxell by other parties in lawsuits or other proceedings (and all legal entities that are or were predecessors to Maxell) or by potential or actual licensees to any of the Asserted Patents. Defendants hereby disclose and identify as if originally set forth herein, all prior art references listed and/or asserted

¹ Local Patent Rule 3-3 disclosures for the ’801 Patent are on behalf of Huawei only because this patent is not asserted against ZTE.

in those Invalidity Contentions as invalidating prior art against the respective Asserted Patent, including for example:

- *Maxell, Ltd. v. ASUSTeK Computer Inc., et al.*, 3-18-cv-01788 (N.D. Cal.)
- *Maxell, Ltd. v. ASUSTek Computer Inc.*, 2-17-cv-07528 (C.D. Cal.)
- *Maxell, Ltd. v. Huawei Technologies Co. Ltd.*, 5:16-cv-00178 (E.D. Tex.) (as it relates to U.S. Pat. No. 6,754,440)
- *Maxell, Ltd. v. BlackBerry Corporation et al.*, 1-17-cv-01446 (D. Del.)
- *Huawei Device Co., Ltd. v. Maxell, Ltd.*, IPR2018-00233 (PTAB)
- *Olympus Corporation et al. v. Maxell, Ltd.*, IPR2018-00906 (PTAB)
- *Fandango Media, LLC et al. v. Maxell, Ltd.*, IPR2018-01434 (PTAB)
- *AsusTek Computer Inc. v. Maxell, Ltd.*, IPR2019-00067 (PTAB)
- *ASUSTek Computer Inc. et al. v. Maxell, Ltd.*, IPR2019-00069 (PTAB)
- *BlackBerry Corporation et al. v. Maxell, Ltd.*, IPR2019-00095 (PTAB)

Defendants further reserve all rights to seek leave to amend their Invalidity Contentions in view of, without limitation: (1) information provided by Maxell concerning its infringement allegations, theories, contentions, facts supporting them, prior suits involving the Asserted Patents or related patents, and/or positions that Maxell or its fact or expert witness(es) may take concerning claim construction, infringement, and/or invalidity issues; (2) information provided by Maxell concerning the alleged priority, conception, and reduction to practice dates for any of the asserted claims; (3) any change by Maxell in the asserted claims; (4) the claim construction process; (5) additional prior art, including, without limitation, prior art obtained through discovery from Maxell or a third party or from prior suits involving the Asserted Patents or related patents; or (6) any other basis in law or in fact. Further, to the extent an accused product

or feature comprises or arises from prior art, Defendants contend, without admitting purported infringement, that the Asserted Patents are anticipated and/or made obvious in light of that prior art.

I. INVALIDITY CONTENTIONS REGARDING THE '487 PATENT

A. Identification of Prior Art Under §§ 102 and 103

Defendants list below (MAX-DEFS-PA-0002760—MAX-DEFS-PA-0003298, MAX-DEFS-PA-0004079—MAX-DEFS-PA-0005096, MAX-DEFS-PA-0013177—MAX-DEFS-PA-0013218) the currently known prior art that anticipates or renders obvious the '487 Patent's Asserted Claims under 35 U.S.C. § 102 and/or § 103 (pre-AIA) expressly or inherently as is detailed below and in the charts attached as Exhibit A.

For references that invalidate under 35 U.S.C. § 102(b), those references were publicly known and available no later than their publication dates, and persons with knowledge of that public availability include without limitation the author(s) of the reference. Defendants continue to investigate the prior art identified below and reserve the right to offer additional evidence that may be uncovered after further discovery.

Patent References

Patent Number	Priority Date	Date of Issue or Publication
U.S. Pat. No. 4,470,899	May 31, 1985	June 2, 1987
U.S. Pat. No. 5,101,501	November 7, 1989	March 31, 1992
U.S. Pat. No. 5,504,935	March 9, 1993	April 2, 1996
U.S. Pat. No. 5,574,983	September 29, 1994	November 12, 1996
U.S. Pat. No. 5,729,826	July 26, 1996	March 17, 1998
U.S. Pat. No. 5,754,541	June 20, 1994	May 19, 1998

Patent Number	Priority Date	Date of Issue or Publication
U.S. Pat. No. 5,796,722	May 17, 1996	August 18, 1998
U.S. Pat. No. 5,815,811	October 27, 1995	September 29, 1998
U.S. Pat. No. 6,069,871	March 6, 1998	May 30, 2000
U.S. Pat. No. 6,122,265	May 19, 1996	September 19, 2000
U.S. Pat. No. 6,469,991	October 14, 1997	October 22, 2002
U.S. Pat. No. 6,801,512	March 23, 2000	October 5, 2004
U.S. Pat. No. 6,901,258	December 13, 2001	May 31, 2005
U.S. Pat. No. 6,999,434	November 28, 2000	February 14, 2006
U.S. Pat. No. 7,006,472	August 27, 1999	February 28, 2006
U.S. Pat. No. 7,023,803	September 28, 2001	April 4, 2006
U.S. Pat. No. 7,146,636	July 24, 2000	December 5, 2006
U.S. Pat. No. 7,173,918	May 19, 2000	February 6, 2007
U.S. Pat. No. 7,400,901	November 19, 2001	July 15, 2008
U.S. Pat. No. 7,406,319	November 19, 2001	July 29, 2008
U.S. Pat. No. 7,450,543	August 14, 2001	November 11, 2008
US 2001/0022806	March 18, 1997	September 20, 2001
US 2002/0039367	September 24, 2001	April 4, 2002
US 2003/0009576	July 3, 2001	January 9, 2003
US 2003/0035410	August 14, 2001	February 20, 2003
US 2003/0078048 A1	March 31, 2000	April 24, 2003
US 2004/0192211 A1	September 20, 2001	September 30, 2004
WO 01/74094 A2	March 31, 2000	October 4, 2001
WO 99/67972	June 23, 1998	December 29, 1999

Patent Number	Priority Date	Date of Issue or Publication
WO 01/78246 A1	April 7, 2000	October 18, 2001
WO 01/97458 A1	June 13, 2000	December 20, 2001
WO 02/01893 A2	June 30, 2000	January 3, 2002
EP 0851633 A2	December 30, 1996	July 1, 1998
EP 0967819 A2	June 27, 1998	December 29, 1999
EP 1032237 A1	February 22, 1999	August 30, 2000
EP 1133208 A2	March 8, 2000	September 12, 2001
EP 1137302 A2	September 30, 1999	September 26, 2001
EP 1156623 A1	May 19, 2000	November 21, 2001

Prior Art Publications

Title	Date of Publication	Author
Soft Handoffs in CDMA Mobile Systems	December 1997	Wong et al.
IEEE 802.11 Wireless Local Area Networks	September 1997	Crow et al.
Selective Handover for Traffic Balance in Mobile Radio Communications	1992	Fujii et al.
Large-Scale Wireless LAN Design	November 2001	Hills et al.
Mobile Station-Base Station Compatibility Standard for Dual-Mode Wideband Spread Spectrum Cellular System	May 1995	Telecommunications Industry Association
A Study on Dynamic Load Balance for IEEE 902.11b Wireless LAN	October 2001	Papanikos et al.
Dynamic Load Balance Algorithm (DLBA) for IEEE 802.11 Wireless LAN	1999	Sheu et al.
Dynamic Load Balance in a CDMA System with Multiple Carriers	2001	Tripathi et al.

Title	Date of Publication	Author
A Pattern Recognition System for Handoff Algorithms	2000	Wong et al.
Soft Handoffs in CDMA Mobile Systems	1997	Wong et al.
Wireless Data Networking	1995	Muller

Copies of the foregoing references identified above have been or are being produced along with these Invalidity Contentions. Defendants are also producing art that they feel is relevant to the claimed patents and may rely on such to teach the state of the art.

Each of the references and systems listed above qualifies as prior art under one or more sections of 35 U.S.C. §§ 102 and/or 103, as detailed below. The invalidating disclosure in each of the listed references and materials is express, implicit, and/or inherent. Defendants reserve the right to rely on prior art in the accompanying production, prior art produced by Plaintiff or third parties, and/or prior art cited in the charts accompanying these invalidity contentions to show the state of the art, the knowledge of one of ordinary skill in the art, and/or the anticipation or obviousness of the '487 Patent. The references provided herein may also be relied upon to show the state of the art in the relevant time frame. Also, to the extent that any of the references listed above are deemed not to be prior art, they may nevertheless provide evidence of prior or simultaneous invention, thereby supporting the obviousness of the asserted claims.

To the extent they constitute prior art, Defendants reserve the right to rely upon any of the following art related to the prior art identified herein: (i) foreign counterparts of the U.S. patents identified; (ii) U.S. counterparts of any foreign patents and foreign patent applications identified; (iii) U.S. and foreign patents and patent applications corresponding to any articles and publications identified; (iv) any products, prior inventions, or publications that relate to any references identified; and (v) any patents, patent applications or publications that relate to any

identified system. In addition, the specification and prosecution history of the '487 Patent and related patents and/or applications contain descriptions of, and admissions concerning, the scope of the claims. Defendants intend to rely upon these descriptions and admissions. Defendants also identify all prior art references cited or included in the '487 Patent and its prosecution history, as well as any statements in either regarding the prior art in either. Defendants reserve the right to rely on documents produced by third parties as prior art. Defendants' Invalidity Contentions and identification of prior art meet the disclosure requirements of 35 U.S.C. §282(c). Defendants reserve their rights to amend their contentions to include additional prior art references.

B. Anticipation and Obviousness References

Pursuant to P.R. 3-3(a) and the Court's Discovery Order, and in light of Maxell's Infringement Contentions and accompanying claim charts, Defendants list below the prior art now known to Defendants that anticipates or renders obvious the asserted claims under 35 U.S.C. § 102 and/or 103. Defendants' contentions do not imply any admission or suggestion that a specific prior art reference does not independently anticipate the '487 Patent Asserted Claims. Each individual prior art reference identified in Subsection A, above, that anticipates and/or each combination that renders obvious the '487 Patent Asserted Claims is described below.

Although Defendants have identified at least one disclosure of a limitation for each prior art reference, each and every disclosure of the same limitation in the same reference is not necessarily identified. To focus the issues, Defendants cite only representative portions of an identified reference, even where a reference may contain additional support for a particular claim limitation. Persons of ordinary skill in the art generally read an item of prior art as a whole and in the context of other publications and literature. Thus, to understand and interpret any specific statement or disclosure within a prior art reference, such persons would rely on other information

within the reference, along with other publications and their general scientific knowledge. Defendants may rely upon uncited portions of the prior art references and on other publications and expert testimony to provide context, and as aids to understanding and interpreting the portions that are cited.

Further, some or all of the systems identified below or identified in the prior art publications and patents will be the subject of continuing investigation and discovery, including on-going and currently uncompleted third party discovery. Defendants reserve the right to supplement their contentions consistent with the Federal Rules and the Local Patent Rules, in the event that additional information is discovered relating to these systems.

i. Anticipating Reference(s)

Defendants identify the following reference(s) as anticipating one or more of the '487 Patent Asserted Claims under 35 U.S.C. § 102. The below table of anticipating references is exemplary, and it does not constitute an admission that any reference anticipates only the listed claims.

Anticipating References

Anticipating Prior Art	Asserted Claim(s)
<i>Soft Handoffs in CDMA Mobile Systems</i> by Wong et al. ("Wong")	1, 2
U.S. Pat. No. 5,101,501 ("Gilhousen 501")	1, 2
EP 1032237 A1 ("Shakhgildian")	1, 2
U.S. Pat. No. 6,069,871 ("Sharma")	1, 2, 3, 4
U.S. Pat. No. 7,406,319 ("Kostic")	1, 2, 3, 4, 5
U.S. Pat. No. 5,815,811 ("Pinard")	1, 2, 3, 5
U.S. Pat. No. 6,108,547 ("Yamashita")	1, 2

To the extent any item of prior art cited above is deemed not to disclose, explicitly or inherently, any limitation of a '487 Patent Asserted Claim, Defendants reserve the right to argue that any difference between that prior art and the corresponding patent claim would have been either inherent to the art, or obvious to one of ordinary skill in the art, even if they have not specifically denoted that the art is to be combined with the knowledge of a person of ordinary skill in the art. Each prior art reference above describing or relating to a prior art system should be understood to discuss the system's capabilities generally and also to discuss specific examples of specific installations of the particular system. To the extent the prior art references describe various implementations of the same underlying system, that underlying system is a single reference under 35 U.S.C. §§ 102(a) and/or 102(b). The prior art references are evidence of the capabilities of the prior art system, and each chart provided for a prior art system should be understood to incorporate by reference all printed publications describing or relating to that prior art system and all charts provided for those printed publications.

In addition, each reference itself also qualifies as prior art on separate grounds as a publication under §§ 102(a) and/or 102(b). Even if the prior art references are not treated as a single prior art reference, at the very least, it would have been obvious to combine the features described in those references.

ii. Obviousness Combinations and Rationale(s) to Combine

Each anticipatory reference listed above individually discloses each limitation of the '487 Patent Asserted Claims. However, to the extent any anticipatory reference is found to lack any claim element, the '487 Patent Asserted Claims also are obvious in light of the ordinary skill in the art and the anticipatory reference itself (via single reference obviousness), or in light of further references, described in the charts attached as Exhibit A. The anticipatory references either alone or in combination with other prior art, renders the '487 Patent Asserted Claims

invalid as obvious under 35 U.S.C. § 103. In particular, each identified prior art reference may be combined with: (i) information known to persons skilled in the art at the time of the alleged inventions of the '487 Patent; or (ii) any of the other anticipatory or other prior art references identified in these contentions or the accompanying charts. In addition, Defendants incorporate by reference each and every prior art reference of record in the prosecution histories of the '487 Patent, counterpart patents, and related patent applications, as well as all statements made by the applicant in the prosecution histories of the '487 Patent, counterpart patents, and related patent applications, including any discussion of prior art or conventional features in any of the specifications of the '487 Patent, counterpart patents, and related patent applications.

Defendants incorporate by reference the statements and reasoning by the U.S. Patent and Trademark Office during prosecution of the '487 Patent and any counterpart patents or applications as to why it would have been obvious to modify or combine prior art references to achieve the limitations of the '487 Patent Asserted Claims or similar claims in any counterparts.

The alleged “inventions” recited in the asserted claims of the '487 Patent would have been obvious because the prior art, common knowledge, and the nature of the problems, viewed through the eyes of a person ordinarily skilled in the art, suggested the claimed elements. A person ordinarily skilled in the relevant fields would have possessed knowledge and skills rendering him or her capable of combining the prior art references with knowledge in the field and common sense. Moreover, the asserted claims represent well-known combinations of familiar and pre-existing elements, yielding only predictable results. Additional reasons that a person of ordinary skill in the art would have been motivated to combine the identified prior art are provided herein and in the accompanying charts and document production.

In addition to the specific combinations of prior art and the specific combinations of groups of prior art disclosed, Defendants will rely on any other combination of any prior art references disclosed herein. Defendants further will rely upon combinations disclosed within the prosecution history of the references cited herein. The obviousness combinations set forth in these contentions reflect Defendants' present understanding of the potential scope of the claims that Maxell appears to be advocating and should not be seen as Defendants' acquiescence to Maxell's interpretation of the patent claims. Defendants will amend or supplement these contentions regarding anticipation or obviousness of the asserted claims as appropriate under the applicable Rules, including in response to further information from Maxell or information discovered during discovery. Maxell has not identified what elements or combinations it alleges were not known to one of ordinary skill in the art at the time. Therefore, for any claim limitation that Maxell alleges is not disclosed in a particular prior art reference, Defendants reserve the right to assert that any such limitation is either inherent in the disclosed reference or obvious to one of ordinary skill in the art at the time in light of the same, or that the limitation is disclosed in another of the references disclosed above and in combination would have rendered the asserted claim obvious.

Additionally, any reference or combination of references that anticipates or renders obvious an asserted independent claim also renders obvious any asserted claim dependent on that independent claim because every element of each dependent claim was known by a person of ordinary skill at the time of the alleged invention, and it would have been obvious to combine those known elements with the independent claims at least as a matter of common sense and routine innovation.

To the extent any limitation is not explicitly or inherently disclosed by an item of prior art identified in Subsection A, the claimed subject matter as a whole would have been obvious to one skilled in the art at the time of the alleged invention, in view of the state of the art and knowledge of those skilled in the art. The item of prior art on its own as read by one of skill in the art would, therefore, render the relevant claims invalid for obviousness under 35 U.S.C. § 103(a).

In addition, the references identified above render one or more asserted claims of the '487 Patent obvious when the references are read in combination with each other, and/or when read in view of the state of the art and knowledge of those skilled in the art. Any of the references disclosed herein may be combined to render obvious (and therefore invalidate) each of Maxell's asserted claims. Defendants may rely upon a subset or all of the references identified, for purposes of obviousness depending on the Court's claim construction, positions taken by Maxell during this litigation, and further investigation and discovery. Defendants may rely upon combinations with any reference in the accompanying charts and any of the other references disclosed herein with respect to the '487 Patent, including combinations with any of the patents, publications or systems identified herein as prior art to the '487 Patent.

Prior art references rendering the asserted claims of the '487 Patent obvious, alone or in combination with other references, are discussed above, included in the accompanying charts, and identified in subsection (a) below, which shows representative specific combinations of references. Moreover, to the extent the foregoing references are found not to anticipate the asserted claims, the foregoing references render the asserted claims obvious either alone or in combination with one or more of the other references identified above. Exemplary reasons that a

person of ordinary skill in the art would have been motivated to combine the identified prior art are provided in below.

Defendants believe that no showing of a specific motivation to combine prior art is required to combine the references disclosed herein and in the attached charts. As reflected in the attached exhibits, and in the references themselves, there was a reason to make each combination – each combination of art would have produced no unexpected results, and each combination at most would simply represent a known alternative to one of ordinary skill in the art. *See KSR Int’l Co. v. Teleflex, Inc.*, 550 U.S. 398, 414-18 (2007) (rejecting the Federal Circuit’s “rigid” application of the teaching, suggestion, or motivation-to-combine test, instead espousing an “expansive and flexible” approach). As reflected in the attached exhibits, in the references themselves, and the discussion herein, the asserted claims of the ’487 Patent combine familiar elements according to known methods, yielding predictable results. Moreover, one of ordinary skill in the art would be prompted to modify each of these references based on design incentives or other market forces. This is true for references in the same field of endeavor as well as for references in a different field of endeavor, as one of skill would understand that techniques used to improve devices in a related or analogous field could improve similar devices in the same way. No specific reference explicitly spelling out all aspects of a proposed combination is required to show obviousness; indeed, the Supreme Court has explained that a person of ordinary skill is “a person of creativity, not an automaton,” and “in many cases a person of ordinary skill in the art will be able to fit the teachings of multiple patents together like pieces of a puzzle.” *Id.* at 420-21. As reflected in the attached exhibits, the discussion herein, and in the references themselves, the elements of the asserted claims of the ’487 Patent are all disclosed in the prior art, and one of skill would readily fit their teachings together.

Nevertheless, in addition to the information contained elsewhere in these contentions, including the exhibits, Defendants hereby identify below additional motivations and reasons to combine the cited art. To determine whether there is a reason to combine the known elements in the manner claimed by a patent, a court can “look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art.” *Id.* at 418. For example, obviousness can be demonstrated by showing “there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent’s claims.” *Id.* at 420. “[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.* Common sense also teaches that “familiar items may have obvious uses beyond their primary purposes, and in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle.” *Id.*

Applying these principles, it would have been obvious to a person of ordinary skill in the art at the time the application that issued the ’487 Patent was filed to combine, modify, or use the teachings of the prior art to make the purported inventions of those patents, including by making each of the combinations identified above. The motivation to combine the teachings of the prior art references disclosed herein can be found in each of (1) the references themselves, (2) the nature of the problem being solved, (3) the express, implied and inherent teachings of the prior art, (4) the knowledge of persons of ordinary skill in the art, (5) the fact that the prior art is generally directed towards the subject matter of each respective asserted patent, and (6) the predictable results obtained in combining the elements of the prior art.

Furthermore, all of the references identified herein with respect to the '487 Patent address the same problem of selecting a best base station for a mobile device in a wireless communication system. A person of ordinary skill in the art would have looked to other devices in the same field, such as the prior art devices and other references, because all of these references share many of the same or substantially similar components, such as base stations (also known as access points), mobile stations, transmitters, receivers, means for measuring signal strength, and means for measuring communication load. A person of ordinary skill in the art would therefore have been motivated to combine these components, knowing that these well-known elements would achieve their purposes in combination, without any difficulty and without any unexpected results.

A person having ordinary skill in the art would have been motivated to make the listed combinations because every reference related to solving the same problem (selecting a best base station for a mobile device) in the same technological field (wireless communication). *See Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc.*, 75 F.3d 1568, 1573 (Fed. Cir. 1996) (the motivation to combine “may also come from the nature of a problem to be solved, leading inventors to look to references relating to possible solutions to that problem.”).

For example, to the extent that any prior art reference is determined not to disclose “each of the base transceiver stations being connected together via a wired network,” this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, the Applicant Admitted Prior Art (“AAPA”) and/or other references. For example, without limitation, each of AAPA, Gilhousen 501, Shakhgildian, Sharma, Kostic, and EP 1133208 A2 (“Feder”) discloses this limitation. *See* Exs. A1, A3, A4, A5, A6, A7. It would have been obvious and it is inherent that a wireless communication network, for example a cellular network

or a wireless local area network (“WLAN”), comprises base stations or access points that are connected together using wired connections.

For example, to the extent that any prior art reference is determined not to disclose “causing said at least one wireless system terminal to be each concurrently connected to at least two of the base transceiver stations,” this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, the AAPA and/or other references. For example, without limitation, each of Wong, Gilhousen 501, Shakhgildian, and Sharma discloses this limitation. *See* Exs. A2, A3, A4, A5. It would have been obvious for a mobile station to concurrently connect to more than one base station in order to seamlessly roam to a station with better signal strength or lower communication load, to reduce signal interference, and/or to achieve macrodiversity which improves communication quality. *See, e.g.,* Wong at 7-8.

For example, to the extent that any prior art reference is determined not to disclose “causing said at least one wireless system terminal to perform data communication with one of said at least two base transceiver stations connected thereto,” this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, AAPA and/or other references. For example, without limitation, each of AAPA, Gilhousen 501, Shakhgildian, Kostic, and Feder discloses this limitation. *See* Exs. A1, A3, A4, A6, A7. It would have been obvious and it is inherent that data are transmitted in digital cellular systems such as CDMA systems or WLAN systems such as 802.11 systems. Moreover, the ’487 Patent broadly defines “data” as “information to be transmitted or received.” ’487 Patent at 10:1-2.

For example, to the extent that any prior art reference is determined not to disclose “measure a receiving signal strength of each of the base transceiver stations” in the event that this phrase is determined to meet the requirements of Section 112 and the “receiving signal

strength” is interpreted to mean a strength of a signal received by the base station, this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, AAPA and/or other references. For example, without limitation, each of Shakhgildian and Feder discloses this limitation. *See* Exs. A4, A7. It would have been obvious to consider not only the downlink signal strength, but also the uplink signal strength in order to select the base station(s) with good overall signal quality. *See e.g.*, Feder at [0032].

For example, to the extent that any prior art reference is determined not to disclose “connecting said at least one wireless system terminal to said each of the at least two base transceiver stations when the receiving signal strength of said each of the at least two base transceiver stations is equal to or more than a predetermined level,” this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, AAPA and/or other references. For example, without limitation, each of Wong, Gilhousen 501, Shakhgildian, Kostic, Feder, and Pinard discloses this limitation. *See* Exs. A2, A3, A4, A6, A7, A8. It would have been obvious to use a minimum threshold level as a straightforward criterion in selecting base station(s) with good signal qualities.

For example, to the extent that any prior art reference is determined not to disclose “disconnecting said at least one wireless system terminal from said each of the at least two base transceiver stations when the receiving signal strength of said each of the at least two base transceiver stations is smaller than the predetermined level,” this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, AAPA and/or other references. For example, without limitation, each of Wong and Shakhgildian discloses this limitation. *See* Exs. A2, A4. It would have been obvious to provide a mechanism to discard

base station(s) with deteriorating signal qualities, as the signal conditions in a wireless communication system change constantly.

For example, to the extent that any prior art reference is determined not to disclose “detecting a communication load on each of the at least two base transceiver stations” in the event that “communication load” is interpreted to exclude a number of connected devices, this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, AAPA and/or other references. For example, without limitation, each of AAPA, Sharma, Kostic, Feder, and Pinard discloses this limitation. *See* Exs. A1, A5, A6, A7, A8. It would have been obvious to consider communication load metrics beyond a number of connected devices as different connected devices may consume different amounts of communication resources.

For example, to the extent that any prior art reference is determined not to disclose “selecting one of the at least two base transceiver stations with a smallest communication load from among the at least two base transceiver stations,” this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, AAPA and/or other references. For example, without limitation, each of AAPA, Sharma, Kostic, Feder, and Pinard discloses this limitation. *See* Exs. A1, A5, A6, A7, A8. It would have been obvious to consider communication load in selecting a base station in order to achieve balancing of communication loads among different base stations, and it would have been obvious to use smallest load as a straightforward criterion to do so. *See, e.g.,* Sharma at 1:50-60; Feder at [0008].

For example, to the extent that any prior art reference is determined not to disclose “detection of the communication load on said each of the at least two base transceiver stations is performed according to a period of time taken for said each of the at least two base transceiver

stations to respond to transmission from said at least one wireless system terminal,” this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, AAPA and/or other references. For example, without limitation, each of Sharma, Kostic, and *Wireless Data Networking* by Muller discloses this limitation. *See* Exs. A5, A6, A9. It would have been obvious to use response time as an indication of communication load, as a person of ordinary skill in the art understood that a heavily loaded base station tended to have more communication delay. Further, even in cellular systems like CDMA, the capabilities of transmitting data packets (*e.g.*, IP packets) were desirable and widely available, *see* U.S. Pat. No. 6,999,434 (“Agrawal”) at 1:1-3:5; *Wireless Data Networking* by Muller at 193-94, and communication delay was an important characteristic of data communication load.

For example, to the extent that any prior art reference is determined not to disclose “detection of the communication load on said each of the at least two base transceiver stations is performed according to a buffered data amount of a communication buffer of said each of the at least two base transceiver stations,” this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, AAPA and/or other references. For example, without limitation, each of Kostic, Feder, and Pinard discloses this limitation. *See* Exs. A6, A7, A8. It would have been obvious to use data buffer as an indication of communication load, as a person of ordinary skill in the art understood that a heavily loaded base station tended to have a full data buffer. Further, even in cellular systems like CDMA, the capabilities of transmitting data packets (*e.g.*, IP packets) were desirable and widely available, *see* U.S. Pat. No. 6,999,434 (“Agrawal”) at 1:1-3:5; *Wireless Data Networking* by Muller at 193-94, and buffer amount was an important characteristic of data communication load.

One of ordinary skill also would have been motivated to combine any of the above references together to yield predictable results, as combining the references would simply entail combining known elements by known methods in the art. In addition, any such combination would involve the simple substitution of one known, equivalent element for another. Such combinations would have been obvious to try because there were only a finite number of predictable solutions. Any such combination would yield predictable results using known techniques and would involve the simple substitution of one known, equivalent element for another. Defendants provide exemplary motivations to combine prior art references below.

a. Exemplary Combinations

Because it would be unduly burdensome to create detailed claim charts for each and every invalidating combination, Defendants have provided illustrative examples of such invalidating combinations below. The following listing provides several exemplary combinations with respect to the '487 Patent Asserted Claims:

- Wong in view of Gilhousen 501
- Wong in view of Shakhgildian
- Wong in view of Sharma
- Wong in view of Gilhousen 501 and Sharma
- Wong in view of Feder
- Wong in view of Feder and *Wireless Data Networking*
- Wong in view of Pinard
- Wong in view of Pinard and *Wireless Data Networking*
- Gilhousen 501 in view of Sharma
- Gilhousen 501 in view of Feder

- Gilhousen 501 in view of Feder and *Wireless Data Networking*
- Gilhousen 501 in view of Pinard
- Gilhousen 501 in view of Pinard and *Wireless Data Networking*
- Shakhgildian in view of Sharma
- Shakhgildian in view of Feder
- Shakhgildian in view of Feder and *Wireless Data Networking*
- Shakhgildian in view of Pinard
- Shakhgildian in view of Pinard and *Wireless Data Networking*
- Yamashita in view of Sharma
- Yamashita in view of Feder
- Yamashita in view of Feder and *Wireless Data Networking*
- Yamashita in view of Pinard
- Yamashita in view of Pinard and *Wireless Data Networking*
- Sharma in view of Kostic
- Sharma in view of Feder
- Sharma in view of Feder and *Wireless Data Networking*
- Sharma in view of Pinard
- Sharma in view of Pinard and *Wireless Data Networking*

Defendants' identification of exemplary combinations is without limitation to Defendants identifying other invalidating combinations as appropriate. Defendants also contend that the asserted claims of the '487 Patent would have been obvious in view of the primary prior art references identified in subsection (i) above. Each of these primary references teaches all of the limitations of the '487 Patent's asserted claims. To the extent any claim limitations are found to

be missing from the primary references, in addition to the exemplary references designated for combination with the primary references, it would have been obvious to one of ordinary skill to add the missing limitation based on the corresponding disclosure of that limitation in the accompanying '487 Patent charts.

C. Claim Charts

Defendants attached claim charts as Exhibit A to Defendants' Invalidity Contentions, and identify where, in each alleged item of prior art, each element of each '487 Patent Asserted Claims are found either expressly or inherently. In these claim charts, Defendants have attempted to identify the most relevant portions of the references. The references may, however, contain additional support for claim limitations. Persons of ordinary skill in the art generally read a prior art reference as a whole and in the context of other publications and literature. Defendants may rely upon uncited portions of the references, other documents, and expert testimony to provide context or to aid in understanding the disclosures of the references. Where Defendants cite to a particular figure in a reference, the citation should be understood to encompass the caption and any corresponding description of the figure in the specification. Conversely, where Defendants cite to particular text referring to a figure, the citation should be understood to include the corresponding figure as well.

Exhibit	Charted Reference	Bates Number
A1	Applicant Admitted Prior Art ("AAPA")	
A2	Soft Handoffs in CDMA Mobile Systems ("Wong")	MAX-DEFS-PA-0005085
A3	U.S. Pat. No. 5,101,501 ("Gilhousen 501")	MAX-DEFS-PA-0004380
A4	EP 1032237 A1 ("Shakhgildian")	MAX-DEFS-PA-0004107
A5	U.S. Pat. No. 6,069,871 ("Sharma")	MAX-DEFS-PA-0004484

Exhibit	Charted Reference	Bates Number
A6	U.S. Pat. No. 7,406,319 (“Kostic”)	MAX-DEFS-PA-0004798
A7	EP 1133208 A2 (“Feder”)	MAX-DEFS-PA-0004122
A8	U.S. Pat. No. 5,815,811 (“Pinard”)	MAX-DEFS-PA-0004474
A9	Wireless Data Networking by N. J. Muller (“Wireless Data Networking”)	MAX-DEFS-PA-0013177
A10	U.S. Pat. No. 6,108,547 (“Yamashita”)	MAX-DEFS-PA-0004506

D. Invalidity of the Claims Under 35 U.S.C. § 112

Defendants further assert that the ’487 Patent is invalid under 35 U.S.C. § 112. The following are the grounds upon which Defendants contend the asserted claims of the ’487 Patent are invalid for failure to meet the requirements of 35 U.S.C. §§ 112, ¶ 1 and/or 112, ¶ 2, based on Defendants’ investigation to date and currently-available information. For each claim identified as invalid, any dependent claims of those invalid claims are also invalid under 35 U.S.C. §§ 112, ¶ 1 and/or 112, ¶ 2.

Invalidity under § 112 may depend upon the Court’s claim construction as well as Plaintiff’s infringement contentions. Thus, Defendants have identified only those issues under § 112 of which they are currently aware. Defendants reserve the right to supplement and amend these contentions based on further discovery and investigation including, in particular, the deposition of any of the named inventors.

i. Enablement and Written Description

35 U.S.C. § 112, ¶ 1 requires a patent specification to describe an invention sufficiently to convey to a person of skill in the art that the patentee had possession of the claimed invention at the time of the application. That statute further requires a patent specification to describe the manner and process of making and using the invention so as to enable a person of skill in the art

to make and use the full scope of the invention without undue experimentation. Defendants state that the following claims are invalid for failure to provide an adequate written description and enabling disclosure pursuant to 35 U.S.C. § 112, ¶ 1.

Claim²	Claim Limitations
2	“causing said at least one wireless system terminal to each measure a receiving signal strength of each of the base transceiver stations”

The asserted claims of the '487 Patent are invalid for failure to satisfy the requirements of 35 U.S.C. § 112, ¶ 1 because the specification as filed does not contain an adequate written description and/or enabling disclosure of the term “causing said at least one wireless system terminal to each measure a receiving signal strength of each of the base transceiver stations.” The '487 Patent specification does not properly describe or otherwise inform one of ordinary skill how a “wireless system terminal” can measure a “receiving signal strength” of a “base transceiver station.” Accordingly, the specification fails to reasonably convey to one of ordinary skill that the inventor had possession of the subject matter of the invention, and it fails to enable a person of ordinary skill to make and use the invention as claimed.

Defendants do not concede that Plaintiff is entitled to the earliest claimed priority date for any '487 Patent Asserted Claim and reserve the right to argue that a later priority date should apply based on information discovered during discovery and/or the Court's claim constructions. Based on the information currently available to Defendants, the claims of the '487 Patent may not be entitled to a priority date earlier than February 10, 2003.

² This includes any asserted claims that depend from the identified claims.

ii. Indefiniteness

The following claims are invalid 35 U.S.C. § 112, ¶ 2 because they fail to inform those skilled in the art about the scope of the invention with reasonable certainty when read in light of the specification and file history.

Claim³	Claim Limitations
2	“causing said at least one wireless system terminal to each measure a receiving signal strength of each of the base transceiver stations”

The asserted claims of the '487 Patent are invalid for failure to satisfy the requirements of 35 U.S.C. § 112, ¶ 2 because the specification does not describe or otherwise inform one of ordinary skill about what constitutes “causing said at least one wireless system terminal to each measure a receiving signal strength of each of the base transceiver stations.” The '487 Patent does not describe or explain what the “receiving signal strength of each of the base transceiver stations” means. As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112, ¶ 2. Therefore, the asserted claims, when read in light of the specification and the prosecution history, “fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2124 (2014).

II. INVALIDITY CONTENTIONS REGARDING THE '503 PATENT

A. Identification of Prior Art Under §§ 102 and 103

Defendants list below (MAX-DEFS-PA-0005097—MAX-DEFS-PA-0006721) the currently known prior art that anticipates or renders obvious the '503 Patent's Asserted Claims

³ This includes any asserted claims that depend from the identified claims.

under 35 U.S.C. § 102 and/or § 103 (pre-AIA) expressly or inherently as is detailed below and in the charts attached as Exhibit B.

For references that invalidate under 35 U.S.C. § 102(b), those references were publicly known and available no later than their publication dates, and persons with knowledge of that public availability include without limitation the author(s) of the reference. Defendants continue to investigate the prior art identified below and reserve the right to offer additional evidence that may be uncovered after further discovery.

Patent References

Patent Number	Priority Date	Date of Issue or Publication
U.S. Pat. No. 4,204,249	June 27, 1977	May 20, 1980
U.S. Pat. No. 4,903,222	October 14, 1988	February 20, 1990
U.S. Pat. No. 5,030,128	March 6, 1989	July 9, 1991
U.S. Pat. No. 5,107,400	November 29, 1990	April 21, 1992
U.S. Pat. No. 5,121,500	May 13, 1991	June 9, 1992
U.S. Pat. No. 5,126,954	November 29, 1990	June 30, 1992
U.S. Pat. No. 5,157,769	March 26, 1992	October 20, 1992
U.S. Pat. No. 5,239,495	August 18, 1992	August 24, 1993
U.S. Pat. No. 5,301,334	October 16, 1991	April 5, 1994
U.S. Pat. No. 5,323,291	October 15, 1992	June 21, 1994
U.S. Pat. No. 5,377,357	May 31, 1991	December 27, 1994
U.S. Pat. No. 5,381,043	February 5, 1993	January 10, 1995
U.S. Pat. No. 5,394,552	November 19, 1991	February 28, 1995
U.S. Pat. No. 5,428,798	January 14, 1994	June 27, 1995
U.S. Pat. No. 5,455,467	March 2, 1994	October 3, 1995

Patent Number	Priority Date	Date of Issue or Publication
U.S. Pat. No. 5,457,785	February 10, 1993	October 10, 1995
U.S. Pat. No. 5,491,609	February 28, 1994	February 13, 1996
U.S. Pat. No. 5,493,542	June 23, 1992	February 20, 1996
U.S. Pat. No. 5,550,985	May 2, 1994	August 27, 1996
U.S. Pat. No. 5,579,489	July 26, 1994	November 26, 1996
U.S. Pat. No. 5,598,537	July 26, 1994	January 28, 1997
U.S. Pat. No. 5,613,135	August 16, 1993	March 18, 1997
U.S. Pat. No. 5,664,118	March 24, 1995	September 2, 1997
U.S. Pat. No. 5,675,813	October 26, 1995	October 7, 1997
U.S. Pat. No. 5,758,101	July 14, 1995	May 26, 1998
U.S. Pat. No. 5,786,984	March 24, 1995	July 28, 1998
U.S. Pat. No. 5,796,965	June 14, 1996	August 18, 1998
U.S. Pat. No. 5,826,043	June 7, 1995	October 20, 1998
U.S. Pat. No. 5,852,370	October 9, 1996	December 22, 1998
U.S. Pat. No. 5,864,702	November 6, 1996	January 26, 1999
U.S. Pat. No. 5,870,615	January 9, 1995	February 9, 1999
U.S. Pat. No. 5,884,086	April 15, 1997	March 16, 1999
U.S. Pat. No. 5,930,517	July 2, 1996	July 27, 1999
U.S. Pat. No. 5,933,609	April 8, 1996	August 3, 1999
U.S. Pat. No. 5,943,507	December 22, 1994	August 24, 1999
U.S. Pat. No. 5,948,074	September 20, 1996	September 7, 1999
U.S. Pat. No. 5,974,551	October 10, 1996	October 26, 1999
U.S. Pat. No. 5,991,839	September 20, 1996	November 23, 1999

Patent Number	Priority Date	Date of Issue or Publication
U.S. Pat. No. 6,009,492	September 20, 1996	December 28, 1999
U.S. Pat. No. 6,088,620	September 20, 1996	July 11, 2000
EP 0426414	October 30, 1990	May 8, 1991
JP H07-169538	September 30, 1993	July 7, 1995
JP H08-123589	October 28, 1994	May 17, 1996

Prior Art Publications

Title	Date of Publication	Author
A Design in Interfacing the MC68HC11 to the AMD AM29F010 Flash Memory Chips	January 1997	Hands
486 color notebooks with docking stations	June 14, 1993	Paul et al.
Maintenance Manual - Extensa TM 51x Series Notebook Computers	April 1996	Texas Instruments

Copies of the foregoing references identified above have been or are being produced along with these Invalidity Contentions. Defendants are also producing art that they feel is relevant to the claimed patents and may rely on such to teach the state of the art.

Each of the references and systems listed above qualifies as prior art under one or more sections of 35 U.S.C. §§ 102 and/or 103, as detailed below. The invalidating disclosure in each of the listed references and materials is express, implicit, and/or inherent. Defendants reserve the right to rely on prior art in the accompanying production, prior art produced by Plaintiff or third parties, and/or prior art cited in the charts accompanying these invalidity contentions to show the state of the art, the knowledge of one of ordinary skill in the art, and/or the anticipation or obviousness of the '503 Patent. The references provided herein may also be relied upon to show the state of the art in the relevant time frame. Also, to the extent that any of the references listed

above are deemed not to be prior art, they may nevertheless provide evidence of prior or simultaneous invention, thereby supporting the obviousness of the asserted claims.

To the extent they constitute prior art, Defendants reserve the right to rely upon any of the following art related to the prior art identified herein: (i) foreign counterparts of the U.S. patents identified; (ii) U.S. counterparts of any foreign patents and foreign patent applications identified; (iii) U.S. and foreign patents and patent applications corresponding to any articles and publications identified; (iv) any products, prior inventions, or publications that relate to any references identified; and (v) any patents, patent applications or publications that relate to any identified system. In addition, the specification and prosecution history of the '503 Patent and related patents and/or applications contain descriptions of, and admissions concerning, the scope of the claims. Defendants intend to rely upon these descriptions and admissions. Defendants also identify all prior art references cited or included in the '503 Patent and its prosecution history, as well as any statements in either regarding the prior art in either. Defendants reserve the right to rely on documents produced by third parties as prior art. Defendants' Invalidity Contentions and identification of prior art meet the disclosure requirements of 35 U.S.C. §282(c). Defendants reserve their rights to amend their contentions to include additional prior art references.

B. Anticipation and Obviousness References

Pursuant to P.R. 3-3(a) and the Court's Discovery Order, and in light of Maxell's Infringement Contentions and accompanying claim charts, Defendants list below the prior art now known to Defendants that anticipates or renders obvious the asserted claims under 35 U.S.C. § 102 and/or 103. Defendants' contentions do not imply any admission or suggestion that a specific prior art reference does not independently anticipate the '503 Patent Asserted Claims.

Each individual prior art reference identified in Subsection A, above, that anticipates and/or each combination that renders obvious the '503 Patent Asserted Claims is described below.

Although Defendants have identified at least one disclosure of a limitation for each prior art reference, each and every disclosure of the same limitation in the same reference is not necessarily identified. To focus the issues, Defendants cite only representative portions of an identified reference, even where a reference may contain additional support for a particular claim limitation. Persons of ordinary skill in the art generally read an item of prior art as a whole and in the context of other publications and literature. Thus, to understand and interpret any specific statement or disclosure within a prior art reference, such persons would rely on other information within the reference, along with other publications and their general scientific knowledge. Defendants may rely upon uncited portions of the prior art references and on other publications and expert testimony to provide context, and as aids to understanding and interpreting the portions that are cited.

Further, some or all of the systems identified below or identified in the prior art publications and patents will be the subject of continuing investigation and discovery, including on-going and currently uncompleted third party discovery. Defendants reserve the right to supplement their contentions consistent with the Federal Rules and the Local Patent Rules, in the event that additional information is discovered relating to these systems.

i. Anticipating Reference(s)

Defendants identify the following reference(s) as anticipating one or more of the '503 Patent Asserted Claims under 35 U.S.C. § 102. The below table of anticipating references is exemplary, and it does not constitute an admission that any reference anticipates only the listed claims.

Anticipating References

Anticipating Prior Art	Asserted Claim(s)
US 5,948,074 (“Ninomiya”)	1, 2, 3, 6, 10, 11, 12, 15, 19, 20, 21, 24, 25, 26
EP 0426414 (“Hibi”)	1, 2, 3, 6, 10, 11, 12, 15, 19, 20, 21, 24, 25, 26
US 5,884,086 (“Amoni”)	1, 2, 6, 10, 11, 15, 19, 20, 24, 25, 26
US 5,664,118 (“Nishigaki”)	1, 2, 3, 6, 10, 11, 12, 15, 19, 20, 21, 24, 25, 26
US 5,301,334 (“Horiuchi”)	1, 2, 3, 6, 10, 11, 12, 15, 19, 20, 21, 24, 25, 26
US 5,870,615 (“Bar-on”)	1, 2, 3, 6, 10, 11, 12, 15, 19, 20, 21, 24, 25, 26
US 5,428,798 (“Sekine”)	1, 2, 3, 6, 10, 11, 12, 15, 19, 20, 21, 24, 25, 26
US 5,796,965 (“Choi”)	1, 2, 3, 6, 10, 11, 12, 15, 19, 20, 21, 24, 25, 26

To the extent any item of prior art cited above is deemed not to disclose, explicitly or inherently, any limitation of a '503 Patent Asserted Claim, Defendants reserve the right to argue that any difference between that prior art and the corresponding patent claim would have been either inherent to the art, or obvious to one of ordinary skill in the art, even if they have not specifically denoted that the art is to be combined with the knowledge of a person of ordinary skill in the art. Each prior art reference above describing or relating to a prior art system should be understood to discuss the system's capabilities generally and also to discuss specific examples of specific installations of the particular system. To the extent the prior art references describe various implementations of the same underlying system, that underlying system is a single reference under 35 U.S.C. §§ 102(a) and/or 102(b). The prior art references are evidence of the capabilities of the prior art system, and each chart provided for a prior art system should be understood to incorporate by reference all printed publications describing or relating to that prior art system and all charts provided for those printed publications.

In addition, each reference itself also qualifies as prior art on separate grounds as a publication under §§ 102(a) and/or 102(b). Even if the prior art references are not treated as a single prior art reference, at the very least, it would have been obvious to combine the features described in those references.

ii. Obviousness Combinations and Rationale(s) to Combine

Each anticipatory reference listed above individually discloses each limitation of the '503 Patent Asserted Claims. However, to the extent any anticipatory reference is found to lack any claim element, the '503 Patent Asserted Claims also are obvious in light of the ordinary skill in the art and the anticipatory reference itself (via single reference obviousness), or in light of further references, described in the charts attached as Exhibit B. The anticipatory references either alone or in combination with other prior art, renders the '503 Patent Asserted Claims invalid as obvious under 35 U.S.C. § 103. In particular, each identified prior art reference may be combined with: (i) information known to persons skilled in the art at the time of the alleged inventions of the '503 Patent; or (ii) any of the other anticipatory or other prior art references identified in these contentions or the accompanying charts. In addition, Defendants incorporate by reference each and every prior art reference of record in the prosecution histories of the '503 Patent, counterpart patents, and related patent applications, as well as all statements made by the applicant in the prosecution histories of the '503 Patent, counterpart patents, and related patent applications, including any discussion of prior art or conventional features in any of the specifications of the '503 Patent, counterpart patents, and related patent applications.

Defendants incorporate by reference the statements and reasoning by the U.S. Patent and Trademark Office during prosecution of the '503 Patent and any counterpart patents or applications as to why it would have been obvious to modify or combine prior art references to achieve the limitations of the '503 Patent Asserted Claims or similar claims in any counterparts.

The alleged “inventions” recited in the asserted claims of the ’503 Patent would have been obvious because the prior art, common knowledge, and the nature of the problems, viewed through the eyes of a person ordinarily skilled in the art, suggested the claimed elements. A person ordinarily skilled in the relevant fields would have possessed knowledge and skills rendering him or her capable of combining the prior art references with knowledge in the field and common sense. Moreover, the asserted claims represent well-known combinations of familiar and pre-existing elements, yielding only predictable results. Additional reasons that a person of ordinary skill in the art would have been motivated to combine the identified prior art are provided herein and in the accompanying charts and document production.

In addition to the specific combinations of prior art and the specific combinations of groups of prior art disclosed, Defendants will rely on any other combination of any prior art references disclosed herein. Defendants further will rely upon combinations disclosed within the prosecution history of the references cited herein. The obviousness combinations set forth in these contentions reflect Defendants’ present understanding of the potential scope of the claims that Maxell appears to be advocating and should not be seen as Defendants’ acquiescence to Maxell’s interpretation of the patent claims. Defendants will amend or supplement these contentions regarding anticipation or obviousness of the asserted claims as appropriate under the applicable Rules, including in response to further information from Maxell or information discovered during discovery. Maxell has not identified what elements or combinations it alleges were not known to one of ordinary skill in the art at the time. Therefore, for any claim limitation that Maxell alleges is not disclosed in a particular prior art reference, Defendants reserve the right to assert that any such limitation is either inherent in the disclosed reference or obvious to one of ordinary skill in the art at the time in light of the same, or that the limitation is disclosed in

another of the references disclosed above and in combination would have rendered the asserted claim obvious.

Additionally, any reference or combination of references that anticipates or renders obvious an asserted independent claim also renders obvious any asserted claim dependent on that independent claim because every element of each dependent claim was known by a person of ordinary skill at the time of the alleged invention, and it would have been obvious to combine those known elements with the independent claims at least as a matter of common sense and routine innovation.

To the extent any limitation is not explicitly or inherently disclosed by an item of prior art identified in Subsection A, the claimed subject matter as a whole would have been obvious to one skilled in the art at the time of the alleged invention, in view of the state of the art and knowledge of those skilled in the art. The item of prior art on its own as read by one of skill in the art would, therefore, render the relevant claims invalid for obviousness under 35 U.S.C. § 103(a).

In addition, the references identified above render one or more asserted claims of the '503 Patent obvious when the references are read in combination with each other, and/or when read in view of the state of the art and knowledge of those skilled in the art. Any of the references disclosed herein may be combined to render obvious (and therefore invalidate) each of Maxell's asserted claims. Defendants may rely upon a subset or all of the references identified, for purposes of obviousness depending on the Court's claim construction, positions taken by Maxell during this litigation, and further investigation and discovery. Defendants may rely upon combinations with any reference in the accompanying charts and any of the other

references disclosed herein with respect to the '503 Patent, including combinations with any of the patents, publications or systems identified herein as prior art to the '503 Patent.

Prior art references rendering the asserted claims of the '503 Patent obvious, alone or in combination with other references, are discussed above, included in the accompanying charts, and identified in subsection (a) below, which shows representative specific combinations of references. Moreover, to the extent the foregoing references are found not to anticipate the asserted claims, the foregoing references render the asserted claims obvious either alone or in combination with one or more of the other references identified above. Exemplary reasons that a person of ordinary skill in the art would have been motivated to combine the identified prior art are provided in below.

Defendants believe that no showing of a specific motivation to combine prior art is required to combine the references disclosed herein and in the attached charts. As reflected in the attached exhibits, and in the references themselves, there was a reason to make each combination – each combination of art would have produced no unexpected results, and each combination at most would simply represent a known alternative to one of ordinary skill in the art. *See KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 414-18 (2007) (rejecting the Federal Circuit's "rigid" application of the teaching, suggestion, or motivation-to-combine test, instead espousing an "expansive and flexible" approach). As reflected in the attached exhibits, in the references themselves, and the discussion herein, the asserted claims of the '503 Patent combine familiar elements according to known methods, yielding predictable results. Moreover, one of ordinary skill in the art would be prompted to modify each of these references based on design incentives or other market forces. This is true for references in the same field of endeavor as well as for references in a different field of endeavor, as one of skill would understand that

techniques used to improve devices in a related or analogous field could improve similar devices in the same way. No specific reference explicitly spelling out all aspects of a proposed combination is required to show obviousness; indeed, the Supreme Court has explained that a person of ordinary skill is “a person of creativity, not an automaton,” and “in many cases a person of ordinary skill in the art will be able to fit the teachings of multiple patents together like pieces of a puzzle.” *Id.* at 420-21. As reflected in the attached exhibits, the discussion herein, and in the references themselves, the elements of the asserted claims of the ’503 Patent are all disclosed in the prior art, and one of skill would readily fit their teachings together.

Nevertheless, in addition to the information contained elsewhere in these contentions, including the exhibits, Defendants hereby identify below additional motivations and reasons to combine the cited art. To determine whether there is a reason to combine the known elements in the manner claimed by a patent, a court can “look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art.” *Id.* at 418. For example, obviousness can be demonstrated by showing “there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent’s claims.” *Id.* at 420. “[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.* Common sense also teaches that “familiar items may have obvious uses beyond their primary purposes, and in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle.” *Id.*

Applying these principles, it would have been obvious to a person of ordinary skill in the art at the time the application that issued as the ’503 Patent was filed to combine, modify, or use

the teachings of the prior art to make the purported inventions of those patents, including by making each of the combinations identified above. The motivation to combine the teachings of the prior art references disclosed herein can be found in each of (1) the references themselves, (2) the nature of the problem being solved, (3) the express, implied and inherent teachings of the prior art, (4) the knowledge of persons of ordinary skill in the art, (5) the fact that the prior art is generally directed towards the subject matter of each respective asserted patent, and (6) the predictable results obtained in combining the elements of the prior art.

Furthermore, all of the references identified herein with respect to the '503 Patent address the same problem of relaying power provided to a computer to a peripheral unit connected to the computer using a minimum number of connectors. A person of ordinary skill in the art would have looked to other devices in the same field, such as the prior art devices and other references, because all of these references share many of the same or substantially similar components, such as a laptop computer receiving power through an AC adapter and providing power to a peripheral unit, such as an optical disk, through the same connector used to transfer data. A person of ordinary skill in the art would therefore have been motivated to combine these terminals—often implemented simply as pins and corresponding sockets—into a single connector (e.g., a single plug or socket), knowing that these well-known elements would achieve their purposes in combination, without any difficulty and without any unexpected results.

A person having ordinary skill in the art would have been motivated to make the listed combinations because every reference related to solving the same problem, relaying power through an intermediary device, in the same technological field, computers and computer accessories. *See Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc.*, 75 F.3d 1568, 1573 (Fed.

Cir. 1996) (the motivation to combine “may also come from the nature of a problem to be solved, leading inventors to look to references relating to possible solutions to that problem.”).

As interpreted by Plaintiff in their infringement contentions, the invention claimed by Claim 1 is embodied in a smartphone connected to a USB cable capable of transferring both power (to recharge the phone) and data (to transfer data to or from the phone). Many of claim 1’s elements are met by prior art laptop computers—e.g., a CPU, display, memory, battery, and a first electricity terminal that can be connected to an AC adapter to charge the battery. Claim 1 adds to this prior art laptop a single connector having two terminals—one for electricity and another for data signals. As interpreted by Plaintiff, this connector is met by one end of a cable because both electricity and data can pass through it and as electricity passes through the end of the cable, the terminal receives electricity on one side and sends electricity on the other side.

Details of motivations to combine are provided in the accompanying charts. Generally:

Ninomiya discloses an expansion unit (docking station) for a portable computer. Power can be sent to and received from the docking station. To the extent Ninomiya does not explicitly disclose a terminal that receives electric power, Ninomiya does explicitly disclose receiving electric power from an AC adapter. Thus it is inherent and obvious that Ninomiya’s portable computer must have a terminal for the AC adapter to be plugged to. Such inherency and obviousness are evidenced in other charted references, *e.g.*, Horiuchi and Sekine.

Amoni discloses a host computer that receives power from an AC adapter and is connected to a peripheral using a cable with a single connector through which both power and data are transferred. To meet elements such as a battery and portability requires only that the host computer be interpreted to be a prior art laptop computer. Since the other references

actually teach a laptop computer meeting the “single connector” between the laptop and the peripherals, any of those references could be combined with Amoni.

Sekine discloses laptop computer capable of connecting to an expansion unit which communicates both power and signal to the laptop computer. To the extent Sekine does not explicitly disclose an AC adapter for supplying power to the laptop, it is inherent and obvious that a laptop has a terminal for an AC adapter to be plugged in. For example, Ninomiya, Hibi, Horiuchi and Choi among other charted references specifically identify such AC adapter terminals. To the extent Sekine does not explicitly disclose that its connector has pins, it is inherent and obvious that a connector must have pins as evidenced in, *e.g.*, Ninomiya, Amoni, Nishigaki, Horiuchi and Choi.

Limitations added by the dependent claim are, to the extent not explicitly disclosed, either inherent or obvious because they were typical implementations of power connections. For example, power supplies were almost always used to provide power having specific characteristics, including voltage, to various components, including the battery, display, CPU or memory. Power and signal terminals were often implemented using pins.

One of ordinary skill also would have been motivated to combine any of the above references together to yield predictable results, as combining the references would simply entail combining known elements by known methods in the art. In addition, any such combination would involve the simple substitution of one known, equivalent element for another. Such combinations would have been obvious to try because there were only a finite number of predictable solutions. Any such combination would yield predictable results using known techniques and would involve the simple substitution of one known, equivalent element for another. Defendants provide exemplary motivations to combine prior art references below.

a. Exemplary Combinations

The following listing provides several exemplary combinations with respect to the '503

Patent Asserted Claims:

- Ninomiya can be combined with any of the other charted anticipatory references to provide elements not found in Ninomiya.
- Amoni can be combined with any of the other charted anticipatory references to provide elements not found in Amoni.
- Sekine can be combined with any of the other charted anticipatory references to provide elements not found in Sekine.

Any of the remaining references can be combined with any other reference to the extent any reference fails to explicitly disclose an element explicitly disclosed by another reference.

Defendants' identification of exemplary combinations is without limitation to Defendants identifying other invalidating combinations as appropriate. Defendants also contend that the asserted claims of the '503 Patent would have been obvious in view of the primary prior art references identified in subsection (i) above. Each of these primary references teaches all of the limitations of the '503 Patent's asserted claims. To the extent any claim limitations are found to be missing from the primary references, in addition to the exemplary references designated for combination with the primary references, it would have been obvious to one of ordinary skill to add the missing limitation based on the corresponding disclosure of that limitation in the accompanying '503 Patent charts.

C. Claim Charts

Defendants attached claim charts as Exhibit B to Defendants' Invalidity Contentions, and identify where, in each alleged item of prior art, each element of each '503 Patent Asserted Claims are found either expressly or inherently. In these claim charts, Defendants have attempted to identify the most relevant portions of the references. The references may, however,

contain additional support for claim limitations. Persons of ordinary skill in the art generally read a prior art reference as a whole and in the context of other publications and literature. Defendants may rely upon uncited portions of the references, other documents, and expert testimony to provide context or to aid in understanding the disclosures of the references. Where Defendants cite to a particular figure in a reference, the citation should be understood to encompass the caption and any corresponding description of the figure in the specification. Conversely, where Defendants cite to particular text referring to a figure, the citation should be understood to include the corresponding figure as well.

Exhibit	Charted Reference	Bates Number
B1	U.S. Pat. No. 5,948,074 (“Ninomiya”)	MAX-DEFS-PA-0006622
B2	EP 0426414 (“Hibi”)	MAX-DEFS-PA-0005097
B3	U.S. Pat. No. 5,884,086 (“Amoni”)	MAX-DEFS-PA-0006433
B4	U.S. Pat. No. 5,664,118 (“Nishigaki”)	MAX-DEFS-PA-0005783
B5	U.S. Pat. No. 5,301,334 (“Horiuchi”)	MAX-DEFS-PA-0005458
B6	U.S. Pat. No. 5,870,615 (“Bar-On”)	MAX-DEFS-PA-0006421
B7	U.S. Pat. No. 5,428,798 (“Sekine”)	MAX-DEFS-PA-0005570
B8	U.S. Pat. No. 5,796,965 (“Choi”)	MAX-DEFS-PA-0006087

D. Invalidity of the Claims Under 35 U.S.C. § 112

Defendants further assert that the ’503 Patent is invalid under 35 U.S.C. § 112. The following are the grounds upon which Defendants contend the asserted claims of the ’503 Patent are invalid for failure to meet the requirements of 35 U.S.C. §§ 112, ¶ 1 and/or 112, ¶ 2, based on Defendants’ investigation to date and currently-available information. For each claim identified

as invalid, any dependent claims of those invalid claims are also invalid under 35 U.S.C. §§ 112, ¶ 1 and/or 112, ¶ 2.

Invalidity under § 112 may depend upon the Court’s claim construction as well as Plaintiff’s infringement contentions. Thus, Defendants have identified only those issues under § 112 of which they are currently aware. Defendants reserve the right to supplement and amend these contentions based on further discovery and investigation including, in particular, the deposition of any of the named inventors.

i. Enablement and Written Description

35 U.S.C. § 112, ¶ 1 requires a patent specification to describe an invention sufficiently to convey to a person of skill in the art that the patentee had possession of the claimed invention at the time of the application. That statute further requires a patent specification to describe the manner and process of making and using the invention so as to enable a person of skill in the art to make and use the full scope of the invention without undue experimentation. Defendants state that the following claims are invalid for failure to provide an adequate written description and enabling disclosure pursuant to 35 U.S.C. § 112, ¶ 1.

Claim⁴	Claim Limitation
19	“a connector being capable of sending voltage to and receiving voltage from an external apparatus”

The asserted claims of the ’503 Patent are invalid for failure to satisfy the requirements of 35 U.S.C. § 112, ¶ 1 because the specification as filed does not contain an adequate written description and/or enabling disclosure of the term “a connector being capable of sending voltage to and receiving voltage from an external apparatus.” The cited limitation is a non-sequitur that is

⁴ This includes any asserted claims that depend from the identified claims.

not and cannot be enabled or properly described. Voltage is an electrical potential difference between two points in a circuit. Voltage cannot be sent or received. Accordingly, the specification fails to reasonably convey to one of ordinary skill that the inventor had possession of the subject matter of the invention, and it fails to enable a person of ordinary skill to make and use the invention as claimed.

i. Indefiniteness

The following claims are invalid 35 U.S.C. § 112, ¶ 2 because they fail to inform those skilled in the art about the scope of the invention with reasonable certainty when read in light of the specification and file history.

Claim⁵	Claim Limitations
All claims	“terminal”
1	“a second electricity terminal sending and receiving electric power”
10	“a second electricity terminal being capable of sending and receiving electric power to/from an external apparatus”
19	“a connector being capable of sending voltage to and receiving voltage from an external apparatus”

The asserted claims of the '503 Patent are invalid for failure to satisfy the requirements of 35 U.S.C. § 112, ¶ 2 because the specification does not describe or otherwise inform one of ordinary skill about what constitutes “terminal.” The specification does not use the word “terminal,” and what structures are within its scope is uncertain. As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112, ¶ 2. Therefore, the asserted claims, when read in light of the specification and the prosecution history, “fail to inform, with reasonable certainty, those skilled

⁵ This includes any asserted claims that depend from the identified claims.

in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2124 (2014).

The asserted claims of the ’503 Patent are invalid for failure to satisfy the requirements of 35 U.S.C. § 112, ¶ 2 because the specification does not describe or otherwise inform one of ordinary skill about what constitutes “a second electricity terminal sending and receiving electric power.” One interpretation is that as the terminal is connected, electric power passes in both directions across the terminal during normal operation. In contrast, Plaintiff’s infringement contentions appear to interpret “sending and receiving power” to mean only that electric power passes in one direction through the terminal. As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112, ¶ 2. Therefore, the asserted claims, when read in light of the specification and the prosecution history, “fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2124 (2014).

The asserted claims of the ’503 Patent are invalid for failure to satisfy the requirements of 35 U.S.C. § 112, ¶ 2 because the specification does not describe or otherwise inform one of ordinary skill about what constitutes “a second electricity terminal being capable of sending and receiving electric power to/from an external apparatus.” “Being capable of sending and receiving” is indefinite because it does not require either sending or receiving but instead requires some evaluation of capability without specifying how that capability is to be determined. Even if interpreted to require sending or receiving, it is ambiguous. For example, one interpretation is that as the terminal is connected, it sends and receives electric power to and from an external apparatus during normal operation. In contrast, Plaintiff’s infringement contentions appear to interpret the limitation to mean only that electric power passes in one

direction through the terminal. As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112, ¶ 2. Therefore, the asserted claims, when read in light of the specification and the prosecution history, “fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2124 (2014).

The asserted claims of the ’503 Patent are invalid for failure to satisfy the requirements of 35 U.S.C. § 112, ¶ 2 because the specification does not describe or otherwise inform one of ordinary skill about what constitutes “a connector being capable of sending voltage to and receiving voltage from an external apparatus.” “Being capable” of sending or receiving is ambiguous and indefinite because it does not require either sending or receiving but instead requires some evaluation of capability without specifying how that capability is to be determined. The limitation is a non-sequitur because voltage is a potential difference between two points in a circuit and cannot be “sent” or “received.” Even if voltage could be sent or received, the scope is ambiguous. For example, one interpretation is that as the terminal is connected, it sends and receives electric power to and from an external apparatus during normal operation. In contrast, Plaintiff’s infringement contentions appear to interpret the limitation to mean only that electric power passes in one direction through the terminal. As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112, ¶ 2. Therefore, the asserted claims, when read in light of the specification and the prosecution history, “fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2124 (2014).

III. INVALIDITY CONTENTIONS REGARDING THE '086 PATENT

A. Identification of Prior Art Under §§ 102 and 103

Defendants list below (MAX-DEFS-PA-0000434—MAX-DEFS-PA-0000958; MAX-DEFS-PA-0013054—MAX-DEFS-PA-0013103) the currently known prior art that anticipates or renders obvious the '086 Patent's Asserted Claims under 35 U.S.C. § 102 and/or § 103 (pre-AIA) expressly or inherently as is detailed below and in the charts attached as Exhibit C.

For references that invalidate under 35 U.S.C. § 102(b), those references were publicly known and available no later than their publication dates, and persons with knowledge of that public availability include without limitation the author(s) of the reference. Defendants continue to investigate the prior art identified below and reserve the right to offer additional evidence that may be uncovered after further discovery.

Patent References

Patent Number	Priority Date	Date of Issue or Publication
U.S. Pat. Pub. No. 2009/0313693 A1("Rogers")	June 16, 2008	December 17, 2009
U.S. Pat. Pub. No. 2009/0169070 A1 ("Fadell")	February 13, 2008	July 2, 2009
U.S. Pat. No. 8,904,479 ("Johannson")	March 28, 2008	December 2, 2014
U.S. Pat. No. 9,626,099 ("Michaelis")	September 30, 2010	April 18, 2017
U.S. Pat. Pub. No. 2010/0225443 A1 ("Bayram")	January 5, 2010	September 9, 2010
U.S. Pat. Pub. No. 2010/0279738 A1 ("Kim")	April 28, 2010	November 4, 2010
U.S. Pat. No. 6,950,539 ("Bjorn")	September 16, 1998	September 27, 2005
U.S. Pat. No. 6,546,122 ("Russo")	July 29, 1999	April 8, 2003
U.S. Pat. No. 9,304,602 ("Ghassabian 602")	December 20, 2010	April 5, 2016
U.S. Pat. Pub. No. 2005/0253814 A1 ("Ghassabian 814")	January 20, 2005	November 17, 2005

Patent Number	Priority Date	Date of Issue or Publication
U.S. Pat. Pub. No. 2007/0152976 A1 (“Townsend”)	December 30, 2005	July 5, 2007
U.S. Pat. Pub. No. 2010/0303311 A1 (“Shin”)	May 26, 2010	December 2, 2010
U.S. Pat. Pub. No. 2010/0325721 A1 (“Bandyopadhyay”)	June 17, 2009	December 23, 2010
U.S. Pat. Pub. No. 2012/0056846 A1 (“Zaliva”)	March 1, 2011	March 8, 2012
U.S. Pat. No. 7,982,721 (“Hio”)	November 30, 2007	July 19, 2011
U.S. Pat. No. 8,528,073 (“Tawara”)	December 31, 2009	September 3, 2013
U.S. Pat. No. 6,360,004 (“Akizuki”)	December 29, 1998	March 19, 2002
Japanese Pat. App. No. JPH05100809 (“Mizuguchi”)	October 7, 1991	April 23, 1993

Prior Art Publications

Title	Author	Date of Publication
TapSense: Enhancing Finger Interaction on Touch Surfaces	Chris Harrison, Julia Schwarz, Scott E. Hudson	October 19, 2011
Detecting and Leveraging Finger Orientation for Interaction with Direct-Touch Surfaces	Feng Wang, Xiang Cao, Xiangshi Ren, Pourang Irani	October 7, 2009
User Authentication using Combination of Behavioral Biometrics over the Touchpad acting like Touch screen of Mobile Device	Hataichanok Saevanee, Pattarasinee Bhatarakosol	2008
Finger Identification for Touch Panel Operation Using Tapping Fluctuation	Yusuke Numabe, Hidetoshi Nonaka, Takeshi Yoshikawa	2009
The Generalized Perceived Input Point Model and How to Double Touch Accuracy by Extracting Fingerprints	Christian Holz, Patrick Baudisch	April 10, 2010

Title	Author	Date of Publication
Automatic Fingerprint Identification	Marce Eleccion	1972

Prior Art Products and Uses⁶

Prior Art Products and Uses	Primary Publisher
Commercial apparatuses with a fingerprint scanner such as the Toshiba G500 and G900	Toshiba
Commercial apparatuses with a fingerprint sensor such as the Motorola Atrix	Motorola

Copies of the foregoing references identified above have been or are being produced along with these Invalidity Contentions. Defendants are also producing art that they feel is relevant to the claimed patents and may rely on such to teach the state of the art.

Each of the references and systems listed above qualifies as prior art under one or more sections of 35 U.S.C. §§ 102 and/or 103, as detailed below. The invalidating disclosure in each of the listed references and materials is express, implicit, and/or inherent. Defendants reserve the right to rely on prior art in the accompanying production, prior art produced by Plaintiff or third parties, and/or prior art cited in the charts accompanying these invalidity contentions to show the state of the art, the knowledge of one of ordinary skill in the art, and/or the anticipation or obviousness of the '086 Patent. The references provided herein may also be relied upon to show the state of the art in the relevant time frame. Also, to the extent that any of the references listed above are deemed not to be prior art, they may nevertheless provide evidence of prior or simultaneous invention, thereby supporting the obviousness of the asserted claims.

⁶ These prior uses are prior art under 35 U.S.C. § 102(a) (known or used in the US); (b) (public use in the US); and/or (g) (made in the US).

To the extent they constitute prior art, Defendants reserve the right to rely upon any of the following art related to the prior art identified herein: (i) foreign counterparts of the U.S. patents identified; (ii) U.S. counterparts of any foreign patents and foreign patent applications identified; (iii) U.S. and foreign patents and patent applications corresponding to any articles and publications identified; (iv) any products, prior inventions, or publications that relate to any references identified; and (v) any patents, patent applications or publications that relate to any identified system. In addition, the specification and prosecution history of the '086 Patent and related patents and/or applications contain descriptions of, and admissions concerning, the scope of the claims. Defendants intend to rely upon these descriptions and admissions. Defendants also identify all prior art references cited or included in the '086 Patent and its prosecution history, as well as any statements in either regarding the prior art in either. Defendants reserve the right to rely on documents produced by third parties as prior art. Defendants' Invalidity Contentions and identification of prior art meet the disclosure requirements of 35 U.S.C. §282(c). Defendants reserve their rights to amend their contentions to include additional prior art references.

B. Anticipation and Obviousness References

Pursuant to P.R. 3-3(a) and the Court's Discovery Order, and in light of Maxell's Infringement Contentions and accompanying claim charts, Defendants list below the prior art now known to Defendants that anticipates or renders obvious the asserted claims under 35 U.S.C. § 102 and/or 103. Defendants' contentions do not imply any admission or suggestion that a specific prior art reference does not independently anticipate the '086 Patent Asserted Claims. Each individual prior art reference identified in Subsection A, above, that anticipates and/or each combination that renders obvious the '086 Patent Asserted Claims is described below.

Although Defendants have identified at least one disclosure of a limitation for each prior art reference, each and every disclosure of the same limitation in the same reference is not necessarily identified. To focus the issues, Defendants cite only representative portions of an identified reference, even where a reference may contain additional support for a particular claim limitation. Persons of ordinary skill in the art generally read an item of prior art as a whole and in the context of other publications and literature. Thus, to understand and interpret any specific statement or disclosure within a prior art reference, such persons would rely on other information within the reference, along with other publications and their general scientific knowledge. Defendants may rely upon uncited portions of the prior art references and on other publications and expert testimony to provide context, and as aids to understanding and interpreting the portions that are cited.

Further, some or all of the systems identified below or identified in the prior art publications and patents will be the subject of continuing investigation and discovery, including on-going and currently uncompleted third party discovery. Defendants reserve the right to supplement their contentions consistent with the Federal Rules and the Local Patent Rules, in the event that additional information is discovered relating to these systems.

i. Anticipating Reference(s)

Defendants identify the following reference(s) as anticipating one or more of the '086 Patent Asserted Claims under 35 U.S.C. § 102. The below table of anticipating references is exemplary, and it does not constitute an admission that any reference anticipates only the listed claims.

Anticipating References

Anticipating Prior Art	Asserted Claim(s)
U.S. Pat. Pub. No. 2009/0313693 A1 (“Rogers”)	1-4
U.S. Pat. Pub. No. 2009/0169070 A1 (“Fadell”)	1-4
U.S. Pat. No. 8,904,479 (“Johansson”)	1-4
U.S. Pat. No. 9,626,099 (“Michaelis”)	1-4
U.S. Pat. Pub. No. 2010/0225443 A1 (“Bayram”)	1-4
U.S. Pat. Pub. No. 2010/0279738 A1 (“Kim”)	1-4
U.S. Pat. No. 6,950,539 (“Bjorn”)	1-4

To the extent any item of prior art cited above is deemed not to disclose, explicitly or inherently, any limitation of a '086 Patent Asserted Claim, Defendants reserve the right to argue that any difference between that prior art and the corresponding patent claim would have been either inherent to the art, or obvious to one of ordinary skill in the art, even if they have not specifically denoted that the art is to be combined with the knowledge of a person of ordinary skill in the art. Each prior art reference above describing or relating to a prior art system should be understood to discuss the system’s capabilities generally and also to discuss specific examples of specific installations of the particular system. To the extent the prior art references describe various implementations of the same underlying system, that underlying system is a single reference under 35 U.S.C. §§ 102(a) and/or 102(b). The prior art references are evidence of the

capabilities of the prior art system, and each chart provided for a prior art system should be understood to incorporate by reference all printed publications describing or relating to that prior art system and all charts provided for those printed publications.

In addition, each reference itself also qualifies as prior art on separate grounds as a publication under §§ 102(a) and/or 102(b). Even if the prior art references are not treated as a single prior art reference, at the very least, it would have been obvious to combine the features described in those references.

ii. Obviousness Combinations and Rationale(s) to Combine

Each anticipatory reference listed above individually discloses each limitation of the '086 Patent Asserted Claims. However, to the extent any anticipatory reference is found to lack any claim element, the '086 Patent Asserted Claims also are obvious in light of the ordinary skill in the art and the anticipatory reference itself (via single reference obviousness), or in light of further references, described in the charts attached as Exhibit C. The anticipatory references alone or in combination with other prior art, renders the '086 Patent Asserted Claims invalid as obvious under 35 U.S.C. § 103. In particular, each identified prior art reference may be combined with: (i) information known to persons skilled in the art at the time of the alleged inventions of the '086 Patent; or (ii) any of the other anticipatory or other prior art references identified in these contentions or the accompanying charts. In addition, Defendants incorporate by reference each and every prior art reference of record in the prosecution histories of the '086 Patent, counterpart patents, and related patent applications, as well as all statements made by the applicant in the prosecution histories of the '086 Patent, counterpart patents, and related patent applications, including any discussion of prior art or conventional features in any of the specifications of the '086 Patent, counterpart patents, and related patent applications.

Defendants incorporate by reference the statements and reasoning by the U.S. Patent and Trademark Office during prosecution of the '086 Patent and any counterpart patents or applications as to why it would have been obvious to modify or combine prior art references to achieve the limitations of the '086 Patent Asserted Claims or similar claims in any counterparts.

The alleged “inventions” recited in the asserted claims of the '086 Patent would have been obvious because the prior art, common knowledge, and the nature of the problems, viewed through the eyes of a person ordinarily skilled in the art, suggested the claimed elements. A person ordinarily skilled in the relevant fields would have possessed knowledge and skills rendering him or her capable of combining the prior art references with knowledge in the field and common sense. Moreover, the asserted claims represent well-known combinations of familiar and pre-existing elements, yielding only predictable results. Additional reasons that a person of ordinary skill in the art would have been motivated to combine the identified prior art are provided herein and in the accompanying charts and document production.

In addition to the specific combinations of prior art and the specific combinations of groups of prior art disclosed, Defendants will rely on any other combination of any prior art references disclosed herein. Defendants further will rely upon combinations disclosed within the prosecution history of the references cited herein. The obviousness combinations set forth in these contentions reflect Defendants’ present understanding of the potential scope of the claims that Maxell appears to be advocating and should not be seen as Defendants’ acquiescence to Maxell’s interpretation of the patent claims. Defendants will amend or supplement these contentions regarding anticipation or obviousness of the asserted claims as appropriate under the applicable Rules, including in response to further information from Maxell or information discovered during discovery. Maxell has not identified what elements or combinations it alleges

were not known to one of ordinary skill in the art at the time. Therefore, for any claim limitation that Maxell alleges is not disclosed in a particular prior art reference, Defendants reserve the right to assert that any such limitation is either inherent in the disclosed reference or obvious to one of ordinary skill in the art at the time in light of the same, or that the limitation is disclosed in another of the references disclosed above and in combination would have rendered the asserted claim obvious.

Additionally, any reference or combination of references that anticipates or renders obvious an asserted independent claim also renders obvious any asserted claim dependent on that independent claim because every element of each dependent claim was known by a person of ordinary skill at the time of the alleged invention, and it would have been obvious to combine those known elements with the independent claims at least as a matter of common sense and routine innovation.

To the extent any limitation is not explicitly or inherently disclosed by an item of prior art identified in Subsection A, the claimed subject matter as a whole would have been obvious to one skilled in the art at the time of the alleged invention, in view of the state of the art and knowledge of those skilled in the art. The item of prior art on its own as read by one of skill in the art would, therefore, render the relevant claims invalid for obviousness under 35 U.S.C. § 103(a).

In addition, the references identified above render one or more asserted claims of the '086 Patent obvious when the references are read in combination with each other, and/or when read in view of the state of the art and knowledge of those skilled in the art. Any of the references disclosed herein may be combined to render obvious (and therefore invalidate) each of Maxell's asserted claims. Defendants may rely upon a subset or all of the references

identified, for purposes of obviousness depending on the Court's claim construction, positions taken by Maxell during this litigation, and further investigation and discovery. Defendants may rely upon combinations with any reference in the accompanying charts and any of the other references disclosed herein with respect to the '086 Patent, including combinations with any of the patents, publications or systems identified herein as prior art to the '086 Patent.

Prior art references rendering the asserted claims of the '086 Patent obvious, alone or in combination with other references, are discussed above, included in the accompanying charts, and identified in subsection (a) below, which shows representative specific combinations of references. Moreover, to the extent the foregoing references are found not to anticipate the asserted claims, the foregoing references render the asserted claims obvious either alone or in combination with one or more of the other references identified above. Exemplary reasons that a person of ordinary skill in the art would have been motivated to combine the identified prior art are provided in below.

Defendants believe that no showing of a specific motivation to combine prior art is required to combine the references disclosed herein and in the attached charts. As reflected in the attached exhibits, and in the references themselves, there was a reason to make each combination – each combination of art would have produced no unexpected results, and each combination at most would simply represent a known alternative to one of ordinary skill in the art. *See KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 414-18 (2007) (rejecting the Federal Circuit's "rigid" application of the teaching, suggestion, or motivation-to-combine test, instead espousing an "expansive and flexible" approach). As reflected in the attached exhibits, in the references themselves, and the discussion herein, the asserted claims of the '086 Patent combine familiar elements according to known methods, yielding predictable results. Moreover, one of

ordinary skill in the art would be prompted to modify each of these references based on design incentives or other market forces. This is true for references in the same field of endeavor as well as for references in a different field of endeavor, as one of skill would understand that techniques used to improve devices in a related or analogous field could improve similar devices in the same way. No specific reference explicitly spelling out all aspects of a proposed combination is required to show obviousness; indeed, the Supreme Court has explained that a person of ordinary skill is “a person of creativity, not an automaton,” and “in many cases a person of ordinary skill in the art will be able to fit the teachings of multiple patents together like pieces of a puzzle.” *Id.* at 420-21. As reflected in the attached exhibits, the discussion herein, and in the references themselves, the elements of the asserted claims of the '086 Patent are all disclosed in the prior art, and one of skill would readily fit their teachings together.

Nevertheless, in addition to the information contained elsewhere in these contentions, including the exhibits, Defendants hereby identify below additional motivations and reasons to combine the cited art. To determine whether there is a reason to combine the known elements in the manner claimed by a patent, a court can “look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art.” *Id.* at 418. For example, obviousness can be demonstrated by showing “there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent’s claims.” *Id.* at 420. “[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.* Common sense also teaches that “familiar items may have obvious uses beyond their primary

purposes, and in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle.” *Id.*

Applying these principles, it would have been obvious to a person of ordinary skill in the art at the time the application that issued as the '086 Patent was filed to combine, modify, or use the teachings of the prior art to make the purported inventions of those patents, including by making each of the combinations identified above. The motivation to combine the teachings of the prior art references disclosed herein can be found in each of (1) the references themselves, (2) the nature of the problem being solved, (3) the express, implied and inherent teachings of the prior art, (4) the knowledge of persons of ordinary skill in the art, (5) the fact that the prior art is generally directed towards the subject matter of each respective asserted patent, and (6) the predictable results obtained in combining the elements of the prior art.

Furthermore, all of the references identified herein with respect to the '086 Patent address the same problem of registering and identifying a user based on the finger of the user. A person of ordinary skill in the art would have looked to other devices in the same field, such as the prior art devices and other references, because all of these references share many of the same or substantially similar components, such as a touch panel configured to detect a contact of a finger of a user, controllers, detector(s), and memory. A person of ordinary skill in the art would therefore have been motivated to combine these components, knowing that these well-known elements would achieve their purposes in combination, without any difficulty and without any unexpected results.

A person having ordinary skill in the art would have been motivated to make the listed combinations because every reference related to solving the same problem (registering and identifying a user based on the finger of the user) in the same technological field (information

processing apparatuses with a touch panel for detecting a contact of a finger of the user). *See Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc.*, 75 F.3d 1568, 1573 (Fed. Cir. 1996) (the motivation to combine “may also come from the nature of a problem to be solved, leading inventors to look to references relating to possible solutions to that problem.”).

For example, to the extent that that any prior art reference is determined not to disclose “a first controller configured to control the information processing apparatus to operate into two operating modes: at least an identification mode and a registering mode, as the operating mode thereof,” this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, the Applicant Admitted Prior Art (“AAPA”) and/or other references. For example, without limitation, each of Rogers, Fadell, Johansson, and Bayram discloses this limitation. *See* Exs. C1, C2, C4, C5. It would have been obvious and inherent for an information processing apparatus to include a registering mode and an operating mode to accomplish the goal of identification of a user. *See, e.g.*, Rogers at Abstract; Fadell at Abstract.

For example, to the extent that that any prior art reference is determined not to disclose “a second controller configured to execute a specified process when said first information and said second information are coincident within said registering mode,” this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, the Applicant Admitted Prior Art (“AAPA”) and/or other references. For example, without limitation, each of Rogers, Fadell, and Bayram discloses this limitation. *See* Exs. C1, C2, C5. It would have been obvious for an information processing apparatus to execute a specified process after determining coincidence of information in order to provide functionality related to the identification of a user. *See, e.g.*, Rogers at Abstract; Fadell at Abstract.

For example, to the extent that that any prior art reference is determined not to disclose “in said registering mode, there are provided a first registering mode for inputting input information by a pad of the finger, and, a second registering mode for inputting input information by an end of the finger, and said second information relating to the identification of the user is produced upon basis of the input information, which is inputted at least in the first or second mode” this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, the Applicant Admitted Prior Art (“AAPA”) and/or other references. For example, without limitation, each of Rogers, Michaelis, Kim, and Bjorn discloses this limitation. *See* Exs. C1, C4, C6, C7. It would have been obvious to provide the ability for an information processing apparatus to be able to differentiate parts of a finger by, e.g., comparing an area of the finger contacting with the touch panel.

For example, to the extent that that any prior art reference is determined not to disclose “wherein said first information includes a position and an area of the finger contacting with said touch panel,” this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, the Applicant Admitted Prior Art (“AAPA”) and/or other references. For example, without limitation, each of Rogers, Johansson, Michaelis, Bayram, Kim, and Russo discloses this limitation. *See* Exs. C1, C3, C4, C6, C8. It would have been obvious and inherent for an information processing apparatus’s touch panel to be capable of taking into account a position and an area of the finger contacting with the touch panel.

For example, to the extent that that any prior art reference is determined not to disclose “wherein said first information includes a plurality of combinations of a position and an area of the finger contacting with said touch panel,” this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, the Applicant Admitted Prior Art

(“AAPA”) and/or other references. For example, without limitation, each of Rogers, Johansson, Michaelis, Bayram, Kim, and Russo discloses this limitation. *See* Exs. C1, C3, C4, C6, C8. It would have been obvious and inherent for an information processing apparatus’s touch panel to be capable of taking into account a plurality of combinations of a position and an area of the finger contacting with the touch panel.

For example, to the extent that that any prior art reference is determined not to disclose “wherein said specific process includes releasing of a lock of resting an operation of said information processing apparatus,” this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, the Applicant Admitted Prior Art (“AAPA”) and/or other references. For example, without limitation, each of Rogers, Fadell, Johansson, Michaelis, Bayram, Kim, and Bjorn discloses this limitation. *See* Exs. C1, C2, C3, C4, C5, C6, C7. It would have been obvious for an information processing apparatus to execute a specified process, such as releasing of a lock, in order to provide functionality related to an identification of a user. *See, e.g.*, Rogers at Abstract; Fadell at Abstract.

The prior art has also long-disclosed limitations of the asserted claims that were well known to those of ordinary skill in the art before the time of the alleged invention. These well-known elements include many instances within the asserted scope of the claims as found in the ’086 Patent and in Maxell’s Infringement Contentions. Some examples of these prior art teachings are described below. Additional examples and/or details of these teachings may be found in Defendants’ claim charts.

- Information processing apparatuses that include a touch panel configured to detect contact with a user’s finger were well known to those of ordinary skill in the art long before the priority date of the ’086 Patent. *See, e.g.*, U.S. Patent App. No. 2007/0152976

(July 5, 2007) (“Touch-sensitive devices are becoming widespread in computing devices as a means of input, especially computing devices that are intended for portable use.”); Saevanee et al., User Authentication using Combination of Behavioral Biometrics over the Touchpad acting like Touch screen of Mobile Device (2008) (“Nowadays, Mobile devices, such as cellular phones and Personal Digital Assistants (PDAs), become widespread in excess over 3 billion users. Most of them are operated by touching a display commonly used because the touch screen interface is easy to use and user-friendly operates.”); Numabe et al., Finger Identification for Touch Panel Operation Using Tapping Fluctuation (2009) (“In recent years, user interface for touch input on mobile devices with touch panels has spread.”); *see also* Exhibit C1 (Rogers discloses an information processing apparatuses comprising a touch panel configured to detect a contact of a finger of a user); Exhibit C2 (Fadell discloses the same); Exhibit C3 (Johansson discloses the same); Exhibit C4 (Michaelis discloses the same); Exhibit C5 (Bayram discloses the same); Exhibit C6 (Kim discloses the same); Exhibit C7 (Bjorn discloses the same); Exhibit C9 (Ghassabian discloses the same).

- Prior to the alleged invention of the '086 Patent it was well known to persons of ordinary skill in the art to detect information necessary to identify a user when the user contacted a touch panel with their finger. *See, e.g.*, Saevanee et al., User Authentication using Combination of Behavioral Biometrics over the Touchpad acting like Touch screen of Mobile Device (2008) (“the authentication [of users] on mobile devices can be classified in three fundamental approaches . . . using a PIN (Personal Identification Number) of a password . . . token-based technique or SIM (Subscriber Identification Module) . . . [and] applying the biometric technique.”); Holtz et al., The Generalized Perceived Input Point

Model and How to Double Touch Accuracy by Extracting Fingerprints (2010) (“During actual use, users touch RidgePad’s surface just like any other touch device. RidgePad computes the center of the contact area as a reference point. It then compares the observed fingerprint with all fingerprints in its database (the search space is reduced to the user’s profile as soon as the user has been identified).”). Moreover, biometric identification was known to include both fingerprint recognition and recognition based on an individual’s unique keystroke dynamics. Saevanee et al., User Authentication using Combination of Behavioral Biometrics over the Touchpad acting like Touch screen of Mobile Device (2008). Identification through use of fingerprints has been known since at least the early 1970s. *See, e.g.,* Eleccion, Automatic Fingerprint Identification (1972) (“At the present state of the art, two basic types of automatic fingerprint identification systems are available to users: those that rely on computerized digital filtering and pattern recognition (see Fig. 2), and those that use coherent optical correlation (Fig. 3).”). *See also* Exhibit C1 (Rogers discloses a detector configured to detect first information necessary for an identification of the user when the contact is detected between the touch panel and the finger of the user); Exhibit C2 (Fadell discloses the same); Exhibit C3 (Johansson discloses the same); Exhibit C4 (Michaelis discloses the same); Exhibit C5 (Bayram discloses the same); Exhibit C6 (Kim discloses the same); Exhibit C7 (Bjorn discloses the same); Exhibit C8 (Russo discloses the same); Exhibit C9 (Ghassabian discloses the same).

- Prior to the alleged invention of the ’086 Patent, it was well known to those of ordinary skill in the art to determine the identity of the user based on how the user inputted information with their finger. For example, the *Saevanee* reference discusses several

previous studies that gathered information on how different users inputted information into an information processing apparatus. *See* Saevanee et al., User Authentication using Combination of Behavioral Biometrics over the Touchpad acting like Touch screen of Mobile Device (2008) (discussing various studies on keystroke dynamics). In particular, one study “investigated the keystroke recognition for the virtual keyboard that used to interact with the hand held electronic devices, such as PDAs, and Mobile phones.” *Id.* (citing J. Mantiarvi, J. koivumaki and P. Vuori, “keystroke recognition for virtual keyboard”, Proceeding of international Conference on Multimedia and Expo, November 11, 2002, Vol. 2, pp.429-432.). Likewise, the *Saevanee* study measured various users’ finger position and finger pressure on a touch pad.

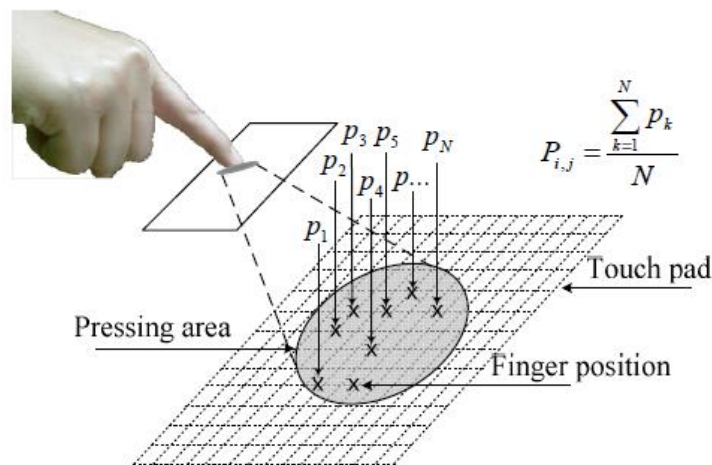


Figure 2. Calculation method of the finger pressure value

Id., see also Holtz et al., The Generalized Perceived Input Point Model and How to Double Touch Accuracy by Extracting Fingerprints (2010) (“To determine which fingerprints are most likely to represent the pitch and roll position of the observed fingerprint, RidgePad simply uses the number of features SURF was able to match as a

metric. This works because two images are likely to exhibit similar features if and only if similar parts of the finger touched the surface. All features typically match only if pitch, roll, and yaw were identical.”).

- Registering information necessary to identify a user was well known to those of ordinary skill in the art prior to the alleged invention of the '086 Patent. For example, automatic fingerprint identification systems in the 1970s required registration. *See* Eleccion, Automatic Fingerprint Identification (1972) (“In general, the functions of these fingerprinting systems can be separated into several distinct operations, which include sensing or reading, image processing, print registration, classification, search, and comparison, and print verification”); *see also* Holtz et al., The Generalized Perceived Input Point Model and How to Double Touch Accuracy by Extracting Fingerprints (2010) (“During calibration, users repeatedly acquire a single target on the fingerprint scanner. It is not necessary for users to touch under specific roll, pitch, and device rotations; the more postures users cover, however, the more postures will benefit from improved precision.”); U.S. Patent App. No. 2010/0303311 (December 2, 2010) (“The display unit 150 displays error or guide information during the process of inputting fingerprints for fingerprint registration or fingerprint authentication under the control of the control unit 170.”); *see also* Exhibit C1 (Rogers discloses a first controller configured to control the information processing apparatus to operate into two operating modes: at least an identification mode and a registering mode, as the operating mode thereof and memory that is configured to store second information relating to the identification of the user, which is stored in advance); Exhibit C2 (Fadell discloses the same); Exhibit C3 (Johansson discloses the same); Exhibit C5 (Bayram discloses the same).

- Prior to the alleged invention of the '086 Patent, it was well known to those of ordinary skill in the art to differentiate between different portions of a finger. *See, e.g.*, Eleccion, Automatic Fingerprint Identification (1972) (“In registration, the fingerprint data is brought to a standard reference position by using the ridge directions already recorded by the FINDER system to determine the center point of the print and the angle through which it must be rotated to obtain normalization.”); U.S. Patent App. No. 2007/0152976 (July 5, 2007) (“A touch-sensitive display can be configured to process the touch and determine whether the touch should be rejected based on characteristics of the touch alone.”); U.S. Patent App. No. 2010/0303311 (December 2, 2010) (“if a difference between the center coordinates of the fingerprint area and the center coordinates of the fingerprint image is not within the predetermined range, cause the display unit to display the position of the fingerprint extracted from the difference, as the error information regarding the fingerprint position”); Saevanee et al., User Authentication using Combination of Behavioral Biometrics over the Touchpad acting like Touch screen of Mobile Device (2008) (“The measurement values, the finger pressure and finger position on the touch pad, will be recorded every 20 ms.”); Holtz et al., The Generalized Perceived Input Point Model and How to Double Touch Accuracy by Extracting Fingerprints (2010) (“Traditional touch devices, such as the FingerWorks pad obtain only the contact area of the finger with the surface. RidgePad obtains the same contact area—from a fingerprint scanner, however (a high-resolution optical L SCAN Guardian, see Figure 8). The fingerprint offers two additional types of information. First, it allows RidgePad to identify the user. Second, it allows RidgePad to analyze the portion of the user’s fingerprint that is located inside the contact area. Based on its analysis of which

part of the fingerprint touches the screen (Figure 1b), RidgePad infers all three finger angles, i.e., yaw, pitch, and roll.”); *see also* Exhibit C1 (Rogers discloses that in said registering mode, there are provided a first registering mode for inputting input information by a pad of the finger, and a second registering mode for inputting input information by an end of the finger, and said second information relating to the identification of the user is produced upon basis of the input information, which is inputted at least in the first or second mode); Exhibit C4 (Michaelis discloses the same); Exhibit C6 (Kim discloses the same); Exhibit C7 (Bjorn discloses the same).

One of ordinary skill also would have been motivated to combine any of the identified references together to yield predictable results, as combining the references would simply entail combining known elements by known methods in the art. In addition, any such combination would involve the simple substitution of one known, equivalent element for another. Such combinations would have been obvious to try because there were only a finite number of predictable solutions. Any such combination would yield predictable results using known techniques and would involve the simple substitution of one known, equivalent element for another. Defendants provide exemplary motivations to combine prior art references below.

a. Exemplary Combinations

The following listing provides several exemplary combinations with respect to the '086 Patent Asserted Claims:

- Fadell in combination with Michaelis
- Fadell in combination with Kim
- Fadell in combination with Bjorn
- Fadell in combination with Bjorn and Michaelis
- Fadell in combination with Bjorn and Kim

- Fadell in combination with Russo and Michaelis
- Fadell in combination with Russo and Kim
- Johansson in combination with Rogers
- Johansson in combination with Kim
- Johansson in combination with Michaelis and Rogers
- Johansson in combination with Michaelis and Bayram
- Johansson in combination with Kim and Rogers
- Johansson in combination with Kim and Bayram
- Michaelis in combination with Rogers
- Michaelis in combination with Bayram
- Michaelis in combination with Johansson and Russo
- Michaelis in combination with Johansson and Bayram
- Michaelis in combination with Johansson and Rogers
- Michaelis in combination with Johansson and Fadell
- Bayram in combination with Kim
- Bayram in combination with Russo
- Kim in combination with Rogers
- Kim in combination with Johansson and Fadell
- Kim in combination with Johansson and Russo
- Bjorn in combination with Rogers and Michaelis
- Bjorn in combination with Rogers and Kim
- Bjorn in combination with Bayram and Michaelis
- Bjorn in combination with Bayram and Kim
- Bjorn in combination with Johansson, Russo, and Michaelis

- Bjorn in combination with Johansson, Russo, and Kim
- Russo in combination with Fadell and Bjorn
- Russo in combination with Michaelis and Bayram
- Ghassabian 602 in combination with Rogers and Michaelis
- Ghassabian 602 in combination with Rogers and Kim
- Ghassabian 602 in combination with Johansson, Rogers, and Michaelis
- Ghassabian 602 in combination with Johansson, Rogers, and Kim
- Ghassabian 602 in combination with Bayram and Michaelis
- Ghassabian 602 in combination with Bayram and Kim

For example, the '086 Patent Asserted Claims are obvious under Fadell in combination with Bjorn. A person having ordinary skill in the art would have been motivated to combine these references because they both relate to detecting and using fingerprints for registration and identification of a user. *See Fadell*, U.S. Patent App. No. 2009/0169070 (“The present invention relates to systems and methods for controlling an electronic device. In particular the present invention relates to systems and methods for controlling an electronic device by detecting and using a person’s fingerprints.”); *Bjorn*, U.S. Patent No. 6,950,539 (“The present invention relates to fingerprint detection. More specifically, the present invention relates to fingerprint detection within the context of pointer touchpad devices.”). Both references also seek to solve problems associated with devices that are reducing in size. *See Fadell*, U.S. Pat. App. No. 2009/0169070 (“Furthermore, as people become increasingly active and mobile, they are demanding increasingly smaller electronic devices.”); *Bjorn*, U.S. Pat. No. 6,950,539 (“With the ever increasing goal of reducing the size, number, and complexity of existing and peripheral components into a single multi-functional low cost component . . .”). Similarly, a person having ordinary skill in the art would have been motivated to combine either or both of Fadell and Bjorn

with Michaelis or Kim, which are each related to detecting and using fingerprints for registration and identification of a user. *See Michaelis*, U.S. Pat. No. 9,626,099 (“The combination of fingerprint information associated with a corresponding motion is correlatable to one or more actions or triggering events that are used to control one or more electronic devices.”); *Kim*, U.S. Pat. App. No. 2010/0279738 (“The display module 151 may be configured to be able to identify a fingerprint.”).

By way of further example, the '086 Patent Asserted Claims are obvious under Johansson in combination with Kim. A person having ordinary skill in the art would have been motivated to combine these references because they both relate to registration and identification of user-inputted patterns through contacting a touch panel. *See Johansson*, U.S. Patent No. 8,904,479 (“A computer-implemented method of authenticating a user with a computing device . . . involves displaying a grid of selectable visually-distinguishable graphical elements on a device display, receiving from a user of the device a drawn pattern across the selectable graphical elements, comparing the received drawn pattern to information representing a stored authentication pattern for the user, and unlocking access to functions on the device if the received drawn pattern substantially matches the stored authentication pattern.”); *Kim*, U.S. Pat. App. No. 2010/0279738 (“a mobile terminal including a display module configured to be capable of recognizing a fingernail touch . . . ; and a controller, wherein, if a fingernail touch with a predefined pattern is detected from the display module, the controller switches the mobile terminal from the first operating mode to a second operating mode, and if an ordinary touch is detected from the display module, the controller performs an operation relevant to an object selected by the ordinary touch.”). Both references also seek to solve problems associated with locking or unlocking a mobile device. *See Johansson*, U.S. Patent No. 8,904,479 (“This

document describes systems and techniques that may be used to lock or unlock a mobile device so as to restrict access to certain of the device's functions to an authorized user.”); *Kim*, U.S. Pat. App. No. 2010/0279738 (“Examples of the second operating mode include a lock mode, an unlock mode, a multimedia playback mode, a ‘Send Message’ mode, a photo album viewer mode, and any operating mode set by the user.”). Similarly, a person having ordinary skill in the art would have been motivated to combine either or both of *Johannson* and *Kim* with *Michaelis* or *Bayram*, which are each related to registration and identification of a user through information inputted via a touch panel. *See Kim*, U.S. Pat. App. No. 2010/0279738 (“Fingerprint portions of two or more different fingers are detected on a detection surface, such as an optical surface, a touch pad, a touchscreen, or the like, and then a further detection made that the person has moved their finger(s), for example, apart, together or relative to one another.”); *Bayram*, U.S. Pat. App. No. 2010/0225443 (“In some embodiments consistent with the present invention, a method is provided for enabling entry of a signature through a touch sensitive device (touch screen, touch pad, etc) without requiring any stylus or similar apparatus.”).

Defendants’ identification of exemplary combinations is without limitation to Defendants identifying other invalidating combinations as appropriate. Defendants also contend that the asserted claims of the ’086 Patent would have been obvious in view of the primary prior art references identified in subsection (i) above. Each of these primary references teaches all of the limitations of the ’086 Patent’s asserted claims. To the extent any claim limitations are found to be missing from the primary references, in addition to the exemplary references designated for combination with the primary references, it would have been obvious to one of ordinary skill to add the missing limitation based on the corresponding disclosure of that limitation in the accompanying ’086 Patent charts.

C. Claim Charts

Defendants attached claim charts as Exhibit C to Defendants' Invalidity Contentions, and identify where, in each alleged item of prior art, each element of each '086 Patent Asserted Claims are found either expressly or inherently. In these claim charts, Defendants have attempted to identify the most relevant portions of the references. The references may, however, contain additional support for claim limitations. Persons of ordinary skill in the art generally read a prior art reference as a whole and in the context of other publications and literature. Defendants may rely upon uncited portions of the references, other documents, and expert testimony to provide context or to aid in understanding the disclosures of the references. Where Defendants cite to a particular figure in a reference, the citation should be understood to encompass the caption and any corresponding description of the figure in the specification. Conversely, where Defendants cite to particular text referring to a figure, the citation should be understood to include the corresponding figure as well.

Exhibit	Charted Reference	Bates Number
C1	U.S. Pat. Pub. No. 2009/0313693 A1 ("Rogers")	MAX-DEFS-PA-0000558 - MAX-DEFS-PA-0000592
C2	U.S. Pat. Pub. No. 2009/0169070 A1 ("Fadell")	MAX-DEFS-PA-0000542 - MAX-DEFS-PA-0000557
C3	U.S. Pat. No. 8,904,479 ("Johannson")	MAX-DEFS-PA-0000804 - MAX-DEFS-PA-0000841
C4	U.S. Pat. No. 9,626,099 ("Michaelis")	MAX-DEFS-PA-0000943 - MAX-DEFS-PA-0000958
C5	U.S. Pat. Pub. No. 2010/0225443 A1 ("Bayram")	MAX-DEFS-PA-0000593 - MAX-DEFS-PA-0000611
C6	U.S. Pat. Pub. No. 2010/0279738 A1 ("Kim")	MAX-DEFS-PA-0000612 - MAX-DEFS-PA-0000655

Exhibit	Charted Reference	Bates Number
C7	U.S. Pat. No. 6,950,539 (“Bjorn”)	MAX-DEFS-PA-0000747 - MAX-DEFS-PA-0000761
C8	U.S. Pat. No. 6,546,122 (“Russo”)	MAX-DEFS-PA-0000724 - MAX-DEFS-PA-0000746
C9	U.S. Pat. No. 9,304,602 (“Ghassabian 602”)	MAX-DEFS-PA-0000842 - MAX-DEFS-PA-0000942

D. Invalidity of the Claims Under 35 U.S.C. § 112

Defendants further assert that the ’086 Patent is invalid under 35 U.S.C. § 112. The following are the grounds upon which Defendants contend the asserted claims of the ’086 Patent are invalid for failure to meet the requirements of 35 U.S.C. §§ 112, ¶ 1 and/or 112, ¶ 2, based on Defendants’ investigation to date and currently-available information. For each claim identified as invalid, any dependent claims of those invalid claims are also invalid under 35 U.S.C. §§ ¶, 1 and/or 112, ¶ 2.

Invalidity under § 112 may depend upon the Court’s claim construction as well as Plaintiff’s infringement contentions. Thus, Defendants have identified only those issues under § 112 of which they are currently aware. Defendants reserve the right to supplement and amend these contentions based on further discovery and investigation including, in particular, the deposition of any of the named inventors.

i. Enablement and Written Description

35 U.S.C. § 112, ¶ 1 requires a patent specification to describe an invention sufficiently to convey to a person of skill in the art that the patentee had possession of the claimed invention at the time of the application. That statute further requires a patent specification to describe the manner and process of making and using the invention so as to enable a person of skill in the art to make and use the full scope of the invention without undue experimentation. Defendants state

that the following claims are invalid for failure to provide an adequate written description and enabling disclosure pursuant to 35 U.S.C. § 112, ¶ 1.

Claim⁷	Claim Limitation
1	“a first controller configured to control the information processing apparatus to operate into two operating modes: at least an identification mode and a registering mode, as the operating mode thereof”
1	“a second controller configured to execute a specified process when said first information and said second information are coincident within said registering mode”

At least in view of Maxell’s apparent construction of the claims in its Infringement Contentions, the asserted claims are invalid because the specification as filed does not contain a written description of the claimed inventions. In particular, the patent disclosure would not lead a person of ordinary skill in the art to understand that the named inventor had possession of the purported inventions as claimed, either as a whole or in view of specific elements (examples of which are given below).

All claims are invalid under § 112 ¶ 1 for failing to meet the written description and/or enablement requirements because they fail to describe a first controller configured to control the information processing apparatus to operate into two operating modes and a second controller configured to execute a specified process when first information and second information are coincident within said registering mode. For example, the specification of the ’086 Patent merely states that “when the number of the input and the password registered earlier matches, (S3004: Yes) and the input methods thereof matches as well (S3005: Yes), the control unit 3 increments the counter (S3006),” the ’086 Patent at 7:24-28, but it fails to describe executing a specified process when first information and second information are coincident within a

⁷ This includes any asserted claims that depend from the identified claims.

registering mode. Accordingly, the description in the specification does not allow a person of ordinary skill in the art to recognize that the applicant invented what is claimed, and all claims thus violate the written description requirement of § 112 ¶ 1. In addition, the patent specification would not have enabled one of ordinary skill in the art at the time of the purported invention to make and use it as claimed.

Defendants do not concede that Plaintiff is entitled to the earliest claimed priority date for any '086 Patent Asserted Claim and reserve the right to argue that a later priority date should apply based on information discovered during discovery and/or the Court's claim constructions. Based on the information currently available to Defendants, the claims of the '086 Patent may not be entitled to a priority date earlier than February 9, 2011.

ii. Indefiniteness

The following claims are invalid 35 U.S.C. § 112, ¶ 2 because they fail to inform those skilled in the art about the scope of the invention with reasonable certainty when read in light of the specification and file history.

Claim⁸	Claim Limitations
1	“a pad of the finger” and “an end of the finger”

The asserted claims of the '086 Patent are invalid for failure to satisfy the requirements of 35 U.S.C. § 112, ¶ 2 because the specification does not describe or otherwise inform one of ordinary skill about what constitutes “a pad of the finger” and “an end of the finger.” What portions of a finger are within the scope of a “pad of the finger” or an “end of the finger” is uncertain. As such, one of ordinary skill would not understand the metes and bounds of the

⁸ This includes any asserted claims that depend from the identified claims.

identified claims, rendering them indefinite under 35 U.S.C. § 112, ¶ 2. Therefore, the asserted claims, when read in light of the specification and the prosecution history, “fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2124 (2014).

IV. INVALIDITY CONTENTIONS REGARDING THE '306 PATENT

A. Identification of Prior Art Under §§ 102 and 103

Defendants list below (MAX-DEFS-PA-0002246—MAX-DEFS-PA-0002759, MAX-DEFS-PA-0013140—MAX-DEFS-PA-0013176) the currently known prior art that anticipates or renders obvious the '306 Patent's Asserted Claims under 35 U.S.C. § 102 and/or § 103 (pre-AIA) expressly or inherently as is detailed below and in the charts attached as Exhibit D.

For references that invalidate under 35 U.S.C. § 102(b), those references were publicly known and available no later than their publication dates, and persons with knowledge of that public availability include without limitation the author(s) of the reference. Defendants continue to investigate the prior art identified below and reserve the right to offer additional evidence that may be uncovered after further discovery.

Patent References

Patent Number	Priority Date	Date of Issue or Publication
U.S. Pat. No. 3,932,886	January 14, 1970	January 13, 1976
U.S. Pat. No. 4,777,474	March 26, 1987	October 11, 1988
U.S. Pat. No. 5,208,852	June 15, 1989	May 4, 1993
U.S. Pat. No. 5,303,284	January 31, 1990	April 12, 1994
U.S. Pat. No. 5,317,632	October 18, 1991	May 31, 1994
U.S. Pat. No. 5,594,867	July 4, 1989	January 14, 1997

Patent Number	Priority Date	Date of Issue or Publication
U.S. Pat. No. 5,636,270	April 27, 1995	June 3, 1997
U.S. Pat. No. 5,687,227	May 25, 1995	November 11, 1997
U.S. Pat. No. 5,694,467	May 10, 1996	December 2, 1997
U.S. Pat. No. 5,699,420	December 23, 1994	December 16, 1997
U.S. Pat. No. 5,739,759	February 4, 1993	April 14, 1998
U.S. Pat. No. 5,812,648	February 20, 1996	September 22, 1998
U.S. Pat. No. 5,854,826	April 13, 1995	December 29, 1998
U.S. Pat. No. 5,870,683	September 18, 1996	February 9, 1999
U.S. Pat. No. 5,926,537	April 29, 1997	July 20, 1999
U.S. Pat. No. 5,960,367	September 18, 1995	September 28, 1999
U.S. Pat. No. 6,026,159	March 16, 1995	February 15, 2000
U.S. Pat. No. 6,052,564	March 13, 1997	April 18, 2000
U.S. Pat. No. 6,075,998	March 13, 1996	June 13, 2000
U.S. Pat. No. 6,094,587	December 30, 1996	July 25, 2000
U.S. Pat. No. 6,134,455	June 30, 1998	October 17, 2000
U.S. Pat. No. 6,298,132	March 9, 1997	October 2, 2001
U.S. Pat. No. 6,363,155	September 24, 1997	March 26, 2002
U.S. Pat. No. 6,363,258	October 28, 1999	March 26, 2002
U.S. Pat. No. 6,366,791	June 17, 1999	April 2, 2002
U.S. Pat. No. 6,377,795	March 10, 1998	April 23, 2002
U.S. Pat. No. 6,418,330	September 14, 1998	July 9, 2002
U.S. Pat. No. 6,496,692	December 6, 1999	December 17, 2002
U.S. Pat. No. 6,501,967	February 23, 1996	December 31, 2002

Patent Number	Priority Date	Date of Issue or Publication
U.S. Pat. No. 6,636,602	August 25, 1999	October 21, 2003
U.S. Pat. No. 6,714,967	July 30, 1999	March 30, 2004
U.S. Pat. No. 6,763,105	November 19, 1997	July 13, 2004
U.S. Pat. No. 6,928,306	January 7, 2000	August 9, 2005
U.S. Pat. No. 7,945,284	November 23, 1999	May 17, 2011
WO 96/27974 A1	March 8, 1995	September 12, 1996
WO 99/01973 A1	July 3, 1997	January 14, 1999
KR100605882 B1	December 24, 1998	April 25, 2007
CN1190303A	December 24, 1996	August 12, 1998

Prior Art Publications

Title	Date of Publication	Author
New GSM Phone: Powerful new GSM Phone from Ericsson is a Complete Communications Tool for Business Users	March 2, 1998	Edge, on & about AT&T
Nokia Introduces New Digital GSM 1900 PCS Phone Designed for Consumers Who Value Ease of Use and Individuality	August 3, 1998	Business Wire

Copies of the foregoing references identified above have been or are being produced along with these Invalidity Contentions. Defendants are also producing art that they feel is relevant to the claimed patents and may rely on such to teach the state of the art.

Each of the references and systems listed above qualifies as prior art under one or more sections of 35 U.S.C. §§ 102 and/or 103, as detailed below. The invalidating disclosure in each of the listed references and materials is express, implicit, and/or inherent. Defendants reserve the right to rely on prior art in the accompanying production, prior art produced by Plaintiff or third

parties, and/or prior art cited in the charts accompanying these invalidity contentions to show the state of the art, the knowledge of one of ordinary skill in the art, and/or the anticipation or obviousness of the '306 Patent. The references provided herein may also be relied upon to show the state of the art in the relevant time frame. Also, to the extent that any of the references listed above are deemed not to be prior art, they may nevertheless provide evidence of prior or simultaneous invention, thereby supporting the obviousness of the asserted claims.

To the extent they constitute prior art, Defendants reserve the right to rely upon any of the following art related to the prior art identified herein: (i) foreign counterparts of the U.S. patents identified; (ii) U.S. counterparts of any foreign patents and foreign patent applications identified; (iii) U.S. and foreign patents and patent applications corresponding to any articles and publications identified; (iv) any products, prior inventions, or publications that relate to any references identified; and (v) any patents, patent applications or publications that relate to any identified system. In addition, the specification and prosecution history of the '306 Patent and related patents and/or applications contain descriptions of, and admissions concerning, the scope of the claims. Defendants intend to rely upon these descriptions and admissions. Defendants also identify all prior art references cited or included in the '306 Patent and its prosecution history, as well as any statements in either regarding the prior art in either. Defendants reserve the right to rely on documents produced by third parties as prior art. Defendants' Invalidity Contentions and identification of prior art meet the disclosure requirements of 35 U.S.C. §282(c). Defendants reserve their rights to amend their contentions to include additional prior art references.

B. Anticipation and Obviousness References

Pursuant to P.R. 3-3(a) and the Court's Discovery Order, and in light of Maxell's Infringement Contentions and accompanying claim charts, Defendants list below the prior art

now known to Defendants that anticipates or renders obvious the asserted claims under 35 U.S.C. § 102 and/or 103. Defendants' contentions do not imply any admission or suggestion that a specific prior art reference does not independently anticipate the '306 Patent Asserted Claims. Each individual prior art reference identified in Subsection A, above, that anticipates and/or each combination that renders obvious the '306 Patent Asserted Claims is described below.

Although Defendants have identified at least one disclosure of a limitation for each prior art reference, each and every disclosure of the same limitation in the same reference is not necessarily identified. To focus the issues, Defendants cite only representative portions of an identified reference, even where a reference may contain additional support for a particular claim limitation. Persons of ordinary skill in the art generally read an item of prior art as a whole and in the context of other publications and literature. Thus, to understand and interpret any specific statement or disclosure within a prior art reference, such persons would rely on other information within the reference, along with other publications and their general scientific knowledge. Defendants may rely upon uncited portions of the prior art references and on other publications and expert testimony to provide context, and as aids to understanding and interpreting the portions that are cited.

Further, some or all of the systems identified below or identified in the prior art publications and patents will be the subject of continuing investigation and discovery, including on-going and currently uncompleted third party discovery. Defendants reserve the right to supplement their contentions consistent with the Federal Rules and the Local Patent Rules, in the event that additional information is discovered relating to these systems.

i. Anticipating Reference(s)

Defendants identify the following reference(s) as anticipating one or more of the '306 Patent Asserted Claims under 35 U.S.C. § 102. The below table of anticipating references is

exemplary, and it does not constitute an admission that any reference anticipates only the listed claims.

Anticipating References

Anticipating Prior Art	Asserted Claim(s)
U.S. Pat. No. 7,945,284 (“Cao”)	2, 13
U.S. Pat. No. 4,777,474 (“Clayton”)	2, 13
U.S. Pat. No. 5,636,270 (“Davey”)	2, 13
U.S. Pat. No. 5,699,420 (“Michel”)	2, 13
U.S. Pat. No. 5,694,467 (“Young”)	2, 13
U.S. Pat. No. 5,303,284 (“Shinozaki”)	2, 13
U.S. Pat. No. 5,960,367 (“Kita”)	2, 13
CN1190303A (“Bazhong”)	2, 13

To the extent any item of prior art cited above is deemed not to disclose, explicitly or inherently, any limitation of a '306 Patent Asserted Claim, Defendants reserve the right to argue that any difference between that prior art and the corresponding patent claim would have been either inherent to the art, or obvious to one of ordinary skill in the art, even if they have not specifically denoted that the art is to be combined with the knowledge of a person of ordinary skill in the art. Each prior art reference above describing or relating to a prior art system should be understood to discuss the system's capabilities generally and also to discuss specific examples of specific installations of the particular system. To the extent the prior art references describe various implementations of the same underlying system, that underlying system is a single reference under 35 U.S.C. §§ 102(a) and/or 102(b). The prior art references are evidence of the capabilities of the prior art system, and each chart provided for a prior art system should be

understood to incorporate by reference all printed publications describing or relating to that prior art system and all charts provided for those printed publications.

In addition, each reference itself also qualifies as prior art on separate grounds as a publication under §§ 102(a) and/or 102(b). Even if the prior art references are not treated as a single prior art reference, at the very least, it would have been obvious to combine the features described in those references.

ii. Obviousness Combinations and Rationale(s) to Combine

Each anticipatory reference listed above individually discloses each limitation of the '306 Patent Asserted Claims. However, to the extent any anticipatory reference is found to lack any claim element, the '306 Patent Asserted Claims also are obvious in light of the ordinary skill in the art and the anticipatory reference itself (via single reference obviousness), or in light of further references, described in the charts attached as Exhibit D. The anticipatory references alone or in combination with other prior art, renders the '306 Patent Asserted Claims invalid as obvious under 35 U.S.C. § 103. In particular, each identified prior art reference may be combined with: (i) information known to persons skilled in the art at the time of the alleged inventions of the '306 Patent; (ii) any of the other anticipatory or other prior art references identified in these contentions or the accompanying charts. In addition, Defendants incorporate by reference each and every prior art reference of record in the prosecution histories of the '306 Patent, counterpart patents, and related patent applications, as well as all statements made by the applicant in the prosecution histories of the '306 Patent, counterpart patents, and related patent applications, including any discussion of prior art or conventional features in any of the specifications of the '306 Patent, counterpart patents, and related patent applications.

Defendants incorporate by reference the statements and reasoning by the U.S. Patent and Trademark Office during prosecution of the '306 Patent and any counterpart patents or

applications as to why it would have been obvious to modify or combine prior art references to achieve the limitations of the '306 Patent Asserted Claims or similar claims in any counterparts.

The alleged “inventions” recited in the asserted claims of the '306 Patent would have been obvious because the prior art, common knowledge, and the nature of the problems, viewed through the eyes of a person ordinarily skilled in the art, suggested the claimed elements. A person ordinarily skilled in the relevant fields would have possessed knowledge and skills rendering him or her capable of combining the prior art references with knowledge in the field and common sense. Moreover, the asserted claims represent well-known combinations of familiar and pre-existing elements, yielding only predictable results. Additional reasons that a person of ordinary skill in the art would have been motivated to combine the identified prior art are provided herein and in the accompanying charts and document production.

In addition to the specific combinations of prior art and the specific combinations of groups of prior art disclosed, Defendants will rely on any other combination of any prior art references disclosed herein. Defendants further will rely upon combinations disclosed within the prosecution history of the references cited herein. The obviousness combinations set forth in these contentions reflect Defendants' present understanding of the potential scope of the claims that Maxell appears to be advocating and should not be seen as Defendants' acquiescence to Maxell's interpretation of the patent claims. Defendants will amend or supplement these contentions regarding anticipation or obviousness of the asserted claims as appropriate under the applicable Rules, including in response to further information from Maxell or information discovered during discovery. Maxell has not identified what elements or combinations it alleges were not known to one of ordinary skill in the art at the time. Therefore, for any claim limitation that Maxell alleges is not disclosed in a particular prior art reference, Defendants reserve the

right to assert that any such limitation is either inherent in the disclosed reference or obvious to one of ordinary skill in the art at the time in light of the same, or that the limitation is disclosed in another of the references disclosed above and in combination would have rendered the asserted claim obvious.

Additionally, any reference or combination of references that anticipates or renders obvious an asserted independent claim also renders obvious any asserted claim dependent on that independent claim because every element of each dependent claim was known by a person of ordinary skill at the time of the alleged invention, and it would have been obvious to combine those known elements with the independent claims at least as a matter of common sense and routine innovation.

To the extent any limitation is not explicitly or inherently disclosed by an item of prior art identified in Subsection A, the claimed subject matter as a whole would have been obvious to one skilled in the art at the time of the alleged invention, in view of the state of the art and knowledge of those skilled in the art. The item of prior art on its own as read by one of skill in the art would, therefore, render the relevant claims invalid for obviousness under 35 U.S.C. § 103(a).

In addition, the references identified above render one or more asserted claims of the '306 Patent obvious when the references are read in combination with each other, and/or when read in view of the state of the art and knowledge of those skilled in the art. Any of the references disclosed herein may be combined to render obvious (and therefore invalidate) each of Maxell's asserted claims. Defendants may rely upon a subset or all of the references identified, for purposes of obviousness depending on the Court's claim construction, positions taken by Maxell during this litigation, and further investigation and discovery. Defendants may

rely upon combinations with any reference in the accompanying charts and any of the other references disclosed herein with respect to the '306 Patent, including combinations with any of the patents, publications or systems identified herein as prior art to the '306 Patent.

Prior art references rendering the asserted claims of the '306 Patent obvious, alone or in combination with other references, are discussed above, included in the accompanying charts, and identified in subsection (a) below, which shows representative specific combinations of references. Moreover, to the extent the foregoing references are found not to anticipate the asserted claims, the foregoing references render the asserted claims obvious either alone or in combination with one or more of the other references identified above. Exemplary reasons that a person of ordinary skill in the art would have been motivated to combine the identified prior art are provided in below.

Defendants believe that no showing of a specific motivation to combine prior art is required to combine the references disclosed herein and in the attached charts. As reflected in the attached exhibits, and in the references themselves, there was a reason to make each combination – each combination of art would have produced no unexpected results, and each combination at most would simply represent a known alternative to one of ordinary skill in the art. *See KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 414-18 (2007) (rejecting the Federal Circuit's "rigid" application of the teaching, suggestion, or motivation-to-combine test, instead espousing an "expansive and flexible" approach). As reflected in the attached exhibits, in the references themselves, and the discussion herein, the asserted claims of the '306 Patent combine familiar elements according to known methods, yielding predictable results. Moreover, one of ordinary skill in the art would be prompted to modify each of these references based on design incentives or other market forces. This is true for references in the same field of endeavor as

well as for references in a different field of endeavor, as one of skill would understand that techniques used to improve devices in a related or analogous field could improve similar devices in the same way. No specific reference explicitly spelling out all aspects of a proposed combination is required to show obviousness; indeed, the Supreme Court has explained that a person of ordinary skill is “a person of creativity, not an automaton,” and “in many cases a person of ordinary skill in the art will be able to fit the teachings of multiple patents together like pieces of a puzzle.” *Id.* at 420-21. As reflected in the attached exhibits, the discussion herein, and in the references themselves, the elements of the asserted claims of the '306 Patent are all disclosed in the prior art, and one of skill would readily fit their teachings together.

Nevertheless, in addition to the information contained elsewhere in these contentions, including the exhibits, Defendants hereby identify below additional motivations and reasons to combine the cited art. To determine whether there is a reason to combine the known elements in the manner claimed by a patent, a court can “look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art.” *Id.* at 418. For example, obviousness can be demonstrated by showing “there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent’s claims.” *Id.* at 420. “[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.* Common sense also teaches that “familiar items may have obvious uses beyond their primary purposes, and in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle.” *Id.*

Applying these principles, it would have been obvious to a person of ordinary skill in the art at the time the application that issued as the '306 Patent was filed to combine, modify, or use the teachings of the prior art to make the purported inventions of those patents, including by making each of the combinations identified above. The motivation to combine the teachings of the prior art references disclosed herein can be found in each of (1) the references themselves, (2) the nature of the problem being solved, (3) the express, implied and inherent teachings of the prior art, (4) the knowledge of persons of ordinary skill in the art, (5) the fact that the prior art is generally directed towards the subject matter of each respective asserted patent, and (6) the predictable results obtained in combining the elements of the prior art.

Furthermore, all of the references identified herein with respect to the '306 Patent address the same problem of producing an alert by a portable device in response to an incoming signal. A person of ordinary skill in the art would have looked to other devices in the same field, such as the prior art devices and other references, because all of these references share many of the same or substantially similar components, such as a portable device capable of receiving incoming signal, a controller and an alert generator. A person of ordinary skill in the art would therefore have been motivated to combine these components, knowing that these well-known elements would achieve their purposes in combination, without any difficulty and without any unexpected results.

A person having ordinary skill in the art would have been motivated to make the listed combinations because every reference related to solving the same problem of alerting an user of an incoming signal in the same technological field of portable electronic communication devices. *See Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc.*, 75 F.3d 1568, 1573 (Fed. Cir. 1996) (the

motivation to combine “may also come from the nature of a problem to be solved, leading inventors to look to references relating to possible solutions to that problem.”).

Under Plaintiff’s apparent interpretation of claims 5, 6, 14, and 15 in its infringement contentions, timing criteria either in terms of time period or in terms of calendar period would have been apparent to a person of ordinary skill in the art as well as to a layperson. Portable electronic devices such as a cellular phone are often used in a proximity of a person who needs to sleep regularly and generally does not want to be awakened by an alert during the sleep time or interrupted during weekends or vacation, thus equipping an alert generating device with a time period or calendar period criterion was a well known need at the time of the invention. *See* Exs. D8-D13.

In addition, in light of prior art’s disclosure of controlling a ringing volume based on a time period or a calendar period, *see, e.g.*, Ex. D8, it would have been obvious to reduce the volume to zero, such that the device is muted during certain periods of time.

Portable electronic communication devices that the ’306 Patent claims to generally interface with humans, such as producing an alert in response to an incoming signal. The alert is catered to human senses, so that it can be sound, light or touch (vibration). But from a device perspective, producing an alert involves the same operation: generating an electrical signal to drive an output device. When the output device is a loudspeaker, a sound alert will be generated – different signal frequency may generate different sound. If the transducer is a light emitting diode (LED), a light alert will be generated. As various output devices are well known in the art at the time of the invention, generating any type of alert (light or vibration) is equivalent to generating a ringing sound required by the asserted claims.

One of ordinary skill also would have been motivated to combine any of the above references together to yield predictable results, as combining the references would simply entail combining known elements by known methods in the art. In addition, any such combination would involve the simple substitution of one known, equivalent element for another. Such combinations would have been obvious to try because there were only a finite number of predictable solutions. Any such combination would yield predictable results using known techniques and would involve the simple substitution of one known, equivalent element for another. Defendants provide exemplary motivations to combine prior art references below.

a. Exemplary Combinations

The following listing provides several exemplary combinations with respect to the '306 Patent Asserted Claims:

- Cao, Miura
- Cao, Miura, Wanner
- Clayton, Miura
- Clayton, Miura, Wanner
- Michel, Miura
- Michel, Miura, Wanner
- Davey, Miura
- Yong, Miura
- Shinozaki, Miura
- Kita, Miura
- Bazhong, Miura
- Cao, Bach
- Clayton, Bach

- Michel, Bach
- Cao, Toriya
- Cao, Horvitz
- Clayton, Toriya
- Clayton, Horvitz
- Michel, Toriya
- Michel, Horvitz
- Bazhong, Toriya
- Bazhong, Horvitz

Defendants' identification of exemplary combinations is without limitation to Defendants identifying other invalidating combinations as appropriate. Defendants also contend that the asserted claims of the '306 Patent would have been obvious in view of the primary prior art references identified in subsection (i) above. Each of these primary references teaches all of the limitations of the '306 Patent's asserted claims. To the extent any claim limitations are found to be missing from the primary references, in addition to the exemplary references designated for combination with the primary references, it would have been obvious to one of ordinary skill to add the missing limitation based on the corresponding disclosure of that limitation in the accompanying '306 Patent charts.

C. Claim Charts

Defendants attached claim charts as Exhibit D to Defendants' Invalidity Contentions, and identify where, in each alleged item of prior art, each element of each '306 Patent Asserted Claims are found either expressly or inherently. In these claim charts, Defendants have attempted to identify the most relevant portions of the references. The references may, however, contain additional support for claim limitations. Persons of ordinary skill in the art generally

read a prior art reference as a whole and in the context of other publications and literature. Defendants may rely upon uncited portions of the references, other documents, and expert testimony to provide context or to aid in understanding the disclosures of the references. Where Defendants cite to a particular figure in a reference, the citation should be understood to encompass the caption and any corresponding description of the figure in the specification. Conversely, where Defendants cite to particular text referring to a figure, the citation should be understood to include the corresponding figure as well.

Exhibit	Charted Reference	Bates Number
D1	U.S. Pat. No. 7,945,284 (“Cao”)	MAX-DEFS-PA-0002700
D2	U.S. Pat. No. 4,777,474 (“Clayton”)	MAX-DEFS-PA-0002270
D3	U.S. Pat. No. 5,636,270 (“Davey”)	MAX-DEFS-PA-0002329
D4	U.S. Pat. No. 5,699,420 (“Michel”)	MAX-DEFS-PA-0002363
D5	U.S. Pat. No. 5,694,467 (“Young”)	MAX-DEFS-PA-0002355
D6	U.S. Pat. No. 5,303,284 (“Shinozaki”)	MAX-DEFS-PA-0002299
D7	U.S. Pat. No. 5,960,367 (“Kita”)	MAX-DEFS-PA-0002424
D8	U.S. Pat. No. 6,763,105 (“Miura”)	MAX-DEFS-PA-0002662
D9	U.S. Pat. No. 5,594,867 (“Yoshida”)	MAX-DEFS-PA-0002316
D10	U.S. Pat. No. 6,052,564 (“Toriya”)	MAX-DEFS-PA-0002475
D11	U.S. Pat. No. 6,714,967 (“Horvitz”)	MAX-DEFS-PA-0002636
D12	U.S. Pat. No. 6,377,795 (“Bach”)	MAX-DEFS-PA-0002580
D13	U.S. Pat. No. 5,812,648 (“Wanner”)	MAX-DEFS-PA-0002387
D14	CN1190303A (“Bazhong”)	MAX-DEFS-PA-0013140

D. Invalidity of the Claims Under 35 U.S.C. § 112

Defendants further assert that the '306 Patent is invalid under 35 U.S.C. § 112. The following are the grounds upon which Defendants contend the asserted claims of the '306 Patent are invalid for failure to meet the requirements of 35 U.S.C. §§ 112, ¶ 1 and/or 112, ¶ 2, based on Defendants' investigation to date and currently-available information. For each claim identified as invalid, any dependent claims of those invalid claims are also invalid under 35 U.S.C. §§ 112, ¶ 1 and/or 112, ¶ 2.

Invalidity under § 112 may depend upon the Court's claim construction as well as Plaintiff's infringement contentions. Thus, Defendants have identified only those issues under § 112 of which they are currently aware. Defendants reserve the right to supplement and amend these contentions based on further discovery and investigation including, in particular, the deposition of any of the named inventors.

i. Enablement and Written Description

35 U.S.C. § 112, ¶ 1 requires a patent specification to describe an invention sufficiently to convey to a person of skill in the art that the patentee had possession of the claimed invention at the time of the application. That statute further requires a patent specification to describe the manner and process of making and using the invention so as to enable a person of skill in the art to make and use the full scope of the invention without undue experimentation. Defendants state that the following claims are invalid for failure to provide an adequate written description and enabling disclosure pursuant to 35 U.S.C. § 112, ¶ 1.

Claim⁹	Claim Limitation
2	generate the ringing sound using at least two of said sound sources

⁹ This includes any asserted claims that depend from the identified claims.

The asserted claims of the '306 Patent are invalid for failure to satisfy the requirements of 35 U.S.C. § 112, ¶ 1 because the specification as filed does not contain an adequate written description and/or enabling disclosure of the term “generate the ringing sound using at least two of said sound sources.” The '306 Patent specification does not properly describe or otherwise inform one of ordinary skill what constitutes “using.” There can be many “use” cases. For instance, using two sound sources simultaneously is a use case; using two sound sources sequentially is also a use case; even silencing one sound source while amplifying another can also be said of a use case. Not every case is enabled or properly described in the specification. Accordingly, the specification fails to reasonably convey to one of ordinary skill that the inventor had possession of the subject matter of the invention, and it fails to enable a person of ordinary skill to make and use the invention as claimed.

ii. Indefiniteness

The following claims are invalid 35 U.S.C. § 112, ¶ 2 because they fail to inform those skilled in the art about the scope of the invention with reasonable certainty when read in light of the specification and file history.

Claim ¹⁰	Claim Limitations
2	“generate the ringing sound using at least two of said sound sources”

The asserted claims of the '306 Patent are invalid for failure to satisfy the requirements of 35 U.S.C. § 112, ¶ 2 because the specification does not describe or otherwise inform one of ordinary skill about what constitutes “generate the ringing sound using at least two of said sound sources.” The '306 Patent does not describe or explain what “using” means. The scope of

¹⁰ This includes any asserted claims that depend from the identified claims.

“using at least two of said sound sources” is ambiguous. Using two sound sources simultaneously is a use case; using two sound sources sequentially is also a use case; even silencing one sound source while amplifying another can also be said of a use case. As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112, ¶ 2. Therefore, the asserted claims, when read in light of the specification and the prosecution history, “fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2124 (2014).

V. INVALIDITY CONTENTIONS REGARDING THE ’140 PATENT

A. Identification of Prior Art Under §§ 102 and 103

Defendants list below (MAX-DEFS-PA-0000959—MAX-DEFS-PA-0002213, MAX-DEFS-PA-0013124—MAX-DEFS-PA-0013139) the currently known prior art that anticipates or renders obvious the ’140 Patent’s Asserted Claims under 35 U.S.C. § 102 and/or § 103 (pre-AIA) expressly or inherently as is detailed below and in the charts attached as Exhibit E.

For references that invalidate under 35 U.S.C. § 102(b), those references were publicly known and available no later than their publication dates, and persons with knowledge of that public availability include without limitation the author(s) of the reference. Defendants continue to investigate the prior art identified below and reserve the right to offer additional evidence that may be uncovered after further discovery.

Patent References

Patent Number	Priority Date	Date of Issue or Publication
U.S. Pat. No. 5,469,471 (“Wheatley”)	February 1, 1994	November 21, 1995
U.S. Pat. No. 6,831,905 (“Lomp”)	June 30, 1995	December 14, 2004

Patent Number	Priority Date	Date of Issue or Publication
E.P. Pat. No. 0,889,663 (“Ishikawa”)	December 27, 1997	January 1, 1999
E.P. Pat. No. 0,926,842 (“Sakoda”)	December 27, 1997	June 30, 1999
U.S. Pat. No. 6,307,844 (“Tsunehara”)	December 4, 1997	October 23, 2001
U.S. Pat. No. 5,524,275 (“Lindell”)	December 17, 1993	June 4, 1996
U.S. Pat. No. 5,056,109 (“Gilhousen”)	November 7, 1989	October 8, 1991
U.S. Pat. No. 5,722,068 (“Bartle”)	January 26, 1994	February 24, 1998
U.S. Pat. No. 5,768,684 (“Grubb”)	August 26, 1996	June 16, 1998
U.S. Pat. No. 5,471,650 (“Vexler”)	January 7, 1993	November 28, 1995
U.S. Pat. No. 5,802,445 (“Weidman”)	July 13, 1995	September 1, 1998
U.S. Pat. No. 6,381,455 (“Smolik”)	October 15, 1998	April 30, 2002
U.S. Pat. No. 6,714,551 (“Le-Ngoc”)	October 14, 1997	March 30, 2004
U.S. Pat. No. 6,377,813 (“Kansakoski”)	December 3, 1998	April 23, 2002
E.P. Pat. No. 0,675,609 (“Suzuki”)	March 31, 1994	October 4, 1995
E.P. Pat. No. 0,516,453 (“Hiroyuki”)	May 31, 1991	December 2, 1992

Prior Art Publications

Title	Date of Publication	Author

Prior Art Products and Uses¹¹

Prior Art Products and Uses	Bates Nos.

Copies of the foregoing references identified above have been or are being produced along with these Invalidity Contentions. Defendants are also producing art that they feel is relevant to the claimed patents and may rely on such to teach the state of the art.

Each of the references and systems listed above qualifies as prior art under one or more sections of 35 U.S.C. §§ 102 and/or 103, as detailed below. The invalidating disclosure in each of the listed references and materials is express, implicit, and/or inherent. Defendants reserve the right to rely on prior art in the accompanying production, prior art produced by Plaintiff or third parties, and/or prior art cited in the charts accompanying these invalidity contentions to show the state of the art, the knowledge of one of ordinary skill in the art, and/or the anticipation or obviousness of the '140 Patent. The references provided herein may also be relied upon to show the state of the art in the relevant time frame. Also, to the extent that any of the references listed

¹¹ These prior uses are prior art under 35 U.S.C. § 102(a) (known or used in the US); (b) (public use in the US); and/or (g) (made in the US).

above are deemed not to be prior art, they may nevertheless provide evidence of prior or simultaneous invention, thereby supporting the obviousness of the asserted claims.

To the extent they constitute prior art, Defendants reserve the right to rely upon any of the following art related to the prior art identified herein: (i) foreign counterparts of the U.S. patents identified; (ii) U.S. counterparts of any foreign patents and foreign patent applications identified; (iii) U.S. and foreign patents and patent applications corresponding to any articles and publications identified; (iv) any products, prior inventions, or publications that relate to any references identified; and (v) any patents, patent applications or publications that relate to any identified system. In addition, the specification and prosecution history of the '140 Patent and related patents and/or applications contain descriptions of, and admissions concerning, the scope of the claims. Defendants intend to rely upon these descriptions and admissions. Defendants also identify all prior art references cited or included in the '140 Patent and its prosecution history, as well as any statements in either regarding the prior art in either. Defendants reserve the right to rely on documents produced by third parties as prior art. Defendants' Invalidity Contentions and identification of prior art meet the disclosure requirements of 35 U.S.C. §282(c). Defendants reserve their rights to amend their contentions to include additional prior art references.

B. Anticipation and Obviousness References

Pursuant to P.R. 3-3(a) and the Court's Discovery Order, and in light of Maxell's Infringement Contentions and accompanying claim charts, Defendants list below the prior art now known to Defendants that anticipates or renders obvious the asserted claims under 35 U.S.C. § 102 and/or 103. Defendants' contentions do not imply any admission or suggestion that a specific prior art reference does not independently anticipate the '140 Patent Asserted Claims.

Each individual prior art reference identified in Subsection A, above, that anticipates and/or each combination that renders obvious the '140 Patent Asserted Claims is described below.

Although Defendants have identified at least one disclosure of a limitation for each prior art reference, each and every disclosure of the same limitation in the same reference is not necessarily identified. To focus the issues, Defendants cite only representative portions of an identified reference, even where a reference may contain additional support for a particular claim limitation. Persons of ordinary skill in the art generally read an item of prior art as a whole and in the context of other publications and literature. Thus, to understand and interpret any specific statement or disclosure within a prior art reference, such persons would rely on other information within the reference, along with other publications and their general scientific knowledge. Defendants may rely upon uncited portions of the prior art references and on other publications and expert testimony to provide context, and as aids to understanding and interpreting the portions that are cited.

Further, some or all of the systems identified below or identified in the prior art publications and patents will be the subject of continuing investigation and discovery, including on-going and currently uncompleted third party discovery. Defendants reserve the right to supplement their contentions consistent with the Federal Rules and the Local Patent Rules, in the event that additional information is discovered relating to these systems.

i. Anticipating Reference(s)

Defendants identify the following reference(s) as anticipating one or more of the '140 Patent Asserted Claims under 35 U.S.C. § 102. The below table of anticipating references is exemplary, and it does not constitute an admission that any reference anticipates only the listed claims.

Anticipating References

Anticipating Prior Art	Asserted Claim(s)
U.S. Pat. No. 5,469,471 (“Wheatley”)	1, 3, 4
U.S. Pat. No. 6,831,905 (“Lomp”)	1, 4

To the extent any item of prior art cited above is deemed not to disclose, explicitly or inherently, any limitation of a ’140 Patent Asserted Claim, Defendants reserve the right to argue that any difference between that prior art and the corresponding patent claim would have been either inherent to the art, or obvious to one of ordinary skill in the art, even if they have not specifically denoted that the art is to be combined with the knowledge of a person of ordinary skill in the art. Each prior art reference above describing or relating to a prior art system should be understood to discuss the system’s capabilities generally and also to discuss specific examples of specific installations of the particular system. To the extent the prior art references describe various implementations of the same underlying system, that underlying system is a single reference under 35 U.S.C. §§ 102(a) and/or 102(b). The prior art references are evidence of the capabilities of the prior art system, and each chart provided for a prior art system should be understood to incorporate by reference all printed publications describing or relating to that prior art system and all charts provided for those printed publications.

In addition, each reference itself also qualifies as prior art on separate grounds as a publication under §§ 102(a) and/or 102(b). Even if the prior art references are not treated as a single prior art reference, at the very least, it would have been obvious to combine the features described in those references.

ii. Obviousness Combinations and Rationale(s) to Combine

Each anticipatory reference listed above individually discloses each limitation of the ’140 Patent Asserted Claims. However, to the extent any anticipatory reference is found to lack any

claim element, the '140 Patent Asserted Claims also are obvious in light of the ordinary skill in the art and the anticipatory reference itself (via single reference obviousness), or in light of further references, described in the charts attached as Exhibit E. The anticipatory references alone or in combination with other prior art, renders the '140 Patent Asserted Claims invalid as obvious under 35 U.S.C. § 103. In particular, each identified prior art reference may be combined with: (i) information known to persons skilled in the art at the time of the alleged inventions of the '140 Patent; or (ii) any of the other anticipatory or other prior art references identified in these contentions or the accompanying charts. In addition, Defendants incorporate by reference each and every prior art reference of record in the prosecution histories of the '140 Patent, counterpart patents, and related patent applications, as well as all statements made by the applicant in the prosecution histories of the '140 Patent, counterpart patents, and related patent applications, including any discussion of prior art or conventional features in any of the specifications of the '140 Patent, counterpart patents, and related patent applications.

Defendants incorporate by reference the statements and reasoning by the U.S. Patent and Trademark Office during prosecution of the '140 Patent and any counterpart patents or applications as to why it would have been obvious to modify or combine prior art references to achieve the limitations of the '140 Patent Asserted Claims or similar claims in any counterparts.

The alleged “inventions” recited in the asserted claims of the '140 Patent would have been obvious because the prior art, common knowledge, and the nature of the problems, viewed through the eyes of a person ordinarily skilled in the art, suggested the claimed elements. A person ordinarily skilled in the relevant fields would have possessed knowledge and skills rendering him or her capable of combining the prior art references with knowledge in the field and common sense. Moreover, the asserted claims represent well-known combinations of

familiar and pre-existing elements, yielding only predictable results. Additional reasons that a person of ordinary skill in the art would have been motivated to combine the identified prior art are provided herein and in the accompanying charts and document production.

In addition to the specific combinations of prior art and the specific combinations of groups of prior art disclosed, Defendants will rely on any other combination of any prior art references disclosed herein. Defendants further will rely upon combinations disclosed within the prosecution history of the references cited herein. The obviousness combinations set forth in these contentions reflect Defendants' present understanding of the potential scope of the claims that Maxell appears to be advocating and should not be seen as Defendants' acquiescence to Maxell's interpretation of the patent claims. Defendants will amend or supplement these contentions regarding anticipation or obviousness of the asserted claims as appropriate under the applicable rules, including in response to further information from Maxell or information discovered during discovery. Maxell has not identified what elements or combinations it alleges were not known to one of ordinary skill in the art at the time. Therefore, for any claim limitation that Maxell alleges is not disclosed in a particular prior art reference, Defendants reserve the right to assert that any such limitation is either inherent in the disclosed reference or obvious to one of ordinary skill in the art at the time in light of the same, or that the limitation is disclosed in another of the references disclosed above and in combination would have rendered the asserted claim obvious.

Additionally, any reference or combination of references that anticipates or renders obvious an asserted independent claim also renders obvious any asserted claim dependent on that independent claim because every element of each dependent claim was known by a person of ordinary skill at the time of the alleged invention, and it would have been obvious to combine

those known elements with the independent claims at least as a matter of common sense and routine innovation.

To the extent any limitation is not explicitly or inherently disclosed by an item of prior art identified in Subsection A, the claimed subject matter as a whole would have been obvious to one skilled in the art at the time of the alleged invention, in view of the state of the art and knowledge of those skilled in the art. The item of prior art on its own as read by one of skill in the art would, therefore, render the relevant claims invalid for obviousness under 35 U.S.C. § 103(a).

In addition, the references identified above render one or more asserted claims of the '140 Patent obvious when the references are read in combination with each other, and/or when read in view of the state of the art and knowledge of those skilled in the art. Any of the references disclosed herein may be combined to render obvious (and therefore invalidate) each of Maxell's asserted claims. Defendants may rely upon a subset or all of the references identified, for purposes of obviousness depending on the Court's claim construction, positions taken by Maxell during this litigation, and further investigation and discovery. Defendants may rely upon combinations with any reference in the accompanying charts and any of the other references disclosed herein with respect to the '140 Patent, including combinations with any of the patents, publications or systems identified herein as prior art to the '140 Patent.

Prior art references rendering the asserted claims of the '140 Patent obvious, alone or in combination with other references, are discussed above, included in the accompanying charts, and identified in subsection (a) below, which shows representative specific combinations of references. Moreover, to the extent the foregoing references are found not to anticipate the asserted claims, the foregoing references render the asserted claims obvious either alone or in

combination with one or more of the other references identified above. Exemplary reasons that a person of ordinary skill in the art would have been motivated to combine the identified prior art are provided in below.

Defendants believe that no showing of a specific motivation to combine prior art is required to combine the references disclosed herein and in the attached charts. As reflected in the attached exhibits, and in the references themselves, there was a reason to make each combination – each combination of art would have produced no unexpected results, and each combination at most would simply represent a known alternative to one of ordinary skill in the art. *See KSR Int’l Co. v. Teleflex, Inc.*, 550 U.S. 398, 414-18 (2007) (rejecting the Federal Circuit’s “rigid” application of the teaching, suggestion, or motivation-to-combine test, instead espousing an “expansive and flexible” approach). As reflected in the attached exhibits, in the references themselves, and the discussion herein, the asserted claims of the ’140 Patent combine familiar elements according to known methods, yielding predictable results. Moreover, one of ordinary skill in the art would be prompted to modify each of these references based on design incentives or other market forces. This is true for references in the same field of endeavor as well as for references in a different field of endeavor, as one of skill would understand that techniques used to improve devices in a related or analogous field could improve similar devices in the same way. No specific reference explicitly spelling out all aspects of a proposed combination is required to show obviousness; indeed, the Supreme Court has explained that a person of ordinary skill is “a person of creativity, not an automaton,” and “in many cases a person of ordinary skill in the art will be able to fit the teachings of multiple patents together like pieces of a puzzle.” *Id.* at 420-21. As reflected in the attached exhibits, the discussion herein,

and in the references themselves, the elements of the asserted claims of the '140 Patent are all disclosed in the prior art, and one of skill would readily fit their teachings together.

Nevertheless, in addition to the information contained elsewhere in these contentions, including the exhibits, Defendants hereby identify below additional motivations and reasons to combine the cited art. To determine whether there is a reason to combine the known elements in the manner claimed by a patent, a court can “look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art.” *Id.* at 418. For example, obviousness can be demonstrated by showing “there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent’s claims.” *Id.* at 420. “[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.* Common sense also teaches that “familiar items may have obvious uses beyond their primary purposes, and in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle.” *Id.*

Applying these principles, it would have been obvious to a person of ordinary skill in the art at the time the application that issued as the '140 Patent was filed to combine, modify, or use the teachings of the prior art to make the purported inventions of those patents, including by making each of the combinations identified above. The motivation to combine the teachings of the prior art references disclosed herein can be found in each of (1) the references themselves, (2) the nature of the problem being solved, (3) the express, implied and inherent teachings of the prior art, (4) the knowledge of persons of ordinary skill in the art, (5) the fact that the prior art is

generally directed towards the subject matter of each respective asserted patent, and (6) the predictable results obtained in combining the elements of the prior art.

Furthermore, all of the references identified herein with respect to the '140 Patent address the same problem of power control in wireless communication. A person of ordinary skill in the art would have looked to other devices in the same field, such as the prior art devices and other references, because all of these references share many of the same or substantially similar components, such as mobile phone, base station, signal receiver, signal transmitter, antenna, signal modulator, signal demodulator, microphone, speaker, and screen, and the same or substantially similar ideas, such as mobile phone's transmission power control and generating a warning when the transmission power exceeds a threshold. A person of ordinary skill in the art would therefore have been motivated to combine these components, knowing that these well-known elements would achieve their purposes in combination, without any difficulty and without any unexpected results.

A person having ordinary skill in the art would have been motivated to make the listed combinations because every reference related to solving the same problem power control in the same technological field wireless communication. *See Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc.*, 75 F.3d 1568, 1573 (Fed. Cir. 1996) (the motivation to combine “may also come from the nature of a problem to be solved, leading inventors to look to references relating to possible solutions to that problem.”).

For example, to the extent that any prior art reference is determined not to disclose “a receiver circuit for receiving a downlink signal from a base station,” this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, AAPA and/or other references. For example, without limitation, each of Wheatley, Lomp, Ishikawa, Sakoda,

Tsunehara, Gilhousen, and Bartle discloses this limitation. *See* Exs. E1, E2, E3, E4, E5, E7, E8. It would have been obvious and it is inherent that the mobile phone includes a receiver circuit for receiving signals sent by the base station.

For example, to the extent that any prior art reference is determined not to disclose “a signal demodulator for dividing an output from said receiver circuit into a communication signal and a control signal,” this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, the AAPA and/or other references. For example, without limitation, each of Wheatley, Lomp, Sakoda, Tsunehara, and Gilhousen discloses this limitation. *See* Exs. E1, E2, E4, E5, E7. It would have been obvious and it is inherent that the mobile phone includes a signal demodulator to demodulate wireless signals received from the base station.

For example, to the extent that any prior art reference is determined not to disclose “a control processor operative for receiving said control signal,” this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, the AAPA and/or other references. For example, without limitation, each of Wheatley, Lomp, Ishikawa, Sakoda, Tsunehara, and Gilhousen discloses this limitation. *See* Exs. E1, E2, E3, E4, E5, E7. It would have been obvious and it is inherent that the mobile phone includes a control processor to process control signals received from the base station.

For example, to the extent that any prior art reference is determined not to disclose “a transmitter circuit for amplifying and modulating an output signal to be transmitted as an uplink signal from an antenna,” this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, the AAPA and/or other references. For example, without limitation, each of Wheatley, Lomp, Sakoda, Tsunehara, Gilhousen, and Bartle discloses this limitation. *See* Exs. E1, E2, E4, E5, E6, E8. It would have been obvious and it is inherent that

the mobile phone includes transmitter circuit to amplify and modulate signals before transmitting the signal to the base station.

For example, to the extent that any prior art reference is determined not to disclose “said control signal contains an intensity control signal to control the intensity of said uplink signal,” this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, the AAPA and/or other references. For example, without limitation, each of Wheatley, Lomp, Sakoda, Tsunehara, Gilhousen, and AAPA discloses this limitation. *See* Exs. E1, E2, E4, E5, E7, E9. It would have been obvious and it is inherent that the base station sends a control signal to the mobile phone to increase the mobile’s transmission power when the mobile’s current transmission power is not sufficient to yield a satisfactory signal received at the base station.

For example, to the extent that any prior art reference is determined not to disclose “said control processor generates an alarm associated with the uplink signal in response to receipt of an intensity control signal included in the control signal for maximizing the intensity of said uplink signal,” this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, the AAPA and/or other references. For example, without limitation, each of Wheatley, Lomp, Ishikawa, Lindell, Bartle, and AAPA discloses this limitation. *See* Exs. E1, E2, E3, E6, E8, E9. It would have been obvious that when the mobile phone’s uplink transmission power is maximized, the mobile generates an alarm to alert the user about the poor uplink connection. Further, generating a warning when uplink transmission quality is weak, based on feedback received from the base station was known in the art. *See, e.g.,* U.S. Pat. No. 5,471,650 (“Vexler”), 4:55-5:2 (“The base station immediately feeds back to the portable handset an indication signal indicative of the quality of the received signal to the handset

Upon receiving the indication signal, the handset . . . communicate[s] to the user by audible or visible indications, e.g. one beep for a weak received signal, or some other indications for other parameters.”); 2:13-30; 2:56-3:13.

For example, to the extent that any prior art reference is determined not to disclose generating an alarm for the uplink power “while said downlink signal is normally received,” this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, the AAPA and/or other references. For example, without limitation, each of Wheatley, Lomp, Sakoda, Tsunehara, and Gilhousen discloses this limitation. *See* Exs. E1, E2, E4, E5, E7. It would have been obvious and it is inherent that the alarm for maximizing uplink power would be generated regardless of the downlink power conditions, including when downlink signal is normally received.

For example, to the extent that any prior art reference is determined not to disclose “wherein the control processor is configured to generate the alarm in response to the intensity control signal for maximizing the intensity of the uplink signal lasting for a predetermined period of time,” this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, the AAPA and/or other references. For example, without limitation, each of Wheatley, Lindell, Bartle, and AAPA discloses this limitation. *See* Exs. E1, E6, E8, E9. It would have been obvious to wait some time before alarming the user that mobile phone’s transmission power is at maximum because the situation could be transient and there may not be a need to alert the user.

For example, to the extent that any prior art reference is determined not to disclose “a receiver for outputting voice on the basis of an audio output signal included in said communication signal,” this limitation would have been obvious to a person of ordinary skill in

the art in view of the reference itself, the AAPA and/or other references. For example, without limitation, each of Wheatley, Gilhousen, and Bartle discloses this limitation. *See* Exs. E1, E7, E8. It would have been obvious and it is inherent that the mobile phone includes a receiver to for emanating to the user the audio signal received from the base station.

For example, to the extent that any prior art reference is determined not to disclose “a microphone for converting voice into an input audio signal,” this limitation would have been obvious to a person of ordinary skill in the art in view of Bartle discloses this limitation. *See* Exs. E8. It would have been obvious and it is inherent that the mobile phone includes a microphone to receive the user’s voice.

For example, to the extent that any prior art reference is determined not to disclose “a signal modulator for performing code modulation of said input audio signal,” this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, the AAPA and/or other references. For example, without limitation, each of Wheatley, Lomp, Sakoda, Tsunehara, and Gilhousen discloses this limitation. *See* Exs. E1, E2, E4, E5, E7. It would have been obvious and it is inherent that the mobile phone includes a signal modulator to modulate the user’s voice before transmitting to the base station.

For example, to the extent that any prior art reference is determined not to disclose “said control processor is supplied with said control signal from said signal demodulator,” this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, the AAPA and/or other references. For example, without limitation, each of Wheatley, Lomp, Sakoda, Tsunehara, Gilhousen, and Bartle discloses this limitation. *See* Exs. E1, E2, E4, E5, E7, E8. It would have been obvious and it is inherent that the mobile phone

includes a signal demodulator to demodulate wireless signals received from the base station and then provided the signals to a control processor for further processing.

For example, to the extent that any prior art reference is determined not to disclose “said transmitter circuit amplifies and modulates an output from said signal modulator and sends out a resultant signal as an uplink from said antenna,” this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, the AAPA and/or other references. For example, without limitation, each of Wheatley, Lomp, Sakoda, Tsunehara, Gilhousen, and Bartle discloses this limitation. *See* Exs. E1, E2, E4, E5, E7, E8. It would have been obvious and it is inherent that the mobile phone’s transmitter circuit amplifies and modulates a signal and transmits it from an antenna to the base station.

One of ordinary skill also would have been motivated to combine any of the above references together to yield predictable results, as combining the references would simply entail combining known elements by known methods in the art. In addition, any such combination would involve the simple substitution of one known, equivalent element for another. Such combinations would have been obvious to try because there were only a finite number of predictable solutions. Any such combination would yield predictable results using known techniques and would involve the simple substitution of one known, equivalent element for another. Defendants provide exemplary motivations to combine prior art references below.

By example only, the ’140 Patent makes general admissions concerning the state of the respective art and claimed concepts that were well-known before the time of the alleged invention. Examples include, among other things, acknowledging known problems and needs in the prior art and the advantages of prior art techniques and elements. *See KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 417-422 (2007).

For example, the '140 Patent admits that CDMA and IS-95 “[i]n a CDMA system, the transmission power of a cellular phone in service is controlled by an electric power control signal, and, in an IS-95 system, fine control operations of 800 times per second are conducted.”

Further, the '140 Patent admits that “portable mobile unit[s]” that were capable of “reception and demodulation of [wireless] signals” were well known in the art. The '140 Patent also admits that it was known that “a cellular phone [generates] an alarm (making a warning sound) when the electric wave reception condition gets too weak to keep a communication while the cellular phone is in service.” Such an alarm was generated by the mobile when downlink signal quality was suffering (i.e., signals transmitted by base station and received by mobile). The problem the '140 Patent wanted to address was that in the “art an alarm concerning the communication condition of a cellular phone is a downlink speech quality deterioration alarm, however no consideration was given at all to an alarm concerning the uplink speech quality.” Thus the applicant’s goal was “to provide a portable mobile unit which is very convenient for a user by giving an alarm when the uplink speech quality lowers even though a downlink signal is normal.”

During the prosecution of the '140 Patent the applicant distinguished its alleged invention from what was known in the art. Specifically, the applicant stated that its alleged invention was directed to “determining whether the reception condition on the base station side regarding a signal transmitted from the mobile terminal is acceptable.” This statement shows that applicant’s invention requires the base station to measure strength of signals it receives from the mobile, and to send a notification to the mobile to change its transmission power. The applicant continue that an “alarm is generated [by the mobile] in response to receipt of an intensity control signal [sent by base station] for maximizing the intensity of the uplink signal.”

Another idea that applicant purports to have invented is to “generate the alarm in response to the intensity control signal for maximizing the intensity of the uplink signal lasting for a predetermined period of time.” The ’140 Patent, however, admits that the JP No. 335904/1996 “discloses a portable mobile unit for detecting an abnormality-representing signal when the level of the signal transmission power increases to a predetermined reference level or more due to a fault of the portable mobile unit continues for a period of time not shorter than a predetermined reference period of time, and then raise an alarm.”

The prior art has also long-disclosed limitations of the asserted claims that were well known to those of ordinary skill in the art before the time of the alleged invention. These well-known elements include many instances within the asserted scope of the claims as found in the ’140 Patent and in Maxell’s Infringement Contentions. Some examples of these prior art teachings are described below. Additional examples and/or details of these teachings may be found in Defendants’ claim charts.

- It was well known to those of ordinary skill in the art long before the priority date of the ’140 Patent that a mobile phone includes a microphone to receive user’s voice. *See, e.g.,* E.P. Pat. No. 0675609 (Oct. 4, 1995) (“In FIGURE 2, reference numeral 41 represents a microphone. A voice picked up by the microphone 41 is fed to an audio encoder 42. The audio encoder 42 converts the analog audio signal supplied from the microphone 41 into digital audio data, and encodes the converted digital audio data into audio data in accordance with the communication system.”).
- It was well known to those of ordinary skill in the art long before the priority date of the ’140 Patent that a mobile phone includes modulation circuits to process user’s voice and prepare a signal for wireless transmission. *See, e.g.,* E.P. Pat. No. 0675609 (Oct. 4, 1995)

(“Then, the data encoded by the channel encoder 43 is supplied to a modulating circuit 44 in which a digital modulation processing in accordance with the communication system is carried out. Then, the signal modulated by the modulating circuit 44 is converted into a transmission signal of a predetermined frequency band.”).

- It was well known to those of ordinary skill in the art long before the priority date of the '140 Patent that a mobile phone includes an antenna for transmitting uplink wireless signals to a base station, as well as for receiving downlink wireless signals from the base station. *See, e.g.,* U.S. Pat. No. 5,768,684 (Jun. 16, 1998) (“In a preferred embodiment, subscriber unit 200 includes diplexer 204 coupled to antenna 202, receiver portion 206 through low noise amplifier 205, and upconverter 215 through high power amplifier 218. Subscriber unit 200 also includes local oscillator 217, modems 208 and 214, decoder 210, encoder 212, and up-converter 215 as shown in FIG. 8.”).
- It was well known to those of ordinary skill in the art long before the priority date of the '140 Patent that a mobile phone includes demodulation circuits to process wireless signals received from a base station. *See, e.g.,* E.P. Pat. No. 0675609 (Oct. 4, 1995) (“The received signals which have been subjected to the intermediate frequency processing in respective intermediate frequency circuits 13 and 24 are fed to detection circuits 14 and 25, respectively, and they are detected and demodulated by the detection circuit 14 and 25, respectively.”).
- It was well known to those of ordinary skill in the art long before the priority date of the '140 Patent that a mobile phone converts received wireless signals into analog audio signals, emanating from a speaker to the user. *See, e.g.,* E.P. Pat. No. 0675609 (Oct. 4, 1995) (“The audio data extracted by the channel decoder 16 from the received data is

supplied to an audio decoder 17. The audio decoder 17 carries out a decode processing on the audio data supplied thereto in accordance with the communication system, and also carries out processing for converting the decoded audio data into an analog audio signal. The converted analog audio signal converted by the audio decoder 17 is supplied through a mixer 18 to a speaker 19 and the speaker 19 emanates it as an audible voice.”).

- It was well known to those of ordinary skill in the art long before the priority date of the '140 Patent that a base station measures transmission power of a mobile and sends a power control information to the mobile to increase the mobile's uplink transmission power. *See, e.g.,* U.S. Pat. No. 5,768,684 (Jun. 16, 1998) (“After the link-quality indicator (LQI) is calculated, the LQI is encoded by encoder 112 (FIG. 7) and transmitted back to the transmitting station. LQI may be transmitted as part of the payload of a data packet included as part of the system control data 37 (FIG. 2).”).
- It was well known to those of ordinary skill in the art long before the priority date of the '140 Patent that a base station sends power control information along with the data destined for the user in the same downlink signal, which the mobile separates. *See, e.g.,* E.P. Pat. No. 0675609 (Oct. 4, 1995) (“The received modulated signal selected by the selecting circuit 15 is fed to a channel decoder 16. The channel decoder 16 is a circuit for extracting and decoding audio data and control data from data transmitted in accordance with the digital communication system to which the wireless telephone apparatus is applied.”); U.S. Pat. No. 5,815,798 (Sep. 29, 1998) (“frame aligner and extractor 272” extracting power control signal and user data from a received signal.).
- It was well known to those of ordinary skill in the art long before the priority date of the '140 Patent that a mobile phone generates a warning to the user when signal quality is

weak. *See, e.g.,* U.S. Pat. No. 6,381,455 (Apr. 30, 2002) (“Upon the data transmission producing errors in excess of a threshold, which indicates an impending call drop . . . [the mobile] produces a subtle yet noticeable change in acoustic voice quality, which serves as a warning of the impending call drop.”; and “[the mobile] produces a subtle change in voice quality which alerts the mobile subscriber that a call may be dropped because the mobile unit 6 is in a fringe area such as a cell boundary or RF coverage hole.”).

- It was well known to those of ordinary skill in the art long before the priority date of the ’140 Patent a mobile phone generates a warning when uplink transmission quality is weak, based on feedback received from the base station. *See, e.g.,* U.S. Pat. No. 5,471,650 (Nov. 28, 1995) (“The base station immediately feeds back to the portable handset an indication signal indicative of the quality of the received signal to the handset Upon receiving the indication signal, the handset . . . communicate[s] to the user by audible or visible indications, e.g. one beep for a weak received signal, or some other indications for other parameters.”).
- It was well known to those of ordinary skill in the art long before the priority date of the ’140 Patent a mobile phone generates a warning to its user that the uplink transmission power is at maximum, based on an indication sent by the base station. *See, e.g.,* U.S. Pat. No. 5,802,445 (Sep. 1, 1998) (“If it becomes apparent that the averaged total power density is approaching the specified maximum allowable exposure . . . the GW 18 sends a message . . . [to] the user terminal 13. In response to receiving this message the controller 13e can display a message to the user on a terminal display Alternatively, an audible warning tone can be given to the user.”).

- It was well known to those of ordinary skill in the art long before the priority date of the '140 Patent that a mobile would change its transmission scheme (e.g., modulation level) when the uplink transmission power is at maximum level. *See*, e.g., U.S. Pat. No. 6,714,551 (Mar. 30, 2004) (“If the received signal strength for a communication link remains below the predefined range despite the transmit power having been adjusted to a maximum allowable level, and if the error rate for data received over the wireless link approaches or exceeds a predefined limit, one or more techniques are employed to reduce the error rate while maintaining a sufficiently high network throughput. A first technique for reducing the error rate is to reduce a rate at which data is communicated along a path. A second technique for reducing the error rate is to alter a modulation level of transmitted signal along the path. A third technique for reducing the error rate is to alter an error correction coding scheme employed for data communicated along the path. A fourth technique is to utilize spectrum spreading for communicating the data along the path.”).
- It was well known to those of ordinary skill in the art long before the priority date of the '140 Patent to keep track of period of the time that a mobile terminal's transmission power is above a certain threshold (e.g., at maximum). *See*, e.g., U.S. Pat. No. 5,802,445 (Sep. 1, 1998) (“The GW also maintains a record of a duration of time that the power density exceeds a specified threshold.”).

One of ordinary skill also would have been motivated to combine any of the above references together to yield predictable results, as combining the references would simply entail combining known elements by known methods in the art. In addition, any such combination would involve the simple substitution of one known, equivalent element for another. Such combinations would have been obvious to try because there were only a finite number of

predictable solutions. Any such combination would yield predictable results using known techniques and would involve the simple substitution of one known, equivalent element for another. Defendants provide exemplary motivations to combine prior art references below.

a. Exemplary Combinations

The following listing provides several exemplary combinations with respect to the '140 Patent Asserted Claims:

- Wheatley in combination with Bartle
- Wheatley in combination with Lindell
- Lomp in combination with Bartle
- Lomp in combination with Lindell
- Ishikawa in combination with Gilhousen and Bartle
- Ishikawa in combination with Gilhousen and Lindell
- Sakoda in combination with Bartle
- Sakoda in combination with Wheatley and Lindell
- Sakoda in combination with Lomp and Lindell
- Sakoda in combination with Ishikawa and Lindell
- Sakoda in combination with Vexler and Lindell
- Tsunehara in combination with Bartle
- Tsunehara in combination with Wheatley and Lindell
- Tsunehara in combination with Lomp and Lindell
- Tsunehara in combination with Ishikawa and Lindell
- Tsunehara in combination with Vexler and Lindell
- Lindell in combination with Gilhousen and Vexler

- Gilhousen in combination with Bartle
- Gilhousen in combination with Wheatley and Lindell
- Gilhousen in combination with Lomp and Lindell
- Gilhousen in combination with Ishikawa and Lindell
- Gilhousen in combination with Vexler and Lindell
- Bartle in combination with Wheatley
- Bartle in combination with Lomp
- Bartle in combination with Sahoda
- Bartle in combination with Tsnuhera
- Bartle in combination with Gilhousen
- Bartle in combination with Vexler

Defendants' identification of exemplary combinations is without limitation to Defendants identifying other invalidating combinations as appropriate. Defendants also contend that the asserted claims of the '140 Patent would have been obvious in view of the primary prior art references identified in subsection (i) above. Each of these primary references teaches all of the limitations of the '140 Patent's asserted claims. To the extent any claim limitations are found to be missing from the primary references, in addition to the exemplary references designated for combination with the primary references, it would have been obvious to one of ordinary skill to add the missing limitation based on the corresponding disclosure of that limitation in the accompanying '140 Patent charts.

C. Claim Charts

Defendants attached claim charts as Exhibit E to Defendants' Invalidity Contentions, and identify where, in each alleged item of prior art, each element of each '140 Patent Asserted

Claims are found either expressly or inherently. In these claim charts, Defendants have attempted to identify the most relevant portions of the references. The references may, however, contain additional support for claim limitations. Persons of ordinary skill in the art generally read a prior art reference as a whole and in the context of other publications and literature. Defendants may rely upon uncited portions of the references, other documents, and expert testimony to provide context or to aid in understanding the disclosures of the references. Where Defendants cite to a particular figure in a reference, the citation should be understood to encompass the caption and any corresponding description of the figure in the specification. Conversely, where Defendants cite to particular text referring to a figure, the citation should be understood to include the corresponding figure as well.

Exhibit	Charted Reference	Bates Number
E1	U.S. Pat. No. 5,469,471 (“Wheatley”)	MAX-DEFS-PA-0001285 - MAX-DEFS-PA-0001299
E2	U.S. Pat. No. 6,831,905 (“Lomp”)	MAX-DEFS-PA-0002021 - MAX-DEFS-PA-0002108
E3	E.P. Pat. No. 0,889,663 (“Ishikawa”)	MAX-DEFS-PA-0001047 - MAX-DEFS-PA-0001070
E4	E.P. Pat. No. 0,926,842 (“Sakoda”)	MAX-DEFS-PA-0001071 - MAX-DEFS-PA-0001087
E5	U.S. Pat. No. 6,307,844 (“Tsunehara”)	MAX-DEFS-PA-0001819 - MAX-DEFS-PA-0001837
E6	U.S. Pat. No. 5,524,275 (“Lindell”)	MAX-DEFS-PA-0001307 - MAX-DEFS-PA-0001317
E7	U.S. Pat. No. 5,056,109 (“Gilhousen”)	MAX-DEFS-PA-0000959 - MAX-DEFS-PA-0000975
E8	U.S. Pat. No. 5,722,068 (“Bartle”)	MAX-DEFS-PA-0001377 - MAX-DEFS-PA-0001388
E9	AAPA	

D. Invalidity of the Claims Under 35 U.S.C. § 112

Defendants further assert that the '140 Patent is invalid under 35 U.S.C. § 112. The following are the grounds upon which Defendants contend the asserted claims of the '140 Patent are invalid for failure to meet the requirements of 35 U.S.C. §§ 112, ¶ 1 and/or 112, ¶ 2, based on Defendants' investigation to date and currently-available information. For each claim identified as invalid, any dependent claims of those invalid claims are also invalid under 35 U.S.C. §§ 112, ¶ 1 and/or 112, ¶ 2.

Invalidity under § 112 may depend upon the Court's claim construction as well as Plaintiff's infringement contentions. Thus, Defendants have identified only those issues under § 112 of which they are currently aware. Defendants reserve the right to supplement and amend these contentions based on further discovery and investigation including, in particular, the deposition of any of the named inventors.

Defendants do not concede that Plaintiff is entitled to the earliest claimed priority date for any '140 Patent Asserted Claim and reserve the right to argue that a later priority date should apply based on information discovered during discovery and/or the Court's claim constructions. Based on the information currently available to Defendants, the claims of the '140 Patent may not be entitled to a priority date earlier than Oct. 17, 2000.

i. Indefiniteness

The following claims are invalid 35 U.S.C. § 112, ¶ 2 because they fail to inform those skilled in the art about the scope of the invention with reasonable certainty when read in light of the specification and file history.

Claim¹²	Claim Limitations
1, 4	downlink signal is normally received
1	associated with
1, 4	maximizing the intensity of said uplink signal
4	“an intensity control signal for controlling intensity of said uplink signal”
4	“an alarm”
4	“a signal for maximizing intensity of said uplink signal”

The asserted claims of the '140 Patent are invalid for failure to satisfy the requirements of 35 U.S.C. § 112, ¶ 2 because the specification does not describe or otherwise inform one of ordinary skill how to ascertain if a “downlink signal is normally received.” As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112, ¶ 2. Therefore, the asserted claims, when read in light of the specification and the prosecution history, “fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2124 (2014).

The asserted claims of the '140 Patent are invalid for failure to satisfy the requirements of 35 U.S.C. § 112, ¶ 2 because the specification does not describe or otherwise inform one of ordinary skill about what constitutes “associated with.” As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112, ¶ 2. Therefore, the asserted claims, when read in light of the specification and the

¹² This includes any asserted claims that depend from the identified claims.

prosecution history, “fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2124 (2014).

The asserted claims of the ’140 Patent are invalid for failure to satisfy the requirements of 35 U.S.C. § 112, ¶ 2 because the specification does not describe or otherwise inform one of ordinary skill about what constitutes “an intensity control signal for controlling intensity of said uplink signal.” The ’140 Patent introduces in Claim 1 “an intensity control signal to control the intensity of said uplink signal.” It is not clear if these two intensity control signals are the same or if they are different. Both interpretations are plausible. As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112, ¶ 2. Therefore, the asserted claims, when read in light of the specification and the prosecution history, “fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2124 (2014).

The asserted claims of the ’140 Patent are invalid for failure to satisfy the requirements of 35 U.S.C. § 112, ¶ 2 because the specification does not describe or otherwise inform one of ordinary skill about what constitutes “an alarm.” The ’140 Patent introduces in Claim 1 “an alarm.” It is not clear if these two alarms are the same or if they are different. Both interpretations are plausible. As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112, ¶ 2. Therefore, the asserted claims, when read in light of the specification and the prosecution history, “fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2124 (2014).

The asserted claims of the ’140 Patent are invalid for failure to satisfy the requirements of 35 U.S.C. § 112, ¶ 2 because the specification does not describe or otherwise inform one of

ordinary skill about what constitutes “a signal for maximizing intensity of said uplink signal.” The ’140 Patent introduces in Claim 1 “an intensity control signal included in the control signal for maximizing the intensity of said uplink signal.” It is not clear if these two signals are the same or if they are different. Both interpretations are plausible. As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112, ¶ 2. Therefore, the asserted claims, when read in light of the specification and the prosecution history, “fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2124 (2014).

VI. INVALIDITY CONTENTIONS REGARDING THE ’810 PATENT

A. Identification of Prior Art Under §§ 102 and 103

Defendants list below (MAX-DEFS-PA-0008509—MAX-DEFS-PA-0008918) the currently known prior art that anticipates or renders obvious the ’810 Patent’s Asserted Claim under 35 U.S.C. § 102 and/or § 103 (pre-AIA) expressly or inherently as is detailed below and in the charts attached as Exhibit F.

For references that invalidate under 35 U.S.C. § 102(b), those references were publicly known and available no later than their publication dates, and persons with knowledge of that public availability include without limitation the author(s) of the reference. Defendants continue to investigate the prior art identified below and reserve the right to offer additional evidence that may be uncovered after further discovery.

Patent References

Patent Number	Priority Date	Date of Issue or Publication
U.S. 5,442,744 (“Piech”)	April 3, 1992	August 15, 1995

Patent Number	Priority Date	Date of Issue or Publication
U.S. 5,884,056 (“Steele”)	December 28, 1995	March 16, 1999
U.S. 6,166,735 (“Dom”)	December 3, 1997	December 26, 2000
U.S. 6,233,015 (“Miller”)	June 27, 1997	May 15, 2001
U.S. 6,307,550 (“Chen”)	June 23, 1999 or June 11, 1998 (CIP)	October 23, 2001
U.S. 6,400,378 (“Snook”)	September 26, 1997	June 4, 2002
U.S. 6,845,485 (“Shastri”)	May 31, 2000 or July 15, 1999 (CIP)	January 18, 2005
U.S. 6,976,229 (“Balabanovic”)	December 16, 1999	December 13, 2005
U.S. 8,195,032 (“Itoh”)	September 18, 1996	June 5, 2012
WO1998057491A1 (“Anderson”)	June 10, 1997	December 17, 1998
U.S. 5,761,655 (“Hoffman”)	March 10, 1994	June 2, 1998

Prior Art Publications

Title	Date of Publication	Author
Howard Wactlar et al., Lessons Learned from Building a Terabyte Digital Video Library, Computer, Vol. 32, Issue 2, Feb. 1999, IEEE Computer Society Press, Los Alamitos, CA, USA	February 1999	Howard Wactlar et al.
Apple Human Interface Guidelines	1992	Apple Inc.
Brent Ethington, Introducing Microsoft Windows 95, Microsoft Press	1995	Microsoft Press

Prior Art Products and Uses¹³

Prior Art Products and Uses	Bates Nos.
Windows 95	

Copies of the foregoing references identified above have been or are being produced along with these Invalidity Contentions. Defendants are also producing art that they feel is relevant to the claimed patents and may rely on such to teach the state of the art.

Each of the references and systems listed above qualifies as prior art under one or more sections of 35 U.S.C. §§ 102 and/or 103, as detailed below. The invalidating disclosure in each of the listed references and materials is express, implicit, and/or inherent. Defendants reserve the right to rely on prior art in the accompanying production, prior art produced by Plaintiff or third parties, and/or prior art cited in the charts accompanying these invalidity contentions to show the state of the art, the knowledge of one of ordinary skill in the art, and/or the anticipation or obviousness of the '810 Patent. The references provided herein may also be relied upon to show the state of the art in the relevant time frame. Also, to the extent that any of the references listed above are deemed not to be prior art, they may nevertheless provide evidence of prior or simultaneous invention, thereby supporting the obviousness of the asserted claims.

To the extent they constitute prior art, Defendants reserve the right to rely upon any of the following art related to the prior art identified herein: (i) foreign counterparts of the U.S. patents identified; (ii) U.S. counterparts of any foreign patents and foreign patent applications identified; (iii) U.S. and foreign patents and patent applications corresponding to any articles and publications identified; (iv) any products, prior inventions, or publications that relate to any

¹³ These prior uses are prior art under 35 U.S.C. § 102(a) (known or used in the US); (b) (public use in the US); and/or (g) (made in the US).

references identified; and (v) any patents, patent applications or publications that relate to any identified system. In addition, the specification and prosecution history of the '810 Patent and related patents and/or applications contain descriptions of, and admissions concerning, the scope of the claims. Defendants intend to rely upon these descriptions and admissions. Defendants also identify all prior art references cited or included in the '810 Patent and its prosecution history, as well as any statements in either regarding the prior art in either. Defendants reserve the right to rely on documents produced by third parties as prior art. Defendants' Invalidity Contentions and identification of prior art meet the disclosure requirements of 35 U.S.C. §282(c). Defendants reserve their rights to amend their contentions to include additional prior art references.

B. Anticipation and Obviousness References

Pursuant to P.R. 3-3(a) and the Court's Discovery Order, and in light of Maxell's Infringement Contentions and accompanying claim charts, Defendants list below the prior art now known to Defendants that anticipates or renders obvious the asserted claims under 35 U.S.C. § 102 and/or 103. Defendants' contentions do not imply any admission or suggestion that a specific prior art reference does not independently anticipate the '810 Patent Asserted Claims. Each individual prior art reference identified in Subsection A, above, that anticipates and/or each combination that renders obvious the '810 Patent Asserted Claims is described below.

Although Defendants have identified at least one disclosure of a limitation for each prior art reference, each and every disclosure of the same limitation in the same reference is not necessarily identified. To focus the issues, Defendants cite only representative portions of an identified reference, even where a reference may contain additional support for a particular claim limitation. Persons of ordinary skill in the art generally read an item of prior art as a whole and in the context of other publications and literature. Thus, to understand and interpret any specific

statement or disclosure within a prior art reference, such persons would rely on other information within the reference, along with other publications and their general scientific knowledge. Defendants may rely upon uncited portions of the prior art references and on other publications and expert testimony to provide context, and as aids to understanding and interpreting the portions that are cited.

Further, some or all of the systems identified below or identified in the prior art publications and patents will be the subject of continuing investigation and discovery, including on-going and currently uncompleted third party discovery. Defendants reserve the right to supplement their contentions consistent with the Federal Rules and the Local Patent Rules, in the event that additional information is discovered relating to these systems.

i. Anticipating Reference(s)

Defendants identify the following reference(s) as anticipating one or more of the '810 Patent Asserted Claims under 35 U.S.C. § 102. The below table of anticipating references is exemplary, and it does not constitute an admission that any reference anticipates only the listed claims.

Anticipating References

Anticipating Prior Art	Asserted Claim(s)
U.S. Pat. No. 5,442,744 (“Piech”)	1, 6
U.S. Pat. No. 5,884,056 (“Steele”)	1, 6
U.S. Pat. No. 6,166,735 (“Dom”)	1, 6
U.S. Pat. No. 6,233,015 (“Miller”)	1, 6
U.S. Pat. No. 6,307,550 (“Chen”)	1, 6
U.S. Pat. No. 6,400,378 (“Snook”)	1, 6
U.S. Pat. No. 6,845,485 (“Shastri”)	1, 6

Anticipating Prior Art	Asserted Claim(s)
U.S. Pat. No. 6,976,229 (“Balabanovic”)	1, 6
U.S. Pat. No. 8,195,032 (“Itoh”)	1, 6
WO1998057491A1 (“Anderson”)	1, 6
Howard Wactlar et al., Lessons Learned from Building a Terabyte Digital Video Library, Computer, Vol. 32, Issue 2, Feb. 1999, IEEE Computer Society Press, Los Alamitos, CA, USA	1, 6

To the extent any item of prior art cited above is deemed not to disclose, explicitly or inherently, any limitation of a '810 Patent Asserted Claim, Defendants reserve the right to argue that any difference between that prior art and the corresponding patent claim would have been either inherent to the art, or obvious to one of ordinary skill in the art, even if they have not specifically denoted that the art is to be combined with the knowledge of a person of ordinary skill in the art. Each prior art reference above describing or relating to a prior art system should be understood to discuss the system's capabilities generally and also to discuss specific examples of specific installations of the particular system. To the extent the prior art references describe various implementations of the same underlying system, that underlying system is a single reference under 35 U.S.C. §§ 102(a) and/or 102(b). The prior art references are evidence of the capabilities of the prior art system, and each chart provided for a prior art system should be understood to incorporate by reference all printed publications describing or relating to that prior art system and all charts provided for those printed publications.

In addition, each reference itself also qualifies as prior art on separate grounds as a publication under §§ 102(a) and/or 102(b). Even if the prior art references are not treated as a single prior art reference, at the very least, it would have been obvious to combine the features described in those references.

ii. Obviousness Combinations and Rationale(s) to Combine

Each anticipatory reference listed above individually discloses each limitation of the '810 Patent Asserted Claims. However, to the extent any anticipatory reference is found to lack any claim element, the '810 Patent Asserted Claims also are obvious in light of the ordinary skill in the art and the anticipatory reference itself (via single reference obviousness), or in light of further references, described in the charts attached as Exhibit F. The anticipatory references, alone or in combination with other prior art, render the '810 Patent Asserted Claims invalid as obvious under 35 U.S.C. § 103. In particular, each identified prior art reference may be combined with: (i) information known to persons skilled in the art at the time of the alleged inventions of the '810 Patent; (ii) any of the other anticipatory or other prior art references identified in these contentions or the accompanying charts. In addition, Defendants incorporate by reference each and every prior art reference of record in the prosecution histories of the '810 Patent, counterpart patents, and related patent applications, as well as all statements made by the applicant in the prosecution histories of the '810 Patent, counterpart patents, and related patent applications, including any discussion of prior art or conventional features in any of the specifications of the '810 Patent, counterpart patents, and related patent applications.

Defendants incorporate by reference the statements and reasoning by the U.S. Patent and Trademark Office during prosecution of the '810 Patent and any counterpart patents or applications as to why it would have been obvious to modify or combine prior art references to achieve the limitations of the '810 Patent Asserted Claims or similar claims in any counterparts.

The alleged “inventions” recited in the asserted claims of the '810 Patent would have been obvious because the prior art, common knowledge, and the nature of the problems, viewed through the eyes of a person ordinarily skilled in the art, suggested the claimed elements. A person ordinarily skilled in the relevant fields would have possessed knowledge and skills

rendering him or her capable of combining the prior art references with knowledge in the field and common sense. Moreover, the asserted claims represent well-known combinations of familiar and pre-existing elements, yielding only predictable results. Additional reasons that a person of ordinary skill in the art would have been motivated to combine the identified prior art are provided herein and in the accompanying charts and document production.

In addition to the specific combinations of prior art and the specific combinations of groups of prior art disclosed, Defendants will rely on any other combination of any prior art references disclosed herein. Defendants further will rely upon combinations disclosed within the prosecution history of the references cited herein. The obviousness combinations set forth in these contentions reflect Defendants' present understanding of the potential scope of the claims that Maxell appears to be advocating and should not be seen as Defendants' acquiescence to Maxell's interpretation of the patent claims. Defendants will amend or supplement these contentions regarding anticipation or obviousness of the asserted claims as appropriate under the applicable Rules, including in response to further information from Maxell or information discovered during discovery. Maxell has not identified what elements or combinations it alleges were not known to one of ordinary skill in the art at the time. Therefore, for any claim limitation that Maxell alleges is not disclosed in a particular prior art reference, Defendants reserve the right to assert that any such limitation is either inherent in the disclosed reference or obvious to one of ordinary skill in the art at the time in light of the same, or that the limitation is disclosed in another of the references disclosed above and in combination would have rendered the asserted claim obvious.

Additionally, any reference or combination of references that anticipates or renders obvious an asserted independent claim also renders obvious any asserted claim dependent on that

independent claim because every element of each dependent claim was known by a person of ordinary skill at the time of the alleged invention, and it would have been obvious to combine those known elements with the independent claims at least as a matter of common sense and routine innovation.

To the extent any limitation is not explicitly or inherently disclosed by an item of prior art identified in Subsection A, the claimed subject matter as a whole would have been obvious to one skilled in the art at the time of the alleged invention, in view of the state of the art and knowledge of those skilled in the art. The item of prior art on its own as read by one of skill in the art would, therefore, render the relevant claims invalid for obviousness under 35 U.S.C. § 103(a).

In addition, the references identified above render one or more asserted claims of the '810 Patent obvious when the references are read in combination with each other, and/or when read in view of the state of the art and knowledge of those skilled in the art. Any of the references disclosed herein may be combined to render obvious (and therefore invalidate) each of Maxell's asserted claims. Defendants may rely upon a subset or all of the references identified, for purposes of obviousness depending on the Court's claim construction, positions taken by Maxell during this litigation, and further investigation and discovery. Defendants may rely upon combinations with any reference in the accompanying charts and any of the other references disclosed herein with respect to the '810 Patent, including combinations with any of the patents, publications or systems identified herein as prior art to the '810 Patent.

Prior art references rendering the asserted claims of the '810 Patent obvious, alone or in combination with other references, are discussed above, included in the accompanying charts, and identified in subsection (a) below, which shows representative specific combinations of

references. Moreover, to the extent the foregoing references are found not to anticipate the asserted claims, the foregoing references render the asserted claims obvious either alone or in combination with one or more of the other references identified above. Exemplary reasons that a person of ordinary skill in the art would have been motivated to combine the identified prior art are provided in below.

Defendants believe that no showing of a specific motivation to combine prior art is required to combine the references disclosed herein and in the attached charts. As reflected in the attached exhibits, and in the references themselves, there was a reason to make each combination – each combination of art would have produced no unexpected results, and each combination at most would simply represent a known alternative to one of ordinary skill in the art. *See KSR Int’l Co. v. Teleflex, Inc.*, 550 U.S. 398, 414-18 (2007) (rejecting the Federal Circuit’s “rigid” application of the teaching, suggestion, or motivation-to-combine test, instead espousing an “expansive and flexible” approach). As reflected in the attached exhibits, in the references themselves, and the discussion herein, the asserted claims of the ’810 Patent combine familiar elements according to known methods, yielding predictable results. Moreover, one of ordinary skill in the art would be prompted to modify each of these references based on design incentives or other market forces. This is true for references in the same field of endeavor as well as for references in a different field of endeavor, as one of skill would understand that techniques used to improve devices in a related or analogous field could improve similar devices in the same way. No specific reference explicitly spelling out all aspects of a proposed combination is required to show obviousness; indeed, the Supreme Court has explained that a person of ordinary skill is “a person of creativity, not an automaton,” and “in many cases a person of ordinary skill in the art will be able to fit the teachings of multiple patents together like

pieces of a puzzle.” *Id.* at 420-21. As reflected in the attached exhibits, the discussion herein, and in the references themselves, the elements of the asserted claims of the ’810 Patent are all disclosed in the prior art, and one of skill would readily fit their teachings together.

Nevertheless, in addition to the information contained elsewhere in these contentions, including the exhibits, Defendants hereby identify below additional motivations and reasons to combine the cited art. To determine whether there is a reason to combine the known elements in the manner claimed by a patent, a court can “look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art.” *Id.* at 418. For example, obviousness can be demonstrated by showing “there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent’s claims.” *Id.* at 420. “[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.* Common sense also teaches that “familiar items may have obvious uses beyond their primary purposes, and in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle.” *Id.*

Applying these principles, it would have been obvious to a person of ordinary skill in the art at the time the application that issued as the ’810 Patent was filed to combine, modify, or use the teachings of the prior art to make the purported inventions of those patents, including by making each of the combinations identified above. The motivation to combine the teachings of the prior art references disclosed herein can be found in each of (1) the references themselves, (2) the nature of the problem being solved, (3) the express, implied and inherent teachings of the prior art, (4) the knowledge of persons of ordinary skill in the art, (5) the fact that the prior art is

generally directed towards the subject matter of each respective asserted patent, and (6) the predictable results obtained in combining the elements of the prior art.

Furthermore, all of the references identified herein with respect to the '810 Patent address the same problem of reproducing or playing back pictures. A person of ordinary skill in the art would have looked to other devices in the same field, such as the prior art devices and other references, because all of these references share many of the same or substantially similar components, such as a video display, a list of representative images of multimedia and scrolling functionalities. A person of ordinary skill in the art would therefore have been motivated to combine these components, knowing that these well-known elements would achieve their purposes in combination, without any difficulty and without any unexpected results.

A person having ordinary skill in the art would have been motivated to make the listed combinations because every reference related to solving the same problem of reproducing or playing back pictures in the same technological field of digital media access systems. *See Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc.*, 75 F.3d 1568, 1573 (Fed. Cir. 1996) (the motivation to combine “may also come from the nature of a problem to be solved, leading inventors to look to references relating to possible solutions to that problem.”).

The prior art has also long-disclosed limitations of the asserted claims that were well known to those of ordinary skill in the art before the time of the alleged invention. These well-known elements include many instances within the asserted scope of the claims as found in the '810 Patent and in Maxell's Infringement Contentions. Some examples of these prior art teachings are described below. Additional examples and/or details of these teachings may be found in Defendants' claim charts.

By example only, the '810 Patent makes general admissions concerning the state of the respective art and claimed concepts that were well-known before the time of the alleged invention. Examples include, among other things, acknowledging known problems and needs in the prior art and the advantages of prior art techniques and elements. *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417-422 (2007).

For example, Defendants contend that the “means for inputting a command” claim element is governed by 35 U.S.C. 112(6), and that the '810 patent's specification fails to identify sufficient structure to perform the claimed function. To the extent that any prior art reference is determined not to disclose “means for inputting a command” under Plaintiff's apparent infringement theory, this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, AAPA and/or other references. For example, without limitation, each of AAPA, Piech, Steele, Dom, Miller, Chen, Snook, Shastri, Balabanovic, Itoh, Anderson, and Wactlar discloses this limitation. *See* Exs. F1, F2, F3, F4, F5, F6, F7, F8, F9, F10, F11, F12. It would have been obvious and inherent for graphical user interfaces and multimedia software to include a means for inputting a command in order to permit the user to interact with the software.

For example, Defendants contend that the “means for displaying a list of time-serial representative images of scenes included in a video picture” claim element is governed by 35 U.S.C. 112(6), and that the '810 patent's specification fails to identify sufficient structure to perform the claimed function. To the extent that any prior art reference is determined not to disclose “means for displaying a list of time-serial representative images of scenes included in a video picture” under Plaintiff's apparent infringement theory, this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, the AAPA and/or

other references. The '810 Patent admits that video storage, including the ability to access programs and to index content with images of scenes, was known in the art:

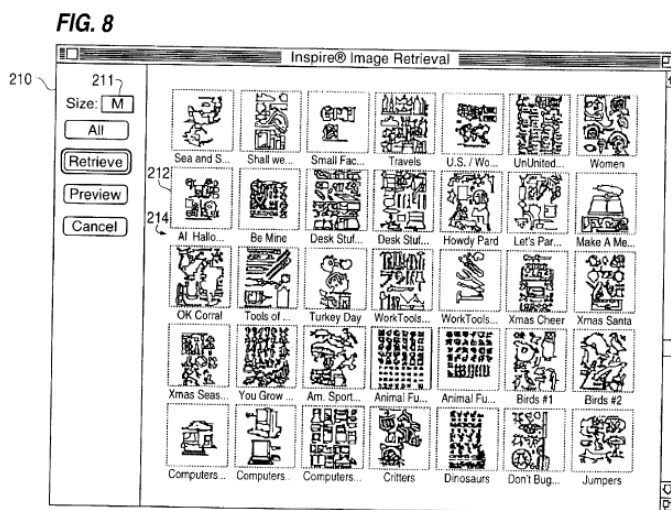
some of picture recording/reproducing software designed to run on a personal computer or the like is so designed or programmed as to create an index composed of leading images of plural scenes included in a video picture by arraying them in the form of a list or array containing representative images of reduced size so that a viewer or user can select the scene which he or she wants to view and reproduce instantaneously a corresponding video picture starting from the selected scene. Such combination of availability of the index information and the high accessibility to the disk-like recording medium as mentioned above provides excellent convenience to the user.

'810 Patent at 1:25-53; *see also, e.g., id.* at 7:50-56. The '810 Patent further explains that in “conventional techniques” indexes were displayed on the screen at the same time as a video and used to select portions of a video to watch. *Id.* at 1:57-65 (“However, the conventional techniques suffer several shortcomings. By way of example, when a video picture is selected to be played back by making use of or referencing the index, it is required to change over a screen image (i.e., image on a display screen) solely of a video picture with that solely of the index or alternatively allocate partially a field or area of the display screen to the playback of the video picture with another field or area being assigned to the display of the images serving as the index information.”). For example, without limitation, each of AAPA, Piech, Steele, Dom, Miller, Chen, Snook, Shastri, Balabanovic, Itoh, Anderson, and Wactlar discloses this limitation. *See* Exs. F1, F2, F3, F4, F5, F6, F7, F8, F9, F10, F11, F12. As another example, U.S. 5,761,655 (“Hoffman”) filed on March 10, 1994, and issued on June 2, 1998, and is prior art under 35 U.S.C. §§ 102(a), (b) and (e)) discloses “[a] system which creates, stores, retrieves and displays thumbnail images.” Hoffman at Abstract. By selecting a thumbnail, a user could access an indexed portion of the data. *See also id.* at 2:17-25 (“In conventional methods, the available storage is searched for all files containing image data. As image files are found, a miniature image is generated from the actual image file. The thumbnail images are then presented in a list

on a graphic screen, along with other key file information such as file name and size. The user can then select the desired files by the thumbnail images. Conventional image selectors of this nature fall into two categories: integrated image selectors and image organizer programs.”). It would have been obvious to include this limitation in order to facilitate a user’s selection and view of a particular time in the video picture, as the representative images serve as landmarks especially in longer video segments. *See also* ’810 Patent at 1:25-30 (“With the advent of hard disks of large capacity capable of storing a large volume of video picture over several ten hours and commercially available at a relatively low price, a video picture recording/reproducing apparatus equipped with the hard disk as the storage medium has been developed for practical use.”). Further, it would have been obvious to display a “time-serial” list in order to organize the list in a logical format, and facilitate a user’s selection and view of a particular time in the video picture.

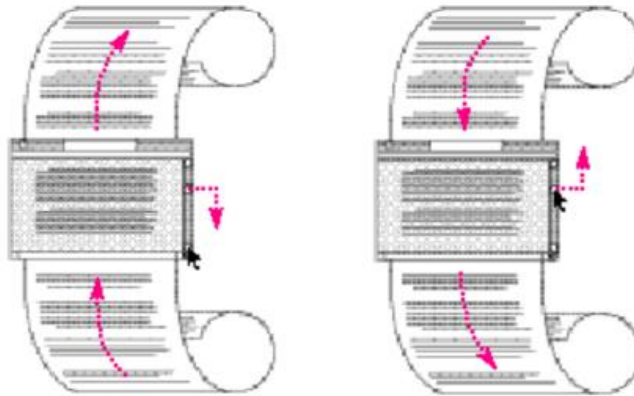
For example, Defendants contend that the “means for scrolling the list by displaying a new representative image instead of the representative image of the representative image already displayed earlier when a total number of the time-serial representative images exceed a maximum number of representative images which can be displayed on a display screen” claim element is governed by 35 U.S.C. 112(6), and that the ’810 patent’s specification fails to identify sufficient structure to perform the claimed function. To the extent that any prior art reference is determined not to disclose “means for scrolling the list by displaying a new representative image instead of the representative image of the representative image already displayed earlier when a total number of the time-serial representative images exceed a maximum number of representative images which can be displayed on a display screen” under Plaintiff’s apparent infringement theory, this limitation would have been obvious to a person of ordinary skill in the

art in view of the reference itself, the AAPA and/or other references. For example, without limitation, each of Piech, Steele, Dom, Miller, Chen, Snook, Shastri, Balabanovic, Itoh, Anderson, and Wactlar discloses this limitation. *See* Exs. F1, F2, F3, F4, F5, F6, F7, F8, F9, F10, F11. Hoffman also discloses such a scrollbar, as shown in Figure 8 below:



Hoffman at Fig. 8; *see also, e.g., id.* at Abstract (“The size of the thumbnails displayed and the area set for displaying the thumbnails can be changed to allow visual review of either a large number of thumbnails or a smaller but larger size set of thumbnails. Thumbnails, and other image files and other related text files and non-related files can be indexed and searched using keywords by using keyword views into the stored files to indicate a match when the views designate the same file.”), 10:4-7 (“The data is also copied into memory and as many thumbnails as possible are kept in the memory so that line scrolling and paging can be accomplished at high speed.”). Scrollbars are also described, for instance, in the 1992 Apple Human Interface Guidelines [HIG] document which is prior art under 35 U.S.C. §§ 102(a) and (b). The 1992 Apple Interface Guidelines provide the following illustration of typical scrolling functionality:

Figure 5-29 Using scroll arrows and the scroll box



Id. at 33-36 (“If the user clicks a scroll arrow or clicks in the gray area, the document ‘moves’ and the scroll box moves along with it. If the user drags the scroll box and releases the mouse button, the document ‘moves’ along with it. Figure 5-29 illustrates these behaviors.”). The index could be scrolled the scroll box in the middle of the scroll bar or the scroll arrows at the respective ends of the scroll bar. By holding down the mouse over the scroll box and dragging it, the document scrolls continuously in proportion to how long the button is held and how much the scroll box is dragged. *Id.* By holding down the mouse on one of the scroll arrows, the document scrolls continuously as long as the button is held down. *Id.* at 35 (“When the user clicks the bottom scroll arrow, for example, the document moves up, bringing what was just below the window into view. Pressing the scroll arrow causes continuous movement in the appropriate direction.”). Scrollbars were also incorporated into the Windows 95 Operating System, as shown below:

The Recycle Bin graphically indicates whether it is empty or contains items. Information about “deleted” items is available in the Recycle Bin’s details view, as shown in Figure 9.

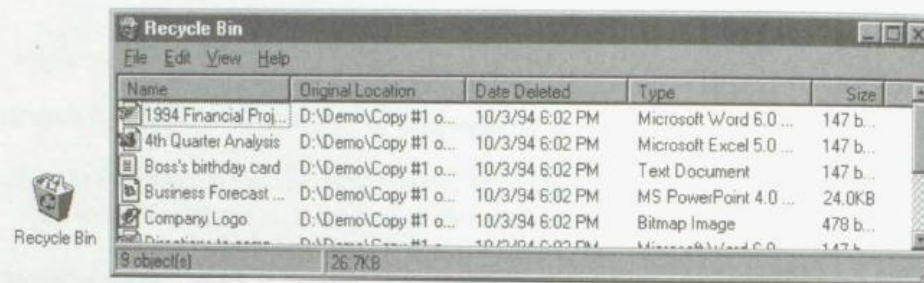


Figure 9. The Recycle Bin with deleted items and the Recycle Bin details view showing additional information

Brent Ethington, *Introducing Microsoft Windows 95*, Microsoft Press (1995) 32 (prior art under 35 U.S.C. §§ 102(a) and (b)). It would have been obvious to permit a user to scroll through representative images of an index in order to allow a user to view an index that cannot be comfortably displayed in its entirety on the display device at a single time.

For example, to the extent that any prior art reference is determined not to disclose “wherein the representative image added newly for display is a representative image of a scene distanced for a given time in conformance to the command inputted via the inputting means,” this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, the AAPA and/or other references. For example, without limitation, each of Piech, Steele, Dom, Miller, Chen, Snook, Shastri, Balabanovic, Itoh, Anderson, and Wactlar discloses this limitation. *See* Exs. F1, F2, F3, F4, F5, F6, F7, F8, F9, F10, F11. This is an inherent aspect of scrolling functionalities. Further, it would have been obvious to include this limitation in order to improve the user experience and permit the user to have control over the scrolling functionalities.

For example, to the extent that any prior art reference is determined not to disclose “the command is effectuated in terms of a time duration for which the inputting means is

continuously actuated,” this limitation would have been obvious to a person of ordinary skill in view of the reference itself, the AAPA and/or other references. For example, without limitation, each of Piech, Steele, Dom, Miller, Chen, Snook, Shastri, Balabanovic, Itoh, Anderson, and Wactlar discloses this limitation. *See* Exs. F1, F2, F3, F4, F5, F6, F7, F8, F9, F10, F11. *See also, e.g.*, Miller at 7:42-58 (“The ability to scroll through the images at an accelerated rate is also provided for. Once the plurality of images has been displayed (106) and the full resolution image has been obscured (110), a timer is started (111) to measure the elapsed time the user control is held actuated. While the plurality of images are advancing (112), if the user does not release the button (114) before the acceleration timer expires (121), then the rate at which the images are advanced is increased (122) and the images continue to scroll at the appropriate rate (123). If at any time during the advancement of images (112) the user control is released (114), and pressed again before a predetermined time (120), the acceleration timer will be reset (111) and the rate of image advancement will be changed to the normal rate (112). Again if the timer expires (121) before the button has been released (114), the plurality of images will advance at an accelerated rate (122).”). This is an inherent aspect of scrolling functionalities. Further, it would have been obvious to include this limitation in order to improve the user experience and permit the user to have control over the scrolling functionalities.

One of ordinary skill also would have been motivated to combine any of the above references together to yield predictable results, as combining the references would simply entail combining known elements by known methods in the art. In addition, any such combination would involve the simple substitution of one known, equivalent element for another. Such combinations would have been obvious to try because there were only a finite number of predictable solutions. Any such combination would yield predictable results using known

techniques and would involve the simple substitution of one known, equivalent element for another. Defendants provide exemplary motivations to combine prior art references below.

a. Exemplary Combinations

The following listing provides several exemplary combinations with respect to the '810 Patent Asserted Claims:

- Steele in combination with Miller
- Steele in combination with AAPA and Miller
- Steele in combination with Piech
- Steele in combination with AAPA and Piech
- Steele in combination with AAPA, Miller, and Piech
- Steele in combination with Piech and Wactlar
- Piech in combination with Miller
- Piech in combination with AAPA and Miller
- Chen in combination with Miller
- Chen in combination with AAPA and Miller
- Chen in combination with Piech
- Chen in combination with AAPA and Piech
- Chen in combination with AAPA, Miller, and Piech
- Shastri in combination with Miller
- Shastri in combination with AAPA and Miller
- Shastri in combination with Piech
- Shastri in combination with AAPA and Piech
- Shastri in combination with AAPA, Miller, and Piech
- AAPA in combination with any one, and any combination of, Piech, Steele, Dom, Miller, Chen, Snook, Shastri, Balabanovic, Itoh, Anderson, and Wactlar

- Piech in combination with any one, and any combination of, AAPA, Steele, Dom, Miller, Chen, Snook, Shastri, Balabanovic, Itoh, Anderson, and Wactlar
- Steele in combination with any one, and any combination of, AAPA, Piech, Steele, Dom, Miller, Chen, Snook, Shastri, Balabanovic, Itoh, Anderson, and Wactlar
- Dom in combination with any one, and any combination of, AAPA, Piech, Steele, Miller, Chen, Snook, Shastri, Balabanovic, Itoh, Anderson, and Wactlar
- Miller in combination with any one, and any combination of, AAPA, Piech, Steele, Dom, Chen, Snook, Shastri, Balabanovic, Itoh, Anderson, and Wactlar
- Chen in combination with any one, and any combination of, AAPA, Piech, Steele, Dom, Miller, Snook, Shastri, Balabanovic, Itoh, Anderson, and Wactlar
- Snook in combination with any one, and any combination of, AAPA, Piech, Steele, Dom, Miller, Chen, Shastri, Balabanovic, Itoh, Anderson, and Wactlar
- Shastri in combination with any one, and any combination of, AAPA, Piech, Steele, Dom, Miller, Chen, Snook, Balabanovic, Itoh, Anderson, and Wactlar
- Balabanovic in combination with any one, and any combination of, AAPA, Piech, Steele, Dom, Miller, Chen, Snook, Shastri, Itoh, Anderson, and Wactlar
- Itoh in combination with any one, and any combination of, AAPA, Piech, Steele, Dom, Miller, Chen, Snook, Shastri, Balabanovic, Anderson and Wactlar.
- Anderson in combination with any one, and any combination of, AAPA, Piech, Steele, Dom, Miller, Chen, Snook, Shastri, Balabanovic, Itoh, and Wactlar
- Wactlar in combination with any one, and any combination of, AAPA, Piech, Steele, Dom, Miller, Chen, Snook, Shastri, Balabanovic, Itoh, and Anderson

Defendants' identification of exemplary combinations is without limitation to Defendants identifying other invalidating combinations as appropriate. Defendants also contend that the asserted claims of the '810 Patent would have been obvious in view of the primary prior art references identified in subsection (i) above. Each of these primary references teaches all of the limitations of the '810 Patent's asserted claims. To the extent any claim limitations are found to be missing from the primary references, in addition to the exemplary references designated for combination with the primary references, it would have been obvious to one of ordinary skill to

add the missing limitation based on the corresponding disclosure of that limitation in the accompanying '810 Patent charts.

C. Claim Charts

Defendants attached claim charts as Exhibit F to Defendants' Invalidity Contentions, and identify where, in each alleged item of prior art, each element of each '810 Patent Asserted Claims are found either expressly or inherently. In these claim charts, Defendants have attempted to identify the most relevant portions of the references. The references may, however, contain additional support for claim limitations. Persons of ordinary skill in the art generally read a prior art reference as a whole and in the context of other publications and literature. Defendants may rely upon uncited portions of the references, other documents, and expert testimony to provide context or to aid in understanding the disclosures of the references. Where Defendants cite to a particular figure in a reference, the citation should be understood to encompass the caption and any corresponding description of the figure in the specification. Conversely, where Defendants cite to particular text referring to a figure, the citation should be understood to include the corresponding figure as well.

Exhibit	Charted Reference	Bates Number
F1	Piech	MAX-DEFS-PA-0008677 -MAX-DEFS-PA-0008689
F2	Steele	MAX-DEFS-PA-0008690 - MAX-DEFS-PA-0008704
F3	Dom	MAX-DEFS-PA-0008732 - MAX-DEFS-PA-0008745
F4	Miller	MAX-DEFS-PA-0008746 - MAX-DEFS-PA-0008758
F5	Chen	MAX-DEFS-PA-0008759 -MAX-DEFS-PA-0008773
F6	Snook	MAX-DEFS-PA-0008774 - MAX-DEFS-PA-0008793
F7	Shastri	MAX-DEFS-PA-0008794 - MAX-DEFS-PA-0008811

F8	Balabanovic	MAX-DEFS-PA-0008812 -MAX-DEFS-PA-0008828
F9	Itoh	MAX-DEFS-PA-0008829 - MAX-DEFS-PA-0008854
F10	Wactlar	MAX-DEFS-PA-0008855 - MAX-DEFS-PA-0008867
F11	Anderson	MAX-DEFS-PA-0008868 - MAX-DEFS-PA-0008917
F12	AAPA	

D. Invalidity of the Claims Under 35 U.S.C. § 112

Defendants further assert that the '810 Patent is invalid under 35 U.S.C. § 112. The following are the grounds upon which Defendants contend the asserted claims of the '810 Patent are invalid for failure to meet the requirements of 35 U.S.C. §§ 112, ¶ 1 and/or 112, ¶ 2, based on Defendants' investigation to date and currently-available information. For each claim identified as invalid, any dependent claims of those invalid claims are also invalid under 35 U.S.C. §§ 112, ¶ 1 and/or 112, ¶ 2.

Invalidity under § 112 may depend upon the Court's claim construction as well as Plaintiff's infringement contentions. Thus, Defendants have identified only those issues under § 112 of which they are currently aware. Defendants reserve the right to supplement and amend these contentions based on further discovery and investigation including, in particular, the deposition of any of the named inventors.

i. Indefiniteness

The following claims are invalid 35 U.S.C. § 112, ¶ 2 because they fail to inform those skilled in the art about the scope of the invention with reasonable certainty when read in light of the specification and file history.

Claim ¹⁴	Claim Limitations
1	<p>“means for inputting a command”</p> <p>This term is a means-plus functions term under 35 U.S.C. § 112 ¶ 6 and the specification fails to disclose a clearly linked corresponding structure.</p>
1	<p>“means for displaying a list of time-serial representative images of scenes included in a video picture”</p> <p>This term is a means-plus functions term under 35 U.S.C. § 112 ¶ 6 and the specification fails to disclose a clearly linked corresponding structure.</p>
1	<p>“means for scrolling the list by displaying a new representative image instead of the representative image of the representative image already displayed earlier when a total number of the time-serial representative images exceed a maximum number of representative images which can be displayed on a display screen”</p> <p>This term is a means-plus functions term under 35 U.S.C. § 112 ¶ 6 and the specification fails to disclose a clearly linked corresponding structure.</p>
1	<p>“representative image of the representative image”</p> <p>The specification does not describe or otherwise inform one of ordinary skill about what constitutes “representative image of the representative image.” The ’810 Patent does not describe or explain the meaning of this term and it does not have an understood meaning to persons of ordinary skill in the art. As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112, ¶ 2. Therefore, the asserted claims, when read in light of the specification and the prosecution history, “fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” <i>Nautilus, Inc. v. Biosig Instruments, Inc.</i>, 134 S. Ct. 2120, 2124 (2014).</p>
1	<p>“the representative image added newly for display is a representative image of a scene distanced for a given time in conformance to the command inputted via the inputting means”</p>

¹⁴ This includes any asserted claims that depend from the identified claims.

Claim ¹⁴	Claim Limitations
	<p>The specification does not describe or otherwise inform one of ordinary skill about what constitutes “the representative image added newly for display is a representative image of a scene distanced for a given time in conformance to the command inputted via the inputting means.” The ’810 Patent does not describe or explain the meaning of this term and it does not have an understood meaning to persons of ordinary skill in the art. As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112, ¶ 2. Therefore, the asserted claims, when read in light of the specification and the prosecution history, “fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” <i>Nautilus, Inc. v. Biosig Instruments, Inc.</i>, 134 S. Ct. 2120, 2124 (2014).</p>
6	<p>“the command is effectuated in terms of a time duration for which the inputting means is continuously actuated”</p> <p>The specification does not describe or otherwise inform one of ordinary skill about what constitutes “the command is effectuated in terms of a time duration for which the inputting means is continuously actuated.” The ’810 Patent does not describe or explain the meaning of this term and it does not have an understood meaning to persons of ordinary skill in the art. As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112, ¶ 2. Therefore, the asserted claims, when read in light of the specification and the prosecution history, “fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” <i>Nautilus, Inc. v. Biosig Instruments, Inc.</i>, 134 S. Ct. 2120, 2124 (2014).</p>

VII. INVALIDITY CONTENTIONS REGARDING THE ’897 PATENT

A. Identification of Prior Art Under §§ 102 and 103

Defendants list below (MAX-DEFS-PA-0008509—MAX-DEFS-PA-0008557, MAX-DEFS-PA-0008937—MAX-DEFS-PA-0012743, MAX-DEFS-PA-0013254—MAX-DEFS-PA-0013286) the currently known prior art that anticipates or renders obvious the ’897 Patent’s Asserted Claims under 35 U.S.C. § 102 and/or § 103 (pre-AIA) expressly or inherently as is detailed below and in the charts attached as Exhibit G.

For references that invalidate under 35 U.S.C. § 102(b), those references were publicly known and available no later than their publication dates, and persons with knowledge of that public availability include without limitation the author(s) of the reference. Defendants continue to investigate the prior art identified below and reserve the right to offer additional evidence that may be uncovered after further discovery.

Patent References

Patent Number	Priority Date	Date of Issue or Publication
U.S. Pat. No. 5,444,482	April 28, 1993	August 22, 1995
U.S. Pat. No. 5,706,097	September 13, 1996	January 8, 1998
U.S. Pat. No. 5,761,655	March 10, 1994	June 2, 1998
U.S. Pat. No. 5,835,163	December 21, 1995	November 10, 1998
U.S. Pat. No. 5,903,309	September 19, 1996	May 11, 1999
U.S. Pat. No. 5,987,179	September 5, 1997	November 16, 1999
U.S. Pat. No. 5,990,976	March 14, 1997	November 23, 1999
U.S. Pat. No. 6,226,449	April 17, 1996	May 1, 2001
U.S. Pat. No. 6,230,162	June 20, 1998	May 8, 2001
U.S. Pat. No. 6,236,395	April 26, 1999	May 22, 2001
U.S. Pat. No. 6,317,141	December 31, 1998	November 13, 2001
U.S. Pat. No. 6,335,746	July 26, 1996	January 2, 2002
U.S. Pat. No. 6,349,330	November 3, 1998	February 19, 2002
U.S. Pat. No. 6,408,301	February 23, 1999	June 18, 2002
U.S. Pat. No. 6,564,070	September 25, 1996	May 13, 2003
U.S. Pat. No. 6,618,553	May 26, 1997	September 9, 2003
U.S. Pat. No. 6,683,649	August 23, 1996	January 27, 2004

Patent Number	Priority Date	Date of Issue or Publication
U.S. Pat. No. 6,701,063	August 4, 1998	March 2, 2004
U.S. Pat. No. 6,728,476	June 9, 1997	April 24, 2004
U.S. Pat. No. 6,738,075	December 31, 1998	May 18, 2004
U.S. Pat. No. 6,870,547	December 16, 1999	March 22, 2005
U.S. Pat. No. 7,193,646	March 25, 1998	March 20, 2007
U.S. Pat. No. 7,738,075	December 31, 1998	May 18, 2004
US 2002/0000998	January 5, 1998	January 3, 2002
US 2002/0054218 A1	October 24, 1997	May 9, 2002
WO 98/57300	June 2, 1998	December 17, 1998
JP H11-176137	December 15, 1997	July 2, 1999
JP H11-69228A	August 11, 1997	March 9, 1999
JP H05-257987A	November 3, 1992	August 10, 1993
JP 10-164483	December 4, 1996	June 19, 1998
EP 0844794 A2	November 21, 1997	May 27, 1998
EP 0860829 A2	February 19, 1998	August 26, 1998

Prior Art Publications

Title	Date of Publication	Author
The Electronic Journal Catalyst	October 1-2, 1993	Brailsford
Video Keyframe Extraction and Filtering: A Keyframe is not a Keyframe to Everyone	1997	Dimitrova et al.
Interactive Image Retrieval over the Internet	October 20-23, 1998	Vass et al.
System design for structured hypermedia generation	1997	Worrington et al.

Title	Date of Publication	Author
VisualSEEk: a Content-Based Image/Video Retrieval Tool	1997	Smith et al.
Vic: A Flexible Framework for Packet Video	1995	McCanne et al.
An Agent-based Approach to Real-time Multimedia Transmission over Heterogeneous Environments	1998	Amir et al.
A Multimedia1 Database System: Managing a Virtual Collection of Art and Architectural Works	1995	Musalem et al.
Image and Video Searching on the World Wide Web	1999	Swain et al.
Incorporating Scene Mosaics as Visual Indexes into UAV Video Imagery Databases	March 1999	Page
Video query: Research directions	March 1998	Bolle et al
Video on Demand Technologies and Demonstrations	May 1998	Podgorney et al.
A Data Model to Support Content-based Search in Digital Video Libraries	November 1997	Srinivasan et al
An Evaluation of Motion and MPEG Based Methods for Temporal Segmentation of Video	October 8, 1998	Kasturi et al.
Querying Video Libraries	1996	Hwang et al.
Summarization of Videotaped Presentations: Automatic Analysis of Motion and Gesture	September 1998	Ju et al.
Eric: A User and Applications Interface to a Distributed Satellite Data Repository	June 25, 1997	James et al.
“What is in that video anyway?”: In Search of Better Browsing	1999	Srinivasan et al.
Earth Interactions: Transcending the Limitations of the Printed Page	September 1997	Journal of Electronic Publishing
Supporting Provision and Access of Educational Visual Resources on the Web	October 15-19, 1996	Zhao et al.

Title	Date of Publication	Author
Retrieval and Browsing of Images Using Image Thumbnails	June 1997	Cohen
The VISION Digital Video Library	July 1997	Gauch et al.
Interfaces and Tools for the Library of Congress National Digital Library Program	October 1998	Marchionini et al.
Using Agent-Based Technology to Create a Cost Effective, Integrated, Multimedia View of the Electronic Medical Record	1995	Lowe et al.
Building a medical multimedia database system to integrate clinical information: an application of high performance computing and communications technology	January 1995	Lowe et al.
NASA Image eXchange (NIX)	February 1998	von Ofenheim et al.
The National Engineering Education Delivery System (NEEDS): A Multimedia Digital Library of Courseware	1998	Agogino et al.
Key to Effective Video Retrieval: Effective Cataloging and Browsing	1998	Ponceleon et al.
Where are your graphics today? The Hitchhiker's Guide to ThumbsPlus	April 1999	Cerious Software, Inc.
Video and Image Semantics: Advanced Tools for Telecommunications	June 1994	Pentland et al.
The Fishclar Digital Video, Recording, Analysis and Browsing System	April 2001	Lee et al.
Multimedia Databases in Perspective	1997	Apers et al.

Prior Art Products and Uses¹⁵

Prior Art Products and Uses	Date
<p>Sony Digital Still Camera, Digital Mavica MVC-FD81/83/88.91, on sale/in use by 1998 and 1999, evidenced by at least:</p> <ul style="list-style-type: none"> • MVC-FD81/83/88/91 Operating Instructions • Advertisements in Popular Photography, PC Magazine, and PC World 	1998
<p>Sony DSC-F55 Cyber-Shot Digital Still Camera, on sale/in use by 1998, evidenced by at least:</p> <ul style="list-style-type: none"> • DSC-F55 Specification (“DSC-F55”) • Sony Cybershot DSC-F55E review 	1998
<p>Hitachi MPEG Camera, on sale/in use by 1998, evidenced by at least:</p> <ul style="list-style-type: none"> • Hitachi Introduces World's First MPEG Camera in Japan • MPEGCAM MP-EG1A Instruction Manual (“MP-EG1A Manual”) • PC Data-Compatible MPEG Camera, Hitachi Review Vol. 46 (1997), No. 5 (“Hitachi Review Article”) • Development of MPEG Camera, Kurashige et al, IEEE 1997 (“MPEG Camera Paper”) 	1998
<p>Thumbplus Software, on sale/in use by 1998, evidenced by at least:</p> <ul style="list-style-type: none"> • Where are your graphics today? The Hitchhiker’s Guide to ThumbsPlus, Cerious Software, Inc. April 1999 	1998
<p>Windows 98, on sale/in use by 1997, evidenced by at least:</p> <ul style="list-style-type: none"> • Introducing Microsoft Windows 98 (“Introducing Windows”), published in 1997. • Mastering Windows 98 (“Mastering Windows”), published in 1998. • More Windows 98 Secrets (“More Windows”), published in 1999. • Peter Norton’s Complete Guide to Windows 98 (“Guide to Windows”), published in 1998. • Windows 98 Annoyances (“Windows Annoyances”), published in 1998. • Windows 98 Secrets (“Windows Secrets”), published in 1998. 	1997

¹⁵ These prior uses are prior art under 35 U.S.C. § 102(a) (known or used in the US); (b) (public use in the US); and/or (g) (made in the US).

Copies of the foregoing references identified above have been or are being produced along with these Invalidity Contentions. Defendants are also producing art that they feel is relevant to the claimed patents and may rely on such to teach the state of the art.

Each of the references and systems listed above qualifies as prior art under one or more sections of 35 U.S.C. §§ 102 and/or 103, as detailed below. The invalidating disclosure in each of the listed references and materials is express, implicit, and/or inherent. Defendants reserve the right to rely on prior art in the accompanying production, prior art produced by Plaintiff or third parties, and/or prior art cited in the charts accompanying these invalidity contentions to show the state of the art, the knowledge of one of ordinary skill in the art, and/or the anticipation or obviousness of the '897 Patent. The references provided herein may also be relied upon to show the state of the art in the relevant time frame. Also, to the extent that any of the references listed above are deemed not to be prior art, they may nevertheless provide evidence of prior or simultaneous invention, thereby supporting the obviousness of the asserted claims.

To the extent they constitute prior art, Defendants reserve the right to rely upon any of the following art related to the prior art identified herein: (i) foreign counterparts of the U.S. patents identified; (ii) U.S. counterparts of any foreign patents and foreign patent applications identified; (iii) U.S. and foreign patents and patent applications corresponding to any articles and publications identified; (iv) any products, prior inventions, or publications that relate to any references identified; and (v) any patents, patent applications or publications that relate to any identified system. In addition, the specification and prosecution history of the '897 Patent and related patents and/or applications contain descriptions of, and admissions concerning, the scope of the claims. Defendants intend to rely upon these descriptions and admissions. Defendants also identify all prior art references cited or included in the '897 Patent and its prosecution

history, as well as any statements in either regarding the prior art in either. Defendants reserve the right to rely on documents produced by third parties as prior art. Defendants' Invalidity Contentions and identification of prior art meet the disclosure requirements of 35 U.S.C. §282(c). Defendants reserve their rights to amend their contentions to include additional prior art references.

B. Anticipation and Obviousness References

Pursuant to P.R. 3-3(a) and the Court's Discovery Order, and in light of Maxell's Infringement Contentions and accompanying claim charts, Defendants list below the prior art now known to Defendants that anticipates or renders obvious the asserted claims under 35 U.S.C. § 102 and/or 103. Defendants' contentions do not imply any admission or suggestion that a specific prior art reference does not independently anticipate the '897 Patent Asserted Claims. Each individual prior art reference identified in Subsection A, above, that anticipates and/or each combination that renders obvious the '897 Patent Asserted Claims is described below.

Although Defendants have identified at least one disclosure of a limitation for each prior art reference, each and every disclosure of the same limitation in the same reference is not necessarily identified. To focus the issues, Defendants cite only representative portions of an identified reference, even where a reference may contain additional support for a particular claim limitation. Persons of ordinary skill in the art generally read an item of prior art as a whole and in the context of other publications and literature. Thus, to understand and interpret any specific statement or disclosure within a prior art reference, such persons would rely on other information within the reference, along with other publications and their general scientific knowledge. Defendants may rely upon uncited portions of the prior art references and on other publications and expert testimony to provide context, and as aids to understanding and interpreting the portions that are cited.

Further, some or all of the systems identified below or identified in the prior art publications and patents will be the subject of continuing investigation and discovery, including on-going and currently uncompleted third party discovery. Defendants reserve the right to supplement their contentions consistent with the Federal Rules and the Local Patent Rules, in the event that additional information is discovered relating to these systems.

i. Anticipating Reference(s)

Defendants identify the following reference(s) as anticipating one or more of the '897 Patent Asserted Claims under 35 U.S.C. § 102. The below table of anticipating references is exemplary, and it does not constitute an admission that any reference anticipates only the listed claims.

Anticipating References

Anticipating Prior Art	Asserted Claim(s)
U.S. Patent No. 6,683,649 ("Anderson 649")	10-12
Hitachi MPEG MP-EG1A camera ("MPEG MP-EG1A")	10-12
SONY MVC-FD91 product, SONY MVC-FD88 product, SONY MVC-FD83, and SONY MVC-FD81 product ("Sony MVC-FD")	10-12
Sony DSC-F55/F55E Digital Still Camera ("Sony DCS-F55")	10-12
JP H11-176137	10-12
Using Agent-Based Technology to Create a Cost Effective, Integrated, Multimedia View of the Electronic Medical Record, Lowe et al, SCAMC Proc., 441-4 (1995) ("Electronic Medical Record")	10-12
JP H11-69288A	10-12
JP H05-257987	10-12
U.S. Patent No. 6,226,449 ("Inoue 449")	10-12

Anticipating Prior Art	Asserted Claim(s)
U.S. Patent No. 5,761,655 (“Hoffman 655”)	10-12
JP 10-164483 (“Takaichi 483”)	10-12

To the extent any item of prior art cited above is deemed not to disclose, explicitly or inherently, any limitation of a '897 Patent Asserted Claim, Defendants reserve the right to argue that any difference between that prior art and the corresponding patent claim would have been either inherent to the art, or obvious to one of ordinary skill in the art, even if they have not specifically denoted that the art is to be combined with the knowledge of a person of ordinary skill in the art. Each prior art reference above describing or relating to a prior art system should be understood to discuss the system's capabilities generally and also to discuss specific examples of specific installations of the particular system. To the extent the prior art references describe various implementations of the same underlying system, that underlying system is a single reference under 35 U.S.C. §§ 102(a) and/or 102(b). The prior art references are evidence of the capabilities of the prior art system, and each chart provided for a prior art system should be understood to incorporate by reference all printed publications describing or relating to that prior art system and all charts provided for those printed publications.

In addition, each reference itself also qualifies as prior art on separate grounds as a publication under §§ 102(a) and/or 102(b). Even if the prior art references are not treated as a single prior art reference, at the very least, it would have been obvious to combine the features described in those references.

ii. Obviousness Combinations and Rationale(s) to Combine

Each anticipatory reference listed above individually discloses each limitation of the '897 Patent Asserted Claims. However, to the extent any anticipatory reference is found to lack any

claim element, the '897 Patent Asserted Claims also are obvious in light of the ordinary skill in the art and the anticipatory reference itself (via single reference obviousness), or in light of further references, described in the charts attached as Exhibit G. The anticipatory references alone or in combination with other prior art, renders the '897 Patent Asserted Claims invalid as obvious under 35 U.S.C. § 103. In particular, each identified prior art reference may be combined with: (i) information known to persons skilled in the art at the time of the alleged inventions of the '897 Patent; or (ii) any of the other anticipatory or other prior art references identified in these contentions or the accompanying charts. In addition, Defendants incorporate by reference each and every prior art reference of record in the prosecution histories of the '897 Patent, counterpart patents, and related patent applications, as well as all statements made by the applicant in the prosecution histories of the '897 Patent, counterpart patents, and related patent applications, including any discussion of prior art or conventional features in any of the specifications of the '897 Patent, counterpart patents, and related patent applications.

Defendants incorporate by reference the statements and reasoning by the U.S. Patent and Trademark Office during prosecution of the '897 Patent and any counterpart patents or applications as to why it would have been obvious to modify or combine prior art references to achieve the limitations of the '897 Patent Asserted Claims or similar claims in any counterparts.

The alleged “inventions” recited in the asserted claims of the '897 Patent would have been obvious because the prior art, common knowledge, and the nature of the problems, viewed through the eyes of a person ordinarily skilled in the art, suggested the claimed elements. A person ordinarily skilled in the relevant fields would have possessed knowledge and skills rendering him or her capable of combining the prior art references with knowledge in the field and common sense. Moreover, the asserted claims represent well-known combinations of

familiar and pre-existing elements, yielding only predictable results. Additional reasons that a person of ordinary skill in the art would have been motivated to combine the identified prior art are provided herein and in the accompanying charts and document production.

In addition to the specific combinations of prior art and the specific combinations of groups of prior art disclosed, Defendants will rely on any other combination of any prior art references disclosed herein. Defendants further will rely upon combinations disclosed within the prosecution history of the references cited herein. The obviousness combinations set forth in these contentions reflect Defendants' present understanding of the potential scope of the claims that Maxell appears to be advocating and should not be seen as Defendants' acquiescence to Maxell's interpretation of the patent claims. Defendants will amend or supplement these contentions regarding anticipation or obviousness of the asserted claims as appropriate under the applicable Rules, including in response to further information from Maxell or information discovered during discovery. Maxell has not identified what elements or combinations it alleges were not known to one of ordinary skill in the art at the time. Therefore, for any claim limitation that Maxell alleges is not disclosed in a particular prior art reference, Defendants reserve the right to assert that any such limitation is either inherent in the disclosed reference or obvious to one of ordinary skill in the art at the time in light of the same, or that the limitation is disclosed in another of the references disclosed above and in combination would have rendered the asserted claim obvious.

Additionally, any reference or combination of references that anticipates or renders obvious an asserted independent claim also renders obvious any asserted claim dependent on that independent claim because every element of each dependent claim was known by a person of ordinary skill at the time of the alleged invention, and it would have been obvious to combine

those known elements with the independent claims at least as a matter of common sense and routine innovation.

To the extent any limitation is not explicitly or inherently disclosed by an item of prior art identified in Subsection A, the claimed subject matter as a whole would have been obvious to one skilled in the art at the time of the alleged invention, in view of the state of the art and knowledge of those skilled in the art. The item of prior art on its own as read by one of skill in the art would, therefore, render the relevant claims invalid for obviousness under 35 U.S.C. § 103(a).

In addition, the references identified above render one or more asserted claims of the '897 Patent obvious when the references are read in combination with each other, and/or when read in view of the state of the art and knowledge of those skilled in the art. Any of the references disclosed herein may be combined to render obvious (and therefore invalidate) each of Maxell's asserted claims. Defendants may rely upon a subset or all of the references identified, for purposes of obviousness depending on the Court's claim construction, positions taken by Maxell during this litigation, and further investigation and discovery. Defendants may rely upon combinations with any reference in the accompanying charts and any of the other references disclosed herein with respect to the '897 Patent, including combinations with any of the patents, publications or systems identified herein as prior art to the '897 Patent.

Prior art references rendering the asserted claims of the '897 Patent obvious, alone or in combination with other references, are discussed above, included in the accompanying charts, and identified in subsection (a) below, which shows representative specific combinations of references. Moreover, to the extent the foregoing references are found not to anticipate the asserted claims, the foregoing references render the asserted claims obvious either alone or in

combination with one or more of the other references identified above. Exemplary reasons that a person of ordinary skill in the art would have been motivated to combine the identified prior art are provided in below.

Defendants believe that no showing of a specific motivation to combine prior art is required to combine the references disclosed herein and in the attached charts. As reflected in the attached exhibits, and in the references themselves, there was a reason to make each combination – each combination of art would have produced no unexpected results, and each combination at most would simply represent a known alternative to one of ordinary skill in the art. *See KSR Int’l Co. v. Teleflex, Inc.*, 550 U.S. 398, 414-18 (2007) (rejecting the Federal Circuit’s “rigid” application of the teaching, suggestion, or motivation-to-combine test, instead espousing an “expansive and flexible” approach). As reflected in the attached exhibits, in the references themselves, and the discussion herein, the asserted claims of the ’897 Patent combine familiar elements according to known methods, yielding predictable results. Moreover, one of ordinary skill in the art would be prompted to modify each of these references based on design incentives or other market forces. This is true for references in the same field of endeavor as well as for references in a different field of endeavor, as one of skill would understand that techniques used to improve devices in a related or analogous field could improve similar devices in the same way. No specific reference explicitly spelling out all aspects of a proposed combination is required to show obviousness; indeed, the Supreme Court has explained that a person of ordinary skill is “a person of creativity, not an automaton,” and “in many cases a person of ordinary skill in the art will be able to fit the teachings of multiple patents together like pieces of a puzzle.” *Id.* at 420-21. As reflected in the attached exhibits, the discussion herein,

and in the references themselves, the elements of the asserted claims of the '897 Patent are all disclosed in the prior art, and one of skill would readily fit their teachings together.

Nevertheless, in addition to the information contained elsewhere in these contentions, including the exhibits, Defendants hereby identify below additional motivations and reasons to combine the cited art. To determine whether there is a reason to combine the known elements in the manner claimed by a patent, a court can “look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art.” *Id.* at 418. For example, obviousness can be demonstrated by showing “there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent’s claims.” *Id.* at 420. “[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.* Common sense also teaches that “familiar items may have obvious uses beyond their primary purposes, and in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle.” *Id.*

Applying these principles, it would have been obvious to a person of ordinary skill in the art at the time the application that issued as the '897 Patent was filed to combine, modify, or use the teachings of the prior art to make the purported inventions of those patents, including by making each of the combinations identified above. The motivation to combine the teachings of the prior art references disclosed herein can be found in each of (1) the references themselves, (2) the nature of the problem being solved, (3) the express, implied and inherent teachings of the prior art, (4) the knowledge of persons of ordinary skill in the art, (5) the fact that the prior art is

generally directed towards the subject matter of each respective asserted patent, and (6) the predictable results obtained in combining the elements of the prior art.

Furthermore, all of the references identified herein with respect to the '897 Patent address the same problem of displaying and/or storing thumbnails of video and/or still images. A person of ordinary skill in the art would have looked to other devices in the same field, such as the prior art devices and other references, because all of these references share many of the same or substantially similar components, such as devices or recording video and/or still images, screens for displaying video and/or still images, JPEG and/or MPEG compression or decompression engines, and storage devices for storing video and/or still images. A person of ordinary skill in the art would therefore have been motivated to combine these components, knowing that these well-known elements would achieve their purposes in combination, without any difficulty and without any unexpected results.

A person having ordinary skill in the art would have been motivated to make the listed combinations because every reference related to solving the same problem, displaying and/storing video, pictures, and thumbnails, in the same technological field, image processing systems. *See Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc.*, 75 F.3d 1568, 1573 (Fed. Cir. 1996) (the motivation to combine “may also come from the nature of a problem to be solved, leading inventors to look to references relating to possible solutions to that problem.”).

The '897 Patent itself acknowledges that at least the following components were known in the art by the time of filing:

- recording medium with large scale capacity (1:31-32).
- digital cameras and recordable players capable of recording moving and still pictures on optical disks (1:34-38).

- the MPEG (Moving Picture Expert Group) standard for recording moving pictures (1:39-45).
- the JPEG (Joint Photographic coding Experts Group) standard used for recording still pictures (1:46-48).
- apparatus that can reproduce MPEG and JPEG files (2:6-21).

A person skilled in the art seeking to permit the review, searching, and/or display of both moving and still images would have been motivated to consider the wealth of known techniques about thumbnail generation, recording, and display and combine the art in the manner as set forth below.

Multiple video cameras capable of recording MPEG video and JPEG still pictures were on the market prior to the filing of the '897 Patent, including:

- Hitachi's MP-EG1A digital video camera.
- Sony's DCS F-55 model camera.
- Sony's MVC FD-91/88/83/and 81 model cameras.

In addition to recording MPEG video and JPEG pictures, these cameras included display screens capable of displaying thumbnails of the recorded video and/or pictures. Upon user selection of the thumbnail, the larger video or picture could be displayed.

In addition, Microsoft Windows 98 ("Windows 98"), Internet Explorer version 4.0 or higher, including DirectShow, were capable of reproducing MPEG video and JPEG pictures. Windows 98 displayed icons, so that when a user selected one of the small icons, the corresponding MPEG video would be displayed. ThumbsPlus software was also capable of reproducing MPEG videos and JPEG pictures and thumbnails corresponding to both MPEG videos and JPEG pictures.

All of the '897 Patent prior art is related to displaying and/or storing thumbnails of video and/or still pictures. Prior art references also include express representations that the inventions or systems they describe can be modified or varied by a person of skill in the art. For example, *Anderson 649* discloses:

- Although the present invention will be described in the context of a digital video camera, various modifications to the preferred embodiment will be readily apparent to those skilled in the art and the generic principles herein may be applied to other embodiments. That is, any digital imaging device used to store and display and/or video, could incorporate the features described hereinbelow and that device would be within the spirit and scope of the present invention. Thus, the present invention is not intended to be limited to the embodiment shown but is to be accorded the widest scope consistent with the principles and features described herein. (3:59-4:3);
- one of ordinary skill in the art will readily recognize that there could be variations to the embodiments and those variations would be within the spirit and scope of the present invention (17:11-14); and
- many modifications may be made by one of ordinary skill in the art without departing from the spirit and scope of the appended claims (17:28-30).

In fact, the PTAB has already found that *Anderson 649*'s teachings are not limited to creating a slide show, but include "disclosures on capturing, encoding, recording, and reproducing video and still pictures, as well as displaying thumbnail pictures for the users to select to display the corresponding video or still picture." IPR2018-00233 Institution Decision at 16.

Another patent by the same inventor, Anderson 309, also discloses that its teachings are not limited to specific formats, but that “[o]ther formats for the multiple image file format 480 may also be used.” Anderson 309 at 7:29-31. It would have been obvious to a POSITA to record thumb nail pictures corresponding to MPEG files in mass Anderson 309’s mass storage device 122 in order to have them available for display at a later time without any additional computation. Anderson 309 even explains that improving speed of picture or thumbnail display is a desirable quality. Anderson 309 at 6:25-29. A POSITA would have understood that recording the thumb nail picture is desirable because it improves the speed at which the digital camera can display multiple thumb nail pictures at once.

In particular, JPEG was one of the most common methods for encoding still pictures and MPEG was one of the most common methods of encoding video at the time the ’897 Patent was filed. *See* Appendix G. One of ordinary skill in the art would understand that choosing to encode still pictures or thumbnails in JPEG format and video in MPEG format represents well-known combinations of familiar and pre-existing elements, yielding only predictable results.

A POSITA would be motivated to combine the teachings of the Cohen article with references that relate to the display or storage of images, videos, and thumbnails because Cohen describes the need for “effective compression” and explains that JPEG is one of the “most important internet compression schemes.” *See* Cohen, Section 4. Cohen also explains that smaller JPEG images can serve as thumbnails and then proposes a specific thumb oriented version of JPEG. *Id.* A POSITA would be familiar with the JPEG compression standard and understand the benefits of effective compression associated with Cohen’s thumb oriented version of JPEG.

Further, one of ordinary skill in the art would be motivated to store video, still pictures, and thumbnails on a recording medium. Prior art products such as the Sony Digital Mavica MVC-FD81 were digital video and still cameras that stored video, pictures, and their thumbnails on storage medium within the camera. One of ordinary skill in the art would understand that storing video, pictures, and their thumbnails on the same storage media results in the benefit of faster retrieval of larger video and picture files after viewing and selecting their respective thumbnails power savings from eliminating the need to dynamically generate thumbnails from stored media files. *See* IPR2018-00233 Institution Decision at 18 (“the speed gain and power savings from eliminating the processing of the image data to generate the thumbnails for display” provided rational underpinnings to apply teachings of Anderson 309). In addition, there are only two ways to store such data - on a single media storage device, or on separate media storage device. For example, Haseno teaches the benefits of storing media files and their corresponding thumbnails on the same recording media. Haseno at 2:3-5, 58-63. One of ordinary skill in the art would understand the benefits and drawbacks of each option, including that storing video, pictures, and thumbnails on the same storage medium provides speed gains and power savings.

By mid-1999, computer and camera devices that took moving and still pictures and converted them to MPEG and JPEG format to preserve memory and/or permit transfer of such files were well-known. *See* Exhibit G, Appendix G. It was also well-known to use thumbnails of different image files to permit rapid review of many image files for selection, editing and reproduction. *See* Exhibit G, Appendix G.

Within the prior art, it was also well-known that the thumbnails could be compressed in many alternative formats or uncompressed, depending on system memory constraints and processing speed desires. *See, e.g.*, the Patent Examiner’s comments on these issues during the

prosecution. It was also well-known that the thumbnails could be stored permanently or temporarily depending on device constraints. *See, e.g.*, the Patent Examiner's comments on these issues during the prosecution. It was also well-known that the thumbnails could be created near the time of recording the moving and still pictures or at some point after the recording of such images. Finally, the thumbnails could be stored in files with the images, in control information associated with the images, in separate databases or separate directories from the images, or in separate memory from the memory used to store the images. *See, e.g.*, the art discussed in Exhibit G.

Defendants also incorporate by reference herein the motivation to combine discussion in the *Inter Partes* Review Petition filed by Huawei relating to the related patent, U.S. Patent No. 6,754,440 ("the '440 Patent") (IPR2018-00233), the Expert Report of Dan Schonfeld (as it relates to the '440 Patent) from the *Maxell v. Huawei* case filed in the Eastern District of Texas, and the *Inter Partes* Review Petition filed by Asus relating to the related patent, U.S. Patent No. 9,451,229 ("the '229 Patent") (IPR2019-00067).

One of ordinary skill also would have been motivated to combine any of the above references together to yield predictable results, as combining the references would simply entail combining known elements by known methods in the art. In addition, any such combination would involve the simple substitution of one known, equivalent element for another. Such combinations would have been obvious to try because there were only a finite number of predictable solutions. Any such combination would yield predictable results using known techniques and would involve the simple substitution of one known, equivalent element for another. Defendants provide exemplary motivations to combine prior art references below.

a. Exemplary Combinations

The following listing provides several exemplary combinations with respect to the '897

Patent Asserted Claims:

- Anderson 649 and Cohen
- Anderson 649 and Haseno
- Anderson 649, Cohen, and Haseno
- Anderson 649 and Anderson 309
- Anderson 649, Anderson 309, and Cohen
- MPEG MP-EG1A and Cohen
- MPEG MP-EG1A and Haseno
- MPEG MP-EG1A, Cohen, and Haseno
- MPEG MP-EG1A and Anderson 309
- MPEG MP-EG1A, Anderson 309, and Cohen
- Sony MVC-FD and Cohen
- Sony MVC-FD and Haseno
- Sony MVC-FD, Cohen, and Haseno
- Sony MVC-FD and Anderson 309
- Sony MVC-FD, Anderson 309, and Cohen
- Sony DSC-F55 and Cohen
- Sony DSC-F55 and Haseno
- Sony DSC-F55, Cohen, and Haseno
- Sony DSC-F55 and Anderson 309
- Sony DSC-F55, Anderson 309, and Cohen
- JP H11-176137 and Cohen

- JP H11-176137 and Haseno
- JP H11-176137, Cohen, and Haseno
- JP H11-176137 and Anderson 309
- JP H11-176137, Anderson 309, and Cohen
- Electronic Medical Record and Cohen
- Electronic Medical Record and Haseno
- Electronic Medical Record, Cohen, and Haseno
- Electronic Medical Record and Anderson 309
- Electronic Medical Record, Anderson 309, and Cohen
- JP H11-69288A and Cohen
- JP H11-69288A and Haseno
- JP H11-69288A, Cohen, and Haseno
- JP H11-69288A and Anderson 309
- JP H11-69288A, Anderson 309, and Cohen
- JP H05-257987 and Cohen
- JP H05-257987 and Haseno
- JP H05-257987, Cohen, and Haseno
- JP H05-257987 and Anderson 309
- JP H05-257987, Anderson 309, and Cohen
- Inoue 449 and Cohen
- Inoue 449 and Haseno
- Inoue 449, Cohen, and Haseno
- Inoue 449 and Anderson 309
- Inoue 449, Anderson 309, and Cohen

- Hoffman 655 and Cohen
- Hoffman 655 and Haseno
- Hoffman 655, Cohen, and Haseno
- Hoffman 655 and Anderson 309
- Hoffman 655, Anderson 309, and Cohen
- Windows 98, MPEG-EG1A
- Windows 98, MPEG-EG1A and Cohen
- Windows 98, MPEG-EG1A and Haseno
- Windows 98, MPEG-EG1A, Cohen, and Haseno
- Windows 98, MPEG-EG1A and Anderson 309
- Windows 98, MPEG-EG1A, Anderson 309, and Cohen
- Windows 98, SONY MVC-FD
- Windows 98, SONY MVC-FD and Cohen
- Windows 98, SONY MVC-FD and Haseno
- Windows 98, SONY MVC-FD, Cohen, and Haseno
- Windows 98, SONY MVC-FD and Anderson 309
- Windows 98, SONY MVC-FD, Anderson 309, and Cohen
- Windows 98, SONY DSC-F55
- Windows 98, SONY DSC-F55 and Cohen
- Windows 98, SONY DSC-F55 and Haseno
- Windows 98, SONY DSC-F55, Cohen, and Haseno
- Windows 98, SONY DSC-F55 and Anderson 309
- Windows 98, SONY DSC-F55, Anderson 309, and Cohen
- ThumbsPlus, MPEG-EG1A

- ThumbsPlus, MPEG-EG1A and Cohen
- ThumbsPlus, MPEG-EG1A and Haseno
- ThumbsPlus, MPEG-EG1A, Cohen, and Haseno
- ThumbsPlus, MPEG-EG1A and Anderson 309
- ThumbsPlus, MPEG-EG1A, Anderson 309, and Cohen
- ThumbsPlus, SONY MVC-FD
- ThumbsPlus, SONY MVC-FD and Cohen
- ThumbsPlus, SONY MVC-FD and Haseno
- ThumbsPlus, SONY MVC-FD, Cohen, and Haseno
- ThumbsPlus, SONY MVC-FD and Anderson 309
- ThumbsPlus, SONY MVC-FD, Anderson 309, and Cohen
- ThumbsPlus, SONY DSC-F55
- ThumbsPlus, SONY DSC-F55 and Cohen
- ThumbsPlus, SONY DSC-F55 and Haseno
- ThumbsPlus, SONY DSC-F55, Cohen, and Haseno
- ThumbsPlus, SONY DSC-F55 and Anderson 309
- ThumbsPlus, SONY DSC-F55, Anderson 309, and Cohen
- Takaichi 483 and Cohen
- Takaichi 483 and Haseno
- Takaichi 483, Cohen, and Haseno
- Takaichi 483 and Anderson 309
- Takaichi 483, Anderson 309, and Cohen
- U.S. Pat. No. 7,193,646 (“Shioji 646”) and U.S. Patent No. 5,444,482
- Shioji 646, U.S. Patent No. 5,444,482, and Cohen

- Shioji 646, U.S. Patent No. 5,444,482, and Haseno
- Shioji 646, U.S. Patent No. 5,444,482, Haseno and Cohen
- Shioji 646, U.S. Patent No. 5,444,482, and Anderson 309
- Shioji 646, U.S. Patent No. 5,444,482, Anderson 309 and Cohen

Defendants' identification of exemplary combinations is without limitation to Defendants identifying other invalidating combinations as appropriate. Defendants also contend that the asserted claims of the '897 Patent would have been obvious in view of the primary prior art references identified in subsection (i) above. Each of these primary references teaches all of the limitations of the '897 Patent's asserted claims. To the extent any claim limitations are found to be missing from the primary references, in addition to the exemplary references designated for combination with the primary references, it would have been obvious to one of ordinary skill to add the missing limitation based on the corresponding disclosure of that limitation in the accompanying '897 Patent charts.

C. Claim Charts

Defendants attached claim charts as Exhibit G to Defendants' Invalidity Contentions, and identify where, in each alleged item of prior art, each element of each '897 Patent Asserted Claims are found either expressly or inherently. In these claim charts, Defendants have attempted to identify the most relevant portions of the references. The references may, however, contain additional support for claim limitations. Persons of ordinary skill in the art generally read a prior art reference as a whole and in the context of other publications and literature. Defendants may rely upon uncited portions of the references, other documents, and expert testimony to provide context or to aid in understanding the disclosures of the references. Where Defendants cite to a particular figure in a reference, the citation should be understood to encompass the caption and any corresponding description of the figure in the specification.

Conversely, where Defendants cite to particular text referring to a figure, the citation should be understood to include the corresponding figure as well.

Exhibit	Charted Reference	Bates Number
G1	U.S. Pat. No. 6,683,649 (“Anderson 649”)	MAX-DEFS-PA-0011398
G2	Hitachi MPEG MP-EG1A camera (“MP-EG1A”)	MAX-DEFS-PA-0009457 - MAX-DEFS-PA-0009571
G3	SONY MVC-FD91 product, SONY MVC-FD88 product, SONY MVC-FD83, and SONY MVC-FD81 product (“Sony MVC-FD”)	MAX-DEFS-PA-0010047 - MAX-DEFS-PA-0010735
G4	Sony DSC-F55/F55E Digital Still Camera (“Sony DSC F55”)	MAX-DEFS-PA-0009286 - MAX-DEFS-PA-0009287 MAX-DEFS-PA-0009933 - MAX-DEFS-PA-0010046
G5	JP H11-176137	MAX-DEFS-PA-0009357
G6	“Electronic Medical Record”	MAX-DEFS-PA-0009294
G7	JP H1169288A	MAX-DEFS-PA-0009697
G8	JP H05-257987	MAX-DEFS-PA-0009585
G9	U.S. Pat. No. 6,226,449 (“Inoue 449”)	MAX-DEFS-PA-0011181
G10	U.S. Pat. No. 5,761,655 (“Hoffman 655”)	MAX-DEFS-PA-0008509
G11	Windows 98	MAX-DEFS-PA-0009121 - MAX-DEFS-PA-0009150 MAX-DEFS-PA-0011996 - MAX-DEFS-PA-0012027
G12	ThumbsPlus	MAX-DEFS-PA-0010796 - MAX-DEFS-PA-0010989

Exhibit	Charted Reference	Bates Number
G13	JP H10-164483	MAX-DEFS-PA-0013254
G14	U.S. Pat. No. 7,193,646 (“Shioji 646”)	MAX-DEFS-PA-0011496
G15	U.S. Pat. No. 5,903,309 (“Anderson 309”)	MAX-DEFS-PA-0011125
G16	Retrieval and Browsing of Images Using Image Thumbnails by Harvey A. Cohen (“Cohen”)	MAX-DEFS-PA-0009244
G17	U.S. Pat. No. 6,728,476 (“Haseno”)	MAX-DEFS-PA-0011436
Appx. G	<i>See Appendix G</i>	<i>See Appendix G</i>

D. Invalidity of the Claims Under 35 U.S.C. § 112

Defendants further assert that the ’897 Patent is invalid under 35 U.S.C. § 112. The following are the grounds upon which Defendants contend the asserted claims of the ’897 Patent are invalid for failure to meet the requirements of 35 U.S.C. §§ 112, ¶ 1 and/or 112, ¶ 2, based on Defendants’ investigation to date and currently-available information. For each claim identified as invalid, any dependent claims of those invalid claims are also invalid under 35 U.S.C. §§ 112, ¶ 1 and/or 112, ¶ 2.

Invalidity under § 112 may depend upon the Court’s claim construction as well as Plaintiff’s infringement contentions. Thus, Defendants have identified only those issues under § 112 of which they are currently aware. Defendants reserve the right to supplement and amend these contentions based on further discovery and investigation including, in particular, the deposition of any of the named inventors.

i. Enablement and Written Description

35 U.S.C. § 112, ¶ 1 requires a patent specification to describe an invention sufficiently to convey to a person of skill in the art that the patentee had possession of the claimed invention at the time of the application. That statute further requires a patent specification to describe the

manner and process of making and using the invention so as to enable a person of skill in the art to make and use the full scope of the invention without undue experimentation. Defendants state that the following claims are invalid for failure to provide an adequate written description and enabling disclosure pursuant to 35 U.S.C. § 112, ¶ 1.

Claim¹⁶	Claim Limitations
12	“the first still pictures, the second still pictures”

The claim 12 of the '897 patent is invalid for failure to satisfy the requirements of 35 U.S.C. § 112, ¶ 1 because the specification as filed does not contain an adequate written description and/or enabling disclosure of the term “the first still pictures, the second still pictures.” The '897 patent specification does not properly describe or otherwise inform one of ordinary skill what constitutes “the first still pictures, the second still pictures.” Accordingly, the specification fails to reasonably convey to one of ordinary skill that the inventor had possession of the subject matter of the invention, and it fails to enable a person of ordinary skill to make and use the invention as claimed.

ii. Indefiniteness

The following claims are invalid 35 U.S.C. § 112, ¶ 2 because they fail to inform those skilled in the art about the scope of the invention with reasonable certainty when read in light of the specification and file history.

Claim¹⁷	Claim Limitations
12	“displaying at least one of the moving pictures, the first still pictures, the second still pictures, the first pictures and the second pictures”

¹⁶ This includes any asserted claims that depend from the identified claims.

¹⁷ This includes any asserted claims that depend from the identified claims.

Claim 12 of the '897 patent are invalid for failure to satisfy the requirements of 35 U.S.C. § 112, ¶ 2 because the specification does not describe or otherwise inform one of ordinary skill about what constitutes “displaying at least one of the moving pictures, the first still pictures, the second still pictures, the first pictures and the second pictures.” This limitation lacks antecedent basis and is ambiguous. As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112, ¶ 2. Therefore, the asserted claims, when read in light of the specification and the prosecution history, “fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2124 (2014).

VIII. INVALIDITY CONTENTIONS REGARDING THE '068 PATENT

A. Identification of Prior Art Under §§ 102 and 103

Defendants list below (MAX-DEFS-PA-0000001—MAX-DEFS-PA-0000433, MAX-DEFS-PA-0012744—MAX-DEFS-PA-0013054; DEFS-PA-0015122—MAX-DEFS-PA-0015123) the currently known prior art that anticipates or renders obvious the '068 Patent's Asserted Claims under 35 U.S.C. § 102 and/or § 103 (pre-AIA) expressly or inherently as is detailed below and in the charts attached as Exhibit H.

For references that invalidate under 35 U.S.C. § 102(b), those references were publicly known and available no later than their publication dates, and persons with knowledge of that public availability include without limitation the author(s) of the reference. Defendants continue to investigate the prior art identified below and reserve the right to offer additional evidence that may be uncovered after further discovery.

Patent References

Patent Number	Priority Date	Date of Issue or Publication
Japanese Pat. App. No. JPH0554517 (“Obata 517”)	August 23, 1991	March 5, 1993
Japanese Pat. App. No. JPH08249789 (“Katai”)	March 10, 1995	September 27, 1996
Japanese Pat. App. No. JPH0660615 (“Sato”)	August 6, 1992	March 4, 1994
Japanese Pat. App. No. JPH06168186 (“Goseki”)	November 30, 1992	June 14, 1994
Japanese Pat. App. No. JPH04291647 (“Matsukawa”)	March 20, 1991	October 15, 1992
Japanese Pat. App. No. JPH0554518 (“Obata 518”)	August 23, 1991	March 5, 1993
Japanese Pat. App. No. JPH06259931 (“Ishizaki”)	March 8, 1993	September 16, 1994
Japanese Pat. App. No. JPH0765545 (“Debitsuto”)	August 20, 1993	March 10, 1995
Japanese Pat. App. No. JPH0779403 (“Kawamura”)	June 25, 1993	March 20, 1995
Japanese Pat. App. No. JPH09138437 (“Yamamoto”)	November 15, 1995	May 27, 1997
U.S. Pat. No. 5,854,875 (“Yamagishi”)	April 16, 1992	December 29, 1998
U.S. Pat. No. 5,561,644 (“Kondo”)	February 22, 1993	October 1, 1996
U.S. Pat. No. 4,527,265 (“d’Alayer de Costemore d’Arc”)	June 30, 1983	July 2, 1985
U.S. Pat. No. 5,086,345 (“Nakane”)	April 7, 1988	February 4, 1992
U.S. Pat. No. 5,239,426 (“Sakaegi”)	December 2, 1988	August 24, 1993
U.S. Pat. No. 5,598,391 (“Mukawa”)	October 27, 1993	January 28, 1997
U.S. Pat. No. 5,634,031 (“Sakuma”)	March 4, 1994	March 27, 1997
U.S. Pat. No. 5,654,946 (“Kim 946”)	July 1, 1993	August 5, 1997

Patent Number	Priority Date	Date of Issue or Publication
U.S. Pat. No. 6,137,642 (“Inoue”)	November 27, 1995	October 24, 2000
U.S. Pat. No. 5,177,720 (“Kondo 720”)	February 7, 1989	January 5, 1993
U.S. Pat. No. 5,365,453 (“Startup”)	February 14, 1991	November 15, 1994
U.S. Pat. No. 5,394,089 (“Clegg”)	November 29, 1989	February 28, 1995

Prior Art Products and Uses¹⁸

Prior Art Products and Uses	Primary Publisher
Commercial recording apparatuses implementing the ISO9660 (International Standardization Organization 9660) standard	Recording apparatus manufacturers
Commercial recording apparatuses implementing the UDF (Universal Disk Format) standard	Recording apparatus manufacturers

Copies of the foregoing references identified above have been or are being produced along with these Invalidity Contentions. Defendants are also producing art that they feel is relevant to the claimed patents and may rely on such to teach the state of the art.

Each of the references and systems listed above qualifies as prior art under one or more sections of 35 U.S.C. §§ 102 and/or 103, as detailed below. The invalidating disclosure in each of the listed references and materials is express, implicit, and/or inherent. Defendants reserve the right to rely on prior art in the accompanying production, prior art produced by Plaintiff or third parties, and/or prior art cited in the charts accompanying these invalidity contentions to show the state of the art, the knowledge of one of ordinary skill in the art, and/or the anticipation or obviousness of the ’068 Patent. The references provided herein may also be relied upon to show

¹⁸ These prior uses are prior art under 35 U.S.C. § 102(a) (known or used in the US); (b) (public use in the US); and/or (g) (made in the US).

the state of the art in the relevant time frame. Also, to the extent that any of the references listed above are deemed not to be prior art, they may nevertheless provide evidence of prior or simultaneous invention, thereby supporting the obviousness of the asserted claims.

To the extent they constitute prior art, Defendants reserve the right to rely upon any of the following art related to the prior art identified herein: (i) foreign counterparts of the U.S. patents identified; (ii) U.S. counterparts of any foreign patents and foreign patent applications identified; (iii) U.S. and foreign patents and patent applications corresponding to any articles and publications identified; (iv) any products, prior inventions, or publications that relate to any references identified; and (v) any patents, patent applications or publications that relate to any identified system. In addition, the specification and prosecution history of the '068 Patent and related patents and/or applications contain descriptions of, and admissions concerning, the scope of the claims. Defendants intend to rely upon these descriptions and admissions. Defendants also identify all prior art references cited or included in the '068 Patent and its prosecution history, as well as any statements in either regarding the prior art in either. Defendants reserve the right to rely on documents produced by third parties as prior art. Defendants' Invalidity Contentions and identification of prior art meet the disclosure requirements of 35 U.S.C. §282(c). Defendants reserve their rights to amend their contentions to include additional prior art references.

B. Anticipation and Obviousness References

Pursuant to P.R. 3-3(a) and the Court's Discovery Order, and in light of Maxell's Infringement Contentions and accompanying claim charts, Defendants list below the prior art now known to Defendants that anticipates or renders obvious the asserted claims under 35 U.S.C. § 102 and/or 103. Defendants' contentions do not imply any admission or suggestion that a specific prior art reference does not independently anticipate the '068 Patent Asserted Claims.

Each individual prior art reference identified in Subsection A, above, that anticipates and/or each combination that renders obvious the '068 Patent Asserted Claims is described below.

Although Defendants have identified at least one disclosure of a limitation for each prior art reference, each and every disclosure of the same limitation in the same reference is not necessarily identified. To focus the issues, Defendants cite only representative portions of an identified reference, even where a reference may contain additional support for a particular claim limitation. Persons of ordinary skill in the art generally read an item of prior art as a whole and in the context of other publications and literature. Thus, to understand and interpret any specific statement or disclosure within a prior art reference, such persons would rely on other information within the reference, along with other publications and their general scientific knowledge. Defendants may rely upon uncited portions of the prior art references and on other publications and expert testimony to provide context, and as aids to understanding and interpreting the portions that are cited.

Further, some or all of the systems identified below or identified in the prior art publications and patents will be the subject of continuing investigation and discovery, including on-going and currently uncompleted third party discovery. Defendants reserve the right to supplement their contentions consistent with the Federal Rules and the Local Patent Rules, in the event that additional information is discovered relating to these systems.

i. Anticipating Reference(s)

Defendants identify the following reference(s) as anticipating one or more of the '068 Patent Asserted Claims under 35 U.S.C. § 102. The below table of anticipating references is exemplary, and it does not constitute an admission that any reference anticipates only the listed claims.

Anticipating References

Anticipating Prior Art	Asserted Claim(s)
Japanese Pat. App. No. JPH0554517 (“Obata”)	1-2
Japanese Pat. App. No. JPH08249789 (“Katai”)	1-2
U.S. Pat. No. 5,854,875 (“Yamagishi”)	1-2
Japanese Pat. App. No. JPH0660615 (“Sato”)	1-2
Japanese Pat. App. No. JPH06168186 (“Goseki”)	1-2
U.S. Pat. No. 5,561,644 (“Kondo”)	1-2

To the extent any item of prior art cited above is deemed not to disclose, explicitly or inherently, any limitation of a '068 Patent Asserted Claim, Defendants reserve the right to argue that any difference between that prior art and the corresponding patent claim would have been either inherent to the art, or obvious to one of ordinary skill in the art, even if they have not specifically denoted that the art is to be combined with the knowledge of a person of ordinary skill in the art. Each prior art reference above describing or relating to a prior art system should be understood to discuss the system's capabilities generally and also to discuss specific examples of specific installations of the particular system. To the extent the prior art references describe various implementations of the same underlying system, that underlying system is a single reference under 35 U.S.C. §§ 102(a) and/or 102(b). The prior art references are evidence of the capabilities of the prior art system, and each chart provided for a prior art system should be understood to incorporate by reference all printed publications describing or relating to that prior art system and all charts provided for those printed publications.

In addition, each reference itself also qualifies as prior art on separate grounds as a publication under §§ 102(a) and/or 102(b). Even if the prior art references are not treated as a

single prior art reference, at the very least, it would have been obvious to combine the features described in those references.

ii. Obviousness Combinations and Rationale(s) to Combine

Each anticipatory reference listed above individually discloses each limitation of the '068 Patent Asserted Claims. However, to the extent any anticipatory reference is found to lack any claim element, the '068 Patent Asserted Claims also are obvious in light of the ordinary skill in the art and the anticipatory reference itself (via single reference obviousness), or in light of further references, described in the charts attached as Exhibit H. The anticipatory references alone or in combination with other prior art, renders the '068 Patent Asserted Claims invalid as obvious under 35 U.S.C. § 103. In particular, each identified prior art reference may be combined with: (i) information known to persons skilled in the art at the time of the alleged inventions of the '068 Patent; or (ii) any of the other anticipatory or other prior art references identified in these contentions or the accompanying charts. In addition, Defendants incorporate by reference each and every prior art reference of record in the prosecution histories of the '068 Patent, counterpart patents, and related patent applications, as well as all statements made by the applicant in the prosecution histories of the '068 Patent, counterpart patents, and related patent applications, including any discussion of prior art or conventional features in any of the specifications of the '068 Patent, counterpart patents, and related patent applications.

Defendants incorporate by reference the statements and reasoning by the U.S. Patent and Trademark Office during prosecution of the '068 Patent and any counterpart patents or applications as to why it would have been obvious to modify or combine prior art references to achieve the limitations of the '068 Patent Asserted Claims or similar claims in any counterparts.

The alleged “inventions” recited in the asserted claims of the '068 Patent would have been obvious because the prior art, common knowledge, and the nature of the problems, viewed

through the eyes of a person ordinarily skilled in the art, suggested the claimed elements. A person ordinarily skilled in the relevant fields would have possessed knowledge and skills rendering him or her capable of combining the prior art references with knowledge in the field and common sense. Moreover, the asserted claims represent well-known combinations of familiar and pre-existing elements, yielding only predictable results. Additional reasons that a person of ordinary skill in the art would have been motivated to combine the identified prior art are provided herein and in the accompanying charts and document production.

In addition to the specific combinations of prior art and the specific combinations of groups of prior art disclosed, Defendants will rely on any other combination of any prior art references disclosed herein. Defendants further will rely upon combinations disclosed within the prosecution history of the references cited herein. The obviousness combinations set forth in these contentions reflect Defendants' present understanding of the potential scope of the claims that Maxell appears to be advocating and should not be seen as Defendants' acquiescence to Maxell's interpretation of the patent claims. Defendants will amend or supplement these contentions regarding anticipation or obviousness of the asserted claims as appropriate under the applicable Rules, including in response to further information from Maxell or information discovered during discovery. Maxell has not identified what elements or combinations it alleges were not known to one of ordinary skill in the art at the time. Therefore, for any claim limitation that Maxell alleges is not disclosed in a particular prior art reference, Defendants reserve the right to assert that any such limitation is either inherent in the disclosed reference or obvious to one of ordinary skill in the art at the time in light of the same, or that the limitation is disclosed in another of the references disclosed above and in combination would have rendered the asserted claim obvious.

Additionally, any reference or combination of references that anticipates or renders obvious an asserted independent claim also renders obvious any asserted claim dependent on that independent claim because every element of each dependent claim was known by a person of ordinary skill at the time of the alleged invention, and it would have been obvious to combine those known elements with the independent claims at least as a matter of common sense and routine innovation.

To the extent any limitation is not explicitly or inherently disclosed by an item of prior art identified in Subsection A, the claimed subject matter as a whole would have been obvious to one skilled in the art at the time of the alleged invention, in view of the state of the art and knowledge of those skilled in the art. The item of prior art on its own as read by one of skill in the art would, therefore, render the relevant claims invalid for obviousness under 35 U.S.C. § 103(a).

In addition, the references identified above render one or more asserted claims of the '068 Patent obvious when the references are read in combination with each other, and/or when read in view of the state of the art and knowledge of those skilled in the art. Any of the references disclosed herein may be combined to render obvious (and therefore invalidate) each of Maxell's asserted claims. Defendants may rely upon a subset or all of the references identified, for purposes of obviousness depending on the Court's claim construction, positions taken by Maxell during this litigation, and further investigation and discovery. Defendants may rely upon combinations with any reference in the accompanying charts and any of the other references disclosed herein with respect to the '068 Patent, including combinations with any of the patents, publications or systems identified herein as prior art to the '068 Patent.

Prior art references rendering the asserted claims of the '068 Patent obvious, alone or in combination with other references, are discussed above, included in the accompanying charts, and identified in subsection (a) below, which shows representative specific combinations of references. Moreover, to the extent the foregoing references are found not to anticipate the asserted claims, the foregoing references render the asserted claims obvious either alone or in combination with one or more of the other references identified above. Exemplary reasons that a person of ordinary skill in the art would have been motivated to combine the identified prior art are provided in below.

Defendants believe that no showing of a specific motivation to combine prior art is required to combine the references disclosed herein and in the attached charts. As reflected in the attached exhibits, and in the references themselves, there was a reason to make each combination – each combination of art would have produced no unexpected results, and each combination at most would simply represent a known alternative to one of ordinary skill in the art. *See KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 414-18 (2007) (rejecting the Federal Circuit's "rigid" application of the teaching, suggestion, or motivation-to-combine test, instead espousing an "expansive and flexible" approach). As reflected in the attached exhibits, in the references themselves, and the discussion herein, the asserted claims of the '068 Patent combine familiar elements according to known methods, yielding predictable results. Moreover, one of ordinary skill in the art would be prompted to modify each of these references based on design incentives or other market forces. This is true for references in the same field of endeavor as well as for references in a different field of endeavor, as one of skill would understand that techniques used to improve devices in a related or analogous field could improve similar devices in the same way. No specific reference explicitly spelling out all aspects of a proposed

combination is required to show obviousness; indeed, the Supreme Court has explained that a person of ordinary skill is “a person of creativity, not an automaton,” and “in many cases a person of ordinary skill in the art will be able to fit the teachings of multiple patents together like pieces of a puzzle.” *Id.* at 420-21. As reflected in the attached exhibits, the discussion herein, and in the references themselves, the elements of the asserted claims of the ’068 Patent are all disclosed in the prior art, and one of skill would readily fit their teachings together.

Nevertheless, in addition to the information contained elsewhere in these contentions, including the exhibits, Defendants hereby identify below additional motivations and reasons to combine the cited art. To determine whether there is a reason to combine the known elements in the manner claimed by a patent, a court can “look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art.” *Id.* at 418. For example, obviousness can be demonstrated by showing “there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent’s claims.” *Id.* at 420. “[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.* Common sense also teaches that “familiar items may have obvious uses beyond their primary purposes, and in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle.” *Id.*

Applying these principles, it would have been obvious to a person of ordinary skill in the art at the time the application that issued as the ’068 Patent was filed to combine, modify, or use the teachings of the prior art to make the purported inventions of those patents, including by making each of the combinations identified above. The motivation to combine the teachings of

the prior art references disclosed herein can be found in each of (1) the references themselves, (2) the nature of the problem being solved, (3) the express, implied and inherent teachings of the prior art, (4) the knowledge of persons of ordinary skill in the art, (5) the fact that the prior art is generally directed towards the subject matter of each respective asserted patent, and (6) the predictable results obtained in combining the elements of the prior art.

Furthermore, all of the references identified herein with respect to the '068 Patent address the same problem of recording data on an information recording medium in an information recording apparatus. A person of ordinary skill in the art would have looked to other devices in the same field, such as the prior art devices and other references, because all of these references share many of the same or substantially similar components, such as an information recording medium, means for driving the recording medium, means for performing digital signal processing of data to be recorded to the information recording medium, means for recording data to the information recording medium, means for recording managing information to the information recording medium, and means for supplying power to the recording device. A person of ordinary skill in the art would therefore have been motivated to combine these components, knowing that these well-known elements would achieve their purposes in combination, without any difficulty and without any unexpected results.

A person having ordinary skill in the art would have been motivated to make the listed combinations because every reference related to solving the same problem (detecting when electric power supplied to the recording device decreases and recording managing information to the recording medium) in the same technological field (battery-powered recording device). *See Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc.*, 75 F.3d 1568, 1573 (Fed. Cir. 1996) (the

motivation to combine “may also come from the nature of a problem to be solved, leading inventors to look to references relating to possible solutions to that problem.”).

For example, to the extent that that any prior art reference is determined not to disclose “driving an information recording medium,” this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, the Applicant Admitted Prior Art (“AAPA”) and/or other references. For example, without limitation, each of Katai, Obata 517, Sato, Goseki, and Kondo discloses this limitation. *See* Exs. H1, H2, H4, H5, H6 . It would have been obvious and it is inherent that an information recording apparatus would drive an information recording medium when the information recording medium is an optical disk. *See, e.g.,* AAPA; Kondo at 5:52–67.

For example, to the extent that that any prior art reference is determined not to disclose “digital signal processing data to be recorded on said recording medium,” this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, the Applicant Admitted Prior Art (“AAPA”) and/or other references. For example, without limitation, each of Katai, Obata 517, Yamagishi, Sato, Kondo, and the AAPA discloses this limitation. *See* Exs. H1, H2, H3, H4, H6, H7. It would have been obvious and it is inherent that an information recording apparatus would digital signal process data before recording it to the recording medium when the recording medium stores data in digital form. *See, e.g.,* Kondo at 7:10–35.

For example, to the extent that that any prior art reference is determined not to disclose “detecting when electric power supplied to said information recording apparatus decreases lower than a predetermined level,” this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, the Applicant Admitted Prior Art (“AAPA”) and/or other

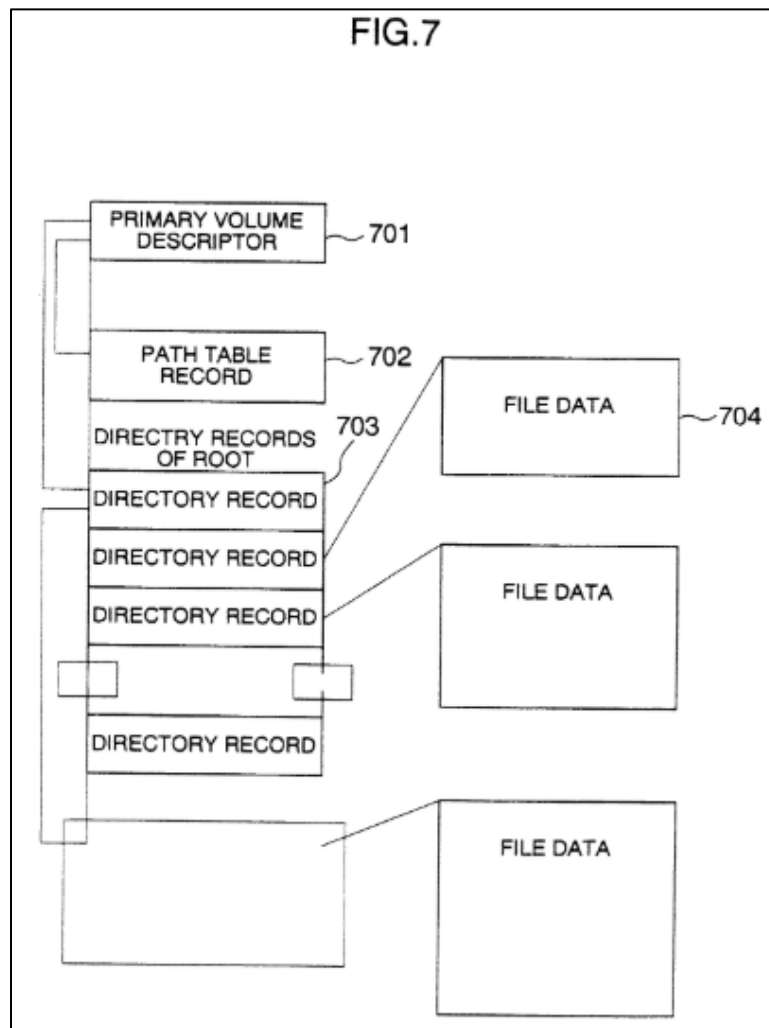
references. For example, without limitation, each of Katai, Obata 517, Yamagishi, and Goseki, discloses this limitation. See Exs. H1, H2, H3, H5. It would have been obvious to detect when power decreases lower than a predetermined value to accomplish the common goal of preventing data loss. *See, e.g.*, Obata at ¶ 10.

For example, to the extent that any prior art reference is determined not to disclose “recording on said information recording medium a managing information utilized for managing the data recorded on said information recording medium,” this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, the Applicant Admitted Prior Art (“AAPA”) and/or other references. For example, without limitation, each of Katai, Obata 517, Goseki, Kondo, and the AAPA discloses this limitation. See Exs. H1, H2, H5, H6, H7. It would have been obvious and it is inherent that an information recording apparatus would record a managing information utilized for managing the data recorded to the recording medium (including when this recording is performed after the claimed “detecting” step) to accomplish the common goal of preventing data loss. *See, e.g.*, Obata at ¶ 10.

By example only, the ’068 Patents makes general admissions concerning the state of the respective art and claimed concepts that were well-known before the time of the alleged invention. Examples include, among other things, acknowledging known problems and needs in the prior art and the advantages of prior art techniques and elements. *See KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 417-422 (2007).

For example, the ’068 Patent admits that “a recording format called a UDF (Universal Disk Format) and the ISO9660 standard of the ISO (International Standardization Organization) [could be used] as file management information,” and were well-known. ’068 Patent, at 2:19-25. Further, it was known that if “the optical disk was taken out in the halfway, even if the user

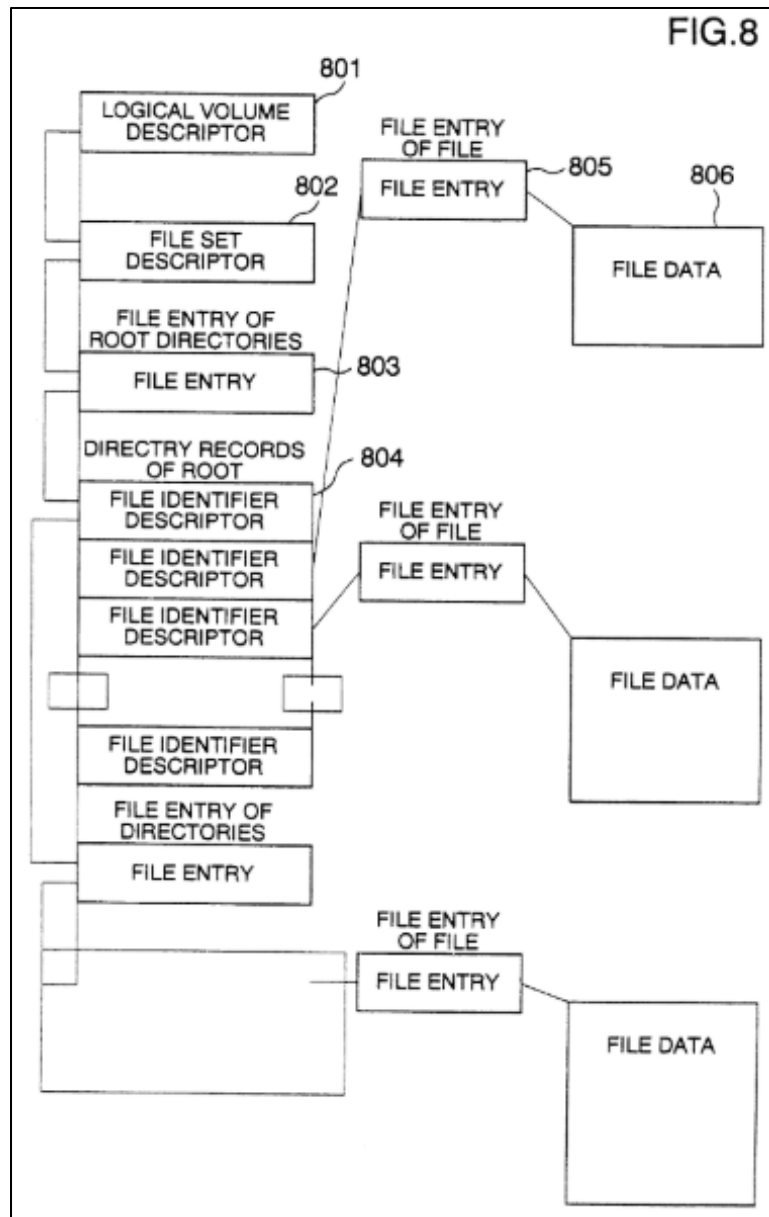
retries to load the optical disk into the same apparatus and to record, unless the previous file management information remains, final file management information including the previous file management information cannot be made.” ’068 Patent, at 2:41-48. Figure 7 illustrates a known data recording format, i.e., “a logical format of ISO9660 and information to manage the file”:



“FIG. 7 conceptually shows files and information to manage the files which are recorded so as to coincide with the logical format of ISO9660. In FIG. 7, reference numeral 704 denotes a File Data to record data of files; 703 indicates a Directory Record to record a recording position and a recording range of the File Data 704, attribute information to unconditionally specify a file, and the like. The Directory Record 703 records recording positions and recording ranges of the

Directory Record group, attribute information to unconditionally specify the Directory Record group, and the like and can be also hierarchically held. Reference numeral 702 denotes a Path Table Record to record recording positions, recording ranges, and the like of all of the Directory Records 703. Reference numeral 701 indicates a Primary Volume Descriptor to record the Path Table 702 and recording positions, recording ranges, and the like of the Directory Record group of the highest hierarchy.” ’068 Patent, at 7:23-40.

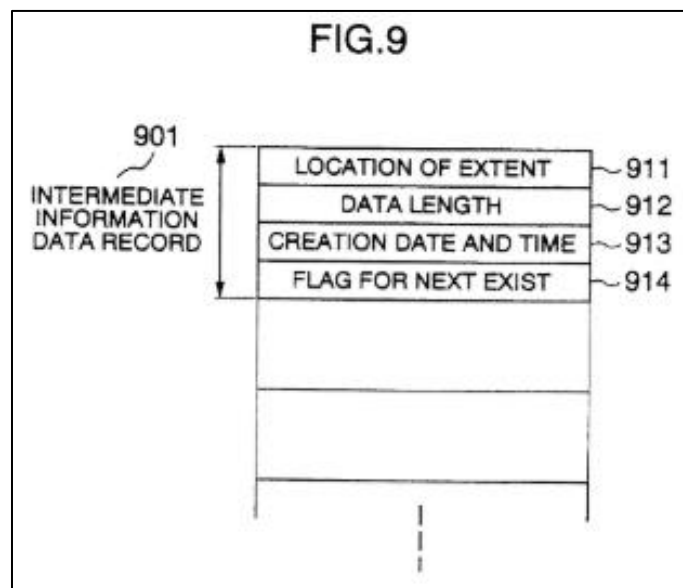
Figure 8 illustrates a known data recording format, i.e., “a logical format of UDF and information to manage the file”:



“FIG. 8 conceptually shows files which are recorded in accordance with the logical format of UDF and information to manage the files. In FIG. 8, reference numeral 806 denotes File Data to record the data of the file and coincides with the File Data 704 in FIG. 7. Reference numeral 805 denotes a File Entry to record a recording position and a recording range of the File Data 806, attribute information to unconditionally specify the file, and the like. Reference numeral 804 denotes a File Identifier Descriptor to record a recording position, a recording range, and the like

of the File Entry 805. The File Entry 805 records recording positions and recording ranges of the File Identifier Descriptor group, attribute information to unconditionally specify the File Identifier Descriptor group, and the like and can be also hierarchically held. Reference numeral 802 denotes a File Set Descriptor to record a recording position and the like of the File Entry 805 of the highest hierarchy. Reference numeral 801 indicates a Logical Volume Descriptor to record the recording position, recording range, and the like.” ’068 Patent, at 7:44-62.

According to the ’068 Patent, intermediate information “can be recorded when the optical disk is ejected from the apparatus or when there is a fear that the apparatus cannot correctly record information to the optical disk, for example, when a residual amount of a battery decreases or the like.” ’068 Patent, at 8:46-50. Figure 9 illustrates the intermediate information:



According to the ’068 Patent, EEPROM memory was well-known. For example, “FIG. 12 has a construction obtained by adding an EEPROM 1200 to the embodiment of FIG. 1. The EEPROM 1200 has a feature such that it can be rewritten by the ordinary writing operation and the written data is held even when a power source voltage is equal to 0 V. Therefore, by writing

the intermediate information into the EEPROM 1200, a session can be constructed at an arbitrary time point.” ’068 Patent, at 9:64-10:3.

The prior art has also long-disclosed limitations of the asserted claims that were well known to those of ordinary skill in the art before the time of the alleged invention. These well-known elements include many instances within the asserted scope of the claims as found in the ’068 Patent and in Maxell’s Infringement Contentions. Some examples of these prior art teachings are described below. Additional examples and/or details of these teachings may be found in Defendants’ claim charts.

- Information recording apparatuses that use an information recording medium were well known to those of ordinary skill in the art long before the priority date of the ’068 Patent. Such apparatuses have been widely used since at least the 1980s. *See, e.g.*, U.S. Pat. No. 5,086,345 (Apr. 7, 1989) (disclosing a still video camera in which a signal is recorded on a rotating magnetic recording medium); U.S. Pat. No. 5,239,426 (Nov. 27, 1989) (disclosing a recording apparatus for recording data in a recording medium such as a disc or a tape); *see also* Exhibit H1 (Katai discloses recording data on an information recording medium in an information recording apparatus); Exhibit H2 (Obata 517 discloses the same); Exhibit H3 (Yamagishi discloses the same); Exhibit H4 (Sato discloses the same); Exhibit H5 (Goseki discloses the same); Exhibit H6 (Kondo discloses the same); Exhibit H7 (AAPA discloses the same).
- Prior to the alleged invention of the ’068 Patent, it was well known to those of ordinary skill in the art to drive an information recording medium when using a recording apparatus. *See, e.g.*, U.S. Pat. No. 5,086,345 (Apr. 7, 1989) (“The recording controller 70 effects a control operation associated with driving of a disk motor 3, loading/unloading of

a magnetic head 2, feeding of the magnetic head 2, and recording of still video signals on a video floppy disk (magnetic disk) 1.”); U.S. Pat. No. 5,239,426 (Nov. 27, 1989) (“A head moving mechanism 6 moves the head 5 in radial directions of the magnetic disk D by driving a head moving motor when the position of the head 5 is controlled so as to select a track.”). Other prior art references from the 1990s similarly disclose driving an information recording medium. *See, e.g.*, U.S. Pat. No. 5,598,391 (Oct. 26, 1994) (“The disc 1 is loaded so as to be driven for rotation by a spindle motor 2 within a recording/playback apparatus 30.”); U.S. Pat. No. 5,654,946 (Jun. 22, 1995) (“The loading mechanism part 4 receives driving signals from the microprocessor 2 and rotates a disc in response to the driving signals to reproduce the piece of music recorded on the disc.”); U.S. Pat. No. 6,137,642 (Nov. 19, 1996) (“In FIG. 1, an MD(magneto optical disk) 1 is employed as a medium capable of recording thereon audio data, and is rotatably driven by a spindle motor 2 during the recording/reproducing operation.”); *see also* Exhibit H1 (Katai discloses driving an information recording apparatus); Exhibit H2 (Obata 517 discloses the same); Exhibit H3 (Yamagishi discloses the same); Exhibit H4 (Sato discloses the same); Exhibit H5 (Goseki discloses the same); Exhibit H6 (Kondo discloses the same).

- Prior to the alleged invention of the '068 Patent, it was well known to those of ordinary skill in the art to perform digital signal processing on data to be recorded on information recording medium. Digital signal processing of data is described in numerous prior art references that disclose information recording apparatuses. *See, e.g.*, U.S. Pat. No. 5,598,391 (Oct. 26, 1994) (“When the recording operation is implemented to the disc 1 (magneto-optical disc), the recording signal (analog audio signal) fed to the terminal 17 is

converted into digital data by the A/D converter 18, and thereafter is fed to the encoder/decoder section 14 to provide an encoding process for compressing the audio signal.”); U.S. Pat. No. 5,634,031 (Feb. 21, 1995) (“The way of a recording signal will now be described below. A record audio input signal is inputted from an input terminal 14 and converted into digital data by an ADC (analog-digital converter) 11. The digital data is converted into the above compressed data by the ATRAC modulation/demodulation circuit 10 and stored in the storage circuit 9 through the vibration-resistant memory controller 8 as record compressed data.”); U.S. Pat. No. 6,137,642 (Nov. 19, 1996) (“A recording signal (analog audio signal) supplied to the terminal 17 is converted into digital data which has been sampled at 44.1 KHz and quantized by 16 bits by way of an A/D converter 18. Thereafter, the resultant digital data is supplied to the encoder/decoder unit 14 so as to be processed by the audio compression/encode process. That is, the data amount of this digital data is compressed by approximately 1/5 by way of the modified DCT process.”); *see also* Exhibit H1 (Katai discloses digital signal processing data to be recorded on said recording medium); Exhibit H2 (Obata 517 discloses the same); Exhibit H3 (Yamagishi discloses the same); Exhibit H4 (Sato discloses the same); Exhibit H6 (Kondo discloses the same); Exhibit H7 (AAPA discloses the same).

- Prior to the alleged invention of the '068 Patent, it was well known to record digital signal processed data on an information recording medium. Therefore, it is no surprise that each of the references discussed in the proceeding bullets, and numerous other references, contain disclosures regarding this step. *See* U.S. Pat. No. 5,598,391 (Oct. 26, 1994) (“The recorded data compressed by the encoder/decoder section 14 . . . is provided

with the encoding process such as CIRC encoding and EFM modulation in the encoder/decoder section 8 and then supplied to a magnetic head drive circuit 15. The magnetic head drive circuit 15 feeds a magnetic head drive signal to the magnetic head 6 in response to the recorded data provided with the encoding process. . . . Also, at this time, the system controller 11 feeds a control signal to output a laser beam of recording level.”); U.S. Pat. No. 5,634,031 (Feb. 21, 1995) (“When the data is stored in the storage circuit 9 up to a predetermined quantity, record data is recorded in the MD1. . . . A recording signal is recorded in the MD1 by the magnetic field generated by the magnetic head 16 above the MD1 and the laser generated by the optical pickup 4 as described above.”); U.S. Pat. No. 6,137,642 (Nov. 19, 1996) (“The recording data which has been compressed in the encoder/decoder unit 14 . . . is supplied to a magnetic head drive circuit 6. In response to the encoded recording data, the magnetic head drive circuit 6 supplies a magnetic head drive signal to the magnetic head 6a. . . . At this time, the system controller 11 supplies a control signal to the optical head 3 in order that this optical head 3 may output the laser light having the recording level.”); *see also* Exhibit H1 (Katai discloses recording the digital signal processed data in said information recording medium); Exhibit H2 (Obata 517 discloses the same); Exhibit H3 (Yamagishi discloses the same); Exhibit H4 (Sato discloses the same); Exhibit H5 (Goseki discloses the same); Exhibit H6 (Kondo discloses the same); Exhibit H7 (AAPA discloses the same).

- Prior to the alleged invention of the '068 Patent, it was well known to those of ordinary skill in the art to provide information recording apparatuses with the ability to detect when electric power decreases lower than a predetermined level. For example, prior art

references dating back to the 1980s disclose the ability to detect when electric power provided by a battery or other source decreases below a predetermined threshold. *See, e.g.*, U.S. Pat. No. 5,239,426 (Nov. 27, 1989) (“In the recording or reproducing apparatus of the character described above, . . . the present position itself of the head on the recording medium becomes equivalent to the memorizing of the next recording position for the recording medium. Therefore, even with the electric power source being turned off, or, in a case where the apparatus is of the type which can be driven by the dry battery, even with the battery being taken out for the replacement purpose by a new one, or for the recharging purpose, or further, as the actual voltage of the electric power source has fallen below the predetermined threshold level, even with battery having become unusable, when the electric power source is turned on again, or recovered, it results that for that recording medium which was used in the preceding recording, even if a recording is started from the present position of the head, no double recording takes place, provided the recording head is not moved and it also does not happen that an unnecessarily unrecorded area or vacant track is formed.”); U.S. Pat. No. 5,598,391 (Oct. 26, 1994) (“A voltage drop detector 33 is provided for a main power source Vcc line, and an output of the voltage drop detector 33 controls a switch 32 and a Chip Enable (CE) port. Namely, these elements are used as a backup means for a regular S-RAM. When the voltage of the main power source Vcc line drops below a predetermined level, the voltage drop detector 33 causes the voltage level of the CE port to be ‘L’ so that the memory backup can be performed by the voltage from the battery 32 as the backup power source.”). Prior art references similarly disclosed battery monitoring circuits capable of directly measuring instantaneous power delivery by a battery based on both voltage and current

detection circuits. *See, e.g.*, U.S. Pat. No. 5,365,453 (November 15, 1994) (“The voltage difference monitor 18 continuously monitors the change in the operating voltage (delta voltage) of the battery 12 at periodic intervals occurring responsive to a change in the power consumption of the load 14.”); U.S. Pat. No. 5,394,089 (February 28, 1995) (“A battery monitoring system 10 in accordance with the present invention is illustrated in FIG. 1 and monitors the condition of battery 9 which is connected to supply a load 8 . . . [and] comprises . . . a second evaluating arrangement 12 for evaluating the level of instantaneous battery voltage.”); *see also* Exhibit H1 (Katai discloses detecting when electric power supplied to said information recording apparatus decreases lower than a predetermined level); Exhibit H2 (Obata 517 discloses the same); Exhibit H3 (Yamagishi discloses the same); Exhibit H5 (Goseki discloses the same).

- Prior to the alleged invention of the '068 Patent, it was well known to those of ordinary skill in the art to record a managing information utilized for managing the data recorded on an information recording medium. *See, e.g.*, U.S. Pat. No. 5,239,426 (Nov. 27, 1989) (“To achieve such objects, according to the invention, in a preferred embodiment thereof, a recording apparatus is disclosed, including memory means for storing management information such as recording situations for a plurality of recording tracks on a loaded disk-shaped recording medium, head moving means for moving a recording head to the plurality of recording tracks on the basis of the management information, detecting means for detecting in a predetermined periodicity the fact that the recording medium has been replaced, and control means for controlling the head moving means in accordance with a detection result of the detecting means so that, until the recording medium is replaced, a position of the head is retained despite the turning on or off of an electric

power source.”). Moreover, several other prior art references similarly disclose recording management information (sometimes referred to as table-of-contents information) for managing the data recorded on an information recording medium. *See, e.g.*, U.S. Pat. No. 5,598,391 (Oct. 26, 1994) (“In such a digital recording/playback system, a table of contents (TOC) is recorded as supervisory information on the recording medium for controlling a recording operation and/or a playback operation of the data. The TOC information is read out from the recording medium, such as a disc, in advance and is held on the side of the recording/playback apparatus so that upon the operation, the TOC information may be referenced and the various controls of the access position and the music may be executed.”); U.S. Pat. No. 5,634,031 (Feb. 21, 1995) (“As described above, in the case of a magneto-optical disk recorder (hereafter referred to as MD), one track comprises a plurality of pieces of small-block record data (a plurality of pieces of small-block record data comprising continuous areas are separately present on an optical disk). These continuous pieces of information for music are present for each track and recorded and entered in a predetermined area of an MD as table-of-contents information. Hereafter, a predetermined area in which table-of-contents information is recorded is referred to as a UTOC (User Table of Contents) area.”); U.S. Pat. No. 6,137,642 (Nov. 19, 1996) (“On the other hand, when the recording/reproducing operation for the MD1 is carried out, the management information recorded on the MD1, namely P-TOC (premastered table of contents) and U-TOC (user table of contents) must be read out. The system controller 11 discriminates an address of an area to be recorded on the MD1, and an address of an area to be reproduced from the MD1 in response to these management information.”); *see also* Exhibit H1 (Katai discloses recording on said information

recording medium a managing information utilized for managing the data recorded on said information recording medium); Exhibit H2 (Obata 517 discloses the same); Exhibit H5 (Goseki discloses the same); Exhibit H6 (Kondo discloses the same); Exhibit H7 (AAPA discloses the same).

One of ordinary skill also would have been motivated to combine any of the above references together to yield predictable results, as combining the references would simply entail combining known elements by known methods in the art. In addition, any such combination would involve the simple substitution of one known, equivalent element for another. Such combinations would have been obvious to try because there were only a finite number of predictable solutions. Any such combination would yield predictable results using known techniques and would involve the simple substitution of one known, equivalent element for another. Defendants provide exemplary motivations to combine prior art references below.

a. Exemplary Combinations

The following listing provides several exemplary combinations with respect to the '068 Patent Asserted Claims:

- Obata 517 in combination with AAPA
- Katai in combination with AAPA
- Yamagishi in combination with Katai
- Yamagishi in combination with Obata 517
- Yamagishi in combination with Sato and Katai
- Yamagishi in combination with Sato and Obata 517
- Yamagishi in combination with Goseki
- Yamagishi in combination with Kondo
- Sato in combination with Katai

- Sato in combination with Obata 517
- Sato in combination with Goseki
- Sato in combination with Yamagishi and Kondo
- Sato in combination with Yamagishi and AAPA
- Goseki in combination with Katai
- Goseki in combination with Obata 517
- Goseki in combination with Kondo
- Goseki in combination with AAPA
- Kondo in combination with Katai
- Kondo in combination with Obata 517
- Kondo in combination with Goseki and AAPA

For example, the '068 Patent Asserted Claims are obvious under Sato in combination with Goseki. A person having ordinary skill in the art would have been motivated to combine these references because they both relate to protecting data from being lost when recording to an optical disk. *See Sato*, Japanese Pat. App. No. JPH0660615 (“[Purpose] To protect TOC data without using non-volatile memory in a disc recording device which handles TOC data as information related to recorded data such as disc recording positions in a predetermined formal TOC area of the disc in order to record the TOC data after recording data has been recorded.”); *Goseki*, Japanese Pat. App. No. JPH06168186 (“[Constitution] A device for preventing loss of RAM-stored information used to prevent the loss of RAM-stored information in a minidisc system.”). Both references also seek to solve problems associated with a loss in power. *See Sato*, Japanese Pat. App. No. JPH0660615 (“[Problem to be Solved by the Invention] However, in this disc recording and playback device, when the power-supply voltage falls to a level making the device unusable during the recording operation, this TOC data is not recorded on the disc.”);

Goseki, Japanese Pat. App. No. JPH06168186 (“[Problem to be Solved by the Invention] However, if the power-supply voltage including the backup power supply drops in a minidisc system of the prior art, the information stored in the RAM is deleted and UTOC information is lost”). Similarly, a person having ordinary skill in the art would have been motivated to combine either or both of Sato and Goseki with Kondo or Yamagishi, which are each related to preventing the loss of TOC data when power is lost. *See Kondo*, U.S. Pat. No. 5,561,644 (“Therefore, when a magneto-optical disk is inserted or the power is turned on, the optical disk apparatus moves the optical pickup to the read-in area at first to reproduce TOC, thereafter, reproduces UTOC if necessary, so that the management data of program area is reproduced first.”); *Yamagishi*, U.S. Pat. No. 5,854,875 (“A recording apparatus includes a detecting device for detecting a status of a power supply; a determination device for determining a type of a connected storage medium; and a control device for controlling a recording mode based on (i) a determination by the determination device, and (ii) a detection by the detecting device.”).

Defendants’ identification of exemplary combinations is without limitation to Defendants identifying other invalidating combinations as appropriate. Defendants also contend that the asserted claims of the ’068 Patent would have been obvious in view of the primary prior art references identified in subsection (i) above. Each of these primary references teaches all of the limitations of the ’068 Patent’s asserted claims. To the extent any claim limitations are found to be missing from the primary references, in addition to the exemplary references designated for combination with the primary references, it would have been obvious to one of ordinary skill to add the missing limitation based on the corresponding disclosure of that limitation in the accompanying ’068 Patent charts.

C. Claim Charts

Defendants attached claim charts as Exhibit H to Defendants’ Invalidity Contentions, and identify where, in each alleged item of prior art, each element of each ’068 Patent Asserted Claims are found either expressly or inherently. In these claim charts, Defendants have attempted to identify the most relevant portions of the references. The references may, however, contain additional support for claim limitations. Persons of ordinary skill in the art generally read a prior art reference as a whole and in the context of other publications and literature. Defendants may rely upon uncited portions of the references, other documents, and expert testimony to provide context or to aid in understanding the disclosures of the references. Where Defendants cite to a particular figure in a reference, the citation should be understood to encompass the caption and any corresponding description of the figure in the specification. Conversely, where Defendants cite to particular text referring to a figure, the citation should be understood to include the corresponding figure as well.

Exhibit	Charted Reference	Bates Number
H1	Japanese Pat. App. No. JPH08249789 (“Katai”)	MAX-DEFS-PA-0012846 - MAX-DEFS-PA-0012878; MAX-DEFS-PA-0015123
H2	Japanese Pat. App. No. JPH0554517 (“Obata”)	MAX-DEFS-PA-0012749 - MAX-DEFS-PA-0012781; MAX-DEFS-PA-0015122
H3	U.S. Pat. No. 5,854,875 (“Yamagishi”)	MAX-DEFS-PA-0000393 - MAX-DEFS-PA-0000414
H4	Japanese Pat. App. No. JPH0660615 (“Sato”)	MAX-DEFS-PA-0000104 - MAX-DEFS-PA-0000126; MAX-DEFS-PA-0012820 - MAX-DEFS-PA-0012832

Exhibit	Charted Reference	Bates Number
H5	Japanese Pat. App. No. JPH06168186 (“Goseki”)	MAX-DEFS-PA-0012744; MAX-DEFS-PA-0012795 - MAX-DEFS-PA-0012806
H6	U.S. Pat. No. 5,561,644 (“Kondo”)	MAX-DEFS-PA-0000329 - MAX-DEFS-PA-0000344
H7	Applicant’s Admitted Prior Art	N/A

D. Invalidity of the Claims Under 35 U.S.C. § 112

Defendants further assert that the ’068 Patent is invalid under 35 U.S.C. § 112. The following are the grounds upon which Defendants contend the asserted claims of the ’068 Patent are invalid for failure to meet the requirements of 35 U.S.C. §§ 112, ¶ 1 and/or 112, ¶ 2, based on Defendants’ investigation to date and currently-available information. For each claim identified as invalid, any dependent claims of those invalid claims are also invalid under 35 U.S.C. §§ 112, ¶ 1 and/or 112, ¶ 2.

Invalidity under § 112 may depend upon the Court’s claim construction as well as Plaintiff’s infringement contentions. Thus, Defendants have identified only those issues under § 112 of which they are currently aware. Defendants reserve the right to supplement and amend these contentions based on further discovery and investigation including, in particular, the deposition of any of the named inventors.

i. Enablement and Written Description

35 U.S.C. § 112, ¶ 1 requires a patent specification to describe an invention sufficiently to convey to a person of skill in the art that the patentee had possession of the claimed invention at the time of the application. That statute further requires a patent specification to describe the manner and process of making and using the invention so as to enable a person of skill in the art to make and use the full scope of the invention without undue experimentation. Defendants state

that the following claims are invalid for failure to provide an adequate written description and enabling disclosure pursuant to 35 U.S.C. § 112, ¶ 1.

Claim ¹⁹	Claim Limitation
1-2	“wherein electric power supplied from a battery to said information recording apparatus decreases” / “detecting when electric power supplied to said information recording apparatus decreases lower than a predetermined level”
2	“recording on said information recording medium a managing information utilized for managing the data recorded on said information recording medium,” taking place after “detecting when electric power supplied to said information recording apparatus decreases lower than a predetermined level”

All claims are invalid under § 112 ¶ 1 for failing to meet the written description and/or enablement requirements because they fail to describe detecting when electric power supplied to an information recording apparatus decreases lower than a predetermined level. For example, the specification of the '068 Patent merely states that there can be “a fear that the apparatus cannot correctly record information to the optical disk, for example, when a residual amount of a battery decreases of the like,” the '068 Patent at 8:46-50, but it fails to describe how to detect a decrease in the “electric power supplied from a battery to said information recording apparatus” or what the claimed “predetermined threshold” would be. Accordingly, the description in the specification does not allow a person of ordinary skill in the art to recognize that the applicant invented what is claimed, and all claims thus violate the written description requirement of § 112 ¶ 1. In addition, the patent specification would not have enabled one of ordinary skill in the art at the time of the purported invention to make and use it as claimed.

Claim 2 is also invalid under § 112 ¶ 1 for failing to meet the written description and/or enablement requirements because the patent fails to describe “recording on said information

¹⁹ This includes any asserted claims that depend from the identified claims.

recording medium a managing information utilized for managing the data recorded on said information recording medium” taking place after “detecting when electric power supplied to said information recording apparatus decreases lower than a predetermined level.” For example, the specification of the ’068 Patent merely states that there can be “a fear that the apparatus cannot correctly record information to the optical disk, for example, when a residual amount of a battery decreases of the like,” the ’068 Patent at 8:46-50, but it fails to describe a step of recording managing information in response to detecting a decrease in the electric power relative to a threshold. Accordingly, the description in the specification does not allow a person of ordinary skill in the art to recognize that the applicant invented what is claimed, and all claims thus violate the written description requirement of § 112 ¶ 1. In addition, the patent specification would not have enabled one of ordinary skill in the art at the time of the purported invention to make and use it as claimed.

Defendants do not concede that Plaintiff is entitled to the earliest claimed priority date for any ’068 Patent Asserted Claim and reserve the right to argue that a later priority date should apply based on information discovered during discovery and/or the Court’s claim constructions. Based on the information currently available to Defendants, the claims of the ’068 Patent may not be entitled to a priority date earlier than July 24, 1998.

ii. Indefiniteness

The following claims are invalid 35 U.S.C. § 112, ¶ 2 because they fail to inform those skilled in the art about the scope of the invention with reasonable certainty when read in light of the specification and file history.

Claim ²⁰	Claim Limitations
1-2	“recording the digital signal processed data in said information recording medium”

The asserted claims of the '068 patent are invalid for failure to satisfy the requirements of 35 U.S.C. § 112, ¶ 2 because the specification does not describe or otherwise inform one of ordinary skill about what constitutes “recording the digital signal processed data in said information recording medium.” It is uncertain what “digital signal processed data” is recorded “*in* said information recording medium” as compared to the claimed “digital signal processing data to be recorded *on* said recording medium.” As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112, ¶ 2. Therefore, the asserted claims, when read in light of the specification and the prosecution history, “fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2124 (2014).

IX. INVALIDITY CONTENTIONS REGARDING THE '334 PATENT

A. Identification of Prior Art Under §§ 102 and 103

Defendants list below (MAX-DEFS-PA-0000959—MAX-DEFS-PA-0000975, MAX-DEFS-PA-0002760—MAX-DEFS-PA-0004078) the currently known prior art that anticipates or renders obvious the '334 Patent's Asserted Claims under 35 U.S.C. § 102 and/or § 103 (pre-AIA) expressly or inherently as is detailed below and in the charts attached as Exhibit I.

For references that invalidate under 35 U.S.C. § 102(b), those references were publicly known and available no later than their publication dates, and persons with knowledge of that public availability include without limitation the author(s) of the reference. Defendants continue

²⁰ This includes any asserted claims that depend from the identified claims.

to investigate the prior art identified below and reserve the right to offer additional evidence that may be uncovered after further discovery.

Patent References

Patent Number	Priority Date	Date of Issue or Publication
U.S. Pat. No. 3,486,128	February 7, 1968	December 23, 1969
U.S. Pat. No. 4,317,083	March 19, 1979	February 23, 1982
U.S. Pat. No. 4,901,307	October 17, 1986	February 13, 1990
U.S. Pat. No. 5,056,109	November 7, 1989	October 8, 1991
U.S. Pat. No. 5,101,173	November 28, 1990	March 31, 1992
U.S. Pat. No. 5,107,225	November 30, 1990	April 21, 1992
U.S. Pat. No. 5,128,629	April 22, 1991	July 7, 1992
U.S. Pat. No. 5,267,262	November 7, 1989	November 30, 1993
U.S. Pat. No. 5,287,555	July 22, 1991	February 15, 1994
U.S. Pat. No. 5,420,536	March 16, 1993	May 30, 1995
U.S. Pat. No. 5,423,081	August 16, 1993	June 6, 1995
U.S. Pat. No. 5,432,473	July 14, 1993	July 11, 1995
U.S. Pat. No. 5,452,473	Feb 28, 1994	September 19, 1995
U.S. Pat. No. 5,469,471	February 1, 1994	November 21, 1995
U.S. Pat. No. 5,485,486	November 7, 1989	January 16, 1996
U.S. Pat. No. 5,542,111	March 19, 1993	July 30, 1996
U.S. Pat. No. 5,548,616	September 9, 1994	August 20, 1996
U.S. Pat. No. 5,559,471	December 21, 1994	September 24, 1996
U.S. Pat. No. 5,574,993	September 24, 1993	November 12, 1996
U.S. Pat. No. 5,603,106	September 6, 1989	February 11, 1997

Patent Number	Priority Date	Date of Issue or Publication
U.S. Pat. No. 5,617,060	April 28, 1994	April 1, 1997
U.S. Pat. No. 5,627,857	September 15, 1995	May 6, 1997
U.S. Pat. No. 5,642,378	November 17, 1994	June 24, 1997
U.S. Pat. No. 5,655,220	February 28, 1994	August 5, 1997
U.S. Pat. No. 5,689,815	May 4, 1995	November 18, 1997
U.S. Pat. No. 5,710,981	May 23, 1995	January 20, 1998
U.S. Pat. No. 5,724,005	April 25, 1996	March 3, 1998
U.S. Pat. No. 5,732,334	July 4, 1996	March 24, 1998
U.S. Pat. No. 5,752,171	May 22, 1995	May 12, 1998
U.S. Pat. No. 5,757,237	August 28, 1996	May 26, 1998
U.S. Pat. No. 5,774,797	January 23, 1995	June 30, 1998
U.S. Pat. No. 5,832,373	April 3, 1995	November 3, 1998
U.S. Pat. No. 5,852,770	September 19, 1995	December 22, 1998
U.S. Pat. No. 5,862,460	September 13, 1996	January 19, 1999
U.S. Pat. No. 6,049,704	December 10, 1997	April 11, 2000
U.S. Pat. No. 6,118,988	May 2, 1998	September 12, 2000
U.S. Pat. No. 6,122,491	December 27, 1996	September 19, 2000
U.S. Pat. No. 6,233,440	August 5, 1998	May 15, 2001
U.S. Pat. No. 6,236,863	March 31, 1997	May 22, 2001
U.S. Pat. No. 6,356,745	June 23, 1998	March 12, 2002
U.S. Pat. No. 6,434,373	August 6, 1997	August 13, 2002
WO 98/49771	April 25, 1997	November 5, 1998
EP 0876004 A2	April 21, 1997	April 11, 1998

Patent Number	Priority Date	Date of Issue or Publication
CN 1146131 A	September 20, 1995	April 14, 2004
JP 946152 A	July 28, 1995	February 14, 1997
JPH 03280727 A	March 29, 1990	December 11, 1991
JPH 04277909 A	March 6, 1991	October 2, 1992
JPH 06252797 A	February 23, 1993	September 9, 1994
JPH 09116357 A	October 23, 1995	May 2, 1997
JPH 10154914 A	November 11, 1996	June 9, 1998
JPH 10190381 A	December 27, 1996	July 21, 1998

Prior Art Publications

Title	Date of Publication	Author
Optimized Linear Phase Square-Root Nyquist FIR Filters for CDMA IS-95 and UMTS Standards	October 23, 2012	Ashrafi
On the Capacity of a Cellular CDMA System	May 2, 1991	Gilhausen et al.
TIA Interim Standard Mobile Station-Base Station Compatibility Standard for Dual-Mode Wideband Spread Spectrum Cellular System	May 1995	Telecommunications Industry Association
Challenges in Portable RF Transceiver Design	September 1996	Razavi
Wireless Data Networking	1995	Muller

Copies of the foregoing references identified above have been or are being produced along with these Invalidity Contentions. Defendants are also producing art that they feel is relevant to the claimed patents and may rely on such to teach the state of the art.

Each of the references and systems listed above qualifies as prior art under one or more sections of 35 U.S.C. §§ 102 and/or 103, as detailed below. The invalidating disclosure in each

of the listed references and materials is express, implicit, and/or inherent. Defendants reserve the right to rely on prior art in the accompanying production, prior art produced by Plaintiff or third parties, and/or prior art cited in the charts accompanying these invalidity contentions to show the state of the art, the knowledge of one of ordinary skill in the art, and/or the anticipation or obviousness of the '334 Patent. The references provided herein may also be relied upon to show the state of the art in the relevant time frame. Also, to the extent that any of the references listed above are deemed not to be prior art, they may nevertheless provide evidence of prior or simultaneous invention, thereby supporting the obviousness of the asserted claims.

To the extent they constitute prior art, Defendants reserve the right to rely upon any of the following art related to the prior art identified herein: (i) foreign counterparts of the U.S. patents identified; (ii) U.S. counterparts of any foreign patents and foreign patent applications identified; (iii) U.S. and foreign patents and patent applications corresponding to any articles and publications identified; (iv) any products, prior inventions, or publications that relate to any references identified; and (v) any patents, patent applications or publications that relate to any identified system. In addition, the specification and prosecution history of the '334 Patent and related patents and/or applications contain descriptions of, and admissions concerning, the scope of the claims. Defendants intend to rely upon these descriptions and admissions. Defendants also identify all prior art references cited or included in the '334 Patent and its prosecution history, as well as any statements in either regarding the prior art in either. Defendants reserve the right to rely on documents produced by third parties as prior art. Defendants' Invalidity Contentions and identification of prior art meet the disclosure requirements of 35 U.S.C. §282(c). Defendants reserve their rights to amend their contentions to include additional prior art references.

B. Anticipation and Obviousness References

Pursuant to P.R. 3-3(a) and the Court's Discovery Order, and in light of Maxell's Infringement Contentions and accompanying claim charts, Defendants list below the prior art now known to Defendants that anticipates or renders obvious the asserted claims under 35 U.S.C. § 102 and/or 103. Defendants' contentions do not imply any admission or suggestion that a specific prior art reference does not independently anticipate the '334 Patent Asserted Claims. Each individual prior art reference identified in Subsection A, above, that anticipates and/or each combination that renders obvious the '334 Patent Asserted Claims is described below.

Although Defendants have identified at least one disclosure of a limitation for each prior art reference, each and every disclosure of the same limitation in the same reference is not necessarily identified. To focus the issues, Defendants cite only representative portions of an identified reference, even where a reference may contain additional support for a particular claim limitation. Persons of ordinary skill in the art generally read an item of prior art as a whole and in the context of other publications and literature. Thus, to understand and interpret any specific statement or disclosure within a prior art reference, such persons would rely on other information within the reference, along with other publications and their general scientific knowledge. Defendants may rely upon uncited portions of the prior art references and on other publications and expert testimony to provide context, and as aids to understanding and interpreting the portions that are cited.

Further, some or all of the systems identified below or identified in the prior art publications and patents will be the subject of continuing investigation and discovery, including on-going and currently uncompleted third party discovery. Defendants reserve the right to supplement their contentions consistent with the Federal Rules and the Local Patent Rules, in the event that additional information is discovered relating to these systems.

i. Anticipating Reference(s)

Defendants identify the following reference(s) as anticipating one or more of the '334 Patent Asserted Claims under 35 U.S.C. § 102. The below table of anticipating references is exemplary, and it does not constitute an admission that any reference anticipates only the listed claims.

Anticipating References

Anticipating Prior Art	Asserted Claim(s)
U.S. Pat. No. 5,548,616 (“Mucke”)	4, 6
U.S. Pat. No. 5,642,378 (“Denheyer”)	4, 6
U.S. Pat. No. 6,236,863 (“Waldroup”)	4, 6
U.S. Pat. No. 6,122,491 (“Francisco”)	4, 6
U.S. Pat. No. 5,452,473 (“Weiland”)	4, 6
U.S. Pat. No. 5,267,262 (“Wheatley”)	4, 6
U.S. Pat. No. 5,689,815 (“Yamazaki”)	4, 6

To the extent any item of prior art cited above is deemed not to disclose, explicitly or inherently, any limitation of a '334 Patent Asserted Claim, Defendants reserve the right to argue that any difference between that prior art and the corresponding patent claim would have been either inherent to the art, or obvious to one of ordinary skill in the art, even if they have not specifically denoted that the art is to be combined with the knowledge of a person of ordinary skill in the art. Each prior art reference above describing or relating to a prior art system should be understood to discuss the system’s capabilities generally and also to discuss specific examples of specific installations of the particular system. To the extent the prior art references describe various implementations of the same underlying system, that underlying system is a single reference under 35 U.S.C. §§ 102(a) and/or 102(b). The prior art references are evidence of the

capabilities of the prior art system, and each chart provided for a prior art system should be understood to incorporate by reference all printed publications describing or relating to that prior art system and all charts provided for those printed publications.

In addition, each reference itself also qualifies as prior art on separate grounds as a publication under §§ 102(a) and/or 102(b). Even if the prior art references are not treated as a single prior art reference, at the very least, it would have been obvious to combine the features described in those references.

ii. Obviousness Combinations and Rationale(s) to Combine

Each anticipatory reference listed above individually discloses each limitation of the '334 Patent Asserted Claims. However, to the extent any anticipatory reference is found to lack any claim element, the '334 Patent Asserted Claims also are obvious in light of the ordinary skill in the art and the anticipatory reference itself (via single reference obviousness), or in light of further references, described in the charts attached as Exhibit I. The anticipatory references either alone or in combination with other prior art, renders the '334 Patent Asserted Claims invalid as obvious under 35 U.S.C. § 103. In particular, each identified prior art reference may be combined with: (i) information known to persons skilled in the art at the time of the alleged inventions of the '334 Patent; or (ii) any of the other anticipatory or other prior art references identified in these contentions or the accompanying charts. In addition, Defendants incorporate by reference each and every prior art reference of record in the prosecution histories of the '334 Patent, counterpart patents, and related patent applications, as well as all statements made by the applicant in the prosecution histories of the '334 Patent, counterpart patents, and related patent applications, including any discussion of prior art or conventional features in any of the specifications of the '334 Patent, counterpart patents, and related patent applications.

Defendants incorporate by reference the statements and reasoning by the U.S. Patent and Trademark Office during prosecution of the '334 Patent and any counterpart patents or applications as to why it would have been obvious to modify or combine prior art references to achieve the limitations of the '334 Patent Asserted Claims or similar claims in any counterparts.

The alleged “inventions” recited in the asserted claims of the '334 Patent would have been obvious because the prior art, common knowledge, and the nature of the problems, viewed through the eyes of a person ordinarily skilled in the art, suggested the claimed elements. A person ordinarily skilled in the relevant fields would have possessed knowledge and skills rendering him or her capable of combining the prior art references with knowledge in the field and common sense. Moreover, the asserted claims represent well-known combinations of familiar and pre-existing elements, yielding only predictable results. Additional reasons that a person of ordinary skill in the art would have been motivated to combine the identified prior art are provided herein and in the accompanying charts and document production.

In addition to the specific combinations of prior art and the specific combinations of groups of prior art disclosed, Defendants will rely on any other combination of any prior art references disclosed herein. Defendants further will rely upon combinations disclosed within the prosecution history of the references cited herein. The obviousness combinations set forth in these contentions reflect Defendants’ present understanding of the potential scope of the claims that Maxell appears to be advocating and should not be seen as Defendants’ acquiescence to Maxell’s interpretation of the patent claims. Defendants will amend or supplement these contentions regarding anticipation or obviousness of the asserted claims as appropriate under the applicable Rules, including in response to further information from Maxell or information discovered during discovery. Maxell has not identified what elements or combinations it alleges

were not known to one of ordinary skill in the art at the time. Therefore, for any claim limitation that Maxell alleges is not disclosed in a particular prior art reference, Defendants reserve the right to assert that any such limitation is either inherent in the disclosed reference or obvious to one of ordinary skill in the art at the time in light of the same, or that the limitation is disclosed in another of the references disclosed above and in combination would have rendered the asserted claim obvious.

Additionally, any reference or combination of references that anticipates or renders obvious an asserted independent claim also renders obvious any asserted claim dependent on that independent claim because every element of each dependent claim was known by a person of ordinary skill at the time of the alleged invention, and it would have been obvious to combine those known elements with the independent claims at least as a matter of common sense and routine innovation.

To the extent any limitation is not explicitly or inherently disclosed by an item of prior art identified in Subsection A, the claimed subject matter as a whole would have been obvious to one skilled in the art at the time of the alleged invention, in view of the state of the art and knowledge of those skilled in the art. The item of prior art on its own as read by one of skill in the art would, therefore, render the relevant claims invalid for obviousness under 35 U.S.C. § 103(a).

In addition, the references identified above render one or more asserted claims of the '334 Patent obvious when the references are read in combination with each other, and/or when read in view of the state of the art and knowledge of those skilled in the art. Any of the references disclosed herein may be combined to render obvious (and therefore invalidate) each of Maxell's asserted claims. Defendants may rely upon a subset or all of the references

identified, for purposes of obviousness depending on the Court's claim construction, positions taken by Maxell during this litigation, and further investigation and discovery. Defendants may rely upon combinations with any reference in the accompanying charts and any of the other references disclosed herein with respect to the '334 Patent, including combinations with any of the patents, publications or systems identified herein as prior art to the '334 Patent.

Prior art references rendering the asserted claims of the '334 Patent obvious, alone or in combination with other references, are discussed above, included in the accompanying charts, and identified in subsection (a) below, which shows representative specific combinations of references. Moreover, to the extent the foregoing references are found not to anticipate the asserted claims, the foregoing references render the asserted claims obvious either alone or in combination with one or more of the other references identified above. Exemplary reasons that a person of ordinary skill in the art would have been motivated to combine the identified prior art are provided in below.

Defendants believe that no showing of a specific motivation to combine prior art is required to combine the references disclosed herein and in the attached charts. As reflected in the attached exhibits, and in the references themselves, there was a reason to make each combination – each combination of art would have produced no unexpected results, and each combination at most would simply represent a known alternative to one of ordinary skill in the art. *See KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 414-18 (2007) (rejecting the Federal Circuit's "rigid" application of the teaching, suggestion, or motivation-to-combine test, instead espousing an "expansive and flexible" approach). As reflected in the attached exhibits, in the references themselves, and the discussion herein, the asserted claims of the '334 Patent combine familiar elements according to known methods, yielding predictable results. Moreover, one of

ordinary skill in the art would be prompted to modify each of these references based on design incentives or other market forces. This is true for references in the same field of endeavor as well as for references in a different field of endeavor, as one of skill would understand that techniques used to improve devices in a related or analogous field could improve similar devices in the same way. No specific reference explicitly spelling out all aspects of a proposed combination is required to show obviousness; indeed, the Supreme Court has explained that a person of ordinary skill is “a person of creativity, not an automaton,” and “in many cases a person of ordinary skill in the art will be able to fit the teachings of multiple patents together like pieces of a puzzle.” *Id.* at 420-21. As reflected in the attached exhibits, the discussion herein, and in the references themselves, the elements of the asserted claims of the ’334 Patent are all disclosed in the prior art, and one of skill would readily fit their teachings together.

Nevertheless, in addition to the information contained elsewhere in these contentions, including the exhibits, Defendants hereby identify below additional motivations and reasons to combine the cited art. To determine whether there is a reason to combine the known elements in the manner claimed by a patent, a court can “look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art.” *Id.* at 418. For example, obviousness can be demonstrated by showing “there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent’s claims.” *Id.* at 420. “[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.* Common sense also teaches that “familiar items may have obvious uses beyond their primary

purposes, and in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle.” *Id.*

Applying these principles, it would have been obvious to a person of ordinary skill in the art at the time the application that issued as the '334 Patent was filed to combine, modify, or use the teachings of the prior art to make the purported inventions of those patents, including by making each of the combinations identified above. The motivation to combine the teachings of the prior art references disclosed herein can be found in each of (1) the references themselves, (2) the nature of the problem being solved, (3) the express, implied and inherent teachings of the prior art, (4) the knowledge of persons of ordinary skill in the art, (5) the fact that the prior art is generally directed towards the subject matter of each respective asserted patent, and (6) the predictable results obtained in combining the elements of the prior art.

Furthermore, all of the references identified herein with respect to the '334 Patent address the same problem of controlling transmission power in cellular telephone. A person of ordinary skill in the art would have looked to other devices in the same field, such as the prior art devices and other references, because all of these references share many of the same or substantially similar components, such as amplifiers, encoders/decoders, acoustic transducers, controllers, and/or memories. A person of ordinary skill in the art would therefore have been motivated to combine these components, knowing that these well-known elements would achieve their purposes in combination, without any difficulty and without any unexpected results.

A person having ordinary skill in the art would have been motivated to make the listed combinations because every reference related to solving the same problem (controlling transmission power in cellular telephone) in the same technological field (cellular telephone). *See Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc.*, 75 F.3d 1568, 1573 (Fed. Cir. 1996) (the

motivation to combine “may also come from the nature of a problem to be solved, leading inventors to look to references relating to possible solutions to that problem.”).

For example, to the extent that any prior art reference is determined not to disclose “a cellular telephone used in a CDMA system,” this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, AAPA and/or other references. For example, without limitation, each of AAPA, Mucke, Waldroup, Francisco, Weiland, Wheatley, Yamazaki, U.S. Pat. No. 5,056,109 (“Gilhousen 109”), TIA Interim Standard Mobile Station-Base Station Compatibility Standard for Dual-Mode Wideband Spread Spectrum Cellular System (“IS-95”), and U.S. Patent No. 5,627,857 (“Wilson”) discloses this limitation. *See* Exs. I1, I2, I4, I5, I6, I7, I8, I10, I11, I12. It would have been obvious to apply prior art transmission power control schemes to the widely available CDMA system to, for example, reduce power consumption and/or signal interference in a CDMA system.

For example, to the extent that any prior art reference is determined not to disclose “converting said first communication signal received from a cell-site station into a voice signal code, converting said voice signal code into an audio signal for driving an acoustic transducer of said cellular telephone, converting an audio input signal from said acoustic transducer into an input voice code signal, converting said input voice code signal into a second communication signal,” this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, the AAPA and/or other references. For example, without limitation, each of Mucke, Denheyer, and IS-95 discloses this limitation. *See* Exs. I2, I3, I11. It would have been obvious and it is inherent that any cellular telephone, in order to perform the basic voice call function, be capable of converting a communication signal from a base station into a voice signal code and then to an audio signal to be played by a speaker, and converting an audio signal from a

microphone into a voice signal code and then to a communication signal to be sent to the base station.

For example, to the extent that any prior art reference is determined not to disclose “an open-loop power control is performed,” this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, the AAPA and/or other references. For example, without limitation, each of AAPA, Mucke, Waldroup, Weiland, Wheatley, Yamazaki, and Gilhousen 109 discloses this limitation. *See* Exs. I1, I2, I4, I6, I7, I8, I10. It would have been obvious to apply open loop control to perform coarse control over a signal strength transmitted by a cellular telephone simply based on a received signal strength and without the need to use a transmission control signal received from a base station. *See, e.g.,* '334 Patent at 1:50-61.

For example, to the extent that any prior art reference is determined not to disclose “an open-loop power control is performed at first and then a closed-loop power control is performed,” this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, the AAPA and/or other references. For example, without limitation, each of AAPA and IS-95 discloses this limitation. *See* Exs. I1, I11. It would have been obvious to apply open loop control to perform coarse control over a signal strength transmitted by a cellular telephone first before a fine control by closed loop control. *See, e.g.,* '334 Patent, at 1:50-61. Further, it would have been obvious to try performing open loop control before closed loop control, as opposed to performing closed loop control before performing open loop control, or performing the two simultaneously.

For example, to the extent that any prior art reference is determined not to disclose “a function defining a relation between bias data and gain data stored in said memory,” this

limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, the AAPA and/or other references. For example, without limitation, each of AAPA, Denheyer, Waldroup, Weiland, Wheatley, Yamazaki, and U.S. Pat. No. 5,101,173 (“DiPiazza”) discloses this limitation. *See* Exs. I1, I3, I4, I6, I7, I8, I9. Memory was a ubiquitous element that was present in virtually all consumer cell phones by the mid-1990s. It would have been obvious to store a relationship between bias data and gain data in a memory, for example in the form of a look-up table, in order to enable precise power control, to reduce computational complexity, and/or to provide flexibility in modifying the relationship. *See, e.g.,* DiPiazza at 5:51-65.

For example, to the extent that any prior art reference is determined not to disclose “bias conditions defined in a ratio to the maximum bias voltage value,” this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, the AAPA and/or other references. For example, without limitation, AAPA discloses this limitation. *See* Ex. I1. Since the bias level will be less than or equal to a known maximum, it would have been readily apparent that it may be expressed as a percentage of the maximum, for example to save space in a memory.

For example, to the extent that any prior art reference is determined not to disclose “said bias condition increases gradually to the maximum value when output intensity increases to the value taken when said cellular telephone is very far from the cell-site station,” this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, the AAPA and/or other references, to the extent the phrases “increases gradually” and “very far from” are determined to be not indefinite. For example, without limitation, each of Mucke, Denheyer, Francisco, Weiland, and U.S. Patent No. 5,774,797 (“Kawano”) discloses this

limitation. *See* Exs. I2, I3, I5, I6, I12. It would have been obvious to apply a gradually increasing bias voltage to the power amplifier, in order to accommodate the increased power requirement without unnecessary power consumption, to maintain amplifier linearity, and/or to reduce signal interference. *See, e.g.,* Mucke at 12:18-27; Francisco at 6:34-58.

For example, to the extent that any prior art reference is determined not to disclose “said bias condition increases gradually to the maximum value when said output intensity increases within the range of –50 dB to 0 dB,” this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, the AAPA and/or other references, to the extent the phrases “increases gradually” and “very far from” are determined to be not indefinite. For example, without limitation, each of AAPA, Mucke, Waldroup, Francisco, Weiland and/or Yamazaki discloses this limitation. *See* Exs. I1, I2, I4, I5, I6, I8. It would have been obvious to apply the gradually increasing bias in a range of –50 dB to 0 dB in order to extend the benefit of, *e.g.,* reduced power consumption to a broad range specified by the CDMA standard. *See e.g.,* Mucke at 7:52-59.

One of ordinary skill also would have been motivated to combine any of the above references together to yield predictable results, as combining the references would simply entail combining known elements by known methods in the art. In addition, any such combination would involve the simple substitution of one known, equivalent element for another. Such combinations would have been obvious to try because there were only a finite number of predictable solutions. Any such combination would yield predictable results using known techniques and would involve the simple substitution of one known, equivalent element for another. Defendants provide exemplary motivations to combine prior art references below.

Defendants also incorporate by reference herein the motivation to combine discussion in IPR2019-00070 and IPR2019-00088.

b. Exemplary Combinations

Because it would be unduly burdensome to create detailed claim charts for each and every invalidating combination, Defendants have provided illustrative examples of such invalidating combinations below. The following listing provides several exemplary combinations with respect to the '334 Patent Asserted Claims:

- Mucke in view of Denheyer and/or AAPA
- Mucke in view of Kawano and/or AAPA
- Mucke in view of DiPiazza and/or AAPA
- Mucke in view of Francisco, DiPiazza, and/or AAPA
- Gilhousen in view of Denheyer and/or AAPA
- Weiland in view of Denheyer and/or AAPA
- Waldroup in view of IS-95 and/or AAPA
- Waldroup in view of Francisco and/or AAPA
- Wheatley in view of Francisco and/or AAPA
- Yamazaki in view of Francisco and/or AAPA

Defendants' identification of exemplary combinations is without limitation to Defendants identifying other invalidating combinations as appropriate. Defendants also contend that the asserted claims of the '334 Patent would have been obvious in view of the primary prior art references identified in subsection (i) above. Each of these primary references teaches all of the limitations of the '334 Patent's asserted claims. To the extent any claim limitations are found to be missing from the primary references, in addition to the exemplary references designated for

combination with the primary references, it would have been obvious to one of ordinary skill to add the missing limitation based on the corresponding disclosure of that limitation in the accompanying '334 Patent charts.

C. Claim Charts

Defendants attached claim charts as Exhibit I to Defendants' Invalidity Contentions, and identify where, in each alleged item of prior art, each element of each '334 Patent Asserted Claims are found either expressly or inherently. In these claim charts, Defendants have attempted to identify the most relevant portions of the references. The references may, however, contain additional support for claim limitations. Persons of ordinary skill in the art generally read a prior art reference as a whole and in the context of other publications and literature. Defendants may rely upon uncited portions of the references, other documents, and expert testimony to provide context or to aid in understanding the disclosures of the references. Where Defendants cite to a particular figure in a reference, the citation should be understood to encompass the caption and any corresponding description of the figure in the specification. Conversely, where Defendants cite to particular text referring to a figure, the citation should be understood to include the corresponding figure as well.

Exhibit	Charted Reference	Bates Number
I1	Applicant Admitted Prior Art ("AAPA")	
I2	U.S. Pat. No. 5,548,616 ("Mucke")	MAX-DEFS-PA-0003642
I3	U.S. Pat. No. 5,642,378 ("Denheyer")	MAX-DEFS-PA-0003744
I4	U.S. Pat. No. 6,236,863 ("Waldroup")	MAX-DEFS-PA-0004006
I5	U.S. Pat. No. 6,122,491 ("Francisco")	MAX-DEFS-PA-0003989
I6	U.S. Pat. No. 5,452,473 ("Weiland")	MAX-DEFS-PA-0003582
I7	U.S. Pat. No. 5,267,262 ("Wheatley")	MAX-DEFS-PA-0003505

I8	U.S. Pat. No. 5,689,815 (“Yamazaki”)	MAX-DEFS-PA-0003783
I9	U.S. Pat. No. 5,101,173 (“DiPiazza”)	MAX-DEFS-PA-0003480
I10	U.S. Pat. No. 5,056,109 (“Gilhousen 109”)	MAX-DEFS-PA-0000959
I11	TIA Interim Standard Mobile Station-Base Station Compatibility Standard for Dual-Mode Wideband Spread Spectrum Cellular System (“IS-95”)	MAX-DEFS-PA-0002760 - MAX-DEFS-PA-0003298
I12	U.S. Patent No. 5,627,857 (“Wilson”)	MAX-DEFS-PA-0003729
	U.S Patent No. 6,049,704 (“Peckham”)	MAX-DEFS-PA-0003963
	U.S. Patent No. 5,774,797 (“Kawano”)	MAX-DEFS-PA-0003877
	U.S. Patent No. 5,832,373 (“Nakanishi”)	MAX-DEFS-PA-0003908

Defendants further incorporate by reference statements and reasoning in IPR2019-00070 and IPR2019-00088 as to why the ’334 Patent is anticipated and/or rendered obvious by prior art.

D. Invalidity of the Claims Under 35 U.S.C. § 112

Defendants further assert that the ’334 Patent is invalid under 35 U.S.C. § 112. The following are the grounds upon which Defendants contend the asserted claims of the ’334 Patent are invalid for failure to meet the requirements of 35 U.S.C. §§ 112, ¶ 1 and/or 112, ¶ 2, based on Defendants’ investigation to date and currently-available information. For each claim identified as invalid, any dependent claims of those invalid claims are also invalid under 35 U.S.C. §§ 112, ¶ 1 and/or 112, ¶ 2.

Invalidity under § 112 may depend upon the Court’s claim construction as well as Plaintiff’s infringement contentions. Thus, Defendants have identified only those issues under § 112 of which they are currently aware. Defendants reserve the right to supplement and amend these contentions based on further discovery and investigation including, in particular, the deposition of any of the named inventors.

i. Indefiniteness

The following claims are invalid 35 U.S.C. § 112, ¶ 2 because they fail to inform those skilled in the art about the scope of the invention with reasonable certainty when read in light of the specification and file history.

Claim ²¹	Claim Limitations
4	“said first communication signal received from a cell-site station”
4	“converge into a range required by said cell-site station”
4	“stored in said memory”
4, 6	“said bias condition increases gradually to the maximum value”
4	“output intensity increases to the value taken when said cellular telephone is very far from the cell-site station”
6	“when said output intensity increases within the range of -50 dB to 0 dB”

The asserted claims of the '334 Patent are invalid for failure to satisfy the requirements of 35 U.S.C. § 112, ¶ 2 because the specification does not describe or otherwise inform one of ordinary skill about what constitutes “said first communication signal received from a cell-site station.” The '334 Patent does not describe or explain whether “a cell-site station” refers to the same “cell-site station” mentioned previously in the claim. As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112, ¶ 2. Therefore, the asserted claims, when read in light of the specification and the prosecution history, “fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2124 (2014).

²¹ This includes any asserted claims that depend from the identified claims.

The asserted claims of the '334 Patent are invalid for failure to satisfy the requirements of 35 U.S.C. § 112, ¶ 2 because the specification does not describe or otherwise inform one of ordinary skill about what constitutes “converge into a range required by said cell-site station.” The '334 Patent does not describe or explain what it means by “converge.” As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112, ¶ 2. Therefore, the asserted claims, when read in light of the specification and the prosecution history, “fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2124 (2014).

The asserted claims of the '334 Patent are invalid for failure to satisfy the requirements of 35 U.S.C. § 112, ¶ 2 because the specification does not describe or otherwise inform one of ordinary skill about what constitutes “stored in said memory.” The '334 Patent does not describe or explain what “said memory” means because of the lack of antecedent basis. As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112, ¶ 2. Therefore, the asserted claims, when read in light of the specification and the prosecution history, “fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2124 (2014).

The asserted claims of the '334 Patent are invalid for failure to satisfy the requirements of 35 U.S.C. § 112, ¶ 2 because the specification does not describe or otherwise inform one of ordinary skill about what constitutes “said bias condition increases gradually to the maximum value.” The '334 Patent does not describe or explain what “gradually,” a term of degree, means. The '334 Patent also does not describe or explain in what range the bias condition increases

gradually as no lower bound is defined. As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112, ¶ 2. Therefore, the asserted claims, when read in light of the specification and the prosecution history, “fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2124 (2014).

The asserted claims of the ’334 Patent are invalid for failure to satisfy the requirements of 35 U.S.C. § 112, ¶ 2 because the specification does not describe or otherwise inform one of ordinary skill about what constitutes “output intensity increases to the value taken when said cellular telephone is very far from the cell-site station.” The ’334 Patent does not describe or explain what “very far from,” a term of degree, means. As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112, ¶ 2. Therefore, the asserted claims, when read in light of the specification and the prosecution history, “fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2124 (2014).

The asserted claims of the ’334 Patent are invalid for failure to satisfy the requirements of 35 U.S.C. § 112, ¶ 2 because the specification does not describe or otherwise inform one of ordinary skill about what constitutes “when said output intensity increases within the range of -50 dB to 0 dB.” The ’334 Patent does not describe or explain what it means by “the range of -50 dB to 0 dB” because a person of ordinary skill in the art understands that “dB” is a relative concept that requires a basis for comparison. As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112, ¶ 2. Therefore, the asserted claims, when read in light of the specification and the

prosecution history, “fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2124 (2014).

X. INVALIDITY CONTENTIONS REGARDING THE ’517 PATENT

A. Identification of Prior Art Under §§ 102 and 103

Defendants list below (MAX-DEFS-PA-0006722—MAX-DEFS-PA-0008508, MAX-DEFS-PA-0013219—MAX-DEFS-PA-0013253) the currently known prior art that anticipates or renders obvious the ’517 Patent’s Asserted Claims under 35 U.S.C. § 102 and/or § 103 (pre-AIA) expressly or inherently as is detailed below and in the charts attached as Exhibit J.

For references that invalidate under 35 U.S.C. § 102(b), those references were publicly known and available no later than their publication dates, and persons with knowledge of that public availability include without limitation the author(s) of the reference. Defendants continue to investigate the prior art identified below and reserve the right to offer additional evidence that may be uncovered after further discovery.

Patent References

Patent Number	Priority Date	Date of Issue or Publication
U.S. Pat. No. 4,963,981 (“Todaka”)	June 21, 1989	October 16, 1990
U.S. Pat. No. 5,283,651 (“Ishizuka”)	August 10, 1990	February 1, 1994
U.S. Pat. No. 5,440,343 (“Parulski 343”)	February 28, 1994	August 8, 1995
U.S. Pat. No. 5,517,239 (“Nakayama”)	September 24, 1991	May 14, 1996
U.S. Pat. No. 5,666,160 (“Hwang”)	June 3, 1996	September 9, 1997
U.S. Pat. No. 5,701,157 (“Kato”)	July 9, 1993	December 23, 1997
U.S. Pat. No. 5,734,427 (“Hayashi”)	May 16, 1995	March 31, 1998
U.S. Pat. No. 5,966,171 (“Hieda”)	March 16, 1994	October 12, 1999

Patent Number	Priority Date	Date of Issue or Publication
U.S. Pat. No. 5,990,947 (“Okino”)	December 29, 1992	November 23, 1999
U.S. Pat. No. 6,002,429 (“Ochi”)	May 23, 1996	December 14, 1999
U.S. Pat. No. 6,005,613 (“Endsley”)	September 12, 1996	December 21, 1999
U.S. Pat. No. 6,512,858 (“Lyon”)	July 21, 1998	January 28, 2003
U.S. Pat. No. 6,661,451 (“Kijima”)	October 30, 1997	December 9, 2003
U.S. Pat. No. 6,700,607 (“Misawa”)	June 4, 1999	March 2, 2004
U.S. Pat. No. 6,757,013 (“Matsuzaka”)	July 8, 1997	June 29, 2004
U.S. Pat. No. 6,937,277 (“Hattori”)	April 16, 1999	August 30, 2005
U.S. Pat. No. 4,131,919 (“Kodak”)	May 20, 1977	December 26, 1978
U.S. Pat. No. 5,018,017 (“Sasaki”)	December 8, 1989	May 21, 1991
U.S. Pat. No. 6,292,218 (“Parulski 218”)	December 30, 1994	September 18, 2001
PCT Pub. WO 98/57491	June 10, 1997	December 17, 1998

Prior Art Publications

Title	Date of Publication	Author
H3-117985 (“Egawa”)	May 20, 1991	Egawa
Toshiro Kinugasa, Electronic Image Stabilizer for Video Camera Use (IEEE Transactions on Consumer Electronics, Vol. 36, No. 3, August 1990)	August 1990	Toshiro Kinugasa
R. A. F. Belfor et al., “Subsampling of Digital Image Sequences using Motion Information,” in MOTION ANALYSIS AND IMAGE SEQUENCE PROCESSING 189 (M. Ibrahim Sezan and Reginald L. Lagendijk eds., 1993)	1993	R. A. F. Belfor et al.

Prior Art Products and Uses²²

Prior Art Products and Uses	Date
Hitachi MPEGCAM MP-EG1A	At least as early as 1997
Sony DSC-F55 Cyber-Shot Digital Still Camera	At least as early as 1999

Copies of the foregoing references identified above have been or are being produced along with these Invalidity Contentions. Defendants are also producing art that they feel is relevant to the claimed patents and may rely on such to teach the state of the art.

Each of the references and systems listed above qualifies as prior art under one or more sections of 35 U.S.C. §§ 102 and/or 103, as detailed below. The invalidating disclosure in each of the listed references and materials is express, implicit, and/or inherent. Defendants reserve the right to rely on prior art in the accompanying production, prior art produced by Plaintiff or third parties, and/or prior art cited in the charts accompanying these invalidity contentions to show the state of the art, the knowledge of one of ordinary skill in the art, and/or the anticipation or obviousness of the '517 Patent. The references provided herein may also be relied upon to show the state of the art in the relevant time frame. Also, to the extent that any of the references listed above are deemed not to be prior art, they may nevertheless provide evidence of prior or simultaneous invention, thereby supporting the obviousness of the asserted claims.

To the extent they constitute prior art, Defendants reserve the right to rely upon any of the following art related to the prior art identified herein: (i) foreign counterparts of the U.S. patents identified; (ii) U.S. counterparts of any foreign patents and foreign patent applications identified; (iii) U.S. and foreign patents and patent applications corresponding to any articles and

²² These prior uses are prior art under 35 U.S.C. § 102(a) (known or used in the US); (b) (public use in the US); and/or (g) (made in the US).

publications identified; (iv) any products, prior inventions, or publications that relate to any references identified; and (v) any patents, patent applications or publications that relate to any identified system. In addition, the specification and prosecution history of the '517 Patent and related patents and/or applications contain descriptions of, and admissions concerning, the scope of the claims. Defendants intend to rely upon these descriptions and admissions. Defendants also identify all prior art references cited or included in the '517 Patent and its prosecution history, as well as any statements in either regarding the prior art in either. Defendants reserve the right to rely on documents produced by third parties as prior art. Defendants' Invalidity Contentions and identification of prior art meet the disclosure requirements of 35 U.S.C. §282(c). Defendants reserve their rights to amend their contentions to include additional prior art references.

B. Anticipation and Obviousness References

Pursuant to P.R. 3-3(a) and the Court's Discovery Order, and in light of Maxell's Infringement Contentions and accompanying claim charts, Defendants list below the prior art now known to Defendants that anticipates or renders obvious the asserted claims under 35 U.S.C. § 102 and/or 103. Defendants' contentions do not imply any admission or suggestion that a specific prior art reference does not independently anticipate the '517 Patent Asserted Claims. Each individual prior art reference identified in Subsection A, above, that anticipates and/or each combination that renders obvious the '517 Patent Asserted Claims is described below.

Although Defendants have identified at least one disclosure of a limitation for each prior art reference, each and every disclosure of the same limitation in the same reference is not necessarily identified. To focus the issues, Defendants cite only representative portions of an identified reference, even where a reference may contain additional support for a particular claim limitation. Persons of ordinary skill in the art generally read an item of prior art as a whole and

in the context of other publications and literature. Thus, to understand and interpret any specific statement or disclosure within a prior art reference, such persons would rely on other information within the reference, along with other publications and their general scientific knowledge. Defendants may rely upon uncited portions of the prior art references and on other publications and expert testimony to provide context, and as aids to understanding and interpreting the portions that are cited.

Further, some or all of the systems identified below or identified in the prior art publications and patents will be the subject of continuing investigation and discovery, including on-going and currently uncompleted third party discovery. Defendants reserve the right to supplement their contentions consistent with the Federal Rules and the Local Patent Rules, in the event that additional information is discovered relating to these systems.

i. Anticipating Reference(s)

Defendants identify the following reference(s) as anticipating one or more of the '517 Patent Asserted Claims under 35 U.S.C. § 102. The below table of anticipating references is exemplary, and it does not constitute an admission that any reference anticipates only the listed claims.

Anticipating References

Anticipating Prior Art	Asserted Claim(s)
U.S. Pat. No. 4,963,981 (“Todaka”)	8-11
U.S. Pat. No. 5,283,651 (“Ishizuka”)	8-11
U.S. Pat. No. 5,440,343 (“Parulski 343”)	8-11
U.S. Pat. No. 5,517,239 (“Nakayama”)	8-11
U.S. Pat. No. 5,666,160 (“Hwang”)	8-11

Anticipating Prior Art	Asserted Claim(s)
U.S. Pat. No. 5,701,157 (“Kato”)	8-11
U.S. Pat. No. 5,734,427 (“Hayashi”)	8-11
U.S. Pat. No. 5,966,171 (“Hieda”)	8-11
U.S. Pat. No. 5,990,947 (“Okino”)	8-11
U.S. Pat. No. 6,002,429 (“Ochi”)	8-11
U.S. Pat. No. 6,005,613 (“Endsley”)	8-11
U.S. Pat. No. 6,512,858 (“Lyon”)	8-11
U.S. Pat. No. 6,661,451 (“Kijima”)	8-11
U.S. Pat. No. 6,700,607 (“Misawa”)	8-11
U.S. Pat. No. 6,757,013 (“Matsuzaka”)	8-11
U.S. Pat. No. 6,937,277 (“Hattori”)	8-11
H3-117985 (“Egawa”)	8-11
Hitachi MPEGCAM MP-EG1A	8-11
Sony DSC-F55 Cyber-Shot Digital Still Camera	8-11

To the extent any item of prior art cited above is deemed not to disclose, explicitly or inherently, any limitation of a '517 Patent Asserted Claim, Defendants reserve the right to argue that any difference between that prior art and the corresponding patent claim would have been either inherent to the art, or obvious to one of ordinary skill in the art, even if they have not specifically denoted that the art is to be combined with the knowledge of a person of ordinary skill in the art. Each prior art reference above describing or relating to a prior art system should be understood to discuss the system's capabilities generally and also to discuss specific examples of specific installations of the particular system. To the extent the prior art references describe various implementations of the same underlying system, that underlying system is a single

reference under 35 U.S.C. §§ 102(a) and/or 102(b). The prior art references are evidence of the capabilities of the prior art system, and each chart provided for a prior art system should be understood to incorporate by reference all printed publications describing or relating to that prior art system and all charts provided for those printed publications.

In addition, each reference itself also qualifies as prior art on separate grounds as a publication under §§ 102(a) and/or 102(b). Even if the prior art references are not treated as a single prior art reference, at the very least, it would have been obvious to combine the features described in those references.

ii. Obviousness Combinations and Rationale(s) to Combine

Each anticipatory reference listed above individually discloses each limitation of the '517 Patent Asserted Claims. However, to the extent any anticipatory reference is found to lack any claim element, the '517 Patent Asserted Claims also are obvious in light of the ordinary skill in the art and the anticipatory reference itself (via single reference obviousness), or in light of further references, described in the charts attached as Exhibit J. The anticipatory references either alone or in combination with other prior art, renders the '517 Patent Asserted Claims invalid as obvious under 35 U.S.C. § 103. In particular, each identified prior art reference may be combined with: (i) information known to persons skilled in the art at the time of the alleged inventions of the '517 Patent; or (ii) any of the other anticipatory or other prior art references identified in these contentions or the accompanying charts. In addition, Defendants incorporate by reference each and every prior art reference of record in the prosecution histories of the '517 Patent, counterpart patents, and related patent applications, as well as all statements made by the applicant in the prosecution histories of the '517 Patent, counterpart patents, and related patent applications, including any discussion of prior art or conventional features in any of the specifications of the '517 Patent, counterpart patents, and related patent applications.

Defendants incorporate by reference the statements and reasoning by the U.S. Patent and Trademark Office during prosecution of the '517 Patent and any counterpart patents or applications as to why it would have been obvious to modify or combine prior art references to achieve the limitations of the '517 Patent Asserted Claims or similar claims in any counterparts.

The alleged “inventions” recited in the asserted claims of the '517 Patent would have been obvious because the prior art, common knowledge, and the nature of the problems, viewed through the eyes of a person ordinarily skilled in the art, suggested the claimed elements. A person ordinarily skilled in the relevant fields would have possessed knowledge and skills rendering him or her capable of combining the prior art references with knowledge in the field and common sense. Moreover, the asserted claims represent well-known combinations of familiar and pre-existing elements, yielding only predictable results. Additional reasons that a person of ordinary skill in the art would have been motivated to combine the identified prior art are provided herein and in the accompanying charts and document production.

In addition to the specific combinations of prior art and the specific combinations of groups of prior art disclosed, Defendants will rely on any other combination of any prior art references disclosed herein. Defendants further will rely upon combinations disclosed within the prosecution history of the references cited herein. The obviousness combinations set forth in these contentions reflect Defendants' present understanding of the potential scope of the claims that Maxell appears to be advocating and should not be seen as Defendants' acquiescence to Maxell's interpretation of the patent claims. Defendants will amend or supplement these contentions regarding anticipation or obviousness of the asserted claims as appropriate under the applicable rules, including in response to further information from Maxell or information discovered during discovery. Maxell has not identified what elements or combinations it alleges

were not known to one of ordinary skill in the art at the time. Therefore, for any claim limitation that Maxell alleges is not disclosed in a particular prior art reference, Defendants reserve the right to assert that any such limitation is either inherent in the disclosed reference or obvious to one of ordinary skill in the art at the time in light of the same, or that the limitation is disclosed in another of the references disclosed above and in combination would have rendered the asserted claim obvious.

Additionally, any reference or combination of references that anticipates or renders obvious an asserted independent claim also renders obvious any asserted claim dependent on that independent claim because every element of each dependent claim was known by a person of ordinary skill at the time of the alleged invention, and it would have been obvious to combine those known elements with the independent claims at least as a matter of common sense and routine innovation.

To the extent any limitation is not explicitly or inherently disclosed by an item of prior art identified in Subsection A, the claimed subject matter as a whole would have been obvious to one skilled in the art at the time of the alleged invention, in view of the state of the art and knowledge of those skilled in the art. The item of prior art on its own as read by one of skill in the art would, therefore, render the relevant claims invalid for obviousness under 35 U.S.C. § 103(a).

In addition, the references identified above render one or more asserted claims of the '517 Patent obvious when the references are read in combination with each other, and/or when read in view of the state of the art and knowledge of those skilled in the art. Any of the references disclosed herein may be combined to render obvious (and therefore invalidate) each of Maxell's asserted claims. Defendants may rely upon a subset or all of the references

identified, for purposes of obviousness depending on the Court's claim construction, positions taken by Maxell during this litigation, and further investigation and discovery. Defendants may rely upon combinations with any reference in the accompanying charts and any of the other references disclosed herein with respect to the '517 Patent, including combinations with any of the patents, publications or systems identified herein as prior art to the '517 Patent.

Prior art references rendering the asserted claims of the '517 Patent obvious, alone or in combination with other references, are discussed above, included in the accompanying charts, and identified in subsection (a) below, which shows representative specific combinations of references. Moreover, to the extent the foregoing references are found not to anticipate the asserted claims, the foregoing references render the asserted claims obvious either alone or in combination with one or more of the other references identified above. Exemplary reasons that a person of ordinary skill in the art would have been motivated to combine the identified prior art are provided in below.

Defendants believe that no showing of a specific motivation to combine prior art is required to combine the references disclosed herein and in the attached charts. As reflected in the attached exhibits, and in the references themselves, there was a reason to make each combination – each combination of art would have produced no unexpected results, and each combination at most would simply represent a known alternative to one of ordinary skill in the art. *See KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 414-18 (2007) (rejecting the Federal Circuit's "rigid" application of the teaching, suggestion, or motivation-to-combine test, instead espousing an "expansive and flexible" approach). As reflected in the attached exhibits, in the references themselves, and the discussion herein, the asserted claims of the '517 Patent combine familiar elements according to known methods, yielding predictable results. Moreover, one of

ordinary skill in the art would be prompted to modify each of these references based on design incentives or other market forces. This is true for references in the same field of endeavor as well as for references in a different field of endeavor, as one of skill would understand that techniques used to improve devices in a related or analogous field could improve similar devices in the same way. No specific reference explicitly spelling out all aspects of a proposed combination is required to show obviousness; indeed, the Supreme Court has explained that a person of ordinary skill is “a person of creativity, not an automaton,” and “in many cases a person of ordinary skill in the art will be able to fit the teachings of multiple patents together like pieces of a puzzle.” *Id.* at 420-21. As reflected in the attached exhibits, the discussion herein, and in the references themselves, the elements of the asserted claims of the '517 Patent are all disclosed in the prior art, and one of skill would readily fit their teachings together.

Nevertheless, in addition to the information contained elsewhere in these contentions, including the exhibits, Defendants hereby identify below additional motivations and reasons to combine the cited art. To determine whether there is a reason to combine the known elements in the manner claimed by a patent, a court can “look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art.” *Id.* at 418. For example, obviousness can be demonstrated by showing “there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent’s claims.” *Id.* at 420. “[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.* Common sense also teaches that “familiar items may have obvious uses beyond their primary

purposes, and in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle.” *Id.*

Applying these principles, it would have been obvious to a person of ordinary skill in the art at the time the application that issued as the ’517 Patent was filed to combine, modify, or use the teachings of the prior art to make the purported inventions of those patents, including by making each of the combinations identified above. The motivation to combine the teachings of the prior art references disclosed herein can be found in each of (1) the references themselves, (2) the nature of the problem being solved, (3) the express, implied and inherent teachings of the prior art, (4) the knowledge of persons of ordinary skill in the art, (5) the fact that the prior art is generally directed towards the subject matter of each respective asserted patent, and (6) the predictable results obtained in combining the elements of the prior art.

Furthermore, all of the references identified herein with respect to the ’517 Patent address the same problem of recording images and videos with an electronic camera and displaying them on a television display. A person of ordinary skill in the art would have looked to other devices in the same field, such as the prior art devices and other references, because all of these references share many of the same or substantially similar components, such as electric cameras, image sensors, zoom capabilities, image stabilization capabilities, and/or television displays. A person of ordinary skill in the art would therefore have been motivated to combine these components, knowing that these well-known elements would achieve their purposes in combination, without any difficulty and without any unexpected results.

A person having ordinary skill in the art would have been motivated to make the listed combinations because every reference related to solving the same problem of recording images and videos with an electronic camera and displaying them on a television display in the same

technological field of electric cameras. *See Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc.*, 75 F.3d 1568, 1573 (Fed. Cir. 1996) (the motivation to combine “may also come from the nature of a problem to be solved, leading inventors to look to references relating to possible solutions to that problem.”).

The '517 Patent makes general admissions concerning the state of the respective art and claimed concepts that were well-known before the time of the alleged invention. Examples include, among other things, acknowledging known problems and needs in the prior art and the advantages of prior art techniques and elements. *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417-422 (2007).

As its title suggest, the '517 Patent generally relates to electric cameras. *See, e.g.*, '517 Patent at Title (“Electric Camera”). The '517 Patent admits that electric cameras, including those with “solid-state image sensors such as CCDs (charge-coupled devices),” were previously available. *Id.* at 1:29-32 (“Electric cameras using solid-state image sensors such as CCDs (charge-coupled devices) include a so-called video camera or camcorder for taking moving images and a so-called digital still camera for taking still images.”).

The '517 Patent further admits that “[i]n recent years, video cameras with a still image taking function and digital still cameras with a moving image taking function have become available.” '517 Patent at 1:32-35. Moreover, “[i]n a digital still camera designed for taking still images, there has been a trend in recent years toward an increasing number of pixels used on the moving video image sensing device in order to obtain higher resolution static image signals.” *Id.* at 2:34-38.

According to the '517 Patent, video cameras were conventionally designed to output signals conforming to television standards such as PAL and NTSC, “which has an effective scanning line number of about 240 lines”:

In a video camera to photograph moving images, it is generally assumed that the video is viewed on a display such as television monitor and thus the camera is designed to produce output signals conforming to a television system such as NTSC and PAL. Therefore, the effective number of vertically arranged pixels or picture elements on the image sensing device used in such a camera is determined to enable television signals to be generated. The NTSC system, for example, performs interlaced scanning on two fields, each of which has an effective scanning line number of about 240 lines (the number of scanning lines actually displayed on the monitor which is equal to the number of scanning lines in the vertical blanking period subtracted from the total number of scanning lines in each field). To realize this, the image sensing device has about 480 pixel rows as the standard effective number of vertically arranged pixels. That is, the signals of two vertically adjoining pixels in each field are mixed together inside or outside the image sensing device to generate about 240 scanning lines, and the combinations of pixels to be cyclically mixed together are changed from one field to another to achieve the interlaced scanning.

Id. at 1:36-56. *See also, e.g., id.* at 2:18-25 (“An example of such a conventional camera has been proposed in JP-A-11-187306. In the camera disclosed in this publication, signals from all the effective pixels are read out taking two or more times the field period of the television system, stored in a memory means such as a field memory, and then subjected to interpolation processing for transformation into signals conforming to the field cycle and horizontal scan cycle of television.”); *see also* JP-A-11-187306. Given the conventional image sensor’s large number of pixels and the conventional display’s relatively smaller number of pixels, it was conventional and obvious to perform “sensing light with a light receiving surface having an array of vertically and horizontally arranged pixels including N vertically arranged pixels, where N is an integer greater than or equal to three times an integer of M which is a number of effective scanning lines of a display screen of a television system” as recited in claim 8 of the '517 Patent.

The '517 Patent also identifies other components that were conventional *See, e.g., '517 Patent at 1:57-2:7* (“Some image sensing devices to take moving images according to the NTSC system have an area of pixels for image stabilization added to the area of effective pixel area, thus bringing the effective number of vertically arranged pixels to about 480 or more. ... When such a camera is used to photograph a still image, it is relatively easy to generate a static image signal conforming to, for example, JPEG (Joint Photographic Expert Group) from the signals coming from the same pixel area that is used to take a moving image.”); 2:18-25 (“An example of such a conventional camera has been proposed in JP-A-11-187306. In the camera disclosed in this publication, signals from all the effective pixels are read out taking two or more times the field period of the television system, stored in a memory means such as a field memory, and then subjected to interpolation processing for transformation into signals conforming to the field cycle and horizontal scan cycle of television.”); 2:53-55 (“JP-A-9-270959 discloses an apparatus which mixes together or culls the pixel signals inside the image sensing device to reduce the number of signals to be read and therefore the read cycle.”); 12:34-36 (“ordinary so-called digital zoom which generates, effective scanning lines of signals by interpolating a small number of output lines”); 12:55-56 (“digital zoom performs the ordinary interpolation processing”). *See also, e.g. JP-A-11-187306; JP-A-9-270959.*

The prior art has also long-disclosed elements of the asserted claims that were well known to those of ordinary skill in the art before the time of the alleged invention. These well-known elements include many instances within the asserted scope of the claims as found in the '517 Patent and in Maxell's Infringement Contentions. Some examples of these prior art teachings are described below. Additional examples and/or details of these teachings may be found in Defendants' claim charts.

- Electric cameras were known at least as early as 1977 as evidenced by U.S. Pat. No. 4,131,919 assigned to Kodak. U.S. Pat. No. 4,131,919 (“Kodak”) (filed May 20, 1977, issued Dec. 26, 1978, prior art under 35 U.S.C. §§ 102(a), (b) and (e)). Kodak discloses that “[r]ecently, considerable effort has been given to the development of solid-state elements for imaging purposes. Such elements offer an advantage over photographic film in that, theoretically, they can be reused any number of times for imaging.” *Id.* at 1:17-21. Kodak also discloses that such solid-state elements include charge coupled devices. *See, e.g., id.* at 1:44-46 (“An arrangement for read-out of information from a charge transfer device is disclosed in IEEE Transactions On Electron Devices, Vol. ED-20, No. 6, June 1973, in an article entitled 'Interlacing In Charge Coupled Imaging Devices', by Carlo H. Sequin.”); 3:55-62 (“Sensor 19 constitutes a charge transfer device and, in particular, is a charge coupled device (CCD), which produces a pattern of charge carriers that is an analog representation of an optical image focused onto an imaging surface of the CCD. As is known in the art, a CCD may include a silicon substrate covered by oxidized silicon, with an array of closely spaced conducting pads on the silicon dioxide surface”);
- The ability to output signals from a digital camera to a display and television was also well-known. *See also, e.g.,* PCT Pub. WO 98/57491 (“Anderson,” claims priority to U.S. Pat. App. 08/872,588 filed on June 10, 1997, and published in English on December 17, 1998, prior art under 35 U.S.C. § 102(a), (b) and (e)) at 8:24-27 (“The resolution of the LCD screen 402 may vary; however, the LCD screen resolution is usually much less than the resolution of the image data that’s produced by imaging device 114 when the user captures an image at full resolution. Typically, the resolution of LCD is % the video

resolution of a full resolution image.”); 19:22-24 (“In this case, the camera can be programmed to monitor whether it is attached to a higher resolution device, such as a PC monitor or television, via the camera’s video jack.”);

- The concept of image stabilization was also well-known at least as early as 1990. *See, e.g.,* Toshiro Kinugasa, *Electronic Image Stabilizer for Video Camera Use* (IEEE Transactions on Consumer Electronics, Vol. 36, No. 3, August 1990, prior art under 35 U.S.C. § 102(a) and (b));
- The concept of subsampling was known at least as early as 1993. *See also, e.g.,* R. A. F. Belfor et al., “Subsampling of Digital Image Sequences using Motion Information,” in *MOTION ANALYSIS AND IMAGE SEQUENCE PROCESSING* 189 (M. Ibrahim Sezan and Reginald L. Lagendijk eds., 1993) (published 1993, prior art under 35 U.S.C. § 102(a) and (b)); U.S. Pat. No. 5,493,335, at 11:13-17, 11:36-45 (filed June 30, 1993, issued February 20, 1996, prior art under 35 U.S.C. § 102(a) and (b)) (citing U.S. Pat. No. 5,018,017 as teaching lower resolution modes using subsampling and compression); U.S. Pat. No. 5,018,017 (filed December 8, 1989, issued May 21, 1991, prior art under 35 U.S.C. § 102(a), (b) and (e)); U.S. Pat No. 6,292,218 (filed July 16, 1997, priority date of December 30, 1994, issued on September 18, 2001, prior art under 35 U.S.C. § 102(a) and (e)).

For example, to the extent that any prior art reference is determined not to disclose “sensing light with a light receiving surface having an array of vertically and horizontally arranged pixels including N vertically arranged pixels, where N is an integer greater than or equal to three times an integer of M which is a number of effective scanning lines of a display screen of a television system,” this limitation would have been obvious to a person of ordinary

skill in the art in view of the reference itself, the AAPA and/or other references. According to the “Background of the Invention” in the ’517 Patent, the NTSC television system has about 240 effective scanning lines in each field that are interlaced together. ’517 Patent, at 1:43-49 (“The NTSC system, for example, performs interlaced scanning on two fields, each of which has an effective scanning line number of about 240 lines (the number of scanning lines actually displayed on the monitor which is equal to the number of scanning lines in the vertical blanking period subtracted from the total number of scanning lines in each field).”). Further, each of the image sensors disclosed in the prior art inherently includes vertically and horizontally arranged pixels. It would have been obvious to use an image sensor with at least three times the effective scanning lines of a display of a television system (e.g., 720 or more lines as compared to NTSC) as disclosed in, for example, each of Ochi at 3:30-35 (“Memory 53 accumulates sensed image data. Memory 53 can have a capacity of approximately 18 MB, for example, where color image data of three main colors (red, green and blue) for 2,000x3,000 pixels is stored, with each of the pixels having eight bits per color.”); Hayashi at 2:61-3:1 (“In the illustrative embodiment, the imaging device 12 is implemented as a CCD image sensor having about 1,300,000 pixels for a high-resolution camera or about 400,000 pixels for a standard resolution camera. It is to be noted that 1300,000 pixels and 400,000 pixels respectively correspond to 1,280 (horizontal)x1024 (vertical) dots and 640 (horizontal)x512 (vertical) dots in terms of the number of display dots.”); Egawa at 609 (“an interline transfer CCD image pickup element with 982 vertical pixels and 1300 horizontal pixels”). It would have been obvious to include this functionality since, as admitted in the ’517 Patent, “there has been a trend in recent years toward an increasing number of pixels used on the moving video image sensing device in order to obtain higher resolution

static image signals,” ’517 Patent at 2:34-38, and higher resolution signals can offer improved image quality.

For example, to the extent that any prior art reference is determined not to disclose “driving the image sensing device to vertically mix or cull signals accumulated in individual pixels, at intervals of K pixels, in order to produce a plurality of lines of output signals which correspond to the M effective scanning lines, where K is an integer less than or equal to a whole number portion of a quotient of N divided by M,” this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, AAPA and/or other references. The ’517 Patent admits that “[i]n a video camera to photograph moving images, it is generally assumed that the video is viewed on a display such as television monitor and thus the camera is designed to produce output signals conforming to a television system such as NTSC and PAL. Therefore, the effective number of vertically arranged pixels or picture elements on the image sensing device used in such a camera is determined to enable television signals to be generated.” ’517 Patent at 1:36-43; *see also, e.g., id.* at 2:15-17 (“it is necessary to generate signals conforming to the television system”); 2:38-40 (“When taking a moving image or monitoring the video, it is necessary to generate signals that conform to the television system.”); 2:18-25 (“An example of such a conventional camera has been proposed in JP-A-11-187306. In the camera disclosed in this publication, signals from all the effective pixels are read out taking two or more times the field period of the television system, stored in a memory means such as a field memory, and then subjected to interpolation processing for transformation into signals conforming to the field cycle and horizontal scan cycle of television.”). To produce a plurality of lines of output signals which correspond to the M effective scanning lines, at least the following references disclose driving the image sensing device to vertically mix or cull signals

accumulated in individual pixels, at intervals of K pixels, where K is an integer less than or equal to a whole number portion of a quotient of N (the vertically arranged pixels of the image sensing device, discussed above) divided by M (the number of effective scanning lines of the display screen of the television, discussed above):

- Egawa at 608 (“in a first mode, a charge transfer period of the second charge transfer element is made to be an integer factor of a period of accumulated charge detection in the output device such that the charges adjacently accumulated by the second charge transfer element are added together by the output device and then detected”), 608 (“in a second mode, the charge transfer period of the second charge transfer element is an integer factor, which is smaller than in the first mode, of the period of accumulated charge detection in the output device.”);
- Ochi at 5:61-6:5 (“There are two thinning methods: (1) simple thinning, and (2) thinning while calculation is performed. In the first method, if the resolution is to be reduced to half of that during image sensing, for example, every other pixel is removed or every other pair of adjacent pixels is removed. Where the resolution is to be reduced to one third of that during image sensing, two out of every three pixels are removed. In the second method, if the resolution is to be reduced to half of that during image sensing, the average value of two adjacent pixels is calculated and the calculation result is deemed to be one pixel value.”); 8:23-26 (“However, where a line sensor that can change the number of pixels to be read is used, the resolution may be adjusted when image signals S1 are sent from the line sensor.”);
- Lyon at 4:1-32 (“The full frame viewscreen display mode allows the entire high-resolution N rows by M columns pixel sensor array to be displayed onto a viewscreen of

lower resolution. The full frame viewscreen mode, by counting in steps of K_n for row addressability and counting in steps of K_m for column addressability, selectively skips rows and columns of the active pixel sensor array when selecting pixel sensors to display onto the viewscreen. This selective skipping allows the higher-resolution pixel array to be mapped onto the lower-resolution viewscreen. Selective pixel sensor skipping will cause some image detail to be lost, but the user will be able to see a lower-resolution version of the entire image. In the full frame viewscreen mode, K_n and K_m may be determined by finding the smallest whole values of K_n and K_m that will allow the full pixel sensor array to be mapped onto the viewscreen. To maintain the aspect ratio of the image, it is typically preferable to use equal values of K ($K_n=K_m$) in the two dimensions, even though the invention and the embodiment disclosed herein will support different values of K_n and K_m . For example, if the viewscreen can only display V_r rows and V_c columns of pixels: $K=\text{ceiling}(\max(N/V_r, M/V_c))$ —where the ceiling function means the least integer that is equal to or greater than its argument. Additional medium zoom modes of display are also available. Different values of K_n and K_m may be selected, allowing for different resolution display modes. Several K_n and K_m storage registers are provided in the scanning circuitry, allowing different values of K_n and K_m to be selected by the user. This makes multiple resolution levels available. For the additional medium zoom modes of display, the user may arbitrarily select the starting location.”);

- Hayashi at 16:10-13 (“a processing circuit for thinning said high-resolution image data output from said imaging device to thereby produce low-resolution image data which are of the resolution of the standard television signal format”);

- Parulski 343 at 5:32-59 (“An NTSC resolution image is obtained in a motion mode of operation by selectively activating the charge clearing structures 46. ... The next field of the NTSC signal is “staggered” vertically by shifting the sampling by two lines in the vertical direction.”);
- Kijima at 5:42-48 (“In the high speed mode shown in FIG. 4, pixel signals for one line are read at intervals of three lines in the vertical direction. The number of lines is not limited to the foregoing number of lines. For example one line at intervals of five lines in the vertical direction may be read. As an alternative to this, pixel signals for one or three lines may be read at intervals of seven lines.”);
- Misawa at 5:12-15 (“FIG. 3(a) shows an example of a uniform reading, in which the signals are read from 1/4 of the photoelectric elements 12 at regular intervals in the vertical direction. One horizontal line is read, and then three horizontal lines are skipped.”); 7:53-65 (“A description will now be given of a method for driving the image sensor in the digital camera. ... In the normal image-capturing mode, ... if there are 960 pixels in a vertical direction, 240 pixels are read (in 1/4).”).

It would have been obvious to include this limitation to provide zoom functionalities without reading out every row in the image sensor, which may require less processing power and may produce output signals more quickly. *See, e.g.*, Egawa at 611 (“As described above, using the driving method according to the present invention, a high-functionality digital zoom can be realized in a solid-state image pickup element. Accordingly, with the present invention, high-sensitivity mode and high-resolution mode using pixel addition can be selected depending on the subject. Enlargement can be done with a zoom lens for even greater enlargement with the digital zoom. And unlike zooms that rely on image processing, this one can be executed in real time, the

resolution is maintained even when zooming, and zooming can be done without using a processing device such as a memory.”).

For example, to the extent that any prior art reference is determined not to disclose “receiving a request to continuously change a magnification factor to magnify an output image,” this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, AAPA and/or other references. The ’517 Patent admits that zoom preexisted and was “ordinary.” *See, e.g.*, ’517 Patent at 12:34-36 (“ordinary so-called digital zoom which generates, effective scanning lines of signals by interpolating a small number of output lines.”), 12:55-56 (“digital zoom performs the ordinary interpolation processing.”). Additionally, for example and without limitation, this limitation is disclosed in each of the following references:

- Kato at 2:35-42 (“The object of the present invention is to provide an image pickup device adapted for use in a television camera, a video camera or the like arbitrarily adjusting the image angle variation and the zooming speed in the zooming operation by combining optical zooming and electronic zooming, and also achieving the zooming operation with any arbitrary speed, without various optical limitations in the changing magnification speed of the optical zooming.”); 10:65-67 (“control means for controlling continuous overlapping execution of optical zooming by said zoom lens and the electronic zooming by said process means”);
- Okino at 2:43-47 (“It is the second object of the present invention to provide a photographing apparatus, which switch functions between electronic and optical zoom functions, so that a stable zooming operation can be continuously performed when both the electronic and optical zoom functions are used.”);

- Matsuzaka at Abstract (“An image pickup apparatus simultaneously performs electronic zooming and optical zooming to determine a view angle for an image.”), Fig. 3;
- Egawa at 611 (“As described above, using the driving method according to the present invention, a high-functionality digital zoom can be realized in a solid-state image pickup element. Accordingly, with the present invention, high-sensitivity mode and high-resolution mode using pixel addition can be selected depending on the subject. Enlargement can be done with a zoom lens for even greater enlargement with the digital zoom. And unlike zooms that rely on image processing, this one can be executed in real time, the resolution is maintained even when zooming, and zooming can be done without using a processing device such as a memory.”);
- Ochi at 3:13-18 (“Operation panel 51 has various operation switches for image sensing (image input) using electronic camera 4 and a display panel. In other words, while it is not shown in the form of a drawing, operation panel 51 has a power switch, a mode switch, a release button (release switch), a zoom switch and a switch for the selection of external device EE connected to output interface 60.”);
- Lyon at 4:51-57 (“It is envisioned that a user would first choose to view the image from the pixel sensor array in the low-resolution full frame viewscreen display mode to get an overall view of the image. The user could then select a smaller area of the image for viewing in one of the medium zoom modes, eventually proceeding to high-resolution partial image display mode for viewing the smallest area of interest within the image.”);
- Hayashi at 12:17-22 (“In addition, in a system wherein the camera is operated at a position remote from a monitor, the operator can effectively remote-control the angle of

the camera relative to a subject, as well as other factors particular to the camera, while watching the real-time display of a distortion-free image on the monitor.”);

- Nakayama at Abstract (“An image pickup apparatus includes ... an operation switch for instructing for on/off control of electronic zoom operation.”), 1:22-32 (“Recent years' development of the digital signal processing technique has made it easier to increase or decrease the number of horizontal lines of an image through interpolation processing. Accordingly, with the use of this technique, there have been increasing video equipment incorporating the so-called electronic zoom function, by which an image is electronically enlarged, or a standard conversion function by which a conversion is made from the NTSC system to the PAL system or some other standard. This is the reason that image-quality enhancement in the electronic zoom function or the standard conversion function is of growing importance.”).

It would have been obvious to include this limitation in order to allow the user to have more control over the degree of zoom and the resulting image.

For example, to the extent that any prior art reference is determined not to disclose “generating image signals of the output image by using the output signals of the image sensing device,” this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, AAPA and/or other references. The '517 Patent admits that “[i]n a video camera to photograph moving images, it is generally assumed that the video is viewed on a display such as television monitor and thus the camera is designed to produce output signals conforming to a television system such as NTSC and PAL.” *Id.* at 1:36-43. *See also, e.g.,* '517 Patent at 2:18-25 (“An example of such a conventional camera has been proposed in JP-A-11-187306. In the camera disclosed in this publication, signals from all the effective pixels are read

out taking two or more times the field period of the television system, stored in a memory means such as a field memory, and then subjected to interpolation processing for transformation into signals conforming to the field cycle and horizontal scan cycle of television.”). Additionally, for example and without limitation, at least the following references disclose generating image signals of the output image by using the output signals of the image sensing device:

- Ochi at 3:61-4:7 (describing displaying the output image on the display screen / television);
- Lyon at 1:10-13 (“More particularly, the present invention relates to image scanning techniques for displaying a high resolution image sensor pixel array onto a viewscreen of lower resolution.”);
- Hayashi at 16:10-13 (“a processing circuit for thinning said high-resolution image data output from said imaging device to thereby produce low-resolution image data which are of the resolution of the standard television signal format”);
- Kijima at 3:7-16 (“An interface portion 36 is a terminal which enables data communication with an external unit, such as a monitor, a personal computer or the like. Thus, output of image data supplied from the image processing portion 26 or the DRAM 28 to the external unit is enabled or, in some cases, image data to be captured from the external unit. A liquid crystal display portion 34 displays an image on the basis of the image data supplied from the image processing portion 26 or the decompressed image data supplied from the DRAM 28.”);
- Nakayama at 9:6-10 (“Numeral 13 denotes a vertical aperture correction circuit for performing vertical aperture correction for output image signals of the electronic zoom

circuit 5, the vertical aperture correction circuit 13 serving to feed a signal to an output terminal 19.”).

- Kato at 4:12-18 (“The image signal read by said controller 9 from the memory 5 is expanded and interpolated in a vertical direction or in a horizontal direction, or contracted by a vertical interpolation circuit 10 and a horizontal interpolation circuit 11, then converted into a standard television signal of a predetermined format and is input to a VTR signal processing circuit 12.”);
- Endsley at 3:17-23 (“The camera data is processed by the host computer 12 to create final images that can be displayed on a computer monitor 16, e.g., transmitted along with audio as part of a “computer videoconference”, etc. The camera 10 can produce both high quality (i.e., high resolution) still images and high frame rate, reduced resolution motion images.”);
- Todaka at 6:19-23 (“FIG. 8(a) and FIG. 8(b), which help to explain the operation of FIG. 7, show monitor screens at the times when an ordinary picture is output and a twofold zoom-up picture is output, respectively.”);
- Misawa at 7:2-7 (“The analog signals generated by the D/A converter 38 can be outputted as video output signals through an output means 41 such as a video output terminal. The digital image data read from the memory 36 may be outputted as digital output data through an output means such as a digital output terminal.”);
- Okino at 5:22-26 (“In this manner, the central portion on the photo-sensitive surface of the image pickup element is displayed on a TV monitor in an enlarged scale, thereby obtaining the same change in magnification as in an optical zoom function.”);

- Matsuzaka at 4:58-5:2 (“A charge-coupled device (CCD) 107 converts an image of the subject to an electrical image signal. An analog-to-digital conversion of the image signal converted by the CCD 107 is performed by an analog-to-digital (A/D) converter 114, and the obtained signal is converted by the camera process circuit 106 to a video signal such as a standardized NTSC signal or the like. At this time, if necessary, the image is enlarged by an electronic processing system 108. The digital-to-analog (D/A) conversion of the video signal is performed by a D/A converter 115, and the converted signal is displayed with an EVF or on a monitor, or is recorded on a recording medium like a magnetic tape.”);
- Egawa at 607 (“a device which is connected to an end of the second charge transfer element, accumulates the charges which have been transferred, detects them, and outputs them as an image signal”).

It would have been obvious to include this limitation in order to permit a user to view the digital photographs that he or she has taken.

For example, to the extent that any prior art reference is determined not to disclose “displaying the output image on the display screen,” this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, AAPA and/or other references. The '517 Patent admits that “[i]n a video camera to photograph moving images, it is generally assumed that the video is viewed on a display such as television monitor and thus the camera is designed to produce output signals conforming to a television system such as NTSC and PAL.” *Id.* at 1:36-43. *See also, e.g.,* '517 Patent at 2:18-25 (“An example of such a conventional camera has been proposed in JP-A-11-187306. In the camera disclosed in this publication, signals from all the effective pixels are read out taking two or more times the field period of the

television system, stored in a memory means such as a field memory, and then subjected to interpolation processing for transformation into signals conforming to the field cycle and horizontal scan cycle of television.”). Additionally, for example and without limitation, at least the following references disclose displaying the output image on the display screen:

- Ochi at 3:61-4:7 (describing displaying the output image on the display screen / television);
- Lyon at 1:10-13 (“More particularly, the present invention relates to image scanning techniques for displaying a high resolution image sensor pixel array onto a viewscreen of lower resolution.”);
- Hayashi at 16:10-13 (“a processing circuit for thinning said high-resolution image data output from said imaging device to thereby produce low-resolution image data which are of the resolution of the standard television signal format”);
- Kijima at 3:7-16 (“An interface portion 36 is a terminal which enables data communication with an external unit, such as a monitor, a personal computer or the like. Thus, output of image data supplied from the image processing portion 26 or the DRAM 28 to the external unit is enabled or, in some cases, image data to be captured from the external unit. A liquid crystal display portion 34 displays an image on the basis of the image data supplied from the image processing portion 26 or the decompressed image data supplied from the DRAM 28.”);
- Nakayama at 9:6-10 (“Numeral 13 denotes a vertical aperture correction circuit for performing vertical aperture correction for output image signals of the electronic zoom circuit 5, the vertical aperture correction circuit 13 serving to feed a signal to an output terminal 19.”);

- Kato at 4:12-18 (“The image signal read by said controller 9 from the memory 5 is expanded and interpolated in a vertical direction or in a horizontal direction, or contracted by a vertical interpolation circuit 10 and a horizontal interpolation circuit 11, then converted into a standard television signal of a predetermined format and is input to a VTR signal processing circuit 12.”);
- Endsley at 3:17-23 (“The camera data is processed by the host computer 12 to create final images that can be displayed on a computer monitor 16, e.g., transmitted along with audio as part of a “computer videoconference”, etc. The camera 10 can produce both high quality (i.e., high resolution) still images and high frame rate, reduced resolution motion images.”);
- Todaka at 6:19-23 (“FIG. 8(a) and FIG. 8(b), which help to explain the operation of FIG. 7, show monitor screens at the times when an ordinary picture is output and a twofold zoom-up picture is output, respectively.”);
- Misawa at 7:2-7 (“The analog signals generated by the D/A converter 38 can be outputted as video output signals through an output means 41 such as a video output terminal. The digital image data read from the memory 36 may be outputted as digital output data through an output means such as a digital output terminal.”);
- Okino at 5:22-26 (“In this manner, the central portion on the photo-sensitive surface of the image pickup element is displayed on a TV monitor in an enlarged scale, thereby obtaining the same change in magnification as in an optical zoom function.”);
- Matsuzaka at 4:58-5:2 (“A charge-coupled device (CCD) 107 converts an image of the subject to an electrical image signal. An analog-to-digital conversion of the image signal converted by the CCD 107 is performed by an analog-to-digital (A/D) converter 114, and

the obtained signal is converted by the camera process circuit 106 to a video signal such as a standardized NTSC signal or the like. At this time, if necessary, the image is enlarged by an electronic processing system 108. The digital-to-analog (D/A) conversion of the video signal is performed by a D/A converter 115, and the converted signal is displayed with an EVF or on a monitor, or is recorded on a recording medium like a magnetic tape.”);

- Egawa at 607 (“a device which is connected to an end of the second charge transfer element, accumulates the charges which have been transferred, detects them, and outputs them as an image signal”).

It would have been obvious to include this limitation in order to permit a user to view the digital photographs that he or she has taken.

For example, to the extent that any prior art reference is determined not to disclose “the image sensing device is driven in: a first state in which intervals of K1 pixels in a first area on the image sensing device are vertically mixed or culled, and a second state in which intervals of K2 pixels in a second area on the image sensing device are vertically mixed or culled, where a value of K2 is smaller than a value of K1, wherein the first state switches to the second state in response to receiving the request to continuously change the magnification factor, and wherein M, K1, and K2 are positive integers greater than 1,” this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, AAPA and/or other references. The ’517 Patent admits that “[i]n a video camera to photograph moving images, it is generally assumed that the video is viewed on a display such as television monitor and thus the camera is designed to produce output signals conforming to a television system such as NTSC and PAL.” *Id.* at 1:36-43. To produce output signals that conform to the television system at a first

magnification factor and first area, and given that it would have been obvious to “driv[e] the image sensing device to vertically mix or cull signals accumulated in individual pixels, at intervals of K pixels, in order to produce a plurality of lines of output signals which correspond to the M effective scanning lines” as discussed above, it would have been obvious to include “a first state in which intervals of K_1 pixels in a first area on the image sensing device are vertically mixed or culled.” To produce output signals that conform to the television system at a second magnification factor and second area, and given that it would have been obvious to “driv[e] the image sensing device to vertically mix or cull signals accumulated in individual pixels, at intervals of K pixels, in order to produce a plurality of lines of output signals which correspond to the M effective scanning lines” as discussed above, it would have been obvious to include “a second state in which intervals of K_2 pixels in a second area on the image sensing device are vertically mixed or culled.” It also inherently and obviously follows that M , K_1 , and K_2 are positive integers greater than 1. As additional examples, without limitation, each of the following references disclose using different values of k for different magnification factors and this limitation:

- Egawa at 608 (“in a first mode, a charge transfer period of the second charge transfer element is made to be an integer factor of a period of accumulated charge detection in the output device such that the charges adjacently accumulated by the second charge transfer element are added together by the output device and then detected”), 608 (“in a second mode, the charge transfer period of the second charge transfer element is an integer factor, which is smaller than in the first mode, of the period of accumulated charge detection in the output device.”);

- Lyon at 4:1-32 (“The full frame viewscreen display mode allows the entire high-resolution N rows by M columns pixel sensor array to be displayed onto a viewscreen of lower resolution. The full frame viewscreen mode, by counting in steps of K_n for row addressability and counting in steps of K_m for column addressability, selectively skips rows and columns of the active pixel sensor array when selecting pixel sensors to display onto the viewscreen. This selective skipping allows the higher-resolution pixel array to be mapped onto the lower-resolution viewscreen. Selective pixel sensor skipping will cause some image detail to be lost, but the user will be able to see a lower-resolution version of the entire image. In the full frame viewscreen mode, K_n and K_m may be determined by finding the smallest whole values of K_n and K_m that will allow the full pixel sensor array to be mapped onto the viewscreen. To maintain the aspect ratio of the image, it is typically preferable to use equal values of K ($K_n=K_m$) in the two dimensions, even though the invention and the embodiment disclosed herein will support different values of K_n and K_m . For example, if the viewscreen can only display V_r rows and V_c columns of pixels: $K=\text{ceiling}(\max(N/V_r, M/V_c))$ —where the ceiling function means the least integer that is equal to or greater than its argument. Additional medium zoom modes of display are also available. Different values of K_n and K_m may be selected, allowing for different resolution display modes. Several K_n and K_m storage registers are provided in the scanning circuitry, allowing different values of K_n and K_m to be selected by the user. This makes multiple resolution levels available. For the additional medium zoom modes of display, the user may arbitrarily select the starting location.”);
- Misawa at 7:53-8:3 (“A description will now be given of a method for driving the image sensor in the digital camera, which is constructed in the above-mentioned manner. First, a

description will be given of the normal image-capturing mode. In the normal image-capturing mode, the digital camera 20 automatically controls the focus and the exposure (a combination of the shutter speed and the diaphragm value) according to the image-capturing conditions. In the normal image-capturing mode, the solid-state imaging device 28 is driven by reading the signals from 1/4 or 1/8 of the photoelectric elements 12 as described with reference to FIGS. 3 or 4. In this case, although the obtained image is rough (if there are 960 pixels in a vertical direction, 240 pixels are read (in 1/4) or 120 pixels are read (in 1/8)), a refresh rate, which is the number of times the images of one screen are refreshed in unit of time, can be high, and a picture composition can be confirmed satisfactorily to the extent that the image is displayed on the small LCD 40 attached to the digital camera 20.”);

- Kijima 5:42-48 (“In the high speed mode shown in FIG. 4, pixel signals for one line are read at intervals of three lines in the vertical direction. The number of lines is not limited to the foregoing number of lines. For example one line at intervals of five lines in the vertical direction may be read. As an alternative to this, pixel signals for one or three lines may be read at intervals of seven lines.”);
- Toshiro Kinugasa, Electronic Image Stabilizer for Video Camera Use (“the scanning area is selectable by one-pixel pitch in the horizontal direction. In the vertical direction, as the pixels are scanned by two-pixel pitch, the image movement by scanning area selection becomes stiff if the scan method mentioned above was used. The scanning area becomes selectable by one pixel pitch even in the vertical direction by using the following selection, and the image movement becomes smooth.... This scanning area selection is based on the interlaced scanning of the imager and the display... [In Figure 9, the] signals

from the scanning area are memorized in the buffer memory, and the signals from the displaying area are read out. The displaying area is selectable by controlling the memory read/write address.”).

It would have been obvious to include this limitation to generate images of multiple zoom levels that are mixed or culled at different intervals.

For example, to the extent that any prior art reference is determined not to disclose “the magnification factor of a first image which is displayed corresponding to the first state is smaller than the magnification factor of a second image which is displayed corresponding to the second state,” this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, AAPA and/or other references. As discussed above, it would have been obvious to include “receiving a request to continuously change a magnification factor to magnify an output image” and “the image sensing device is driven in: a first state in which intervals of K1 pixels in a first area on the image sensing device are vertically mixed or culled, and a second state in which intervals of K2 pixels in a second area on the image sensing device are vertically mixed or culled, where a value of K2 is smaller than a value of K1, wherein the first state switches to the second state in response to receiving the request to continuously change the magnification factor, and wherein M, K1, and K2 are positive integers greater than 1.” It inherently and obviously follows that “the magnification factor of a first image which is displayed corresponding to the first state is smaller than the magnification factor of a second image which is displayed corresponding to the second state.”

For example, to the extent that any prior art reference is determined not to disclose “the electric camera has a moving video mode and a static image mode, and the first state is switched to the second state in the moving video mode,” this limitation would have been obvious to a

person of ordinary skill in the art in view of the reference itself, AAPA and/or other references. The '517 Patent admits that “[e]lectric cameras using solid-state image sensors such as CCDs (charge-coupled devices) include a so-called video camera or camcorder for taking moving images and a so-called digital still camera for taking still images. In recent years, video cameras with a still image taking function and digital still cameras with a moving image taking function have become available.” ’517 Patent at 1:29-35. Additionally, for example and without limitation, each of the following references discloses an electric camera with a moving video mode and a static image mode:

- Ochi at 7:9-18 (“Where video output is to be performed, (YES in step #85), the frame rate for the output image is calculated (step #86). The frame rate dictates the number of frames that is required per unit time where external device EE handles moving images. Control parameters for video output buffer memory are then calculated (step #87). These control parameters are parameters that control the addresses of the buffer memory when a frame image is repeatedly output from the buffer memory, in the case where external device EE requires a still image.”);
- Lyon at 6:5-12 (“The flexible address generator circuit 14 and control circuit 16 may be used to read full high-resolution image data out of the pixel sensor array 12 and store that data in storage system 18. The pixel sensor array 12 is a high-resolution active pixel sensor array suitable for use in digital still or video cameras. Such active pixel sensor arrays are generally displayed onto a viewscreen so that the user can view and adjust the image.”);
- Endsley at 2:24-29 (“For example, the camera may be configured for capturing still and motion images with a "shutter" button that is used for different purposes in the different

configurations. In one case, pressing the shutter button changes the camera from the motion mode to immediately capture a still image.”);

- Misawa at 6:63-7:1 (“The LCD 40 displays a still image captured in response to the input of an image-recording start signal, which is generated by pressing a shutter release button (not shown), and an image before the input of the image-recording start signal (a moving image or an intermittent image).”);
- Okino at 7:51-57 (“An encoder circuit 13 converts the analog signal output from the operation circuit 12 into a standard video signal such as an NTSC signal. The standard video signal is output onto a signal line 14. An electronic view finder (EVF) 15 is used for determining a composition, and confirming an object to be photographed.”);
- Matsuzaka at 1:9-11 (“The present invention relates to image pickup apparatuses such as video cameras, electronic still cameras, and digital still cameras.”).

The cameras switch from the first state to the second state in the moving video mode when the magnification factor is changed, as discussed above. It would have been obvious to include this limitation to give users the ability to both take still images and record videos on the same device.

For example, to the extent that any prior art reference is determined not to disclose “the image signals are generated to have a same number of lines as the effective scanning lines of the display screen,” this limitation would have been obvious to a person of ordinary skill in the art in view of the reference itself, AAPA and/or other references. The ’517 Patent admits that “[w]hen taking a moving image or monitoring the video, it is necessary to generate signals that conform to the television system. The number of pixels on such an image sensing device, however, does not necessarily match the number of scanning lines of the television system and therefore some form of conversion means is required.” ’517 Patent at 2:38-43. *See also* the discussion and

citations with respect to the “generating image signals of the output image by using the output signals of the image sensing device,” “displaying the output image on the display screen” and “driving the image sensing device to vertically mix or cull signals accumulated in individual pixels, at intervals of K pixels, in order to produce a plurality of lines of output signals which correspond to the M effective scanning lines” limitations.

One of ordinary skill also would have been motivated to combine any of the above references together to yield predictable results, as combining the references would simply entail combining known elements by known methods in the art. In addition, any such combination would involve the simple substitution of one known, equivalent element for another. Such combinations would have been obvious to try because there were only a finite number of predictable solutions. Any such combination would yield predictable results using known techniques and would involve the simple substitution of one known, equivalent element for another. Defendants provide exemplary motivations to combine prior art references below.

c. Exemplary Combinations

Because it would be unduly burdensome to create detailed claim charts for each and every invalidating combination, Defendants have provided illustrative examples of such invalidating combinations below. The following listing provides several exemplary combinations with respect to the '517 Patent Asserted Claims:

- Misawa in combination with Okino
- Misawa in combination with Okino and AAPA
- Matsuzaka in combination with Egawa
- Matsuzaka in combination with Egawa and AAPA
- Lyon in combination with AAPA

- Lyon in combination with Kato
- Lyon in combination with AAPA, Kato
- Lyon in combination with Okino
- Lyon in combination with AAPA, Okino
- Lyon in combination with Egawa
- Lyon in combination with AAPA, Egawa
- Lyon in combination with AAPA, Kato, Egawa
- Lyon in combination with AAPA, Okino, Egawa
- Lyon in combination with Misawa
- Lyon in combination with AAPA, Misawa
- Lyon in combination with AAPA, Kato, Misawa
- Lyon in combination with AAPA, Okino, Misawa
- Lyon in combination with Endsley
- Lyon in combination with AAPA, Endsley
- Lyon in combination with Kato, Endsley
- Lyon in combination with AAPA, Kato, Endsley
- Lyon in combination with Okino, Endsley
- Lyon in combination with AAPA, Okino, Endsley
- Lyon in combination with Egawa, Endsley
- Lyon in combination with AAPA, Egawa, Endsley
- Lyon in combination with AAPA, Kato, Egawa, Endsley
- Lyon in combination with AAPA, Okino, Egawa, Endsley
- Lyon in combination with Misawa, Endsley

- Lyon in combination with AAPA, Misawa, Endsley
- Lyon in combination with AAPA, Kato, Misawa, Endsley
- Lyon in combination with AAPA, Okino, Misawa, Endsley
- Ochi in combination with AAPA
- Ochi in combination with Kato
- Ochi in combination with AAPA, Kato
- Ochi in combination with Okino
- Ochi in combination with AAPA, Okino
- Ochi in combination with Egawa
- Ochi in combination with AAPA, Egawa
- Ochi in combination with AAPA, Kato, Egawa
- Ochi in combination with AAPA, Okino, Egawa
- Ochi in combination with Misawa
- Ochi in combination with AAPA, Misawa
- Ochi in combination with AAPA, Kato, Misawa
- Ochi in combination with AAPA, Okino, Misawa
- Ochi in combination with Endsley
- Ochi in combination with AAPA, Endsley
- Ochi in combination with Kato, Endsley
- Ochi in combination with AAPA, Kato, Endsley
- Ochi in combination with Okino, Endsley
- Ochi in combination with AAPA, Okino, Endsley
- Ochi in combination with Egawa, Endsley

- Ochi in combination with AAPA, Egawa, Endsley
- Ochi in combination with AAPA, Kato, Egawa, Endsley
- Ochi in combination with AAPA, Okino, Egawa, Endsley
- Ochi in combination with Misawa, Endsley
- Ochi in combination with AAPA, Misawa, Endsley
- Ochi in combination with AAPA, Kato, Misawa, Endsley
- Ochi in combination with AAPA, Okino, Misawa, Endsley
- Kijima in combination with AAPA
- Kijima in combination with Kato
- Kijima in combination with AAPA, Kato
- Kijima in combination with Okino
- Kijima in combination with AAPA, Okino
- Kijima in combination with Egawa
- Kijima in combination with AAPA, Egawa
- Kijima in combination with AAPA, Kato, Egawa
- Kijima in combination with AAPA, Okino, Egawa
- Kijima in combination with Misawa
- Kijima in combination with AAPA, Misawa
- Kijima in combination with AAPA, Kato, Misawa
- Kijima in combination with AAPA, Okino, Misawa
- Kijima in combination with Endsley
- Kijima in combination with AAPA, Endsley
- Kijima in combination with Kato, Endsley

- Kijima in combination with AAPA, Kato, Endsley
- Kijima in combination with Okino, Endsley
- Kijima in combination with AAPA, Okino, Endsley
- Kijima in combination with Egawa, Endsley
- Kijima in combination with AAPA, Egawa, Endsley
- Kijima in combination with AAPA, Kato, Egawa, Endsley
- Kijima in combination with AAPA, Okino, Egawa, Endsley
- Kijima in combination with Misawa, Endsley
- Kijima in combination with AAPA, Misawa, Endsley
- Kijima in combination with AAPA, Kato, Misawa, Endsley
- Kijima in combination with AAPA, Okino, Misawa, Endsley
- AAPA in combination with any one, and any combination of, Misawa, Okino, Kato, Lyon, Ochi, Endsley and Egawa
- Misawa in combination with any one, and any combination of, AAPA, Okino, Kato, Lyon, Ochi, Endsley and Egawa
- Okino in combination with any one, and any combination of, Misawa, AAPA, Kato, Lyon, Ochi, Endsley and Egawa
- Kato in combination with any one, and any combination of, Misawa, Okino, AAPA, Lyon, Ochi, Endsley and Egawa
- Lyon in combination with any one, and any combination of, Misawa, Okino, Kato, AAPA, Ochi, Endsley and Egawa
- Ochi in combination with any one, and any combination of, Misawa, Okino, Kato, Lyon, AAPA, Endsley and Egawa

- Endsley in combination with any one, and any combination of, Misawa, Okino, Kato, Lyon, Ochi, AAPA and Egawa
- Egawa in combination with any one, and any combination of, Misawa, Okino, Kato, Lyon, Ochi, Endsley and AAPA

Defendants' identification of exemplary combinations is without limitation to Defendants identifying other invalidating combinations as appropriate. Defendants also contend that the asserted claims of the '517 Patent would have been obvious in view of the primary prior art references identified in subsection (i) above. Each of these primary references teaches all of the limitations of the '517 Patent's asserted claims. To the extent any claim limitations are found to be missing from the primary references, in addition to the exemplary references designated for combination with the primary references, it would have been obvious to one of ordinary skill to add the missing limitation based on the corresponding disclosure of that limitation in the accompanying '517 Patent charts.

C. Claim Charts

Defendants attached claim charts as Exhibit J to Defendants' Invalidity Contentions, and identify where, in each alleged item of prior art, each element of each '517 Patent Asserted Claims are found either expressly or inherently. In these claim charts, Defendants have attempted to identify the most relevant portions of the references. The references may, however, contain additional support for claim limitations. Persons of ordinary skill in the art generally read a prior art reference as a whole and in the context of other publications and literature. Defendants may rely upon uncited portions of the references, other documents, and expert testimony to provide context or to aid in understanding the disclosures of the references. Where Defendants cite to a particular figure in a reference, the citation should be understood to

encompass the caption and any corresponding description of the figure in the specification. Conversely, where Defendants cite to particular text referring to a figure, the citation should be understood to include the corresponding figure as well.

Exhibit	Charted Reference	Bates Number
J1	Todaka	MAX-DEFS-PA-0007995 - MAX-DEFS-PA-0008010
J2	Ishizuka	MAX-DEFS-PA-0008064 - MAX-DEFS-PA-0008085
J3	Parulski 343	MAX-DEFS-PA-0008105 - MAX-DEFS-PA-0008120
J4	Nakayama	MAX-DEFS-PA-0008136 - MAX-DEFS-PA-0008181
J5	Hwang	MAX-DEFS-PA-0008182 - MAX-DEFS-PA-0008192
J6	Kato	MAX-DEFS-PA-0008193 - MAX-DEFS-PA-0008208
J7	Hayashi	MAX-DEFS-PA-0008209 - MAX-DEFS-PA-0008223
J8	Hieda	MAX-DEFS-PA-0008254 - MAX-DEFS-PA-0008287
J9	Okino	MAX-DEFS-PA-0008288 - MAX-DEFS-PA-0008307
J10	Ochi	MAX-DEFS-PA-0008308 - MAX-DEFS-PA-0008322
J11	Endsley	MAX-DEFS-PA-0008323 - MAX-DEFS-PA-0008333
J12	Lyon	MAX-DEFS-PA-0008369 - MAX-DEFS-PA-0008386
J13	Kijima	MAX-DEFS-PA-0008408 - MAX-DEFS-PA-0008429
J14	Misawa	MAX-DEFS-PA-0008446 - MAX-DEFS-PA-0008462
J15	Matsuzaka	MAX-DEFS-PA-0008463 - MAX-DEFS-PA-0008479
J16	Hattori	MAX-DEFS-PA-0008480 - MAX-DEFS-PA-0008508
J17	Egawa	MAX-DEFS-PA-0006903 - MAX-DEFS-PA-0006925
J18	MP-EG1A	
J19	Sony DSC-F55	

Exhibit	Charted Reference	Bates Number
J20	AAPA	

D. Invalidity of the Claims Under 35 U.S.C. § 112

Defendants further assert that the '517 Patent is invalid under 35 U.S.C. § 112. The following are the grounds upon which Defendants contend the asserted claims of the '517 Patent are invalid for failure to meet the requirements of 35 U.S.C. §§ 112, ¶ 1 and/or 112, ¶ 2, based on Defendants' investigation to date and currently-available information. For each claim identified as invalid, any dependent claims of those invalid claims are also invalid under 35 U.S.C. §§ 112, ¶ 1 and/or 112, ¶ 2.

Invalidity under § 112 may depend upon the Court's claim construction as well as Plaintiff's infringement contentions. Thus, Defendants have identified only those issues under § 112 of which they are currently aware. Defendants reserve the right to supplement and amend these contentions based on further discovery and investigation including, in particular, the deposition of any of the named inventors.

i. Enablement and Written Description

35 U.S.C. § 112, ¶ 1 requires a patent specification to describe an invention sufficiently to convey to a person of skill in the art that the patentee had possession of the claimed invention at the time of the application. That statute further requires a patent specification to describe the manner and process of making and using the invention so as to enable a person of skill in the art to make and use the full scope of the invention without undue experimentation. Defendants state that the following claims are invalid for failure to provide an adequate written description and enabling disclosure pursuant to 35 U.S.C. § 112, ¶ 1.

Claim ²³	Claim Limitations
8	<p>“receiving a request to continuously change a magnification factor to magnify an output image”</p> <p>The asserted claims of the ’517 Patent are invalid for failure to satisfy the requirements of 35 U.S.C. § 112, ¶ 1 because the specification as filed does not contain an adequate written description and/or enabling disclosure of the term “receiving a request to continuously change a magnification factor to magnify an output image.” The ’517 Patent specification does not properly describe or otherwise inform one of ordinary skill what constitutes “receiving a request to continuously change a magnification factor to magnify an output image.” Accordingly, the specification fails to reasonably convey to one of ordinary skill that the inventor had possession of the subject matter of the invention, and it fails to enable a person of ordinary skill to make and use the invention as claimed.</p>
8	<p>“the first state switches to the second state in response to receiving the request to continuously change the magnification factor”</p> <p>The asserted claims of the ’517 Patent are invalid for failure to satisfy the requirements of 35 U.S.C. § 112, ¶ 1 because the specification as filed does not contain an adequate written description and/or enabling disclosure of the term “the first state switches to the second state in response to receiving the request to continuously change the magnification factor.” The ’517 Patent specification does not properly describe or otherwise inform one of ordinary skill what constitutes “receiving a request to continuously change a magnification factor to magnify an output image.” Accordingly, the specification fails to reasonably convey to one of ordinary skill that the inventor had possession of the subject matter of the invention, and it fails to enable a person of ordinary skill to make and use the invention as claimed.</p>

Defendants do not concede that Plaintiff is entitled to the earliest claimed priority date for any ’517 Patent Asserted Claim and reserve the right to argue that a later priority date should apply based on information discovered during discovery and/or the Court’s claim constructions. Based on the information currently available to Defendants, the claims of the ’517 Patent may not be entitled to a priority date earlier than January 11, 2000.

²³ This includes any asserted claims that depend from the identified claims.

ii. Indefiniteness

The following claims are invalid 35 U.S.C. § 112, ¶ 2 because they fail to inform those skilled in the art about the scope of the invention with reasonable certainty when read in light of the specification and file history.

Claim ²⁴	Claim Limitations
8	<p>“a number of effective scanning lines of a display screen of a television system”</p> <p>The specification does not describe or otherwise inform one of ordinary skill about what constitutes “a number of effective scanning lines of a display screen of a television system.” The ’517 Patent does not describe or explain the meaning of this term and it does not have an understood meaning to persons of ordinary skill in the art. As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112, ¶ 2. Therefore, the asserted claims, when read in light of the specification and the prosecution history, “fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” <i>Nautilus, Inc. v. Biosig Instruments, Inc.</i>, 134 S. Ct. 2120, 2124 (2014).</p>
8	<p>“driving the image sensing device to vertically mix or cull signals accumulated in individual pixels”</p> <p>The specification does not describe or otherwise inform one of ordinary skill about what constitutes “driving the image sensing device to vertically mix or cull signals accumulated in individual pixels.” The ’517 Patent does not describe or explain the meaning of this term and it does not have an understood meaning to persons of ordinary skill in the art. As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112, ¶ 2. Therefore, the asserted claims, when read in light of the specification and the prosecution history, “fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” <i>Nautilus, Inc. v. Biosig Instruments, Inc.</i>, 134 S. Ct. 2120, 2124 (2014).</p>
8	<p>“continuously change a magnification factor to magnify an output image”</p>

²⁴ This includes any asserted claims that depend from the identified claims.

Claim ²⁴	Claim Limitations
	<p>The specification does not describe or otherwise inform one of ordinary skill about what constitutes “continuously change a magnification factor to magnify an output image.” The ’517 Patent does not describe or explain the meaning of this term and it does not have an understood meaning to persons of ordinary skill in the art. As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112, ¶ 2. Therefore, the asserted claims, when read in light of the specification and the prosecution history, “fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” <i>Nautilus, Inc. v. Biosig Instruments, Inc.</i>, 134 S. Ct. 2120, 2124 (2014).</p>
11	<p>“a same number of lines as the effective scanning lines of the display screen”</p> <p>The specification does not describe or otherwise inform one of ordinary skill about what constitutes “a same number of lines as the effective scanning lines of the display screen.” The ’517 Patent does not describe or explain the meaning of this term and it does not have an understood meaning to persons of ordinary skill in the art. As such, one of ordinary skill would not understand the metes and bounds of the identified claims, rendering them indefinite under 35 U.S.C. § 112, ¶ 2. Therefore, the asserted claims, when read in light of the specification and the prosecution history, “fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” <i>Nautilus, Inc. v. Biosig Instruments, Inc.</i>, 134 S. Ct. 2120, 2124 (2014).</p>

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Respectfully submitted,

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that a true and correct copy of the above and foregoing document has been served on November 15, 2018 to at least one counsel of record for each party via electronic mail.

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