

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

MAXELL, LTD.,

Plaintiff,

vs.

APPLE INC.,

Defendant.

Civil Action No. 5:19-cv-00036-RWS

JURY TRIAL DEMANDED

DEFENDANT APPLE INC.'S INVALIDITY CONTENTIONS
PURSUANT TO PATENT LOCAL RULES 3-3 AND 3-4

I. INTRODUCTION

Pursuant to the Court's Docket Control Order entered July 9, 2019 (D.I. 46) and Patent Local Rules 3-3 and 3-4, Defendant Apple Inc. ("Apple") provides these preliminary invalidity contentions ("Invalidity Contentions") to Maxell, Ltd. ("Maxell") for the asserted claims of U.S. Patent Nos. 6,748,317 ("the '317 patent"); 6,580,999 ("the '999 patent"); 8,339,493 ("the '493 patent"); 7,116,438 ("the '438 patent"); 6,408,193 ("the '193 patent"); 10,084,991 ("the '991 patent"); 6,928,306 ("the '306 patent"); 6,329,794 ("the '794 patent"); 10,212,586 ("the '586 patent"); 6,430,498 ("the '498 patent") (collectively, the "Asserted Patents").

Based on Maxell's Disclosure of Asserted Claims and Infringement Contentions ("Infringement Contentions") served on June 12, 2019, Maxell is asserting claims 1-3, 5-15, 17, and 18 of the '317 patent; claims 1-6 of the '999 patent; claims 1, 3-6, 10, and 11 of the '493 patent; claims 1-7 of the '438 patent; claims 1, 6, and 7 of the '193 patent; claims 1-5 and 8-12 of the '991 patent; claims 2, 5, 6, and 12-15 of the '306 patent; claims 1-3 and 5-14 of the '794 patent; claims 1-2, 6-7, 9-10, 13-14, and 16-18 of the '586 patent; and claims 1, 3-5, 7-11, and 13 of the '498 patent (collectively, "the Asserted Claims"). Apple addresses the invalidity of the Asserted Claims in these Invalidity Contentions, and concludes with a description of its document production and identification of additional reservations and explanations.

These Invalidity Contentions are based on the claim constructions or interpretations likely to be advanced by Maxell (as reflected in Maxell's Complaint and Infringement Contentions), and are not necessarily based on what Apple contends are the proper constructions. By applying Maxell's apparent constructions and/or interpretations, Apple does not concede in any way that those constructions are correct, and instead expressly reserves the right to oppose those constructions. Apple expressly reserves the right to amend these Invalidity Contentions after the Court has construed all relevant claim terms under P.R. 3-6. Furthermore, some of Apple's

contentions herein are based on infringement allegations made by Maxell. Apple does not concede in any way that those infringement allegations are correct, but rather asserts the fundamental principle that whatever infringes a claim if later in time must anticipate if earlier in time. These Invalidity Contentions use the acronym “PHOSITA” to refer to a person having ordinary skill in the art to which the alleged invention pertains around the respective priority dates alleged by Maxell.

Apple hereby incorporates by reference all Invalidity Contentions against any of the Asserted Patents or their related patents from prior cases, including, but not limited to, the Invalidity Contentions served by the defendants in *Hitachi Maxell, Ltd. v. Huawei Device USA, Inc.*, Case No. 5:16-CV-00178-RWS (E.D. Tex.); *Hitachi Maxell, Ltd. v. ZTE Corp.*, Case No. 5:16-CV-00179-RWS (E.D. Tex.); *Maxell, Ltd. v. ASUSTEK Computer Inc.*, Case No. 2:17-cv-7528-R-MRW (C.D. Cal.); and *Maxell, Ltd. v. ASUSTEK Computer Inc.*, Case No. 3:18-cv-01788-VD (N.D. Cal.). Maxell is already in possession of these Invalidity Contentions and associated claim charts. Apple further incorporates by reference all prior art cited during prosecution of the Asserted Patents, and all *inter partes* review (IPR) petitions filed against the Asserted Patents and the prior art cited in these IPR petitions, including, but not limited to, IPR2018-00235, IPR2019-00071, IPR2018-00236, IPR2018-00904, IPR2018-00241, IPR2018-00237, and IPR2019-00640.

II. '317, '999, AND '498 PATENTS

The '498 patent was filed with the United States Patent and Trademark Office on July 11, 2000. The '999 patent was filed with the United States Patent and Trademark Office on June 18, 2002 as a continuation of Application No. 09/613,634 (filed on July 11, 2000; issued as the '498 patent). The '317 patent was filed with the United States Patent and Trademark Office on May 5, 2000 as a continuation of Application No. 10/173,423 (filed on June 18, 2001; issued as the '999 patent), which in turn was filed as a continuation of Application No. 09/613,634 (filed on July 11,

2000). In its Infringement Contentions, Maxell claims a priority date of July 12, 1999 for the '317, '999, and '498 patents. Apple reserves the right to serve additional or modified invalidity contentions should Maxell be permitted to amend or modify its claimed priority date.

A. Prior Art

Apple identifies the following prior art now known to Apple to anticipate and/or render obvious one or more claims of the '317, '999, and '498 patents under at least 35 U.S.C. §§ 102(a), (b), (e), (g), and/or 103.

1. Prior Art Patents and Publications

The following patents and publications are prior art for the Asserted Claims of the '317, '999, and '498 patents under at least 35 U.S.C. §§ 102(a), (b), (e), and/or (g). Invalidity claim charts for these references are attached as Exhibits A1 through A21.

1. Japanese Patent Publication No. JPH08-285613 to Akiyama et al. ("Akiyama"), published on November 1, 1996.
2. Japanese Patent Publication No. JPH10-197277 to Maruyama et al. ("Maruyama"), published on July 31, 1998.
3. U.S. Patent No. 5,781,150 to Norris ("Norris"), filed on October 13, 1995 and issued on July 14, 1998.
4. Cyberguide: A Mobile Context-Aware Tour Guide by Abowd et al. ("Abowd"), published on September 29, 1998.
5. PCT Application US98/17237 (WO 99/09374) to Knockeart, et al. ("Knockeart"), published on February 25, 1999.
6. U.S. Patent No. 6,067,502 to Hayashida et al. ("Hayashida"), filed on August 21, 1997 and issued on May 23, 2000.
7. U.S. Patent No. 5,815,411 to Ellenby, et al. ("Ellenby"), filed on September 10, 1993 and issued on September 29, 1998.
8. Japanese Patent Publication No. JPH09-311625 to Ikeda ("Ikeda"), published on December 2, 1997.
9. Japanese Patent No. JPH05-264711 ("Yokoyama" or the "'711 Patent"), published on October 12, 1993.

10. U.S. Patent No. 5,589,835 to Gildea et al. (“Gildea”), filed on December 20, 1994 and issued on December 31, 1996.
11. U.S. Patent No. 6,525,768 to Obradovich (“Obradovich”), filed on October 21, 1999 based on Provisional Application No. 60/105,050 (“the ’050 Application”) filed on October 21, 1998, and issued on February 25, 2003.¹
12. U.S. Patent No. 5,592,382 to Colley (“Colley”), issued on January 7, 1997.
13. USRE42,927 to Want et al. (“Want”) reissued from U.S. Patent No. 6,122,520, filed on February 13, 1998 and issued on September 19, 2000.

Apple’s investigation into prior art patent and publication references remains ongoing and Apple reserves the right to identify and rely on additional patent or publication references that describe or are otherwise related to the prior art systems identified below based on information obtained through discovery.

2. Prior Art Systems

The following systems are anticipatory prior art for the Asserted Claims of the ’317, ’999, and ’498 patents under at least 35 U.S.C. §§ 102(a), (b) and/or (g):

1. Products, components, systems, and methods invented, designed, developed, reduced to practice, and/or in public use or on sale related to the Seiko Epson Locatio (“Locatio”), as exemplified in claim charts in Exhibits A13-A15. As part of these Invalidity Contentions, Apple has produced documents relating to Locatio. Based on information available to Apple, Apple believes that this system was conceived and/or reduced to practice by engineers at Seiko Epson at least before

¹ The ’050 Application is substantively identical to Obradovich, including the same written description of the invention and figures illustrating the same. Where, as here, “the specification of the provisional” satisfies 35 U.S.C. § 112 ¶ 1 for the “invention claimed in the non-provisional application,” the non-provisional patent qualifies as prior art under 35 U.S.C. § 102(e) as of the date of the filing date of its provisional application. *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015); *see also New Railhead Mfg., L.L.C. v. Vermeer Mfg. Co.*, 298 F.3d 1290, 1294 (Fed. Cir. 2002) (“[F]or the non-provisional utility application to be afforded the priority date of the provisional application, ... the written description of the provisional must adequately support the claims of the non-provisional application.”). Additionally, because the disclosures are substantively identical, all disclosures from Obradovich cited in these Invalidity Contentions are also contained in the ’050 Application. Accordingly, Obradovich qualifies as prior art to the ’317, ’498, and ’999 patents under at least 35 U.S.C. § 102(e) as of the ’050 Application’s filing date of October 21, 1998.

May 17, 1999, without being abandoned, suppressed, or concealed, and was in public use or on sale in or before June 1999.

2. Products, components, systems, and methods invented, designed, developed, reduced to practice, and/or in public use or on sale related to the CyberGuide system (“CyberGuide”), as exemplified in claim charts in Exhibits A10-A12. As part of these Invalidity Contentions, Apple has produced documents relating to CyberGuide. Based on information available to Apple, Apple believes that this system was conceived and/or reduced to practice in researchers at the Georgia Institute of Technology (including, for example, Gregory Abowd, Christopher Atkeson, Jason Hong, Rob Kooper, Jason Bennett, Derek Adams, Matt Howser, and others) at least before September 23, 1996, without being abandoned, suppressed, or concealed, and was in public use or on sale in the U.S. in or before September 1996.
3. Products, components, systems, and methods invented, designed, developed, reduced to practice, and/or in public use or on sale related to the Garmin NavTalk (“NavTalk”), as exemplified in claim charts in Exhibits A16-A18. As part of these Invalidity Contentions, Apple has produced documents relating to NavTalk. Based on information available to Apple, Apple believes that this system was conceived and/or reduced to practice by engineers at Garmin at least before January 1999, without being abandoned, suppressed, or concealed, and was in public use or on sale in the U.S. on or before January 31, 1999.

Apple’s investigation into prior art systems remains ongoing and Apple reserves the right to identify and rely on systems that represent different versions or are otherwise related variations of the systems identified above. Apple further reserves the right to revise, amend, update, and/or supplement the information provided in these Invalidity Contention (including the attached claim charts) based on additional information and evidence obtained through discovery. Apple also reserves the right to rely on any system, product, or public knowledge or use that embodies or otherwise incorporates any of the prior art patents and publications listed above. In addition to the prior art products, components, systems, and methods described above, Apple also reserves the right to rely on documents and publications relating to the prior art listed above as prior art publications.

B. Anticipation

Apple contends that each prior art reference and system (collectively, “references”)

anticipates one or more claims of the '317, '999, and '498 patents under at least 35 U.S.C. §§ 102(a), (b), (e), and/or (g), either expressly or inherently as understood by a PHOSITA:

1. Japanese Patent Publication No. JPH08-285613 to Akiyama et al. ("Akiyama"), published on November 1, 1996. *See* Exs. A1-A3.
2. Japanese Patent Publication No. JPH10-197277 to Maruyama et al. ("Maruyama"), published on July 31, 1998. *See* Exs. A4-A6.
3. U.S. Patent No. 5,781,150 to Norris ("Norris"), filed on October 13, 1995 and issued on July 14, 1998. *See* Exs. A7-A9.
4. The Cyberguide system, made publicly available at least as early as September 1996 and described in at least (1) Abowd, Gregory D., A Mobile Context-Aware Tour Guide, Baltzer Journals (September 23, 1996) ("Abowd"); (2) Long, Sue, Cyberguide: Prototyping Context-Aware Mobile Applications, Future Computing Environments, <https://www.cc.gatech.edu/fce/cyberguide/pubs/chi96-cyberguide.html> ("Cyberguide Prototyping"); and (3) CyBARguide Project Notes by Mike Pinkerton, Gregory Abowd, and Sue Long, <https://www.cc.gatech.edu/fce/cyberguide/cybarguide/CyBARguide.html> ("CyBARguide") (collectively, "Cyberguide"). *See* Exs. A10-A12.
5. Products, components, systems, and methods invented, designed, developed, reduced to practice, and/or in public use or on sale related to the Seiko Epson Locatio ("Locatio"). *See* Exs. A13-A15.
6. Products, components, systems, and methods invented, designed, developed, reduced to practice, and/or in public use or on sale related to the Garmin NavTalk ("NavTalk"). *See* Exs. A16-A18.
7. U.S. Patent No. 6,067,502 to Hayashida ("Hayashida"), filed on August 21, 1997 and issued on May 23, 2000. *See* Exs. A19-A21.

C. Obviousness

Apple contends that each prior art reference disclosed in the preceding Anticipation section may be combined with (1) information known to persons skilled in the art at the time of the alleged invention, (2) the applicant-admitted prior art in the specification, (3) any of the other anticipatory prior art references, and/or (4) any of the additional prior art references identified in this section to render these claims invalid as obvious.

1. Exemplary Combinations

Below is a listing of exemplary combinations of references that render obvious the Asserted Claims of the '317, '999, and '498 patents. For at least the reasons described below, it would have been obvious to a PHOSITA to combine any of a number of prior art references, including any combination of those identified below, to meet the limitations of the Asserted Claims of the '317, '999, and '498 patents. These exemplary combinations are alternatives to Apple's anticipation and single-reference obviousness contentions, and, thus, they should not be interpreted as indicating that any of the individual references included in the exemplary combinations are not by themselves invalidating prior art under §§ 102 and/or 103. Apple reserves the right to identify additional combinations during expert discovery and later stages of the case.

- Akiyama (or Akiyama in view of Gildea/the Cyberguide/Want) in view of Hayashida/Ellenby/Ikeda/the '711 Patent/the NavTalk. *See* Ex. A1.
- Akiyama (or Akiyama in view of Gildea/the Cyberguide/Want) in view of Norris/the Cyberguide/Maruyama/Knockeart in further view of Hayashida/Ellenby/Ikeda/the '711 Patent/the NavTalk. *See* Ex. A1.
- Akiyama (or Akiyama in view of Gildea/the Cyberguide/Want) in view of Hayashida/Ellenby/Ikeda/the '711 Patent/the NavTalk in further view of Hayashida/Akiyama. *See* Ex. A1.
- Akiyama (or Akiyama in view of Gildea/the Cyberguide/Want) in view of Norris/the Cyberguide/Maruyama/Knockeart in view of Hayashida/Ellenby/Ikeda/the '711 Patent/the NavTalk in further view of Hayashida/Akiyama. *See* Ex. A1.
- Akiyama (or Akiyama in view of Gildea/the Cyberguide/Want). *See* Ex. A1.
- Akiyama (or Akiyama in view of Gildea/the Cyberguide/Want) in view of Norris/the Cyberguide/Maruyama/Knockeart. *See* Ex. A1.
- Akiyama (or Akiyama in view of Gildea/the Cyberguide/Want) in view of Maruyama/the Locatio/the Cyberguide/Knockeart. *See* Ex. A1.
- Akiyama (or Akiyama in view of Gildea/the Cyberguide/Want) in view of Norris/the Cyberguide/Maruyama/Knockeart in further view of view of Maruyama/the Locatio/the Cyberguide/Knockeart. *See* Ex. A1.

- Akiyama (or Akiyama in view of Gildea/the Cyberguide/Want) in view of Maruyama/the Locatio/the Cyberguide/Knockeart in further view of Knockeart. *See* Ex. A1.
- Akiyama (or Akiyama in view of Gildea/the Cyberguide/Want) in view of Norris/the Cyberguide/Maruyama/Knockeart in view of Maruyama/the Locatio/the Cyberguide/Knockeart in further view of Knockeart. *See* Ex. A1.
- Akiyama (or Akiyama in view of Gildea/the Cyberguide/Want) in view of Hayashida/Ellenby/Ikeda/the '711 Patent/the NavTalk in further view of Norris/the NavTalk/the Locatio/Maruyama/the Cyberguide/Obradovich. *See* Ex. A1.
- Akiyama (or Akiyama in view of Gildea/the Cyberguide/Want) in view of Norris/the Cyberguide/Maruyama/Knockeart in view of Hayashida/Ellenby/Ikeda/the '711 Patent/the NavTalk in further view of Norris/the NavTalk/the Locatio/Maruyama/the Cyberguide/Obradovich. *See* Ex. A1.
- Akiyama (or Akiyama in view of Gildea/the Cyberguide/Want) in view of Hayashida/Ellenby/Ikeda/the '711 Patent/the NavTalk in view of Norris/the NavTalk/the Locatio/Maruyama/the Cyberguide/Obradovich in further view of the '711 Patent. *See* Ex. A1.
- Akiyama (or Akiyama in view of Gildea/the Cyberguide/Want) in view of Norris/the Cyberguide/Maruyama/Knockeart in view of Hayashida/Ellenby/Ikeda/the '711 Patent/the NavTalk in view of Norris/the NavTalk/the Locatio/Maruyama/the Cyberguide/Obradovich in further view of the '711 Patent. *See* Ex. A1.
- Akiyama (or Akiyama in view of Gildea/the Cyberguide/Want) in view of Hayashida/Ellenby/Ikeda/the '711 Patent/the NavTalk in view of Norris/the NavTalk/the Locatio/Maruyama/the Cyberguide/Obradovich in further view of Hayashida/Akiyama. *See* Ex. A1.
- Akiyama (or Akiyama in view of Gildea/the Cyberguide/Want) in view of Norris/the Cyberguide/Maruyama/Knockeart in view of Hayashida/Ellenby/Ikeda/the '711 Patent/the NavTalk in view of Norris/the NavTalk/the Locatio/Maruyama/the Cyberguide/Obradovich in further view of Hayashida/Akiyama. *See* Ex. A1.
- Akiyama (or Akiyama in view of Gildea/the Cyberguide/Want) in view of Hayashida/Ellenby/Ikeda/the '711 Patent/the NavTalk in further view of Maruyama/the Locatio/the Cyberguide. *See* Ex. A1.
- Akiyama (or Akiyama in view of Gildea/the Cyberguide/Want) in view of Norris/the Cyberguide/Maruyama/Knockeart in view of Hayashida/Ellenby/Ikeda/the '711 Patent/the NavTalk in further view of Maruyama/the Locatio/the Cyberguide. *See* Ex. A1.

- Akiyama (or Akiyama in view of Gildea/the Cyberguide/Want) in view of Hayashida/Ellenby/Ikeda/the '711 Patent/the NavTalk in view of Maruyama/the Locatio/the Cyberguide in further view of the '711 Patent. *See* Ex. A1.
- Akiyama (or Akiyama in view of Gildea/the Cyberguide/Want) in view of Norris/the Cyberguide/Maruyama/Knockeart in view of Hayashida/Ellenby/Ikeda/the '711 Patent/the NavTalk in view of Maruyama/the Locatio/the Cyberguide in further view of the '711 Patent. *See* Ex. A1.
- Akiyama (or Akiyama in view of Gildea/the Cyberguide/Want) in view of Hayashida/Ellenby/Ikeda/the '711 Patent/the NavTalk in view of Norris/the NavTalk/the Locatio/Maruyama/the Cyberguide/Obradovich in further view of Maruyama/the Locatio/the Cyberguide. *See* Ex. A1.
- Akiyama (or Akiyama in view of Gildea/the Cyberguide/Want) in view of Norris/the Cyberguide/Maruyama/Knockeart in view of Hayashida/Ellenby/Ikeda/the '711 Patent/the NavTalk in further view of Norris/the NavTalk/the Locatio/Maruyama/the Cyberguide/Obradovich in further view of Maruyama/the Locatio/the Cyberguide. *See* Ex. A1.
- Akiyama (or Akiyama in view of Gildea/Want/the Cyberguide). *See* Ex. A2.
- Akiyama (or Akiyama in view of Gildea/Want/the Cyberguide) in view of the Cyberguide/Maruyama/Knockeart. *See* Ex. A2.
- Akiyama (or Akiyama in view of Gildea/Want/the Cyberguide) in view of Hayashida/the '711 Patent. *See* Ex. A2.
- Akiyama (or Akiyama in view of Gildea/Want/the Cyberguide) in view of the Cyberguide/Maruyama/Knockeart in further view of Hayashida/the '711 Patent. *See* Ex. A2.
- Akiyama (or Akiyama in view of Gildea/Want/the Cyberguide) in view of Norris/Maruyama/Ikeda/the '711 Patent. *See* Ex. A2.
- Akiyama (or Akiyama in view of Gildea/Want/the Cyberguide) in view of the Cyberguide/Maruyama/Knockeart in further view of Norris/Maruyama/Ikeda/the '711 Patent. *See* Ex. A2.
- Akiyama (or Akiyama in view of Gildea/Want/the Cyberguide) in view of Hayashida/the '711 Patent in further view of Norris/Maruyama/Ikeda/the '711 Patent. *See* Ex. A2.
- Akiyama (or Akiyama in view of Gildea/Want/the Cyberguide) in view of the Cyberguide/Maruyama/Knockeart in view of Hayashida/the '711 Patent in further view of Norris/Maruyama/Ikeda/the '711 Patent. *See* Ex. A2.

- Akiyama (or Akiyama in view of Gildea/Want/the Cyberguide) in view of Maruyama/Norris/the Cyberguide/the Locatio/the NavTalk/Obradovich. *See* Ex. A2.
- Akiyama (or Akiyama in view of Gildea/Want/the Cyberguide) in view of the Cyberguide/Maruyama/Knockeart in further view of Maruyama/Norris/the Cyberguide/the Locatio/the NavTalk/Obradovich. *See* Ex. A2.
- Akiyama (or Akiyama in view of Gildea/Want/the Cyberguide) in view of Maruyama/Norris/the Cyberguide/the Locatio/the NavTalk/Obradovich in further view of Hayashida/the '711 Patent. *See* Ex. A2.
- Akiyama (or Akiyama in view of Gildea/Want/the Cyberguide) in view of the Cyberguide/Maruyama/Knockeart in view of Maruyama/Norris/the Cyberguide/the Locatio/the NavTalk/Obradovich in further view of Hayashida/the '711 Patent. *See* Ex. A2.
- Akiyama (or Akiyama in view of Gildea/Want/the Cyberguide) in view of Maruyama/Norris/the Cyberguide/the Locatio/the NavTalk/Obradovich in further view of Maruyama/Ikeda/the '711 Patent. *See* Ex. A2.
- Akiyama (or Akiyama in view of Gildea/Want/the Cyberguide) in view of the Cyberguide/Maruyama/Knockeart in view of Maruyama/Norris/the Cyberguide/the Locatio/the NavTalk/Obradovich in further view of Maruyama/Ikeda/the '711 Patent. *See* Ex. A2.
- Akiyama (or Akiyama in view of Gildea/Want/the Cyberguide) in view of Maruyama/Norris/the Cyberguide/the Locatio/the NavTalk/Obradovich in view of Hayashida/the '711 Patent in further view of Maruyama/Ikeda/the '711 Patent. *See* Ex. A2.
- Akiyama (or Akiyama in view of Gildea/Want/the Cyberguide) in view of the Cyberguide/Maruyama/Knockeart in view of Maruyama/Norris/the Cyberguide/the Locatio/the NavTalk/Obradovich in view of Hayashida/the '711 Patent in further view of Maruyama/Ikeda/the '711 Patent. *See* Ex. A2.
- Akiyama (or Akiyama in view of Gildea/Want/the Cyberguide) in view of Maruyama/Norris/the Cyberguide/the Locatio/the NavTalk/Obradovich in further view of Norris/Maruyama/Ikeda/the '711 Patent. *See* Ex. A2.
- Akiyama (or Akiyama in view of Gildea/Want/the Cyberguide) in view of the Cyberguide/Maruyama/Knockeart in view of Maruyama/Norris/the Cyberguide/the Locatio/the NavTalk/Obradovich in further view of Norris/Maruyama/Ikeda/the '711 Patent. *See* Ex. A2.

- Akiyama (or Akiyama in view of Gildea/Want/the Cyberguide) in view of Maruyama/Norris/the Cyberguide/the Locatio/the NavTalk/Obradovich in view of Hayashida/the '711 Patent in further view of Norris/Maruyama/Ikeda/the '711 Patent. *See* Ex. A2.
- Akiyama (or Akiyama in view of Gildea/Want/the Cyberguide) in view of the Cyberguide/Maruyama/Knockeart in view of Maruyama/Norris/the Cyberguide/the Locatio/the NavTalk/Obradovich in view of Hayashida/the '711 Patent in further view of Norris/Maruyama/Ikeda/the '711 Patent. *See* Ex. A2.
- Akiyama (or Akiyama in view of the Cyberguide/Gildea/Want) in view of Norris/Maruyama/the Locatio/the Cyberguide/the NavTalk/Obradovich. *See* Ex. A3.
- Akiyama (or Akiyama in view of the Cyberguide/Gildea/Want) in view of Norris/the Cyberguide/Maruyama/Knockeart in further view of Norris/Maruyama/the Locatio/the Cyberguide/the NavTalk/Obradovich. *See* Ex. A3.
- Akiyama (or Akiyama in view of the Cyberguide/Gildea/Want) in view of Norris/Maruyama/the Locatio/the Cyberguide/the NavTalk/Obradovich in further view of Hayashida/Maruyama. *See* Ex. A3.
- Akiyama (or Akiyama in view of the Cyberguide/Gildea/Want) in view of Norris/the Cyberguide/Maruyama/Knockeart in view of Norris/Maruyama/the Locatio/the Cyberguide/the NavTalk/Obradovich in further view of Hayashida/Maruyama. *See* Ex. A3.
- Maruyama (or Maruyama in view of Gildea/Want/the Cyberguide). *See* Exs. A4-A6.
- Maruyama (or Maruyama in view of Gildea/Want/the Cyberguide) in view of Knockeart. *See* Ex. A4.
- Maruyama (or Maruyama in view of Gildea/Want/the Cyberguide) in view of Norris/Colley. *See* Exs. A4-A6.
- Maruyama (or Maruyama in view of Gildea/Want/the Cyberguide) in view of the NavTalk/the Cyberguide/the Locatio/Obradovich. *See* Exs. A4, A6.
- Maruyama (or Maruyama in view of Gildea/Want/the Cyberguide) in view of the NavTalk/the Cyberguide/the Locatio/Obradovich in further view of Norris/Colley. *See* Exs. A4, A6.
- Maruyama (or Maruyama in view of Gildea/Want/the Cyberguide) in view of Colley. *See* Ex. A5.
- Maruyama (or Maruyama in view of Gildea/Want/the Cyberguide) in view of the NavTalk/the Cyberguide/the Locatio/Obradovich. *See* Ex. A5.

- Maruyama (or Maruyama in view of Gildea/Want/the Cyberguide) in view of Norris/Colley in further view of in view of the NavTalk/the Cyberguide/the Locatio/Obradovich. *See* Ex. A5.
- Maruyama (or Maruyama in view of Gildea/Want/the Cyberguide) in view of Colley in further view of in view of the NavTalk/the Cyberguide/the Locatio/Obradovich. *See* Ex. A5.
- Norris (or Norris in view of the Cyberguide/Want). *See* Exs. A7-A9.
- Norris (or Norris in view of the Cyberguide/Want) in view of Maruyama/Colley. *See* Exs. A7-A9.
- Norris (or Norris in view of the Cyberguide/Want) in view of the Locatio/Maruyama. *See* Exs. A7, A9.
- Norris (or Norris in view of the Cyberguide/Want) in view of the Locatio/Maruyama in further view of Maruyama/Colley. *See* Exs. A7, A9.
- Norris (or Norris in view of the Cyberguide/Want) in view of the Locatio/Maruyama in view of Maruyama/Colley in further view of Colley. *See* Ex. A7.
- Norris (or Norris in view of the Cyberguide/Want) in view of Maruyama. *See* Ex. A8.
- Norris (or Norris in view of the Cyberguide/Want) in view of Maruyama/Colley in further view of Maruyama. *See* Ex. A8.
- Norris (or Norris in view of the Cyberguide/Want) in view of Colley. *See* Ex. A8.
- Norris (or Norris in view of the Cyberguide/Want) in view of Maruyama in further view of Colley. *See* Ex. A8.
- The Cyberguide (or the Cyberguide in view of Want). *See* Ex. A10-A12.
- The Cyberguide (or the Cyberguide in view of Want) in view of Maruyama/the Locatio. *See* Ex. A10, A12.
- The Cyberguide (or the Cyberguide in view of Want) in view of Hayashida/Ellenby/Ikeda. *See* Ex. A10.
- The Cyberguide (or the Cyberguide in view of Want) in view of Hayashida/Ellenby/Ikeda in further view of Hayashida/the '711 Patent. *See* Ex. A10.
- The Cyberguide (or the Cyberguide in view of Want) in view of Hayashida/Ellenby/Ikeda in view of Maruyama/the Locatio in further view of Hayashida/Norris/Maruyama. *See* Ex. A10.

- The Cyberguide (or the Cyberguide in view of Want) in view of Hayashida/Ellenby/Ikeda in further view of Hayashida/the '711 Patent/Akiyama. *See* Ex. A10.
- The Cyberguide (or the Cyberguide in view of Want) in view of Hayashida/Ellenby/Ikeda in view of Maruyama/the Locatio. *See* Ex. A10.
- The Cyberguide (or the Cyberguide in view of Want) in view of Hayashida/Ellenby/Ikeda in view of Maruyama/the Locatio in further view of Hayashida/the '711 Patent /Akiyama. *See* Ex. A10.
- The Cyberguide (or the Cyberguide in view of Want) in view of Hayashida/Ellenby/Ikeda in view of Maruyama/the Locatio in further view of Hayashida/the '711 Patent. *See* Ex. A10.
- The Cyberguide (or the Cyberguide in view of Want) in view of Hayashida/Akiyama/the '711 Patent. *See* Ex. A11-A12.
- The Cyberguide (or the Cyberguide in view of Want) in view of Hayashida/Akiyama/the '711 Patent in further view of Norris/Maruyama/Ikeda/the '711 Patent. *See* Ex. A11.
- The Cyberguide (or the Cyberguide in view of Want) in view of Akiyama/Knockeart in further view of Hayashida/Akiyama/the '711 Patent. *See* Ex. A11.
- The Cyberguide (or the Cyberguide in view of Want) in view of Norris/Maruyama/Ikeda/the '711 Patent. *See* Ex. A11.
- The Cyberguide (or the Cyberguide in view of Want) in view of Akiyama/Knockeart. *See* Ex. A11.
- The Cyberguide (or the Cyberguide in view of Want) in view of Maruyama/Ikeda/the '711 Patent. *See* Ex. A11.
- The Cyberguide (or the Cyberguide in view of Want) in view of Akiyama/Knockeart in further view of Maruyama/Ikeda/the '711 Patent. *See* Ex. A11.
- The Cyberguide (or the Cyberguide in view of Want) in view of Hayashida/Akiyama/the '711 Patent in further view of Maruyama/Ikeda/the '711 Patent. *See* Ex. A11.
- The Cyberguide (or the Cyberguide in view of Want) in view of Akiyama/Knockeart in view of Hayashida/Akiyama/the '711 Patent in further view of Maruyama/Ikeda/the '711 Patent. *See* Ex. A11.

- The Cyberguide (or the Cyberguide in view of Want) in view of Akiyama/Knockeart in further view of Norris/Maruyama/Ikeda/the '711 Patent. *See* Ex. A11
- The Cyberguide (or the Cyberguide in view of Want) in view of Akiyama/Knockeart in view of Hayashida/Akiyama/the '711 Patent in further view of Norris/Maruyama/Ikeda/the '711 Patent. *See* Ex. A11.
- The Cyberguide (or the Cyberguide in view of Want) in view of Maruyama/the Locatio in further view of Hayashida/Akiyama/the '711 Patent. *See* Ex. A12.
- The Locatio (or the Locatio in view of Gildea/Want/the Cyberguide) in view of Norris/the Cyberguide/Maruyama/Knockeart in further view of the '711 Patent/the NavTalk/Hayashida. *See* Ex. A13.
- The Locatio (or the Locatio in view of Gildea/Want/the Cyberguide) in view of Norris/the Cyberguide/Maruyama/Knockeart in view of the '711 Patent/the NavTalk/Hayashida. *See* Ex. A13.
- The Locatio (or the Locatio in view of Gildea/Want/the Cyberguide) in view of Norris/the Cyberguide/Maruyama/Knockeart. *See* Ex. A13.
- The Locatio (in view of Gildea/Want/the Cyberguide) in view of Norris/the Cyberguide/Maruyama/Knockeart. *See* Ex. A14.
- The Locatio (in view of Gildea/Want/the Cyberguide) in view of Norris/the Cyberguide/Maruyama/Knockeart in further view of the NavTalk/Hayashida/Akiyama. *See* Ex. A14.
- The Locatio (in view of Gildea/Want/the Cyberguide) in view of Norris/the Cyberguide/Maruyama/Knockeart in further view of the NavTalk/Hayashida. *See* Ex. A14.
- The Locatio (in view of Gildea/Want/the Cyberguide) in view of Norris/the Cyberguide/Maruyama/Knockeart in further view of Hayashida/Akiyama/the '711 Patent. *See* Ex. A14.
- The Locatio (in view of Gildea/Want/the Cyberguide) in view of Norris/the Cyberguide/Maruyama/Knockeart in further view of the Norris/Maruyama/Ikeda. *See* Ex. A14.
- The Locatio (in view of Gildea/Want/the Cyberguide) in view of Norris/the Cyberguide/Maruyama/Knockeart in view of the NavTalk/Hayashida/Akiyama in further view of Norris/Maruyama/Ikeda. *See* Ex. A14.

- The Locatio (in view of Gildea/Want/the Cyberguide) in view of Norris/the Cyberguide/Maruyama/Knockeart in further view of the Cyberguide/Knockeart. *See* Ex. A14.
- The Locatio (in view of Gildea/Want/the Cyberguide) in view of Norris/the Cyberguide/Maruyama/Knockeart in view of the NavTalk/Hayashida/Akiyama in further view of the Cyberguide/Knockeart. *See* Ex. A14.
- The Locatio (in view of Gildea/Want/the Cyberguide) in view of Norris/the Cyberguide/Maruyama/Knockeart in further view of Norris/Maruyama/Ikeda. *See* Ex. A14.
- The Locatio (in view of Gildea/Want/the Cyberguide) in view of Norris/the Cyberguide/Maruyama/Knockeart in view of the NavTalk/Hayashida in further view of Norris/Maruyama/Ikeda. *See* Ex. A14.
- The Locatio (in view of Gildea/Want/the Cyberguide) in view of Norris/the Cyberguide/Maruyama/Knockeart in view of the NavTalk/Hayashida in further view of Cyberguide/Knockeart. *See* Ex. A14.
- The Locatio (in view of Gildea/Want/the Cyberguide) in view of Norris/the Cyberguide/Maruyama/Knockeart in further view of the Cyberguide/Knockeart. *See* Ex. A14.
- The Locatio (in view of Gildea/Want/the Cyberguide) in view of Norris/the Cyberguide/Maruyama/Knockeart in view of the Cyberguide/Knockeart in further view of Hayashida/Akiyama/the '711 Patent. *See* Ex. A14.
- The Locatio (in view of Gildea/Want/the Cyberguide) in view of Norris/the Cyberguide/Maruyama/Knockeart in further view of the Cyberguide/Maruyama/Ikeda. *See* Ex. A14.
- The Locatio (in view of Gildea/Want/the Cyberguide) in view of Norris/the Cyberguide/Maruyama/Knockeart in view of Hayashida/Akiyama/the '711 Patent in further view of the Cyberguide/Maruyama/Ikeda. *See* Ex. A14.
- The Locatio (in view of Gildea/Want/the Cyberguide) in view of Norris/the Cyberguide/Maruyama/Knockeart in view of the Cyberguide/Knockeart in further view of the Cyberguide/Maruyama/Ikeda. *See* Ex. A14.
- The Locatio (in view of Gildea/Want/the Cyberguide) in view of Norris/the Cyberguide/Maruyama/Knockeart in view of the Cyberguide/Knockeart in view of Hayashida/Akiyama/the '711 Patent in further view of the Cyberguide/Maruyama/Ikeda. *See* Ex. A14.

- The Locatio (in view of Gildea/Want/the Cyberguide) in view of Norris/the Cyberguide/Maruyama/Knockeart in view of Hayashida/Akiyama/the '711 Patent in further view of the Norris/Maruyama/Ikeda. *See* Ex. A14.
- The Locatio (in view of Gildea/Want/the Cyberguide) in view of Norris/the Cyberguide/Maruyama/Knockeart in view of the Cyberguide/Knockeart in further view of Norris/Maruyama/Ikeda. *See* Ex. A14.
- The Locatio (in view of Gildea/Want/the Cyberguide) in view of Norris/the Cyberguide/Maruyama/Knockeart in view of the Cyberguide/Knockeart in view of Hayashida/Akiyama/the '711 Patent in further view of Norris/Maruyama/Ikeda. *See* Ex. A14.
- The Locatio (or the Locatio in view of Gildea/Want/the Cyberguide). *See* Ex. A15.
- The Locatio (or the Locatio in view of Gildea/Want/the Cyberguide) in view of Norris/Maruyama/Knockeart/the Cyberguide. *See* Ex. A15.
- The Locatio (or the Locatio in view of Gildea/Want/the Cyberguide) in view of Hayashida/the '711 Patent. *See* Ex. A15.
- The Locatio (or the Locatio in view of Gildea/Want/the Cyberguide) in view of Norris/Maruyama/Knockeart/the Cyberguide in further view of Hayashida/the '711 Patent. *See* Ex. A15.
- The Locatio (or the Locatio in view of Gildea/Want/the Cyberguide) in view of the NavTalk/the '711 Patent. *See* Ex. A15.
- The Locatio (or the Locatio in view of Gildea/Want/the Cyberguide) in view of Norris/Maruyama/Knockeart/the Cyberguide in further view of the NavTalk/the '711 Patent. *See* Ex. A15.
- The Locatio (or the Locatio in view of Gildea/Want/the Cyberguide) in view of the NavTalk. *See* Ex. A15.
- The Locatio (or the Locatio in view of Gildea/Want/the Cyberguide) in view of Norris/Maruyama/Knockeart/the Cyberguide in further view of the NavTalk. *See* Ex. A15.
- The NavTalk (or the NavTalk in view of Gildea/Want/the Cyberguide) in view of Norris/the Cyberguide/Maruyama/Knockeart. *See* Ex. A16.
- The NavTalk (or the NavTalk in view of Gildea/Want/the Cyberguide) in view of Norris/the Cyberguide/Maruyama/Knockeart in further view of Akiyama. *See* Ex. A16.

- The NavTalk (or the NavTalk in view of Gildea/Want/the Cyberguide) in view of Norris/the Cyberguide/Maruyama/Knockeart in further view of the Cyberguide/the Locatio/Maruyama. *See* Ex. A16.
- The NavTalk (or the NavTalk in view of Gildea/Want/the Cyberguide) in view of Norris/the Cyberguide/Maruyama/Knockeart in further view of the Locatio/Maruyama. *See* Ex.A16.
- The NavTalk (or the NavTalk in view of Gildea/Want/the Cyberguide) in view of Norris/the Cyberguide/Maruyama/Knockeart in view of the Locatio/Maruyama in further view of Akiyama renders Claim 14 obvious. *See* Ex. A16.
- The NavTalk (or the NavTalk in view of Gildea/Want/the Cyberguide) in view of Norris/the Cyberguide/Knockeart/Maruyama. *See* Ex. A17.
- The NavTalk (or the NavTalk in view of Gildea/Want/the Cyberguide) in view of Norris/the Cyberguide/Knockeart/Maruyama in further view of Akiyama/the '711 Patent renders Claims 1, 3, and 4 obvious
- The NavTalk (or the NavTalk in view of Gildea/Want/the Cyberguide) in view of Norris/the Cyberguide/Knockeart/Maruyama in further view of Norris/Maruyama/Ikeda/the '711 Patent. *See* Ex. A17.
- The NavTalk (or the NavTalk in view of Gildea/Want/the Cyberguide) in view of Norris/the Cyberguide/Knockeart/Maruyama in view of Akiyama/the '711 Patent in further view of Norris/Maruyama/Ikeda/the '711 Patent. *See* Ex. A17.
- The NavTalk (or the NavTalk in view of Gildea/Want/the Cyberguide) in view of Norris/the Cyberguide/Knockeart/Maruyama in further view of the Cyberguide. *See* Ex. A17.
- The NavTalk (or the NavTalk in view of Gildea/Want/the Cyberguide) in view of Norris/the Cyberguide/Knockeart/Maruyama in view of Akiyama/the '711 Patent in further view of the Cyberguide. *See* Ex. A17.
- The NavTalk (or the NavTalk in view of Gildea/Want/the Cyberguide) in view of Norris/the Cyberguide/Knockeart/Maruyama in further view of Hayashida/Akiyama/the '711 Patent. *See* Ex. A17.
- The NavTalk (or the NavTalk in view of Gildea/Want/the Cyberguide) in view of Norris/the Cyberguide/Knockeart/Maruyama in further view of Norris/Maruyama/Ikeda/the '711 Patent. *See* Ex. A17.
- The NavTalk (or the NavTalk in view of Gildea/Want/the Cyberguide) in view of Norris/the Cyberguide/Knockeart/Maruyama in view of Hayashida/Akiyama/the '711 Patent in further view of Norris/Maruyama/Ikeda/the '711. *See* Ex. A17.

- The NavTalk (or the NavTalk in view of Gildea/Want/the Cyberguide) in view of Norris/the Cyberguide/Knockeart/Maruyama in further view of the Cyberguide. *See* Ex. A17.
- The NavTalk (or the NavTalk in view of Gildea/Want/the Cyberguide) in view of Norris/the Cyberguide/Knockeart/Maruyama in view of Hayashida/Akiyama/the '711 Patent in further view of the Cyberguide. *See* Ex. A17.
- The NavTalk (or the NavTalk in view of Gildea/Want/the Cyberguide) in view of Norris/the Cyberguide/Knockeart/Maruyama in view of the Cyberguide in further view of Norris/Maruyama/Ikeda/the '711 Patent. *See* Ex. A17.
- The NavTalk (or the NavTalk in view of Gildea/Want/the Cyberguide) in view of Norris/Maruyama/Knockeart. *See* Ex. A18.
- The NavTalk (or the NavTalk in view of Gildea/Want/the Cyberguide) in view of Norris/Maruyama/Knockeart in further view of the Locatio/Maruyama. *See* Ex. A18.
- The NavTalk (or the NavTalk in view of Gildea/Want/the Cyberguide) in view of Norris/Maruyama/Knockeart in further view of Akiyama. *See* Ex. A18.
- The NavTalk (or the NavTalk in view of Gildea/Want/the Cyberguide) in view of Norris/Maruyama/Knockeart in view of the Locatio/Maruyama in further view of Akiyama. *See* Ex. A18.
- Hayashida (or Hayashida in view of Want/the Cyberguide). *See* Exs. A19-A20.
- Hayashida (or Hayashida in view of Want/the Cyberguide) in view of the Cyberguide/Maruyama. *See* Ex. A19.
- Hayashida (or Hayashida in view of Want/the Cyberguide). *See* Ex. A19.
- Hayashida (or Hayashida in view of Want/the Cyberguide) in view of Akiyama. *See* Ex. A19.
- Hayashida (or Hayashida in view of Want/the Cyberguide) in view of the Locatio/Maruyama. *See* Ex. A19.
- Hayashida (or Hayashida in view of Want/the Cyberguide) in view of the Locatio/Maruyama in further view of the '711 Patent. *See* Ex. A19.
- Hayashida (or Hayashida in view of Want/the Cyberguide) in view of Norris/Maruyama/the Locatio/the Cyberguide/the NavTalk/Obradovich. *See* Ex. A19.

- Hayashida (or Hayashida in view of Want/the Cyberguide) in view of Norris/Maruyama/the Locatio/the Cyberguide/the NavTalk/Obradovich in further view of Akiyama. *See* Ex. A19.
- Hayashida (or Hayashida in view of Want/the Cyberguide) in view of Norris/Maruyama/the Locatio/the Cyberguide/the NavTalk/Obradovich in further view of the NavTalk/Maruyama. *See* Ex. A19.
- Hayashida (or Hayashida in view of the Cyberguide/Want) in view of Akiyama/the '711 Patent. *See* Ex. A20.
- Hayashida (or Hayashida in view of the Cyberguide/Want) in view of Maruyama/Ikeda/the '711 Patent. *See* Ex. A20.
- Hayashida (or Hayashida in view of the Cyberguide/Want) in view of Akiyama/the '711 Patent in further view of Maruyama/Ikeda/the '711 Patent renders. *See* Ex. A20.
- Hayashida (or Hayashida in view of the Cyberguide/Want) in view of Norris/the NavTalk, the Locatio/Maruyama/the Cyberguide/Obradovich. *See* Ex. A20.
- Hayashida (or Hayashida in view of the Cyberguide/Want) in view of Akiyama/the '711 Patent in further view of Norris/the NavTalk, the Locatio/Maruyama/the Cyberguide/Obradovich. *See* Ex. A20.
- Hayashida (or Hayashida in view of the Cyberguide/Want) in view of Norris/the NavTalk, the Locatio/Maruyama/the Cyberguide/Obradovich in further view of Maruyama/Ikeda/the '711 Patent. *See* Ex. A20.
- Hayashida (or Hayashida in view of the Cyberguide/Want) in view of Norris/the NavTalk/the Locatio/the Cyberguide/Maruyama/Obradovich. *See* Ex. A21.
- Hayashida (or Hayashida in view of the Cyberguide/Want) in view of Norris/the NavTalk/the Locatio/the Cyberguide/Maruyama/Obradovich in further view of the '711 Patent. *See* Ex. A21.

2. Motivation To Combine

Apple provides the following legal background regarding obviousness combinations. No showing of a specific motivation to combine prior art is required to combine the references disclosed above and in the attached charts, as each combination of art would have yielded expected results and at most would simply represent a known alternative to one of skill in the art. *See Apple Inc. v. Samsung Elecs. Co.*, 839 F.3d 1034, 1058 (Fed. Cir. 2016); *Intercontinental Great Brands*

LLC v. Kellogg N. Am. Co., 869 F.3d 1336, 1344 (Fed. Cir. 2017); *KSR Int'l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727, 1739-40 (2007) (rejecting the Federal Circuit's "rigid" application of the teaching, suggestion, or motivation to combine test, and instead applying an "expansive and flexible" approach). Indeed, the Supreme Court held that a PHOSITA is "a person of ordinary 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." *KSR*, 127 S.Ct. at 1742. Nevertheless, in addition to the information contained in the section immediately above and elsewhere in these contentions, Apple hereby identifies motivations and reasons to combine.

One or more combinations of the prior art references identified above would have been obvious because these references would have been combined using: known methods to yield predictable results; known techniques in the same way; a simple substitution of one known, equivalent element for another to obtain predictable results; and/or a teaching, suggestion, or motivation in the prior art generally. *See Apple*, 839 F.3d at 1077; *Intercontinental Great Brands*, 869 F.3d at 1344. In addition, it would have been obvious to try combining the prior art references identified above because there were only a finite number of predictable solutions and/or because known work in one field of endeavor prompted variations based on predictable design incentives and/or market forces either in the same field or a different one. *See ACCO Brands Corp. v. Fellowes, Inc.*, 813 F.3d 1361, 1367 (Fed. Cir. 2016); *Sanofi-Aventis Deutschland GmbH v. Glenmark Pharms. Inc., USA*, 748 F.3d 1354, 1360 (Fed. Cir. 2014); *Bayer Pharma AG v. Watson Labs., Inc.*, 874 F.3d 1316, 1329 (Fed. Cir. 2017); *KSR*, 127 S. Ct. at 1742. Further, the combinations of the prior art references identified above and in the claim charts would have been obvious because the combinations represent known potential options with a reasonable expectation of success. *See InTouch Techs., Inc. v. VGO Comms., Inc.*, 751 F.3d 1327, 1347 (Fed. Cir. 2014).

Additional evidence that there would have been a motivation to combine the prior art references identified above includes the interrelated teachings of multiple prior art references; the effects of demands known to the design community or present in the marketplace; the existence of a known problem for which there was an obvious solution encompassed by the Asserted Claims of the '317, '999, and '498 patents; the existence of a known need or problem in the field of the endeavor at the time of the alleged inventions; and the background knowledge that would have been possessed by a PHOSITA. *See Arctic Cat Inc. v. Bombardier Recreational Prod. Inc.*, 876 F.3d 1350, 1359 (Fed. Cir. 2017); *Intercontinental Great Brands LLC v. Kellogg N. Am. Co.*, 869 F.3d 1336, 1344 (Fed. Cir. 2017); *Unwired Planet, LLC v. Google Inc.*, 841 F.3d 995, 1003 (Fed. Cir. 2016); *Norgren Inc. v. Int'l Trade Comm'n*, 699 F.3d 1317, 1322-23 (Fed. Cir. 2012).

The motivation to combine the teachings of the prior art references disclosed herein is also found in the references themselves and in: (1) the nature of the problem being solved; (2) the express, implied and inherent teachings of the prior art; (3) the knowledge of PHOSITAs; (4) the predictable results obtained in combining the different elements of the prior art; (5) the predictable results obtained in simple substitution of one known element for another; (6) the use of a known technique to improve similar devices, methods, or products in the same way; (7) the predictable results obtained in applying a known technique to a known device, method, or product ready for improvement; (8) the finite number of identified predictable solutions that had a reasonable expectation of success; and (9) known work in various technological fields that could be applied to the same or different technological fields based on design incentives or other market forces.

The motivations to combine various references are included in the claim charts attached to these Invalidity Contentions. In addition, Apple discloses additional motivations below.

The Asserted Claims of the '317, '999, and '498 patents are generally directed to a portable

terminal providing real-time navigation to a walking user. This technology was widely known and used in commercial products on sale and/or in public use before the alleged priority date of the '317, '999, and '498 patents. Indeed, a jury has already found that the claim elements of the '317 patent were “well-understood, routine, and conventional to a person of ordinary skill in the art as of July 12, 1999.” *Maxell, Ltd. v. ZTE (USA) Inc.*, Case No. 5:16-cv-00179-RWS, Dkt. 228 at *7 (E.D. Tex. June 29, 2018).

For example, the Asserted Claims of the '317, '999, and/or '498 patents recite “a device for getting location information denoting a [p]resent place of said portable terminal” or similar limitations. By 1999, it was well known and conventional for a portable terminal to include components for getting location information denoting the present place of the terminal. *See, e.g.*, Akiyama at [0011]-[0012]; Maruyama at [0002]; Norris at Abstract; Abowd at 3. Indeed, the specification of the '317 patent admits that components for getting location information were known and conventional. *See, e.g.*, '317 patent at 1:31-34 (“There are also many systems under development to be used for supplying the location information around the user’s present place through the GPS (Global Positioning System).”). A PHOSITA would have recognized the benefits of including components in a portable terminal for getting location information, including, for example, a GPS, an infrared ray sensor, or an optical frequency beacon, because doing so would allow the portable terminal to obtain location information for various applications with increased accuracy. Moreover, in the case of an infrared ray sensor, a PHOSITA would have recognized the benefits of allowing the device to function indoors or in other locations where GPS signal is not available. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented the conventional approach for

obtaining location information in a portable terminal with known benefits.

The Asserted Claims of the '317, '999, and/or '498 patents recite “a device for getting a direction information denoting an orientation of said portable terminal” or similar limitations. By 1999, it was well known and conventional for a portable terminal to include components for obtaining orientation information. *See, e.g.*, Maruyama at [0005]-[0007]; Norris at 7:13-29; Abowd at 3. A PHOSITA would have recognized the benefits of including components in a portable terminal for obtaining orientation information, including, for example, a geomagnetic sensor, azimuth detecting unit, compass, or gyroscope, because doing so would allow the user to accurately orient themselves in the navigation environment and walk towards an intended destination. Thus, to the extent any reference does not explicitly disclose this limitation, it would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented the conventional approach for obtaining direction information in a portable terminal with known benefits.

The Asserted Claims of the '317, '999, and/or '498 patents recite “said display displays positions of said destination and said present place, and a relation of said direction and a direction from said present place to said destination” or similar limitations. By 1999, it was well known and conventional for a portable terminal to include a display that displays the positions of the present location and destination, and a relation between the present place and the destination. *See, e.g.*, Akiyama at [0021] and Fig. 3; Maruyama at [0018]; Abowd at 5-6; Colley at Abstract. A PHOSITA would have recognized the benefits of displaying the destination, present place, and relation between the two, because doing so would enhance the user’s ability to intuitively grasp the direction of the destination from the user’s present location using a simple display. Thus, to the extent any reference does not explicitly disclose this limitation, it would have been obvious to

a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented the conventional approach for presenting direction information in a portable terminal with known benefits.

The Asserted Claims of the '317, '999, and/or '498 patents recite “said display changes according to a change of said direction of said portable terminal orientation” or similar limitations. By 1999, it was well known and conventional for a portable terminal to include a display that changes according to a change of orientation. *See, e.g.*, '711 Patent at [0021]-[0023], [0037], Figs. 5, 8a-8b; Ikeda at [0006]-[0007], [0016], [0018], [0020], [0023], Fig. 15; Hayashida at 2:1-12, 5:66-6:7, 22:40-44, 23:34-42, Fig. 19. A PHOSITA would have recognized the benefits of changing the display according to a change in orientation because doing so would make navigation more easily understandable to users. Particularly for walking navigation, a PHOSITA would have recognized benefits realized by permitting a user to rotate the device and having such action result in updated display that accurately reflects the relationship between the user and destination. Thus, to the extent any reference does not explicitly disclose this limitation, it would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented the conventional approach for presenting display information in a portable terminal with known benefits.

The Asserted Claims of the '317, '999, and/or '498 patents recite that “said direction from said present place to said inputted destination is denoted with an orientation of line,” or a “length of a line,” that the line is “distinguished between starting and ending points,” and similar limitations. By 1999, it was well known and conventional for a portable terminal to denote the direction from a present place to a destination using the orientation and length of a line, and to distinguish between its starting and end points. *See, e.g.*, Akiyama at Figs. 3, 7-9 and [0021],

Norris at Figs. 5A and 5B. A PHOSITA would have recognized the benefits of denoting the direction from a present place to a destination using the orientation and length of a line, and marking the starting and end point, because doing so would provide a user with additional navigation information and make the navigation more easily understandable to users. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented the conventional approach for displaying navigation information on a portable terminal with known benefits.

The Asserted Claims of the '317, '999, and/or '498 patents recite that “a distance between said present place and said destination is denoted with a number” or similar limitations. By 1999, it was well known and conventional for a portable terminal to denote a distance between a present place and destination with a number. *See, e.g.*, Hayashida at 14:56-65, 22:32-39, Fig. 17. A PHOSITA would have recognized the benefits of denoting a distance between a present place and destination with a number because doing so would provide user with additional information about travel. Thus, to the extent any reference does not explicitly disclose this limitation, it would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented the conventional approach for displaying travel information on a portable terminal.

The Asserted Claims of the '317, '999, and/or '498 patents recite “a device connected to a server” and “outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server,” or similar limitations. By 1999, it was well known and conventional for a portable terminal to include components that allow connection to a server and retrieval of navigation-related information therefrom. *See, e.g.*,

Akiyama at [0011]-[0012]; Abowd at 3. A PHOSITA would have recognized the benefits of including components in a portable terminal for connecting to and communicating with a server, including, for example, data transmitting / receiving unit, personal handyphone system (PHS), or Apple MessagePad with wireless serial connection, because doing so would allow the user to have wireless access to substantial communication and networking resources, and access to storage, for obtaining, e.g., additional navigation information. Similarly, a PHOSITA would have recognized that doing so would enable the portable terminal to provide destinations with increased specificity and convenience to the user. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented the conventional approach for implementing data communication on a portable terminal with known benefits.

The Asserted Claims of the '317, '999, and/or '498 patents recite retrieval of “stores or roads information” and displaying such information “as lists.” By 1999, it was well known and conventional for a portable terminal to retrieve stores or roads information from a server and/or display that information in a list format. *See, e.g.,* Knockeart at pages 10-11, 18. A PHOSITA would have recognized the benefits of retrieving stores or roads information because doing so would assist the user with finding specific target destinations and reviewing them in an organized and easily understood manner. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented the conventional approach for storing and displaying navigation-related data with known benefits.

The Asserted Claims of the '317, '999, and/or '498 patents recite that “when one of said

stores is selected by said input device, said display displays detailed information of said selected store” or similar limitations. By 1999, it was well known and conventional for a portable terminal to display detailed information of a store when it is selected. *See, e.g.*, Knockeart at 58. A PHOSITA would have recognized the benefits of displaying detailed information about a store upon selection because doing so would provide user with additional useful detail about a destination before the user arrives. Thus, to the extent any reference does not explicitly disclose this limitation, it would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented the conventional approach for storing and displaying travel information on a portable terminal with known benefits.

The Asserted Claims of the ’317, ’999, and/or ’498 patents recite a “device for getting a location information of another portable terminal from said another terminal via connected network” (or, similarly, “wherein location of partner of the user is determined according to a location information from a partner’s portable terminal”). By 1999, it was well known and conventional for a portable terminal to obtain the location of another portable terminal via a connected network. *See, e.g.*, Obradovich at 11:53-12:19. A PHOSITA would have recognized the benefits of obtaining the location of another portable terminal via a connected network because doing so would increase the versatility of the portable terminal and allow the user to find another user. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented the conventional approach for implementing data communication on a portable terminal with known benefits.

The Asserted Claims of the ’317, ’999, and/or ’498 patents recite “wherein said direction

from said present place to the location of said another portable terminal is displayed using the symbols denoting the said present location and said location of another portable terminal,” and that the “distance information” between the present location and other portable terminal location can be displayed “with a number” or “with a length of said line.” By 1999, it was well known and conventional to denote the locations of the first user and second user with symbols, and to denote the distance between the two users with numbers or lines. *See, e.g.*, ’711 Patent at Figs. 8a and 8b; Akiyama at [0021] and Fig. 3. A PHOSITA would have recognized the benefits of denoting the locations of the first and second users with symbols because doing so would enhance the user’s ability to read the display. A PHOSITA would also have recognized the benefits of displaying the distance between the two users with a number or length of a line, for the same reasons as stated above, with respect to any type of destination. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented the conventional approach for displaying navigation instructions on a portable terminal with known benefits.

The Asserted Claims of the ’317, ’999, and/or ’498 patents recite “a device for retrieving a route from said present place to said destination” or similar limitations. By 1999, it was well known and conventional for a portable terminal to include components for retrieving route information. *See, e.g.*, Akiyama at [0011]-[0012]; Maruyama at [0011]-[0012]. A PHOSITA would have recognized the benefits of including components in a portable terminal for retrieving route information, because doing so would achieve the same benefits discussed above with respect to connection to a server and retrieval of navigation-related information generally. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious

to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented the conventional approach for retrieving navigation data with known benefits.

The Asserted Claims of the '317, '999, and/or '498 patents recite “wherein said display displays said route with a bent line using symbols denoting starting and ending points and displays symbols denoting said present place on said route” (or, similarly, “wherein a full route from said starting point to said destination is shown with a bent line that is distinguished between starting and ending points and said present place is shown with a symbol on said line”). By 1999, it was well known and conventional to display a route using with a bent line using symbols for starting point, end point, and present place. *See, e.g.*, Akiyama at [0021] and Fig. 3; '711 Patent at [0037] and Figs. 8a and 8b. A PHOSITA would have recognized the benefits of displaying a route with a bent line and using symbols for starting point, end point, and present place, because doing so would enhance the user’s ability to read the display. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented the conventional approach for displaying navigation instructions on a portable terminal with known benefits.

The Asserted Claims of the '317, '999, and/or '498 patents recite “wherein said device for getting direction information gets orientation information of a display of said portable terminal” (or, similarly, “wherein said device for getting direction information gets information in a direction pointed by the tip of said portable terminal”). By 1999, it was well known and conventional to obtain the orientation of a portable terminal display from, e.g., its tip. *See, e.g.*, Ikeda at [0006]-[0007], Figs. 8, 9, 11, and 13; '711 Patent at [0021]-[0023]. A PHOSITA would have recognized

the benefits of obtaining the orientation of a portable terminal display, because doing so would provide accurate guidance reflective of the direction that a user has oriented the device and its display. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented the conventional approach for obtaining orientation direction of a portable terminal with known benefits.

D. Invalidity Under 35 U.S.C. § 112

1. Legal Background Regarding The Indefiniteness, Enablement, And Written Description Requirements

Section 112, ¶ 2 includes a definiteness requirement: “[T]he specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention” 35 U.S.C. § 112, ¶ 2. “[A] patent is invalid for indefiniteness if its claims, read in light of the patent’s specification and 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 definiteness requirement requires that the claim set forth what the applicant regards as the invention, and do so with sufficient particularity and definiteness. *Allen Eng’g Corp. v. Bartell Indus.*, 299 F.3d 1336, 1348 (Fed. Cir. 2002). Where it would be apparent to one of skill in the art, based on the patent specification, that the “invention” set forth in a claim is not what the patent applicant regarded as the invention, the claim is invalid. *Id.*

35 U.S.C. § 112 further includes an enablement requirement: “The specification shall contain a written description . . . of the manner and process of making and using [the invention] in such full, clear, concise and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same.” 35 U.S.C. § 112,

¶ 1.

To satisfy the enablement requirement, the disclosure “must teach those skilled in the art how to make and use the full scope of the claimed invention without ‘undue experimentation.’” *Genentech, Inc. v. Novo Nordisk A/S*, 108 F.3d 1361, 1366 (Fed. Cir. 1997); *MagSil Corp. v. Hitachi Glob. Storage Techs., Inc.*, 687 F.3d 1377, 1381 (Fed. Cir. 2012); *Sitrick v. Dreamworks, LLC*, 516 F.3d 993, 999 (Fed. Cir. 2008). Moreover, “[i]t is the specification, not the knowledge of one skilled in the art, that must supply the novel aspects of an invention in order to constitute adequate enablement.” *Genentech, Inc.*, 108 F.3d at 1366. “If, by following the steps set forth in the specification, one of ordinary skill in the art is not able to replicate the claimed invention without undue experimentation, the claim has not been enabled as required by 112, paragraph 1.” *National Recovery Tech., Inc. v. Magnetic Separation Syst., Inc.*, 166 F.3d 1190, 1196 (Fed. Cir. 1990). Similarly, if a specification teaches away from a substantial portion of the claim, or otherwise does not enable the full scope of the claim, there is no enablement. *AK Steel Corp. v. Sollac*, 344 F.3d 1234 (Fed. Cir. 2003); *see also MagSil Corp.*, 687 F.3d at 1383-84 (Fed. Cir. 2012).

35 U.S.C. § 112 further includes a written description requirement: “The specification shall contain a written description of the invention” 35 U.S.C. § 112, ¶ 1. “To satisfy the written description requirement, a patent applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention.” *ICU Medical, Inc. v. Alaris Medical Systems, Inc.*, 558 F.3d 1368, 1377 (Fed. Cir. 2009) (internal quotation marks and citations omitted); *see also Synthes USA, LLC v. Spinal Kinetics, Inc.*, 734 F.3d 1332, 1340 (Fed. Cir. 2013). “The test [for written description support] requires an objective inquiry into the four corners of the specification from the perspective of a person of ordinary skill in the

art. Based on that inquiry, the specification must describe an invention understandable to that skilled artisan and show that the inventor actually invented the invention claimed.” *Ariad Pharmaceuticals, Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc).

The specification must describe the claimed invention in sufficient detail so that a PHOSITA can recognize what is claimed. “The appearance of mere indistinct words in a specification or a claim, even an original claim, does not necessarily satisfy that requirement.” *University of Rochester v. G.D. Searle & Co.*, 358 F.3d 916, 923 (Fed. Cir. 2004) (internal quotation marks and citations omitted).

The identified grounds noted below both individually and collectively render the Asserted Claims of the ’317, ’999, and ’498 patents invalid under the statutory requirements of § 112.

2. Indefiniteness Under 35 U.S.C. § 112, ¶ 2

The Asserted Claims of the ’317, ’999, and ’498 patents fail to satisfy the requirements of § 112, ¶ 2 because the scope of the following terms cannot be determined with reasonable certainty by a PHOSITA when reading the claims in light of the specification and prosecution history.

- “said direction” (’317 patent, claims 1 and 10)
- “said device connected to said server outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server” (’317 patent, claim 5)
- “said information is stores or roads information” (’317, claim 7)
- “said destination” (’317 patent, claims 10 and 18; ’498 patent, claim 10)
- “said location of another portable terminal” (’317 patent, claims 11-14)
- “said walking navigation information” (’498 patent, claims 1, 5, 8, and 10; ’999 patent, claims 1, 5-6)

3. Lack Of Enablement Under 35 U.S.C. § 112, ¶ 1

The Asserted Claims of the '317, '999, and '498 patents fail to satisfy the requirements of § 112, ¶ 1 because the specification fails to provide an enabling disclosure for the following terms:

- “said device connected to said server outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server” ('317 patent, claim 5)

4. Lack Of Written Description Under 35 U.S.C. § 112, ¶ 1

The Asserted Claims of the '317, '999, and '498 patents fail to satisfy the requirements of § 112, ¶ 1 because the specification fails to provide an adequate written description of the following terms:

- “said device connected to said server outputting said location information and said direction information and receiving retrieved information based on said outputted information at said server” ('317 patent, claim 5)

E. Invalidity Under 35 U.S.C. § 101

To be valid under § 101, a claim must be directed to one of four eligible subject matter categories: “new and useful process, machine, manufacture, or composition of matter.” 35 U.S.C. § 101. “Claims that fall within one of the four subject matter categories may nevertheless be ineligible if they encompass laws of nature, physical phenomena, or abstract ideas.” *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980). The Supreme Court established a two-step test for deciding the subject matter eligibility of claims under § 101. *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2355 (2014). First, the claims must be analyzed to determine whether they are drawn to one of the statutory exceptions. *Id.* Claims that invoke generic computer components instead of reciting specific improvements in computer capabilities are abstract under this first step. *See Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1335-36 (Fed. Cir. 2016). Second, the

elements of the claims must be viewed both individually and as an order combination to see if there is an “inventive concept.” *Id.* The mere fact that a claim recites or implies that an abstract idea is implemented using a general-purpose computer does not supply an inventive concept necessary to satisfy § 101. *See Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1355 (Fed. Cir. 2016); *Alice*, 134 S. Ct. at 2357-59.

The Asserted Claims of the ’317, ’999, and ’498 patents are invalid under § 101 because they are directed to the ineligible abstract idea of providing location and direction information to a walking user of a portable terminal and claim implementations of this abstract idea using only conventional technology, as shown by the prior art identified above and as determined by the jury in a prior case. *See, e.g., Maxell, Ltd. v. ZTE (USA) Inc.*, Case No. 5:16-cv-00179-RWS, Dkt. 228 at *7 (E.D. Tex. June 29, 2018) (jury verdict finding that the claims of the ’317 patent claimed elements that were “well-understood, routine, and conventional to a person of ordinary skill in the art as of July 12, 1999”). The claims thus fail to disclose an inventive concept sufficient to transform the claimed abstract idea into a patent-eligible invention. Instead, the claim recites performing the abstract idea using broad functional language at a high level of generality without providing any specificity.

III. ’493 PATENT

The ’493 patent was filed with the United States Patent and Trademark Office on July 28, 2010 as a continuation of Application No. 10/660,710 (filed on September 12, 2003), which was filed as a division of Application No. 09/520,836 (filed on March 8, 2000). In its Infringement Contentions, Maxell claims a priority date of January 11, 2000. Apple reserves the right to serve additional or modified invalidity contentions should Maxell be permitted to amend or modify its claimed priority date.

A. Prior Art

Apple identifies the following prior art now known to Apple to anticipate and/or render obvious one or more claims of the '493 patent under at least 35 U.S.C. §§ 102(a), (b), (e), (g), and/or 103.

1. Prior Art Patents and Publications

The following patents and publications are prior art for Asserted Claims of the '493 patent under at least 35 U.S.C. §§ 102(a), (b), (e), and/or (g). Invalidity claim charts for these references are attached as Exhibits B1 through B12.

1. U.S. Patent No. 6,335,760 ("Sato '760"), filed on March 24, 1998, and issued on January 1, 2002 to Koichi Sato.
2. U.S. Patent No. 6,018,363 ("Horii '363"), filed on April 24, 1995, and issued on January 25, 2000 to Hiroyuki Horii.
3. U.S. Patent No. 7,903,162 ("Juen '162"), filed on March 9, 2000, as a continuation of application No. 09/951,417, which is a continuation of application No. 08/937,805 that was filed on September 25, 1997; issued to Masahiro Juen on March 8, 2011.²
4. U.S. Patent No. 4,740,828 ("Kinoshita '828"), filed on December 18, 1984, and issued on April 26, 1998 to Takao Kinoshita.
5. U.S. Patent No. 6,563,535 ("Anderson '535"), filed on May 19, 1998, and issued on May 13, 2013 to Eric C. Anderson.
6. U.S. Patent No. 6,529,236 ("Watanabe '236"), filed on September 12, 1997, and issued on March 4, 2003.
7. U.S. Patent No. 6,661,451 ("Kijima '451"), filed on October 30, 1997, and issued

² Juen '162 is prior art to the '493 patent under at least 35 U.S.C. § 102(e) based on the filing date of September 25, 1997 by Application No. 08/937,805. Juen '162 also claims priority to Japanese Patent Application No. H08-253343, which was published as Japanese Patent Application Publication No. H10-108121 on April 24, 1998 ("Juen '121"). Juen '121 is prior art to the '493 patent under at least 35 U.S.C. §§ 102(a) and (b). Juen '121 contains substantially the same disclosure as Juen '162. If Maxell disputes the prior art status of Juen '162, Apple reserves the right to rely on Juen '121 based on its disclosure of the same features and elements as those charted in the attached exhibits.

on December 9, 2003 to Takayuki Kijima et al.

8. European Patent Specification No. EP 0802688 (“Inoue ’688”), filed on April 15, 1997 by Hisashi Inoue et al., and published on October 22, 1997.
9. U.S. Patent No. 5,444,482 (“Misawa ’482”), filed on April 28, 1994 and issued on August 22, 1995 to Takeshi Misawa et al.
10. U.S. Patent No. 5,502,483 (“Takase ’483”), filed on December 21, 1993 and issued on March 26, 1996 to Satoshi Takease et al.
11. U.S. Patent No. 4,612,575 (“Ishman ’575”), filed on July 24, 1984 and issued on September 16, 1986 to Neal H. Ishman et al.
12. Hitachi MP-EG1 Instruction Manual (“Hitachi Manual”), published by Hitachi, Ltd. in 1997
13. D. Grotta and S. W. Grotta, “Digital Cameras, the Digital Chameleon,” PC Magazine, Vol. 16, No. 13, July 1997 (“PCMag July 1997”)
14. Getting Started With the QuickTake 200 Camera, (“QuickTake 200 User’s Manual”), published by Apple Inc. in 1997
15. Using the QuickTake 200 AC Adapter, published by Apple Inc. in 1997
16. The Sony Digital Video Recorder (DCR-TRV900) User Manual (“DCR-TRV900 Manual”), published by Sony Corporation in 1998
17. Published advertisement from The Indianapolis News (Indianapolis, Indiana) dated September 4, 1998
18. Published advertisement from The Indianapolis News (Indianapolis, Indiana) dated September 12, 1998
19. Sony Consumer Electronics Guide: DCR-TRV900 - More Specifications, webpage published by Sony Corporation by at least April 24, 1999 (from https://web.archive.org/web/19990424085854/http://www.sel.sony.com/SEL/consumer/ss5/office/camcorder/digitalvideoproducts/dcr-trv900_specs.shtml)
20. Sony Consumer Electronics Guide: DCR-TRV900 - More Specifications, webpage published by Sony Corporation by at least January 28, 1999 (from <https://web.archive.org/web/19990128112515/http://www.sel.sony.com:80/SEL/consumer/ss5/office/camcorder/digitalvideoproducts/dcr-trv900.shtml>)
21. J. Ozer, “Digital Video Cameras,” PC Magazine Vol. 18 No. 7 (April 6, 1999) (“PCMag 4/6/99”)
22. Sony MVC-FD83/FD88 User’s Manual (“MVC-FD83 Manual”), published by

Sony corporation in 1999

23. Published advertisement from Popular Photography magazine dated October 1999
24. Published advertisement from The Daily Sentinel (Grand Junction, Colorado) newspaper dated Sunday, June 13, 1999
25. JVC GR-DVL9600 GR-DVL9500 User's Manual ("JVCVRDVL9500 Manual"), published by the Victor Company of Japan, Ltd. in 1999
26. Excerpts from the JVC America Website published around January 1999 (from https://web.archive.org/web/19990117003015/http://jvc-america.com:80/digital_camcorders/digital_camcorders.html) ("JVC Site")
27. Published review from the Iowa City Press (Iowa City, Iowa) newspaper dated January 12, 1999
28. Published advertisement from The Courier-News (Bridgewater, New Jersey) newspaper dated February 17, 1999

Apple's investigation into prior art patent and publication references remains ongoing and Apple reserves the right to identify and rely on additional patent or publication references that describe or are otherwise related to the prior art systems identified below based on information obtained through discovery.

2. Prior Art Systems

The following systems are anticipatory prior art for the Asserted Claims of the '493 patent under at least 35 U.S.C. §§ 102(a), (b) and/or (g):

1. Products, components, systems, and methods invented, designed, developed, reduced to practice, and/or in public use or on sale related to the Hitachi MPEGCAM MP-EG1A ("Hitachi MPEGCAM"), as exemplified in claim charts in Exhibit B4-B5. As part of these Invalidity Contentions, Apple has produced documents relating to Hitachi MPEGCAM. Based on information available to Apple, Apple believes that this system was in public use and/or on sale in the U.S. before December 16, 1997.
2. Products, components, systems, and methods invented, designed, developed, reduced to practice, and/or in public use or on sale related to the Apple QuickTake 200 / Fujifilm DS-7 ("Apple QuickTake"), as exemplified in claim charts in Exhibit B2. As part of these Invalidity Contentions, Apple has produced documents relating to Apple QuickTake. The Apple QuickTake was in public use and/or on sale in the U.S. by 1996.

3. Products, components, systems, and methods invented, designed, developed, reduced to practice, and/or in public use or on sale related to the Sony DCR-TRV900 (“DCR-TRV900”), as exemplified in claim charts in Exhibit B3. As part of these Invalidity Contentions, Apple has produced documents relating to DCR-TRV900. Based on information available to Apple, Apple believes that this system was in public use and/or on sale in the U.S. by 1998.
4. Products, components, systems, and methods invented, designed, developed, reduced to practice, and/or in public use or on sale related to the Sony MVC-FD83/FD88 (“MVCFD83”), as exemplified in claim charts in Exhibit B11. As part of these Invalidity Contentions, Apple has produced documents relating to MVCFD83. Based on information available to Apple, Apple believes that this system was in public use and/or on sale in the U.S. by at least June 13, 1999.
5. Products, components, systems, and methods invented, designed, developed, reduced to practice, and/or in public use or on sale related to the JVC GR-DVL9600/GR-DVL9500 (“JVCGRDVL9500”), as exemplified in claim charts in Exhibit B9. As part of these Invalidity Contentions, Apple has produced documents relating to JVCGRDVL9500. Based on information available to Apple, Apple believes that this system was in public use and/or on sale in the U.S. by at least January 17, 1999.

Apple’s investigation into prior art systems remains ongoing and Apple reserves the right to identify and rely on systems that represent different versions or are otherwise related variations of the systems identified above. Apple further reserves the right to revise, amend, update, and/or supplement the information provided in these Invalidity Contention (including the attached claim charts) based on additional information and evidence obtained through discovery. Apple also reserves the right to rely on any system, product, or public knowledge or use that embodies or otherwise incorporates any of the prior art patents and publications listed above. In addition to the prior art products, components, systems, and methods described above, Apple also reserves the right to rely on documents and publications relating to the prior art listed above as prior art publications.

B. Anticipation

Apple contends that each prior art reference anticipates one or more claims of the ’493 patent under at least 35 U.S.C. §§ 102(a), (b), (e), and/or (g), either expressly or inherently as

understood by a PHOSITA:

1. Apple QuickTake. *See* Ex. B2.
2. DCR-TRV900. *See* Ex. B3.
3. Hitachi MPEGCAM. *See* Ex. B4-B5.
4. Horii '363. *See* Ex. B6.
5. Inoue '688. *See* Ex. B7.
6. Juen '162. *See* Ex. B8.
7. JVCGRDVL9500. *See* Ex. B9.
8. MVCFD83. *See* Ex. B11.

C. Obviousness

Apple contends that each prior art reference disclosed in the preceding Anticipation section may be combined with (1) information known to persons skilled in the art at the time of the alleged invention, (2) the applicant-admitted prior art in the specification, (3) any of the other anticipatory prior art references, and/or (4) any of the additional prior art references identified in this section to render these claims invalid as obvious.

1. Exemplary Combinations

Below is a listing of exemplary combinations of references that render obvious the Asserted Claims of the '493 patent. For at least the reasons described below, it would have been obvious to a PHOSITA to combine any of a number of prior art references, including any combination of those identified below, to meet the limitations of the Asserted Claims of the '493 patent. These exemplary combinations are alternatives to Apple's anticipation and single-reference obviousness contentions, and, thus, they should not be interpreted as indicating that any of the individual references included in the exemplary combinations are not by themselves invalidating prior art under §§ 102 and/or 103. Apple reserves the right to identify additional combinations during

expert discovery and later stages of the case.

- Anderson '535 in combination with Horii '363 or Juen '162. *See* Ex. B1.
- Anderson '535 in combination with Sato '760, and further with one of Horii '363 or Juen '162. *See* Ex. B1.
- Anderson '535 (alone; in combination with one of Horii '363 or Juen '162; or in combination with Sato '760, and further with one of Horii '363 or Juen '162) and further with one of Misawa '482, Takase '483, or Ishman '575. *See* Ex. B1.
- Apple QuickTake in combination with Sato '760 and/or Horii '363. *See* Ex. B2.
- Apple QuickTake in combination with Sato '760 and/or Horii '363, and further with Juen '162. *See* Ex. B2.
- Apple QuickTake in combination with Sato '760, Horii '363, and/or Juen '162, and further with Misawa '482, Takase '483, or Ishman '575. *See* Ex. B2.
- DCR-TRV900 in combination with Sato '760 and/or Horii '363. *See* Ex. B3.
- DCR-TRV900 in combination with Sato '760 and/or Horii '363, and further with Juen '162. *See* Ex. B3.
- DCR-TRV900 in combination with Sato '760 and/or Horii '363 and/or Juen '162, and further with one of Misawa '482, Takase '483, or Ishman '575. *See* Ex. B3.
- DCR-TRV900 in combination with Sato '760 and/or Horii '363 and/or Anderson '535. *See* Ex. B3.
- DCR-TRV900 in combination with Sato '760 and/or Horii '363 and/or Anderson '535, and further with Juen '162. *See* Ex. B3.
- DCR-TRV900 in combination with Sato '760 and/or Horii '363 and/or Anderson '535, and further with one of Misawa '482, Takase '483, or Ishman '575. *See* Ex. B3.
- Hitachi MPEGCAM (as described by the Hitachi Manual and/or PC Magazine July 1997) in combination with Sato '760 and/or Horii '363. *See* Ex. B5.
- Hitachi MPEGCAM (as described by the Hitachi Manual and/or PC Magazine July 1997) in combination with Sato '760 and/or Horii '363, and further with Juen '162. *See* Ex. B5.
- Hitachi MPEGCAM (as described by the Hitachi Manual and/or PC Magazine July 1997) in combination with Sato '760 and/or Horii '363, and further with Misawa '482, Takase '483, or Ishman '575. *See* Ex. B5.

- Horii '363 in combination with one of Sato '760, Anderson '535, Watanabe '236, Kijima '451, or Juen '162. *See* Ex. B6.
- Horii '363 in combination with Anderson '535, and further with one of Sato '760, Kijima '451, Watanabe '236, or Juen '162. *See* Ex. B6.
- Horii '363 in combination with Anderson '535, and further with Sato '760 and Kijima '451. *See* Ex. B6.
- Horii '363 in combination with Anderson '535, and further with Sato '760 and Watanabe '236. *See* Ex. B6.
- Horii '363 in combination with Sato '760, and further with one of Kijima '451, Watanabe '236, or Juen '162. *See* Ex. B6.
- Horii '363 in combination with one of Kijima '451 or Watanabe '236, and further with Juen '162. *See* Ex. B6.
- Horii '363 in combination with one of Sato '760, Anderson '535, or Juen '162, and further with one of Misawa '482, Takase '483, or Ishman '575. *See* Ex. B6.
- Inoue '688 in combination with Sato '760 and/or Horii '363. *See* Ex. B7.
- Inoue '688 in combination with Sato '760 and/or Horii '363, and further with Juen '162. *See* Ex. B7.
- Inoue '688 (in combination with Sato '760 and/or Horii '363; or in combination with Sato '760 and/or Horii '363, and further with Juen '162) and further with one of Misawa '482, Takase '483, or Ishman '575. *See* Ex. B7.
- Juen '162 in combination with one of Sato '760, Watanabe '236, Anderson '535, or Kijima '451. *See* Ex. B8.
- Juen '162 in combination with Sato '760, and further with one of Watanabe '236 or Kijima '451. *See* Ex. B8.
- Juen '162 in combination with Anderson '535, and further with one of Watanabe '236 or Kijima '451. *See* Ex. B8.
- Juen '162 (alone; in combination with one of Sato '760, Watanabe '236, Anderson '535, or Kijima '451; or in combination with Sato '760 and with one of Watanabe '236 or Kijima '451; or in combination with Anderson '535 and with one of Watanabe '236 or Kijima '451) and further with one of Misawa '482, Takase '483, or Ishman '575. *See* Ex. B8.
- JVCGRDVL9500 in combination with Sato '760 and/or Horii '363. *See* Ex. B9.

- JVCGRDVL9500 in combination with Sato '760 and/or Horii '363, and further with Juen '162. *See* Ex. B9.
- JVCGRDVL9500 in combination with Sato '760 and/or Horii '363 and/or Anderson '535. *See* Ex. B9.
- JVCGRDVL9500 in combination with Sato '760 and/or Horii '363 and/or Anderson '535, and further with Juen '162. *See* Ex. B9.
- JVCGRDVL9500 with Sato '760 and/or Horii '363 and/or Anderson '535, and further with Misawa '482, Takase '483, or Ishman '575. *See* Ex. B9.
- Kinoshita '828 in combination with Misawa '482, Takase '483, Juen '162, and/or Horii '363. *See* Ex. B10.
- Kinoshita '828 in combination with Sato '760, and further with Misawa '482, Takase '483, Juen '162, and/or Horii '363. *See* Ex. B10.
- Kinoshita '828 in combination with Misawa '482, Takase '483, Horii '363, Ishman '575, and/or Juen '162. *See* Ex. B10.
- Kinoshita '828 in combination with Sato '760, and further with Misawa '482, Takase '483, Horii '363, Ishman '575, and/or Juen '162. *See* Ex. B10.
- MVCFD83 in combination Sato '760 and/or Horii '363. *See* Ex. B11.
- MVCFD83 in combination with Sato '760 and/or Horii '363, and further with Juen '162. *See* Ex. B11.
- MVCFD83 in combination with Sato '760 and/or Horii '363 and/or Juen '162, and further with one of Misawa '482, Takase '483, or Ishman '575. *See* Ex. B11.
- Sato '760 in combination with one of Horii '363, Juen '162, Misawa '482, or Takase '483. *See* Ex. B12.
- Sato '760 in combination with one of Horii '363 or Juen '162, and further with one of Misawa '482, Takase '483, or Ishman '575. *See* Ex. B12.

2. Motivation To Combine

Apple hereby incorporates the legal background regarding obviousness combinations and motivations to combine from Section □ above. The motivations to combine various references are included in the claim charts attached to these Invalidity Contentions. In addition, Apple discloses additional motivations below.

The Asserted Claims of the '493 patent are generally directed to apparatuses and techniques for capturing digital images. These technologies were widely known before the alleged priority date of the '493 patent, and were used in commercial products on sale and/or in public use before the alleged priority date of the '493 patent.

For example, the Asserted Claims of the '493 patent recite “an image sensing device with a light receiving sensor having an array of pixels arranged vertically and horizontally in a grid pattern, in an N number of vertically arranged pixel lines” or similar limitations. By 2000, it was conventional for digital cameras to include a light receiving sensor, such as a charge coupled device (CCD) image sensor, having pixels arranged vertically and horizontally in a grid pattern. *See, e.g.,* Sato '760 at 3:42-49, 4:41-46; Horii '363 at 1:12-15, 6:5-8; Juen '162 at 5:62-6:2; Kinoshita '828 at 3:68-4:4; Anderson '535 at 10:29-44; Watanabe '236 at 4:15-34; Kijima '451 at 3:26-34; Inoue '688 at [0013]; Apple QuickTake; Hitachi MPEGCAM; JVCGRDVL9500; MVCFD83Hitachi; MPEGCAM. Indeed, the specification of the '493 Patent admits that the use of such image sensing devices was known and conventional. *See, e.g.,* '493 patent at 1:23-2:53. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented the conventional approach for designing image sensors.

The Asserted Claims of the '493 patent recite “a signal processing unit, that generates image signals by using the output signals of the image sensing device” or similar limitations. By 2000, it was conventional (and necessary) for digital cameras to include signal processing circuitry for processing data captured by an image sensing device and generating resulting image signals. *See, e.g.,* Sato '760 at 4:26-37; Horii '363 at Fig. 1; Juen '162 at 6:3-6; Kinoshita '828 at 4:12-37;

Anderson '535 at Fig. 1; Watanabe '236 at Fig. 1A; Kijima '451 at Fig. 1; Inoue '688 at Fig. 4; Apple QuickTake; Hitachi MPEGCAM; JVCGRDVL9500; MVCFD83Hitachi; MPEGCAM. Indeed, the specification of the '493 Patent admits that the use of such signal processing circuitry was known and conventional. *See, e.g.*, '493 patent at 1:23-2:53. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented the conventional approach for processing image data captured by an image sensing device.

The Asserted Claims of the '493 patent recite “a display unit with the display screen, to display an image corresponding to the image signals” or similar limitations. By 2000, it was well known that a digital camera could include a display screen, such as a LCD viewfinder, to display an image corresponding to the image signals captured by the image sensor. *See, e.g.*, Sato '760 at Fig. 1; Horii '363 at 7:45-58; Juen '162 at 6:23-35; Kinoshita '828 at 5:6-14; Anderson '535 at Fig. 1, 10:29-44; Watanabe '236 at 6:14-24; Kijima '451 at Abstract; Inoue '688 at Figs. 2, 4; Apple QuickTake; Hitachi MPEGCAM; JVCGRDVL9500; MVCFD83Hitachi; MPEGCAM. Indeed, the specification of the '493 Patent admits that the use of a display to monitor the capturing of images was conventional. *See, e.g.*, '493 patent at 2:1-17. A PHOSITA would have recognized the benefits of including such a display, including, for example, allowing the user to accurately frame the picture by providing a “live view” of the image being captured. There were many commercially-available display screens on the market, and it was a matter of design choice for the camera maker to decide whether to include such as display. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this

represented a well-known feature of digital cameras with known benefits.

The Asserted Claims of the '493 patent recite “wherein when recording an image in a static image mode, the signal processing unit generates the image signals by using all signal charges accumulated in all N number of vertically arranged pixel lines of the image sensing device, to provide N pixel lines” or similar limitations. By 2000, it was a well-known, common goal for digital cameras to capture high-resolution digital images. *See, e.g.*, Sato '760 at 3:42-49, 4:41-46; Horii '363 at 1:12-15, 6:5-8; Juen '162 at 5:62-6:2; Kinoshita '828 at 3:68-4:4; Anderson '535 at 10:29-44; Watanabe '236 at 4:15-34; Kijima '451 at 3:26-34; Inoue '688 at [0013]. Indeed, the specification of the '493 Patent admits that capturing all pixel lines of an image sensing device for a still image was conventional. *See, e.g.*, '493 patent at 2:1-9 (in describing known prior art: “using the entire area of effective pixels including the area of image stabilization pixels in photographing a still image”). A PHOSITA would have recognized the benefits of using all pixel lines of the image sensing device, including, for example, allowing the user to capture the maximum resolution allowable by the image sensor. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented a well-known technique for capturing high-resolution digital images.

The Asserted Claims of the '493 patent recite “wherein when monitoring the image in the static image mode, the signal processing unit generates the image signals by using pixel lines that have been mixed or culled from the N number of vertically arranged pixel lines to only include pixel lines separated from one another by intervals of a first distance” or similar limitations. By 2000, it was well known and conventional for digital cameras to include a display that has a lower resolution compared to the image sensor. *See, e.g.*, Sato '760 at Fig. 1; Horii '363 at 7:45-58; Juen

'162 at 6:23-35; Kinoshita '828 at 5:6-14; Anderson '535 at Fig. 1, 10:29-44; Watanabe '236 at 6:14-24; Kijima '451 at Abstract; Inoue '688 at Figs. 2, 4; Apple QuickTake; Hitachi MPEGCAM; JVCGRDVL9500; MVCFD83Hitachi; MPEGCAM. In view of various size, cost, and other design considerations, it was common for camera makers to use an LCD having a resolution lower than the resolution of the image sensor. Indeed, the specification of the '493 Patent admits that mixing or culling pixel lines to produce a lower-resolution image for display during monitoring of the image was known and conventional. *See, e.g.*, '493 patent at 2:1-25. A PHOSITA would have recognized the benefits of mixing or culling pixel lines to produce a lower-resolution image for display during monitoring of the image in the static image mode, including, for example, accommodating the lower resolution of the display and/or ensuring sufficient bandwidth to provide live viewing of the image being captured by the image sensor at a reasonable frame rate. *See id.* Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented a well-known technique for capturing digital images with known benefits.

The Asserted Claims of the '493 patent recite “wherein when recording the image in a moving video mode, the signal processing unit generates the image signals by using a portion of, or the entirety of, pixel lines which have been mixed or culled from the N number of vertically arranged pixel lines to only include pixel lines separated from one another by intervals of a second distance ...” or similar limitations. By 2000, it was well known for digital cameras to include a moving video mode in addition to a still image mode. *See, e.g.*, Horii '363 at Fig. 7; Juen '162 at Fig. 16; Kinoshita '828 at Kijima '451 at Abstract; Inoue '688 at [0003]; Apple QuickTake; Hitachi MPEGCAM; JVCGRDVL9500; MVCFD83Hitachi; MPEGCAM. A PHOSITA would have

recognized the benefits of incorporating a moving video mode, including, for example, improved functionality for the user. *See id.* Indeed, the specification of the '493 Patent admits that the inclusion of a moving video mode was known and conventional. *See, e.g.,* '493 patent at 1:26-29 (“In recent years, video cameras with a still image taking function and digital still cameras with a moving image taking function have become available.”). The specification of the '493 Patent admits that, to maintain computability with television formats, it was well-known and necessary to capture moving video at a resolution lower than that of the image sensor by mixing or culling the image data. *See, e.g.,* '493 patent at 2:2:26-35 (“In 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. When 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.”); 1:37-50 (“The NTSC system, for example, performs interlaced scanning on two fields, each of which has an effective scanning line number of about 240 lines 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.”); 2:10-17 (referencing JP H11-187306 for its thinning/mixing technique); 2:44-54 (referencing JP H09-270959 for its thinning/mixing technique). A PHOSITA would have also recognized the benefits of capturing moving video at a resolution lower than that of the image sensor by mixing or culling the image data, including, for example, lower data storage requirements, better battery life, enabling real-time processing of video images, and compatibility

with standard television display formats. *See id.* Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of one of the references charted in the attached exhibits because this represented a well-known technique for capturing digital moving videos with known benefits.

The Asserted Claims of the '493 patent recite “an image-instability detector which detects an image-instability of the electric camera” or similar limitations. By 2000, it was well known and conventional for digital cameras to include components for detecting and correcting image instability. *See, e.g.,* Misawa '482 at 3:7-9, 4:60-5:8, 8:7-16, Figs. 1-3; Takase '483 at 1:5-8, 3:38-47, 3:57-4:3, 6:38-53, Figs. 3 and 5; Ishman '575 at Abstract, 1:49-2:36, 2:58-61, 3:62-4:19, 7:24-35, Figs. 2-3. Indeed, the specification of the '493 Patent admits that the inclusion image stability correction in a digital camera was known and conventional. *See, e.g.,* '493 patent at 1:51-2:53 (“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 ...”). A PHOSITA would have recognized the benefits of using an image-instability detector, including, for example, improved image output and reduced blurring. *See id.* Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented a well-known technique for capturing digital images and/or videos with known benefits.

D. Invalidity Under 35 U.S.C. § 112

Apple hereby incorporates the legal background regarding indefiniteness, enablement, and written description from Section II.D.1 above. The identified grounds noted below both individually and collectively render the Asserted Claims of the '493 patent invalid under the statutory requirements of § 112.

1. Indefiniteness Under 35 U.S.C. § 112, ¶ 2

The Asserted Claims of the '493 patent fail to satisfy the requirements of § 112, ¶ 2 because the scope of the following terms cannot be determined with reasonable certainty by a PHOSITA when reading the claims in light of the specification and prosecution history.

- “vertically arranged pixel lines” (claims 1, 5, and 10)
- “a number of effective scanning lines M of a display screen” (claim 1)
- “mixing or culling signal charges accumulated in the N number of vertically arranged pixel lines” (claim 1)
- “mixed or culled from the N number of vertically arranged pixel lines” (claims 5 and 10)
- “to provide pixel lines only at pixel intervals of K1 pixels” / “to provide pixel lines only at pixel intervals of K2 pixels” (claim 1)
- “the output signals” (claims 1, 5, and 10)
- “effective scanning lines” (claim 1)
- “using the part of signal charges mixed or culled at pixel intervals of K2 pixels” (claim 4)
- “changing the pixel lines used, and the portion of the pixel lines used” (claim 6)
- “changing the pixel lines used, and the portion of the pixel lines used” (claim 11)
- “the first distance” (claim 10)

2. Lack Of Enablement Under 35 U.S.C. § 112, ¶ 1

The Asserted Claims of the '493 patent fail to satisfy the requirements of § 112, ¶ 1 because the specification fails to provide an enabling disclosure for the following terms:

- “mixing or culling signal charges accumulated in the N number of vertically

arranged pixel lines” (claim 1)

- “mixed or culled from the N number of vertically arranged pixel lines” (claims 5 and 10)
- “a value of K1 being different from a value of K2” (claim 1)
- “where the second distance is different from the first distance” (claim 5)
- “wherein a value of the second distance is different from a value of the first distance” (claim 10)

3. Lack Of Written Description Under 35 U.S.C. § 112, ¶ 1

The Asserted Claims of the ’493 patent fail to satisfy the requirements of § 112, ¶ 1 because the specification fails to provide an adequate written description of the following terms:

- “mixing or culling signal charges accumulated in the N number of vertically arranged pixel lines” (claim 1)
- “mixed or culled from the N number of vertically arranged pixel lines” (claims 5 and 10)
- “a value of K1 being different from a value of K2” (claim 1)
- “where the second distance is different from the first distance” (claim 5)
- “wherein a value of the second distance is different from a value of the first distance” (claim 10)

4. Improper Dependent Claims Under 35 U.S.C. § 112, ¶ 4

The Asserted Claims of the ’193 patent fail to satisfy the requirements of § 112, ¶ 4 because the following claims represent improper dependent form:

- “wherein during the moving video mode, the signal processing unit generates the image signals by using the signal charges mixed or culled at pixel intervals of K2

pixels” (claim 3)

IV. ’438 PATENT

The ’438 patent was filed with the United States Patent and Trademark Office on December 30, 2003. In its Infringement Contentions, Maxell claims a priority date of May 22, 2003. Apple reserves the right to serve additional or modified invalidity contentions should Maxell be permitted to amend or modify its claimed priority date.

A. Prior Art

Apple identifies the following prior art now known to Apple to anticipate and/or render obvious one or more claims of the ’438 patent under at least 35 U.S.C. §§ 102(a), (b), (e), (g), and/or 103.

1. Prior Art Patents and Publications

The following patents and publications are prior art for Asserted Claims of the ’438 patent under at least 35 U.S.C. §§ 102(a), (b), (e), and/or (g). Invalidity claim charts for these references are attached as Exhibits C1 through C4.

1. Japanese Patent Publication No. 2003-02227 (“Nagano ’227”), filed on July 6, 2001 by Matsushita Electric Industrial Co., Ltd., and published on January 24, 2003.
2. Japanese Patent Publication No. 2003-006110 (“Yamazaki ’110”), filed on June 20, 2001 by Denso Corporation, and published on January 10, 2003.
3. U.S. Patent No. 7,340,214 (“Hamberg ’214”), filed on February 13, 2002, and issued on March 4, 2008 to Max Hamberg.
4. World Intellectual Property Organization International Publication No. WO 02/101701 A2 (“Bao ’701”), filed on June 12, 2001 by Xiaoming Bao et al., and published on December 19, 2002.
5. U.S. Patent Application Publication No. 2003/0149874 (“Balfanz ’874”), filed on February 6, 2002 by Dirk Balfanz et al., and published on August 7, 2003.
6. U.S. Patent No. 7,136,999 (“Griffiths ’999”), filed on June 20, 2000, and issued on November 14, 2006 to Jonathan Griffiths.
7. U.S. Patent No. 6,351,271 (“Mainwaring ’271”) filed on October 9, 1998, and

issued on February 26, 2002 to Scott D. Mainwaring, et al.

Apple's investigation into prior art patent and publication references remains ongoing and Apple reserves the right to identify and rely on additional patent or publication references that describe or are otherwise related to the prior art systems identified below based on information obtained through discovery.

2. Prior Art Systems

Apple reserves the right to rely on any system, product, or public knowledge or use that embodies or otherwise incorporates any of the prior art patents and publications listed above.

B. Anticipation

Apple contends that each prior art reference anticipates one or more claims of the '438 patent under at least 35 U.S.C. §§ 102(a), (b), (e), and/or (g), either expressly or inherently as understood by a PHOSITA:

1. Bao '701 *See* Ex. C1.
2. Hamberg '214 *See* Ex. C2.
3. Nagano '227 *See* Ex. C3.
4. Yamazaki '110 *See* Ex. C4.

C. Obviousness

Apple contends that each prior art reference disclosed in the preceding Anticipation section may be combined with (1) information known to persons skilled in the art at the time of the alleged invention, (2) the applicant-admitted prior art in the specification, (3) any of the other anticipatory prior art references, and/or (4) any of the additional prior art references identified in this section to render these claims invalid as obvious.

1. Exemplary Combinations

Below is a listing of exemplary combinations of references that render obvious the Asserted

Claims of the '438 patent. For at least the reasons described below, it would have been obvious to a PHOSITA to combine any of a number of prior art references, including any combination of those identified below, to meet the limitations of the Asserted Claims of the '438 patent. These exemplary combinations are alternatives to Apple's anticipation and single-reference obviousness contentions, and, thus, they should not be interpreted as indicating that any of the individual references included in the exemplary combinations are not by themselves invalidating prior art under §§ 102 and/or 103. Apple reserves the right to identify additional combinations during expert discovery and later stages of the case.

- Bao '701 in view of one or more of Nagano '227, Yamazaki '110, Hamberg '214, Balfanz '874, Griffiths '999, and Mainwaring '271. *See* Ex. C1.
- Hamberg '214 in view of one or more of Nagano '227, Yamazaki '110, Balfanz '874, Bao '701, Griffiths '999, and Mainwaring '271. *See* Ex. C2.
- Nagano '227 in view of one or more of Balfanz '874, Yamazaki '110, Hamberg '214, Griffiths '999, and Mainwaring '271. *See* Ex. C3.
- Yamazaki '110 in view of one or more of Nagano '227, Hamberg '214, Balfanz '874, Griffiths '999, and Mainwaring '271. *See* Ex. C4.

2. Motivation To Combine

Apple hereby incorporates the legal background regarding obviousness combinations and motivations to combine from Section □ above. The motivations to combine various references are included in the claim charts attached to these Invalidity Contentions. In addition, Apple discloses additional motivations below.

The Asserted Claims of the '438 patent are generally directed to techniques for secure communication between an information terminal and a display apparatus. These technologies were widely known before the alleged priority date of the '438 patent.

For example, the Asserted Claims of the '438 patent recite “an input unit for receiving an input entered by a user” or similar limitations. By 2003, it was conventional for wireless

communication systems to include a keyboard (such as a ten-key keypad on a mobile phone) or other input interface. *See, e.g.*, Bao '701 at 7:16-22; Nagano '227 at [0027], [0087]-[0088], Fig. 1; Hamberg '214 at Fig. 2, 18:10-21; Yamazaki '110 at [0020], [0022]. Indeed, the specification of the '438 patent admits that information terminals such as mobile telephones typically included a liquid crystal display and a ten-key board. '438 patent at 3:17-18, 3:61-62. A PHOSITA would have recognized the benefits of incorporating an input interface, such as a ten-key board because it would make it easier for users to input and edit data, thus improving usability. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented the conventional approach for designing information terminals with known benefits.

The Asserted Claims of the '438 patent recite “a first short-distance communication unit for carrying out a short-distance communication” or similar limitations. By 2003, it was well known that communication signals with limited ranges could be utilized in wireless communication systems. *See, e.g.*, Bao '701 at 7:16-30; Balfanz '874 at [0033], [0041], Fig. 4; Hamberg '214 at 4:25-34, 7:62-64, 16:26-31, Figs. 2, 6; Nagano '227 at [0037], Fig. 8; Yamazaki '110 at [0020], Fig. 2; Giffiths '999 at 2:34-47, 3:44-48. Indeed, the specification of the '438 patent identifies well-known signals such as infrared ray and radio LAN as examples of “short-distance communication” signals. A PHOSITA would have recognized the benefits of incorporating a short-distance signal, because it would limit those interacting with a display device to individuals located in the immediate vicinity of the display device. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached

exhibits because this represented a well-known approach for designing wireless communication systems with known benefits.

The Asserted Claims of the '438 patent recite “said first short-distance communication unit...carries out an authentication process for allowance to use said display apparatus” or similar limitations. By 2003, it was well known to utilize a “short-distance communication unit,” such as the examples provided in the specification, to carry out an authentication process. *See, e.g.*, Bao '701 at 7:23-27, 10:14-19; Balfanz '874 at [0042], Fig. 5; Nagano '227 at [0043], [0088]; Yamazaki '110 at [0018], [0045]-[0046]; Hamberg '214 at 6:7-18, 9:1-5; Griffiths '999 at 2:24-27, 2:34-47, 4:40-42. A PHOSITA would have recognized the benefits of utilizing such communications to authorize users to interact with a display device because this would ensure greater security in that only users who are physically present can contribute data to a display, thus preventing misuse and vandalism by remote users. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented a well-known approach for designing wireless communication systems with known benefits.

The Asserted Claims of the '438 patent recite “a second communication unit for carrying out a communication with said display apparatus through a network” or similar limitations. Similarly, the Asserted Claims of the '438 patent recite “said second communication unit carries out data exchange with said display apparatus” or similar limitations. By 2003, it was common to utilize a network to carry out data exchange between devices. *See, e.g.*, Hamberg '214 at 8:6-10, Fig. 1G; Balfanz '874 at [0050], Fig. 5; Bao '701 at 8:14-9:9; Nagano '227 at [0046], Fig. 10; Griffiths '999 at 2:17-23, 2:39-48, 3:51-65, Fig. 1. A PHOSITA would have recognized the

benefits of taking advantage of the higher bandwidth available over the mobile phone network or other wireless networks compared to short-distance communications. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented a well-known approach for designing wireless communication systems with known benefits.

The Asserted Claims of the '438 patent recite “said second communication unit does not carry out data exchange with said display apparatus if said authentication process is not affirmed” or similar limitations. By 2003, it was well known to not proceed with a data exchange between two devices if an authentication process was not first affirmed. *See, e.g.,* Yamazaki '110 at [0018]; Balfanz '874 at [0050], Fig. 5; Bao '701 at 8:14-18; Nagano '227 at [0046]; Fig. 10; Hamberg '214 at 21:11-14; Griffiths '999 at 4:50-55. A PHOSITA would have recognized the benefits of allowing communication over the higher-bandwidth, longer-range main wireless link while maintaining the security benefits of location-limited authentication, thereby increasing the speed and performance of a wireless communication system without compromising security. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented a well-known approach for designing wireless communication systems with known benefits.

The Asserted Claims of the '438 patent recite “said information-processing terminal has a function of contributing data to said display apparatus” or similar limitations. By 2003, it was common to contribute data to a display from an information terminal. *See, e.g.,* Hamberg '214 at 4:25-34, Fig. 6; Bao '701 at 14:19-21; Nagano '227 at [0010], Fig. 14; Yamazaki '110 at [0015],

Fig. 1; Mainwaring '271 at 6:50-58. A PHOSITA would have recognized the benefits of allowing users to contribute their own content, such as classified ads or other content, to display devices to improve functionality. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented a well-known approach for designing wireless communication systems for interacting with a display having known benefits.

The Asserted Claims of the '438 patent recite “a function of adding a comment to contributed data” or similar limitations. By 2003, it was well known for a user to perform various tasks with contributed data including to add a comment to contributed data. *See, e.g.*, Nagano '227 at [0063]; Hamberg '214 at 4:50-53, Fig. 6A; Yamazaki '110 at [0049], [0058], [0060], Figs. 16, 18; Mainwaring '271 at 6:50-58. A PHOSITA would have recognized the added convenience of being able to reply to messages directly on the display device, thereby improving user convenience and the functionality of the system. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented a well-known approach for designing wireless communication systems for interacting with a display having known benefits.

The Asserted Claims of the '438 patent recite “an information processing terminal...comprising means for selecting an object displayed on said display apparatus.” By 2003, it was well known to incorporate means into an information processing terminal for selecting a displayed object. *See, e.g.*, Yamazaki '110 at [0016]; Bao '701 at 7:23-8:2; Nagano '227 at [0017]; Hamberg at 11:59-62, 18:19-21, Fig. 1; Mainwaring '271 at 9:14-22. A PHOSITA would

have recognized the benefit of allowing a user to more easily select content, such as an advertisement or downloadable object, thereby increasing user convenience. Thus, to the extent any reference does not explicitly disclose this limitation, it would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented a well-known approach for designing wireless communication systems for interacting with a display having known benefits.

The Asserted Claims of the '438 patent recite “[a] display apparatus for presenting information to users surrounding said display apparatus,” or similar limitations. Similarly, the Asserted Claims of the '438 patent recite “wherein said display apparatus is an electronic notice board.” By 2003, it was well known that displays could be used for presenting information to users as electronic notice boards. *See, e.g.*, Yamazaki '110 at [0015], [0021], Figs. 12, 16, 17, 18, and 19; Nagano '227 at [0002]; Mainwaring '271 at 4:58-65, 7:25-32, Figs. 4, 11A; Hamberg '214 at 4:23-25, 17:65-18:21, Fig. 6B; Bao '701 at 6:22-28. A PHOSITA would have recognized the benefit of allowing users to interact with each other on a larger variety of ways, thereby improving the functionality of the display. Thus, to the extent any reference does not explicitly disclose this limitation, it would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented a well-known approach for designing wireless communication systems for interacting with a display having known benefits.

The Asserted Claims of the '438 patent recite “wherein a process is carried out to associate information on a communication establishment between said first short-distance communication unit and said information-processing terminal with information on a communication establishment between said second communication unit and said information-processing terminal.” By 2003, it

was well known to exchange commitments information that associates the communication establishment over the authentication communication with the communication over the main wireless channel. *See, e.g.*, Yamazaki '110 at [0018], Fig. 5; Balfanz '874 at [0018]; Nagano '227 at [0033], [0037], Fig. 7; Hamberg '214 at Figs. 4, 8. A PHOSITA would have recognized the benefit of ensuring that the user who authenticated via the location limited channel is the same user communicating over the main wireless channel, thereby improving the security of the wireless system. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented a well-known approach for designing wireless communication systems with known benefits.

D. Invalidity Under 35 U.S.C. § 112

Apple hereby incorporates the legal background regarding indefiniteness, enablement, and written description from Section II.D.1 above. The identified grounds noted below both individually and collectively render the Asserted Claims of the '438 patent invalid under the statutory requirements of § 112.

1. Indefiniteness Under 35 U.S.C. § 112, ¶ 2

The Asserted Claims of the '438 patent fail to satisfy the requirements of § 112, ¶ 2 because the scope of the following terms cannot be determined with reasonable certainty by a PHOSITA when reading the claims in light of the specification and prosecution history.

- “short-distance communication unit” (claims 1, 4, 5)
- “data exchange” (claims 1, 4)
- “does not carry out data exchange” (claims 1, 4)
- “wherein a process is carried out to associate information on a communication

establishment” (claim 5)

- “An electronic notice-board system including a display apparatus according to claim 4 wherein said display apparatus is an electronic notice board” (claims 6, 7)
- Claims 1 and 4 are directed to an “information-processing terminal” and a “display apparatus” but claim method steps such as “carries out data exchange” and accordingly are indefinite for improperly claiming two different subject-matter classes.

2. Lack Of Enablement Under 35 U.S.C. § 112, ¶ 1

The Asserted Claims of the ’438 patent fail to satisfy the requirements of § 112, ¶ 1 because the specification fails to provide an enabling disclosure for the following terms:

- “authentication process” (claims 1, 4)
- “allowance to use” (claims 1, 4)
- “does not carry out data exchange” (claims 1, 4)
- “contributing data” (claim 2)
- “adding a comment to contributed data” (claim 2)
- “wherein a process is carried out to associate information on a communication establishment between said first short-distance communication unit and said information-processing terminal with information on a communication establishment between said second communication unit and said information-processing terminal” (claim 5)

3. Lack Of Written Description Under 35 U.S.C. § 112, ¶ 1

The Asserted Claims of the ’438 patent fail to satisfy the requirements of § 112, ¶ 1 because the specification fails to provide an adequate written description of the following terms:

- “data exchange” (claims 1, 4)
- “does not carry out data exchange” (claims 1, 4)
- “input unit for receiving an input” (claim 1)
- “contributing data” (claim 2)
- “adding a comment to contributed data” (claim 2)
- “means for selecting” (claim 3)
- “wherein a process is carried out to associate information on a communication establishment between said first short-distance communication unit and said information-processing terminal with information on a communication establishment between said second communication unit and said information-processing terminal” (claim 5)
- “electronic notice board” (claims 6, 7)

E. Invalidity Under 35 U.S.C. § 101

The Asserted Claims of the '438 patent are invalid under § 101 because they are directed to the ineligible abstract idea of contributing data to a public notice board and claim implementations of this abstract idea using only conventional technology, as shown by the prior art identified above. The claims thus fail to disclose an inventive concept sufficient to transform the claimed abstract idea into a patent-eligible invention. Instead, the claims recites performing the abstract idea using broad functional language at a high level of generality without providing any specificity.

V. '193 PATENT

The '193 patent was filed with the United States Patent and Trademark Office on November 9, 1999. In its Infringement Contentions, Maxell claims a priority date of November

10, 1998. Apple reserves the right to serve additional or modified invalidity contentions should Maxell be permitted to amend or modify its claimed priority date.

A. Prior Art

Apple identifies the following prior art now known to Apple to anticipate and/or render obvious one or more claims of the '193 patent under at least 35 U.S.C. §§ 102(a), (b), (e), (g), and/or 103.

1. Prior Art Patents and Publications

The following patents and publications are prior art for Asserted Claims of the '193 patent under at least 35 U.S.C. §§ 102(a), (b), (e), and/or (g). Invalidity claim charts for these references are attached as Exhibits D1 through D3.

1. U.S. Patent No. 5,548,616 ("Mucke '616"), filed on September 9, 1994, and issued on August 20, 1996 to Lars H. Mucke et al.
2. U.S. Patent No. 6,236,863 ("Waldroup '863"), filed on March 17, 1998, and issued on May 22, 2001 to Anthony B. Waldroup et al.
3. B.D. Geller et al., "A Technique for the Maintenance of FET Power Amplifier Efficiency Under Backoff," IEEE MTT-S International Microwave Symposium Digest (June 13-15, 1998) ("Geller")
4. Japanese Patent Application Publication No. H10-285059 ("Nakayama '059"), filed on April 8, 1997 by Takashi Nakayama, and published on October 23, 1998.
5. U.S. Patent No. 6,118,988 ("Choi '988"), filed on July 31, 1998, and issued on September 12, 2000 to Jun-Hyuk Choi.

Apple's investigation into prior art patent and publication references remains ongoing and Apple reserves the right to identify and rely on additional patent or publication references that describe or are otherwise related to the prior art systems identified below based on information obtained through discovery.

2. Prior Art Systems

Apple reserves the right to rely on any system, product, or public knowledge or use that

embodies or otherwise incorporates any of the prior art patents and publications listed above.

B. Anticipation

Apple contends that each prior art reference anticipates one or more claims of the '193 patent under at least 35 U.S.C. §§ 102(a), (b), (e), and/or (g), either expressly or inherently as understood by a PHOSITA:

6. Mucke '616. *See* Ex. D1.

7. Nakayama '059. *See* Ex. D2.

C. Obviousness

Apple contends that each prior art reference disclosed in the preceding Anticipation section may be combined with (1) information known to persons skilled in the art at the time of the alleged invention, (2) the applicant-admitted prior art in the specification, (3) any of the other anticipatory prior art references, and/or (4) any of the additional prior art references identified in this section to render these claims invalid as obvious.

1. Exemplary Combinations

Below is a listing of exemplary combinations of references that render obvious the Asserted Claims of the '193 patent. For at least the reasons described below, it would have been obvious to a PHOSITA to combine any of a number of prior art references, including any combination of those identified below, to meet the limitations of the Asserted Claims of the '193 patent. These exemplary combinations are alternatives to Apple's anticipation and single-reference obviousness contentions, and, thus, they should not be interpreted as indicating that any of the individual references included in the exemplary combinations are not by themselves invalidating prior art under §§ 102 and/or 103. Apple reserves the right to identify additional combinations during expert discovery and later stages of the case.

- Mucke '616 in view of Nakayama '059 and/or Choi '988. *See* Ex. D1.

- Nakayama '059 in view of Applicant Admitted Prior Art and/or Waldroup '863. *See* Ex. D2.
- Waldroup '863 in view of Geller. *See* Ex. D3.
- Waldroup '863 in view of Geller and Mucke '616. *See* Ex. D3.
- Waldroup '863 in view of Nakayama '059. *See* Ex. D3.

2. Motivation To Combine

Apple hereby incorporates the legal background regarding obviousness combinations and motivations to combine from Section □ above. The motivations to combine various references are included in the claim charts attached to these Invalidity Contentions. In addition, Apple discloses additional motivations below.

The Asserted Claims of the '193 patent are generally directed to techniques for cellular data transmissions using the CDMA (Code Division Multiple Access) standard. These technologies were widely known before the alleged priority date of the '193 patent. In fact, the specification of the '193 Patent admits that CDMA data transmission was not only known, but was already established in telecommunications standards such as the TIA IS-95 standard. *See, e.g.*, '193 Patent at 1:10-2:15; Figs. 11-12; TIA IS-95 Standard.

For example, the Asserted Claims of the '193 patent recite “[a] cellular telephone adapted to be used in a CDMA system” comprising “an antenna for receiving ... and transmitting ...” signals to a “cell-site station,” “a duplexer connected to said antenna,” “a receiver connected to said antenna through said duplexer ...,” “an encoder/decoder apparatus connected to said receiver and an acoustic transducer ...,” “a transmitter connected to said encoder/decoder apparatus and to said antenna through said duplexer ...,” and “a controller connected to said receiver and said transmitter” By 1998, it was common and well known for a cellular telephone to include each of these components. For example, the specification of the '193 Patent admits that CDMA

telephone communications were already established in a well-known standard ('193 patent at 1:24-27), and that telephones compatible with such standards each included an antenna (*id.* at 1:12-17, 1:27-32, Fig. 11), duplexer (*id.* at 1:27-32, Fig. 11), receiver (*id.* at 1:48-2:6), transmitter (*id.* at 1:26-2:6, Fig. 11), and controller (*id.* at 1:32-59, Fig. 11). *See also*, Mucke '616 at Fig. 1; Waldroup '863 at Fig. 1; Nakayama '059 at Fig. 1. Moreover, the specification of the '193 Patent references U.S. Patent No. 5,056,109 for describing a known, conventional CDMA cellular telephone, which includes encoder/decoder circuitry. *See, e.g.*, U.S. Patent No. 5,056,109 at 14:10-28, 16:9-24; *see also* Mucke '616 at Fig. 1; Waldroup '863 at Fig. 1; Nakayama '059 at Fig. 1. In addition, all telephones that existed in 1998 included acoustic transducers, such as microphones. *See id.* Thus, to the extent any reference does not explicitly disclose one or more of these common components of a telephone, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because they represented the conventional approach for designing CDMA cellular telephones. The inclusion of these elements in a CDMA telephone would simply reflect the use of a known technique to improve similar devices, methods, or products in the same way that result in predictable results.

The Asserted Claims of the '193 patent also recite that “said controller controls said transmitter so that an open-loop power control is performed and then a closed-loop power control is performed according to said power control signal so as to control the transmitted power to converge into a range required by said cell-site station.” By 1998, it was conventional and well known for a CDMA cellular telephone to perform such open-loop and closed-loop power control according to a power control signal so as to control the transmitted power to converge into a range required by said cell-site station. Indeed, the specification of the '193 patent describes such power

control as required by the IS-95 CDMA standard: “In IS-95, open-loop power control and closed-loop power control are employed in order to regulate a receiving power at the cell-site station. The open-loop power control, which definitely determines a transmitting power according to an information indicating an intensity of electric field detected by a receiver, does not require a severe accuracy (generally within the range of 9.5 dB). On the other hand, the closed-loop power control performs fine control according to an information indicating a variation of a gain of the signal transmitted from the cell-site station (generally 1 dB step). In this case, the transmitter performs the open-loop power control at first, then it performs the closed-loop power control for the transmitted power to converge into a desired value which the cell-site station requires.” ’193 patent at 1:45-59; *see also id.* at 9:52-64; *see also* Mucke ’616 at 1:38-51, Waldroup ’863 at Abstract. Thus, to the extent any reference does not explicitly disclose one or more of these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art, the IS-95 standard, and/or one of the references charted in the attached exhibits because they represented the conventional approach for implementing the IS-95 CDMA standard, with the known benefits described by the IS-95 CDMA standard itself. The application of these power control techniques to a CDMA telephone would simply reflect the use of a known technique to improve similar devices, methods, or products in the same way that result in predictable results.

The Asserted Claims of the ’193 patent also recite that “said controller controls a gain of said variable amplitude amplifier and a bias condition of said power amplifier using a set of bias and gain data stored in said memory” and “said controller controls a gain of said variable amplitude amplifier using a function defining a relation between bias data and gain data stored in said memory.” By 1998, the use of a controller, such as an embedded microprocessor, to perform power control functions based on data stored in a memory was well known and conventional. *See,*

e.g., Mucke '616 at 4:8-26, 5:56-59, Fig. 1; Waldroup '863 at 7:47-56, Fig. 1; Geller at 951; Nakayama '059 at [0023]-[0026], Fig. 1. Indeed, the specification of the '193 patent admits that the use of a control processor was known and common. *See, e.g.*, '193 patent at 1:11-17 (citing U.S. Patent No. 5,056,109 for its disclosure of "control processor"). A PHOSITA would have recognized the benefits of using a controller and memory to control bias and gain settings, including improved programmability and more efficient integration. Thus, to the extent any reference does not explicitly disclose one or more of these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because they represented the conventional approach for electronic design, with the known benefits. The inclusion of a controller and memory to a CDMA telephone would simply reflect the use of a known technique to improve similar devices, methods, or products in the same way that result in predictable results.

D. Invalidity Under 35 U.S.C. § 112

Apple hereby incorporates the legal background regarding indefiniteness, enablement, and written description from Section II.D.1 above. The identified grounds noted below both individually and collectively render the Asserted Claims of the '193 patent invalid under the statutory requirements of § 112.

1. Indefiniteness Under 35 U.S.C. § 112, ¶ 2

The Asserted Claims of the '193 patent fail to satisfy the requirements of § 112, ¶ 2 because the scope of the following terms cannot be determined with reasonable certainty by a PHOSITA when reading the claims in light of the specification and prosecution history.

- “an acoustic transducer for converting said voice signal code into an audio signal for driving said acoustic transducer and converting an audio input signal from said acoustic transducer into an input voice code signal” (claims 1 and 7)

- “voice code signal” (claims 1 and 7)
- “A cellular telephone adapted to be used in a CDMA system, comprising: ... said controller controls said transmitter so that an open-loop power control is performed and then a closed-loop power control is performed according to said power control signal so as to control the transmitted power to converge into a range required by said cell-site station, and said controller controls a gain of said variable amplitude amplifier and a bias condition of said power amplifier using a set of bias and gain data stored in said memory” (claim 1)
- “A cellular telephone adapted to be used in a CDMA system, comprising: ... said controller controls said transmitter so that an open-loop power control is performed and then a closed-loop power control is performed according to said power control signal so as to control the transmitted power to converge into a range required by said cell-site station, said controller controls a gain of said variable amplitude amplifier using a function defining a relation between bias data and gain data stored in said memory, and said maximum power detector controls and output power of said power amplifier” (claim 7)
- “function defining a relation between bias data and gain data” (claim 7)

2. Lack Of Enablement Under 35 U.S.C. § 112, ¶ 1

The Asserted Claims of the '193 patent fail to satisfy the requirements of § 112, ¶ 1 because the specification fails to provide an enabling disclosure for the following terms:

- “an acoustic transducer for converting said voice signal code into an audio signal for driving said acoustic transducer and converting an audio input signal from said acoustic transducer into an input voice code signal” (claims 1 and 7)

- “voice code signal” (claims 1 and 7)
- “said controller controls a gain of said variable amplitude amplifier and a bias condition of said power amplifier using a set of bias and gain data stored in said memory” (claim 1)
- “said controller controls a gain of said variable amplitude amplifier using a function defining a relation between bias data and gain data stored in said memory” (claim 7)

3. Lack Of Written Description Under 35 U.S.C. § 112, ¶ 1

The Asserted Claims of the ’193 patent fail to satisfy the requirements of § 112, ¶ 1 because the specification fails to provide an adequate written description of the following terms:

- “an acoustic transducer for converting said voice signal code into an audio signal for driving said acoustic transducer and converting an audio input signal from said acoustic transducer into an input voice code signal” (claims 1 and 7)
- “voice code signal” (claims 1 and 7)
- “said controller controls a gain of said variable amplitude amplifier and a bias condition of said power amplifier using a set of bias and gain data stored in said memory” (claim 1)
- “said controller controls a gain of said variable amplitude amplifier using a function defining a relation between bias data and gain data stored in said memory” (claim 7)

VI. ’991 PATENT

The ’991 patent was filed with the United States Patent and Trademark Office on December 11, 2017 as a continuation of Application No. 15/631,298 (filed on June 23, 2017), which was

filed as a continuation of Application No. 15/215,839 (filed on July 21, 2016), which was filed as a continuation of Application No. 14/811,048 (filed on July 28, 2015), which was filed as a continuation of Application No. 13/723,312 (filed on December 21, 2012), which was filed as a continuation of Application No. 12/457,257 (filed on June 4, 2009). In its Infringement Contentions, Maxell claims a priority date of September 25, 2008. Apple reserves the right to serve additional or modified invalidity contentions should Maxell be permitted to amend or modify its claimed priority date.

A. Prior Art

Apple identifies the following prior art now known to Apple to anticipate and/or render obvious one or more claims of the '991 patent under at least 35 U.S.C. §§ 102(a), (b), (e), (g), and/or 103.

1. Prior Art Patents and Publications

The following patents and publications are prior art for Asserted Claims of the '991 patent under at least 35 U.S.C. §§ 102(a), (b), (e), and/or (g). Invalidity claim charts for these references are attached as Exhibits E1 through E6.

1. U.S. Patent Application Publication No. 2003/0041333 ("Allen '333"), filed on August 27, 2001 by Paul G. Allen et al., and published on February 27, 2003.
2. U.S. Patent No. 7,956,849 ("Anzures '849"), filed on September 4, 2007, and issued on June 7, 2011 to Freddy Allen Anzures et al.
3. U.S. Patent No. 7,565,680 ("Asmussen '680"), filed on June 30, 2000, and issued on July 21, 2009 to Michael L. Asmussen.
4. U.S. Patent Application Publication No. 2007/0139514 ("Marley '514"), filed on December 19, 2005 by Robert P. Marley, and published on June 21, 2007.
5. U.S. Patent Application Publication No. 2008/0062965 ("Silva '965"), filed on September 12, 2006 by Michael C. Silva et al., and published on March 13, 2008.
6. U.S. Patent No. 7,548,255 ("Bear '255"), filed on September 30, 2003, and issued on June 16, 2009 to Eric Gould Bear et al.

7. Motorola-DVR-DCT6200-6208-User-Guide (“Motorola User Guide”), which, based on information available to Apple, Apple believes was published by at least 2003.
8. U.S. Patent No. 7,046,268 (“Saburi ’268”), filed on December 19, 2002, and issued on May 16, 2006 to Kazumi Saburi.

Apple’s investigation into prior art patent and publication references remains ongoing and Apple reserves the right to identify and rely on additional patent or publication references that describe or are otherwise related to the prior art systems identified below based on information obtained through discovery.

2. Prior Art Systems

The following systems are anticipatory prior art for the Asserted Claims of the ’991 patent under at least 35 U.S.C. §§ 102(a), (b) and/or (g):

1. Products, components, systems, and methods invented, designed, developed, reduced to practice, and/or in public use or on sale related to the D-Link i2eye DVC-1000 (“D-Link”), as exemplified in claim charts in Exhibit E3. As part of these Invalidity Contentions, Apple has produced documents relating to D-Link. Based on information available to Apple, Apple believes that this system was in public use and/or on sale in the U.S. by at least 2002.

Apple’s investigation into prior art systems remains ongoing and Apple reserves the right to identify and rely on systems that represent different versions or are otherwise related variations of the systems identified above. Apple further reserves the right to revise, amend, update, and/or supplement the information provided in these Invalidity Contention (including the attached claim charts) based on additional information and evidence obtained through discovery. Apple also reserves the right to rely on any system, product, or public knowledge or use that embodies or otherwise incorporates any of the prior art patents and publications listed above. In addition to the prior art products, components, systems, and methods described above, Apple also reserves the right to rely on documents and publications relating to the prior art listed above as prior art publications.

B. Anticipation

Apple contends that each prior art reference anticipates one or more claims of the '991 patent under at least 35 U.S.C. §§ 102(a), (b), (e), and/or (g), either expressly or inherently as understood by a PHOSITA:

2. Anzures '849. *See* Ex. E1.
3. Asmussen '680. *See* Ex. E2.
4. D-Link. *See* Ex. E3.
5. Marley '514. *See* Ex. E4.
6. Silva '965. *See* Ex. E5.
7. Allen '333. *See* Ex. E6.

C. Obviousness

Apple contends that each prior art reference disclosed in the preceding Anticipation section may be combined with (1) information known to persons skilled in the art at the time of the alleged invention, (2) the applicant-admitted prior art in the specification, (3) any of the other anticipatory prior art references, and/or (4) any of the additional prior art references identified in this section to render these claims invalid as obvious.

1. Exemplary Combinations

Below is a listing of exemplary combinations of references that render obvious the Asserted Claims of the '991 patent. For at least the reasons described below, it would have been obvious to a PHOSITA to combine any of a number of prior art references, including any combination of those identified below, to meet the limitations of the Asserted Claims of the '991 patent. These exemplary combinations are alternatives to Apple's anticipation and single-reference obviousness contentions, and, thus, they should not be interpreted as indicating that any of the individual references included in the exemplary combinations are not by themselves invalidating prior art

under §§ 102 and/or 103. Apple reserves the right to identify additional combinations during expert discovery and later stages of the case.

- Anzures '849 in combination with Saburi '268 or Marley '514 or Bear '255. *See* Ex. E1.
- Anzures '849 in combination with any of Marley '514, Saburi '268, and/or Bear '255. *See* Ex. E1.
- Anzures '849 in combination with Saburi '268 and Marley '514. *See* Ex. E1.
- Anzures '849 in combination with Bear '255 and Marley '514. *See* Ex. E1.
- Asmussen '680 in combination with Marley '514 or Saburi '268 or Bear '255 or Allen '333. *See* Ex. E2.
- Asmussen '680 in combination with any of Marley '514, Saburi '268, and/or Bear '255. *See* Ex. E2.
- Asmussen '680 in combination with Marley '514 and Allen '333. *See* Ex. E2.
- Asmussen '680 in combination with Saburi '268 and Allen '333. *See* Ex. E2.
- Asmussen '680 in combination with Bear '255 and Allen '333. *See* Ex. E2.
- Asmussen '680 in combination with Allen '333 and any of Marley, '514, Saburi '268, and/or Bear '255. *See* Ex. E2.
- D-Link in combination with any of Asmussen '680, Bear '255, Marley '514, and/or Allen '333. *See* Ex. E3.
- D-Link in combination with Asmussen '680 and any of Saburi '268 and/or Bear '255. *See* Ex. E3.
- D-Link in combination with Bear '255 and any of Marley '514 and/or Allen '333. *See* Ex. E3.
- D-Link in combination with Asmussen '680 and Saburi '268 and Bear '255. *See* Ex. E3.
- D-Link in combination with Allen '333 and any of Asmussen '680, Bear '255, and/or Marley '514. *See* Ex. E3.
- D-Link in combination with Allen '333 and Asmussen '680 and any of Bear '255 and/or Saburi '268. *See* Ex. E3.

- D-Link in combination with Marley '514 and Bear '255 and Allen '333. *See* Ex. E3.
- D-Link in combination with Asmussen '680 and Saburi '268 and Bear '255 and Allen '333. *See* Ex. E3.
- D-Link in combination with Asmussen '680 and Allen '333 and Marley '514. *See* Ex. E3.
- D-Link in combination with Bear '255 and Allen '333 and Marley '514. *See* Ex. E3.
- D-Link in combination with Asmussen '680 and Marley '514 and Allen '333 and any of Saburi '268 and/or Bear '255. *See* Ex. E3.
- D-Link in combination with Asmussen '680 and Saburi '268 and Bear '255 and Allen '333 and Marley '514. *See* Ex. E3.
- Marley '514 in combination with Motorola User Guide or Asmussen '680 or Allen '333 or Bear '255. *See* Ex. E4.
- Marley '514 in combination with Asmussen '680 and Bear '255. *See* Ex. E4.
- Marley '514 in combination with Asmussen '680 and Saburi '268 and/or Bear '255. *See* Ex. E4.
- Marley '514 in combination with Motorola User Guide and Allen '333. *See* Ex. E4.
- Marley '514 in combination with Asmussen '680 and Allen '333. *See* Ex. E4.
- Marley '514 in combination with Bear '255 and Allen '333. *See* Ex. E4.
- Marley '514 in combination with Asmussen '680 and Bear '255 and Allen '333. *See* Ex. E4.
- Marley '514 in combination with Asmussen '680 and Saburi '268, Bear '255, and/or Allen '333. *See* Ex. E4.
- Silva '965 in combination with Asmussen '680 or Bear '255 or Allen '333 or Marley '514. *See* Ex. E5.
- Silva '965 in combination with Asmussen '680 and Saburi '268 or Bear '255 or Allen '333. *See* Ex. E5.
- Silva '965 in combination with Asmussen '680 and any of Saburi '268 and/or Bear '255. *See* Ex. E5.
- Silva '965 in combination with Asmussen '680 and Saburi '268 and Allen '333. *See* Ex. E5.

- Silva '965 in combination with Bear '255 and Allen '333. *See* Ex. E5.
- Silva '965 in combination with Asmussen '680, Bear '255, and Allen '333. *See* Ex. E5.
- Silva '965 in combination with Asmussen '680 and any of Bear '255, Saburi '268, and/or Allen '333. *See* Ex. E5.
- Silva '965 in combination with Asmussen '680, Allen '333, and Marley '314. *See* Ex. E5.
- Silva '965 in combination with Bear '255, Allen '333, and Marley '514. *See* Ex. E5.
- Silva '965 in combination with Asmussen '680, Saburi '268, Allen '333, and Marley '514. *See* Ex. E5.
- Silva '965 in combination with Asmussen '680 and any of Bear '255, Allen '333, Saburi '268, and/or Marley '514. *See* Ex. E5.
- Allen '333 in combination with Bear '255 or Marley '514. *See* Ex. E6.
- Allen '333 in combination with Asmussen '680 and Saburi '268 and/or Bear '255. *See* Ex. E6.
- Allen '333 in combination with Bear '255 and Marley '514. *See* Ex. E6.
- Allen '333 in combination with Asmussen '680 and Saburi '268 and Marley '514. *See* Ex. E6.
- Allen '333 in combination with Asmussen '680 and any of Bear '255, Saburi '268, and/or Marley '514. *See* Ex. E6.

2. Motivation To Combine

Apple hereby incorporates the legal background regarding obviousness combinations and motivations to combine from Section □ above. The motivations to combine various references are included in the claim charts attached to these Invalidity Contentions. In addition, Apple discloses additional motivations below.

The Asserted Claims of the '991 patent are generally directed to apparatuses and techniques for performing video telephone calls. These technologies were widely known before the alleged priority date of the '991 patent, and were used in commercial products on sale and/or in public use

before the alleged priority date of the '991 patent.

For example, the Asserted Claims of the '991 patent recite “a network interface configured to receive first digital information which is received from a contents server which is coupled to the communication apparatus via the network interface” or similar limitations. By 2008, it was conventional for video telephone devices to be configured to receive digital information, such as television programs, including video-on-demand, from a contents server, for example, via broadband, cable, Internet, cellular, Bluetooth, and/or Wi-Fi connections. *See, e.g.*, Allen '333 at [0032], [0043]; Anzures '849 at 6:56-7:18; Asmussen '680 at 4:20-25, 14:14-23, 26:1-11; Marley '514 at [0001], [0005]; Silva '965 at [0022], [0024], [0029], [0038]; Motorola User Guide at pp. 3, 6. Indeed, the specification of the '991 patent admits that the use of such technology was known and conventional. *See, e.g.*, '991 patent at 7:52-61, 15:58-16:9. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented the conventional approach for designing video telephone devices.

The Asserted Claims of the '991 patent recite “a display configured to display at least the first and the second digital information” or similar limitations. By 2008, it was conventional (and necessary) for video telephone devices to comprise a display, including a touch-screen display. *See, e.g.*, Allen '333 at [0034], [0047], [0076]; Anzures '849 at 3:25-33, 4:9-28, 8:1-16, 9:58-62; Asmussen '680 at 4:5-30, 45:50-53, 49:57-50:3; Marley '514 at [0022], [0029]; Silva '965 at [0032], [0038]-[0040]. Indeed, the specification of the '991 patent admits that the use of such display devices was known and conventional. *See, e.g.*, '991 patent at 1:52-2:3. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached

exhibits because this represented the conventional approach for designing video telephone devices.

The Asserted Claims of the '991 patent recite “wherein when the processor receives an inbound videophone call notice while displaying the first digital information on the display, the processor pauses the displaying of the first digital information” or similar limitations. By 2008, it was well known that video telephone devices could include the ability to automatically pause the displaying of digital information upon receiving notice of an inbound videophone call. *See, e.g.*, Anzures '849 at 2:28-40, 16:17-25; Asmussen '680 at Abstract, 4:10-18, 43:18-40, 44:1-27, 44:38-56, 46:27-35. Indeed, the specification of the '991 patent admits that a receiver arranged to automatically display a phone call arrival message on its display screen upon receipt of an incoming call at the telephone was known. *See, e.g.*, '991 patent at 1:39-51. The specification of the '991 patent further admits that a receiver arranged to automatically display a videophone call arrival message on its display screen upon receipt of an incoming videophone call was known. *See, e.g.*, '991 patent at 2:7-19. A PHOSITA would have recognized the benefits of automatically pausing such display, including, for example, allowing the user to avoid missing any of the displayed digital information and further allowing the user to devote his undivided attention to the incoming call. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented a well-known approach, with known benefits, for designing video telephone devices.

The Asserted Claims of the '991 patent recite “wherein when the processor receives an inbound videophone call notice while displaying the first digital information on the display, the processor ... renders the camera operative” or similar limitations. By 2008, it was well known that video telephone devices could include the ability to automatically render the camera operative

upon receiving notice of an inbound videophone call. *See, e.g.*, Anzures '849 at 2:28-40, 16:17-25; Asmussen '680 at Abstract, 4:10-18, 43:18-40, 44:1-27, 44:38-56, 46:27-35; Bear '255 at 6:44-46, 11:33-45, 11:61-12:7; Saburi '268 at 4:55-5:22, 6:10-16, 6:25-36, 6:51-7:7. Indeed, the specification of the '991 patent admits that a video telephone apparatus comprising a camera and arranged to transmit video and voice signals that are obtained by the camera and the microphone was known. *See, e.g.*, '991 patent at 1:39-51. The specification of the '991 patent further admits that a receiver arranged to automatically display a phone call arrival message on its display screen upon receipt of an incoming call at the telephone was known. *See, e.g.*, '991 patent at 1:39-51. Further, the specification of the '991 patent admits that a receiver arranged to automatically display a videophone call arrival message on its display screen upon receipt of an incoming videophone call was known. *See, e.g.*, '991 patent at 2:7-19. A PHOSITA would have recognized the benefits of automatically rendering the camera operative, including, for example, allowing the user to commence the videophone call as quickly as possible. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented a well-known approach, with known benefits, for designing video telephone devices.

The Asserted Claims of the '991 patent recite “wherein after the videophone call is finished, the processor restarts the displaying of the first digital information” or similar limitations. By 2008, it was well known that video telephone devices could include the ability to automatically restart the displaying of digital information upon receiving notice of a terminated videophone call. *See, e.g.*, Allen '333 at [0008], [0027], [0084], [0096], [0101]; Anzures '849 at 16:17-25, 19:55-62, Fig. 8B; Marley '514 at [0022], Fig. 5. A PHOSITA would have recognized the benefits of automatically restarting such display, including, for example, allowing the user to resume viewing

the displayed digital information as quickly as possible. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented a well-known approach, with known benefits, for designing video telephone devices.

The Asserted Claims of the '991 patent recite “wherein when the processor receives an input for making an outbound videophone call to the another communication apparatus, the processor ... displays information indicating the outbound videophone call on the display calling message” or similar limitations. By 2008, it was well known that video telephone devices could include the ability to display information indicating the outbound videophone call on the display upon receiving an input for making an outbound videophone call. *See, e.g.*, Anzures '849 at 11:44-56, 12:4-13; Marley '514 at [0018]-[0019], Fig. 4. A PHOSITA would have recognized the benefits of displaying information indicating the outbound videophone call on the display, including, for example, allowing the user to see how he appears to the called party. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented a well-known approach, with known benefits, for designing video telephone devices.

D. Invalidity Under 35 U.S.C. § 112

Apple hereby incorporates the legal background regarding indefiniteness, enablement, and written description from Section II.D.1 above. The identified grounds noted below both individually and collectively render the Asserted Claims of the '991 patent invalid under the statutory requirements of § 112.

1. Indefiniteness Under 35 U.S.C. § 112, ¶ 2

The Asserted Claims of the '991 patent fail to satisfy the requirements of § 112, ¶ 2 because

the scope of the following terms cannot be determined with reasonable certainty by a PHOSITA when reading the claims in light of the specification and prosecution history.

- “communication apparatus” (Claim 1/Claim 2/Claim 3/Claim 4/Claim 5/Claim 8/Claim 10);
- “digital information” (Claim 1/Claim 2/Claim 3/Claim 4/Claim 8/Claim 9/Claim 10/Claim 11);
- “network interface” (Claim 1/Claim 8);
- “first digital information” (Claim 1/Claim 2/Claim 4/Claim 8/Claim 9/Claim 11);
- “contents server” (Claim 1/Claim 8);
- “second digital information” (Claim 1/Claim 8);
- “third digital information” (Claim 1/Claim 3/Claim 8/Claim 10);
- “inbound videophone call notice” (Claim 1/Claim 4/Claim 8/Claim 11);
- “pauses[/pausing] the displaying of the first digital information” (Claim 1/Claim 8);
- “renders[/rendering] the camera [and microphone] operative” (Claim 1/Claim 5/Claim 8/Claim 12);
- “input for stopping the videophone call” (Claim 1/Claim 8);
- “stops[/stopping] the camera” (Claim 1/Claim 8);
- “A communication apparatus for transmitting and receiving digital information to and from another communication apparatus, comprising: a network interface configured to receive first digital information which is received from a contents server which is coupled to the communication apparatus via the network interface and second digital information from the another communication apparatus; a

camera configured to generate video information which is included in third digital information; a display configured to display at least the first and the second digital information; and a processor; wherein when the processor receives an inbound videophone call notice while displaying the first digital information on the display, the processor pauses the displaying of the first digital information and renders the camera operative; wherein the processor outputs the third digital information to the another communication apparatus and displays the second digital information of the videophone call on the display; and wherein when the processor receives an input for stopping the videophone call, the processor stops output of the third digital information and stops the camera” (Claim 1);

- “restarts[/restarting] the displaying of the first digital information” (Claim 2/Claim 9);
- “switches[/switching] a function of processing video information of the first digital information to a function of processing video information of the second digital information of the videophone call” (Claim 4/Claim 11);
- “The communication apparatus according to claim 3, wherein when the processor receives the inbound videophone call notice while displaying the first digital information on the display, the processor switches a function of processing video information of the first digital information to a function of processing video information of the second digital information of the videophone call” (Claim 4);
- “input for making an outbound videophone call” (Claim 5/Claim 12);
- “display calling message” (Claim 5);
- “A method for transmitting and receiving digital information for a communication

apparatus, wherein the communication apparatus comprises a camera, a network interface, a display and a processor; and wherein the method is executed by the processor, the method comprising the steps of: displaying first digital information which is received from a contents server which is coupled to the communication apparatus via the network interface; upon receiving an inbound videophone call notice while playing the first digital information, pausing the displaying of the first digital information; rendering the camera operative; receiving second digital information from the another communication apparatus via the network interface; generating video information which is included in third digital information by the camera; displaying the second digital information on the display; and outputting the third digital information to an another communication apparatus; upon receiving an input for stopping the videophone call, stopping output of the third digital information; and stopping the camera” (Claim 8);

- “The method according to claim 10, further comprising the step of: upon receiving the inbound videophone call notice while displaying the first digital information, switching a function of processing video information of the first digital information to a function of processing video information of the second digital information of the videophone call” (Claim 11).

2. Lack Of Enablement Under 35 U.S.C. § 112, ¶ 1

The Asserted Claims of the '991 patent fail to satisfy the requirements of § 112, ¶ 1 because the specification fails to provide an enabling disclosure for the following terms:

- “communication apparatus” (Claim 1/Claim 2/Claim 3/Claim 4/Claim 5/Claim 8/Claim 10);

- “digital information” (Claim 1/Claim 2/Claim 3/Claim 4/Claim 8/Claim 9/Claim 10/Claim 11);
- “network interface” (Claim 1/Claim 8);
- “first digital information” (Claim 1/Claim 2/Claim 4/Claim 8/Claim 9/Claim 11);
- “contents server” (Claim 1/Claim 8);
- “second digital information” (Claim 1/Claim 8);
- “third digital information” (Claim 1/Claim 3/Claim 8/Claim 10);
- “inbound videophone call notice” (Claim 1/Claim 4/Claim 8/Claim 11);
- “pauses[/pausing] the displaying of the first digital information” (Claim 1/Claim 8);
- “renders[/rendering] the camera [and microphone] operative” (Claim 1/Claim 5/Claim 8/Claim 12);
- “input for stopping the videophone call” (Claim 1/Claim 8);
- “stops[/stopping] the camera” (Claim 1/Claim 8);
- “restarts[/restarting] the displaying of the first digital information” (Claim 2/Claim 9);
- “switches[/switching] a function of processing video information of the first digital information to a function of processing video information of the second digital information of the videophone call” (Claim 4/Claim 11);
- “input for making an outbound videophone call” (Claim 5/Claim 12);
- “display calling message” (Claim 5).

3. Lack Of Written Description Under 35 U.S.C. § 112, ¶ 1

The Asserted Claims of the '991 patent fail to satisfy the requirements of § 112, ¶ 1 because

the specification fails to provide an adequate written description of the following terms:

- “communication apparatus” (Claim 1/Claim 2/Claim 3/Claim 4/Claim 5/Claim 8/Claim 10);
- “digital information” (Claim 1/Claim 2/Claim 3/Claim 4/Claim 8/Claim 9/Claim 10/Claim 11);
- “network interface” (Claim 1/Claim 8);
- “first digital information” (Claim 1/Claim 2/Claim 4/Claim 8/Claim 9/Claim 11);
- “contents server” (Claim 1/Claim 8);
- “second digital information” (Claim 1/Claim 8);
- “third digital information” (Claim 1/Claim 3/Claim 8/Claim 10);
- “inbound videophone call notice” (Claim 1/Claim 4/Claim 8/Claim 11);
- “pauses[/pausing] the displaying of the first digital information” (Claim 1/Claim 8);
- “renders[/rendering] the camera [and microphone] operative” (Claim 1/Claim 5/Claim 8/Claim 12);
- “input for stopping the videophone call” (Claim 1/Claim 8);
- “stops[/stopping] the camera” (Claim 1/Claim 8);
- “restarts[/restarting] the displaying of the first digital information” (Claim 2/Claim 9);
- “switches[/switching] a function of processing video information of the first digital information to a function of processing video information of the second digital information of the videophone call” (Claim 4/Claim 11);
- “input for making an outbound videophone call” (Claim 5/Claim 12);

- “display calling message” (Claim 5).

4. Improper Dependent Claims Under 35 U.S.C. § 112, ¶ 4

The Asserted Claims of the '991 patent fail to satisfy the requirements of § 112, ¶ 4 because the following claims represent improper dependent form:

- “The communication apparatus according to claim 3, wherein when the processor receives the inbound videophone call notice while displaying the first digital information on the display, the processor switches a function of processing video information of the first digital information to a function of processing video information of the second digital information of the videophone call” (Claim 4);
- “The method according to claim 10, further comprising the step of: upon receiving the inbound videophone call notice while displaying the first digital information, switching a function of processing video information of the first digital information to a function of processing video information of the second digital information of the videophone call” (Claim 11).

E. Invalidity Under 35 U.S.C. § 101

The Asserted Claims of the '991 patent are invalid under § 101 because they are directed to the ineligible abstract idea of pausing one task to complete another, and claim implementations of this abstract idea using only conventional technology, as shown by the prior art identified above. The claims thus fail to disclose an inventive concept sufficient to transform the claimed abstract idea into a patent-eligible invention. Instead, the claim recites performing the abstract idea using broad functional language at a high level of generality without providing any specificity.

VII. '306 PATENT

The '306 patent was filed with the United States Patent and Trademark Office on January 4, 2001. In its Infringement Contentions, Maxell claims a priority date of January 7, 2000. Apple

reserves the right to serve additional or modified invalidity contentions should Maxell be permitted to amend or modify its claimed priority date.

A. Prior Art

Apple identifies the following prior art now known to Apple to anticipate and/or render obvious one or more claims of the '306 patent under at least 35 U.S.C. §§ 102(a), (b), (e), (g), and/or 103.

1. Prior Art Patents and Publications

The following patents and publications are prior art for Asserted Claims of the '306 patent under at least 35 U.S.C. §§ 102(a), (b), (e), and/or (g). Invalidity claim charts for these references are attached as Exhibits F1 through F6.

1. U.S. Patent No. 6,122,347 ("Borland '347"), filed on November 13, 1997, and issued on September 19, 2000 to David J. Borland.
2. U.S. Patent No. 6,216,017 ("Lee '017"), filed on August 13, 1998, and issued on April 10, 2001 to Ki-Tae Lee et al.
3. U.S. Patent No. 4,330,780 ("Masaki '780"), filed on January 3, 1980, and issued on May 18, 1982 to Masaru Masaki.
4. International Patent Publication No. WO 1996/027974 ("Van der Salm '974"), filed on March 8, 1996 by Peter Van der Salm et al., and published on September 12, 1996.
5. U.S. Patent No. 5,007,076 ("Blakley '076"), filed on November 3, 1989, and issued on April 9, 1991 to James R. Blakley.
6. U.S. Patent No. 4,894,649 ("Davis '649"), filed on January 7, 1988, and issued on January 16, 1990 to Walter L. Davis.
7. U.S. Patent No. 6,373,925 ("Guercio '925"), filed on September 24, 1997, and issued on April 16, 2002 to David J. Guercio et al.
8. UK Patent Application No. GB 2323245 ("Haestrup '245"), filed on March 14, 1997 by Jan Haestrup et al., and published on September 16, 1998.
9. CN Patent No. 1190303A ("Huang '303"), filed on December 19, 1997 by Bazhong Huang, and published on August 12, 1998.

10. U.S. Patent No. 5,646,979 (“Knuth ’979”), filed on December 20, 1995, and issued on July 8, 1997 to Stephen B. Knuth.
11. U.S. Patent No. 5,526,406 (“Luneau ’406”), filed on September 9, 1994, and issued on June 11, 1996 to David J. Luneau.
12. U.S. Patent No. 3,686,635 (“Millington ’635”), filed on June 9, 1971, and issued on August 22, 1972 to Raymond J. Millington et al.
13. U.S. Patent No. 6,763,105 (“Miura ’105”), filed on November 13, 1998, and issued on July 13, 2004 to Nazomi Miura et al.
14. *Motorola Telecommunications Device Data* by Motorola Inc. (“MC3417/18 Datasheet”). Based on information available to Apple, Apple believes that this reference was published in the U.S. by Motorola Inc. in 1984.
15. U.S. Patent No. 6,328,570 (“Ng ’570”), filed on June 10, 1998, and issued on December 11, 2001 to Kai Kong Ng.
16. European Patent Application Publication No. EP 0848533 (“Peters ’533”), filed on December 2, 1997 by Daniel V. Peters, and published on June 17, 1998.
17. U.S. Patent No. 4,924,499 (“Serby ’499”), filed on February 25, 1988, and issued on May 8, 1990 to Victor M. Serby.
18. International Patent Publication No. WO 1996/002999 (“Sremac ’999”), filed on July 19, 1995 by Steve Sremac, and published on February 1, 1996.

Apple’s investigation into prior art patent and publication references remains ongoing and Apple reserves the right to identify and rely on additional patent or publication references that describe or are otherwise related to the prior art systems identified below based on information obtained through discovery.

2. Prior Art Systems

The following systems are anticipatory prior art for the Asserted Claims of the ’306 patent under at least 35 U.S.C. §§ 102(a), (b) and/or (g):

1. Products, components, systems, and methods invented, designed, developed, reduced to practice, and/or in public use or on sale related to CIDney Voice Announce Systems (“CIDney Voice Announce Systems”), as exemplified in claim charts in Exhibit F5. As part of these Invalidity Contentions, Apple has produced documents relating to CIDney Voice Announce Systems. Based on information available to Apple, Apple believes that this system was in public use and/or on sale

in the U.S. by 1997.

2. Products, components, systems, and methods invented, designed, developed, reduced to practice, and/or in public use or on sale related to Nokia Model 8860 (“Nokia Phone Systems”), as exemplified in claim charts in Exhibit F6. As part of these Invalidity Contentions, Apple has produced documents relating to Nokia Phone Systems. Based on information available to Apple, Apple believes that this system was in public use and/or on sale in the U.S. by May 1999.
3. Products, components, systems, and methods invented, designed, developed, reduced to practice, and/or in public use or on sale related to Nokia Model 3210 (“Nokia 3210”), as exemplified in claim charts in Exhibit F6. As part of these Invalidity Contentions, Apple has produced documents relating to Nokia 3210. Based on information available to Apple, Apple believes that this system was in public use and/or on sale in the U.S. by March 1999.
4. Products, components, systems, and methods invented, designed, developed, reduced to practice, and/or in public use or on sale related to Talking Caller ID by Stealth Software (“Talking Caller ID Systems”), as exemplified in claim charts in Exhibit F5. As part of these Invalidity Contentions, Apple has produced documents relating to Talking Caller ID Systems. Based on information available to Apple, Apple believes that this system was in public use and/or on sale in the U.S. by 1998.

Apple’s investigation into prior art systems remains ongoing and Apple reserves the right to identify and rely on systems that represent different versions or are otherwise related variations of the systems identified above. Apple further reserves the right to revise, amend, update, and/or supplement the information provided in these Invalidity Contention (including the attached claim charts) based on additional information and evidence obtained through discovery. Apple also reserves the right to rely on any system, product, or public knowledge or use that embodies or otherwise incorporates any of the prior art patents and publications listed above. In addition to the prior art products, components, systems, and methods described above, Apple also reserves the right to rely on documents and publications relating to the prior art listed above as prior art publications.

B. Anticipation

Apple contends that each prior art reference anticipates one or more claims of the ’306

patent under at least 35 U.S.C. §§ 102(a), (b), (c), and/or (g), either expressly or inherently as understood by a PHOSITA:

1. Borland '347. *See* Ex. F1.
2. Lee '017. *See* Ex. F2.
3. Masaki '780. *See* Ex. F3.
4. Van der Salm '974. *See* Ex. F4.
5. CIDney Voice Announce Systems. *See* Ex. F5.
6. Nokia Phone Systems. *See* Ex. F6.

C. Obviousness

Apple contends that each prior art reference disclosed in the preceding Anticipation section may be combined with (1) information known to persons skilled in the art at the time of the alleged invention, (2) the applicant-admitted prior art in the specification, (3) any of the other anticipatory prior art references, and/or (4) any of the additional prior art references identified in this section to render these claims invalid as obvious.

1. Exemplary Combinations

Below is a listing of exemplary combinations of references that render obvious the Asserted Claims of the '306 patent. For at least the reasons described below, it would have been obvious to a PHOSITA to combine any of a number of prior art references, including any combination of those identified below, to meet the limitations of the Asserted Claims of the '306 patent. These exemplary combinations are alternatives to Apple's anticipation and single-reference obviousness contentions, and, thus, they should not be interpreted as indicating that any of the individual references included in the exemplary combinations are not by themselves invalidating prior art under §§ 102 and/or 103. Apple reserves the right to identify additional combinations during expert discovery and later stages of the case.

- Borland '347 in combination with Huang '303 or Blakley '076 or Guercio '925 or Peters '533. *See* Ex. F1.
- Borland '347, alone or in combination with Huang '303 or Blakley '076 or Guercio '925 or Peters '533, and Sremac '999 or Ng '570. *See* Ex. F1.
- Borland '347, alone or in combination with Huang '303 or Blakley '076 or Guercio '925 or Peters '533, and Sremac '999 or Ng '570, and Miura '105 or Serby '499. *See* Ex. F1.
- Lee '017 in combination with Huang '303 or Blakley '076 or Borland '347 or Guercio '925 or Hastrup '245 or Peters '533. *See* Ex. F2.
- Lee '017, alone or in combination with Huang '303 or Blakley '076 or Borland '347 or Guercio '925 or Peters '533, and Sremac '999 or Ng '570. *See* Ex. F2.
- Lee '017 in combination with Huang '303 or Blakley '076 or Borland '347 or Guercio '925 or Peters '533, and Sremac '999 or Ng '570, and Miura '105 or Serby '499. *See* Ex. F2.
- Masaki '780 in combination with Davis '649. *See* Ex. F3.
- Masaki '780 in combination with MC3417/18 Datasheet and Millington '635. *See* Ex. F3.
- Masaki '780 in combination with MC3417/18 Datasheet, Millington '635, and Davis '649. *See* Ex. F3.
- Van der Salm '974 in combination with Huang '303 or Blakley '076 or Borland '347 or Guercio '925 or Peters '533. *See* Ex. F4.
- Van der Salm '974, alone or in combination with Huang '303 or Blakley '076 or Borland '347 or Guercio '925 or Peters '533, and Sremac '999 or Ng '570. *See* Ex. F4.
- Van der Salm '974, alone or in combination with Huang '303 or Blakley '076 or Borland '347 or Guercio '925 or Peters '533, and Sremac '999 or Ng '570, and Miura '105 or Serby '499. *See* Ex. F4.
- CIDney Voice Announce Systems in combination with Luneau '406. *See* Ex. F5.
- CIDney Voice Announce Systems, alone or in combination with Luneau '406, and Knuth '979. *See* Ex. F5.
- CIDney Voice Announce Systems, alone or in combination with Luneau '406 and/or Knuth '979, and Miura '105 or Talking Caller ID Systems or Nokia 3210. *See* Ex. F5.
- Nokia Phone Systems in combination with Hastrup '245 or Nokia 3210. *See* Ex. F6.

2. Motivation To Combine

Apple hereby incorporates the legal background regarding obviousness combinations and motivations to combine from Section □ above. The motivations to combine various references are included in the claim charts attached to these Invalidity Contentions. In addition, Apple discloses additional motivations below.

The Asserted Claims of the '306 patent are generally directed to apparatuses and techniques for alerting of an incoming signal by a ringing sound. These technologies were widely known before the alleged priority date of the '306 patent, and were used in commercial products on sale and/or in public use before the alleged priority date of the '306 patent.

For example, the Asserted Claims of the '306 patent recite “a ringing sound generator having a plurality of sound sources therewith” and “said controller controls said ringing sound generator so as to generate the ringing sound using at least two of said sound sources when the signal comes in” or similar limitations. By 2000, it was conventional for ringing sound devices to comprise a plurality of sound sources. *See, e.g.*, Borland '347 at 4:31-36, 5:54-60, 11:12-15, 13:42-14:21, 15:20-64; Lee '017 at 5:47-51, 12:24-31; Masaki '780 at 2:1-15, 2:18-4:14; Van der Salm '974 at 8:8-19, 8:21-35, 13:20-14:3, 14:14-38, 15:8-29, 15:31-16:12, 16:14-38, 18:16-25; Blakely '076 at Abstract, 1:56-2:8, 2:16-35, 5:64-6:9, 11:14-21; Guercio '925 at Abstract, 4:24-42, 6:65-7:24, 7:29-48, 7:50-8:13; Huang '303 at 8; Knuth '979 at Abstract, 1:6-9, 2:37-42, 2:52-3:51, 4:35-54, 4:55-65, 4:66-5:26; Luneau '406 at 3:5-7, 4:34-38, 5:27-32; Ng '570 at 5:52-67, Fig. 3, Claim 32; Peters '533 at Abstract, 10:5-6, 12:8-21, 13:46-58, 14:33-58; Sremac '999 at Abstract, 5-6. Indeed, the specification of the '306 patent admits that the use of such technology was known and conventional. *See, e.g.*, '306 patent at 1:11-53. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits

because this represented the conventional approach for designing ringing sound devices.

The Asserted Claims of the '306 patent recite “further comprising a timer, wherein said controller controls said ringing sound generator so as to generate the ringing sound when the signal comes within a time zone which is set up in advance” or similar limitations. By 2000, it was well known that ringing sound devices could include a timer such that the ringing sound is generated when the signal comes within a time zone that is set up in advance. *See, e.g.*, Davis '649 at Abstract, 1:60-2:8, 3:25-32, 3:47-55, 4:42-44, 5:3-27, 5:28-6:14, 6:15-65, 7:25-38; Haestrup '245 at 3, 6-7, 9, 12-13, Table 1; Miura '105 at 1:22-39, 1:66-2:21, 6:19-7:8. A PHOSITA would have recognized the benefits of including a timer such that the ringing sound is generated when the signal comes within a time zone that is set up in advance, including, for example, accommodating a user's needs for quiet times, such as bedtime or a movie, as well as accommodating a user's needs for a distinctive ringing pattern that can be recognized amongst many, such as when the user is in a crowded public place. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented a well-known approach, with known benefits, for designing ringing sound devices.

The Asserted Claims of the '306 patent recite “further comprising a calendar function, wherein said controller controls said ringing sound generator so as to generate the ringing sound when the signal comes within a period which is set up in advance” or similar limitations. By 2000, it was well known that ringing sound devices could include a calendar function such that the ringing sound is generated when the signal comes within a period that is set up in advance. *See, e.g.*, Davis '649 at 5:39-44, 5:57-6:16, 7:14-17; Haestrup '245 at 3, 6-7, 9, 12-13, Table 1; Miura '105 at 1:22-39, 1:66-2:21, 6:19-7:8, 9:44-50; Serby '499 at 2:26-29. A PHOSITA would have

recognized the benefits of including a calendar function such that the ringing sound is generated when the signal comes within a period that is set up in advance, including, for example, accommodating a user's needs for quiet days, such as religious holidays, as well as accommodating a user's desires for a period-specific distinctive ringing pattern, such as holiday music on holidays. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented a well-known approach, with known benefits, for designing ringing sound devices.

The Asserted Claims of the '306 patent recite "a ringing sound generator for generating the ringing sound in accordance with a plurality of patterns made of combination of at least two sound sources" and "said controller controls said ringing sound generator, so as to generate the ringing sound when the signal comes in, by selecting one pattern from said plurality of patterns" or similar limitations. By 2000, it was conventional for ringing sound devices to comprise a plurality of patterns. *See, e.g.*, Borland '347 at 3:1-16, 3:45-59, 8:47-9:15, 9:50-56, 10:9-18, 11:42-12:11, 12:42-58; Masaki '780 at Abstract, 1:51-60, 2:61-64; Van der Salm '974 at 8:37-9:10, 17:4-17, 18:21-31; Miura '105 at 1:22-32, 2:7-14, 2:35-44. Indeed, the specification of the '306 patent admits that the use of such technology was known and conventional. *See, e.g.*, '306 patent at 1:11-53, 1:54-59. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented the conventional approach for designing ringing sound devices.

D. Invalidity Under 35 U.S.C. § 112

Apple hereby incorporates the legal background regarding indefiniteness, enablement, and written description from Section II.D.1 above. The identified grounds noted below both

individually and collectively render the Asserted Claims of the '306 patent invalid under the statutory requirements of § 112.

1. Indefiniteness Under 35 U.S.C. § 112, ¶ 2

The Asserted Claims of the '306 patent fail to satisfy the requirements of § 112, ¶ 2 because the scope of the following terms cannot be determined with reasonable certainty by a PHOSITA when reading the claims in light of the specification and prosecution history.

- “on incoming of a signal” (Claim 2/Claim 12/Claim 13);
- “ringing sound” (Claim 2/Claim 5/Claim 6/Claim 12/Claim 13/Claim 14/Claim 15);
- “ringing sound generator” (Claim 2/Claim 5/Claim 6/Claim 12/Claim 13/Claim 14/Claim 15);
- “sound sources” (Claim 2);
- “controller for controlling operations” (Claim 2/Claim 12/Claim 13);
- “using at least two of said sound sources[/sound generation protocols]” (Claim 2/Claim 13);
- “timer” (Claim 5/Claim 14);
- “time zone” (Claim 5/Claim 14);
- “calendar function” (Claim 6/Claim 15);
- “period” (Claim 6/Claim 15);
- “pattern[s]” (Claim 12);
- “made of combination of at least two sound sources” (Claim 12);
- “sound generation protocols” (Claim 13).

2. Lack Of Enablement Under 35 U.S.C. § 112, ¶ 1

The Asserted Claims of the '306 patent fail to satisfy the requirements of § 112, ¶ 1 because the specification fails to provide an enabling disclosure for the following terms:

- “on incoming of a signal” (Claim 2/Claim 12/Claim 13);
- “ringing sound” (Claim 2/Claim 5/Claim 6/Claim 12/Claim 13/Claim 14/Claim 15);
- “ringing sound generator” (Claim 2/Claim 5/Claim 6/Claim 12/Claim 13/Claim 14/Claim 15);
- “sound sources” (Claim 2);
- “controller for controlling operations” (Claim 2/Claim 12/Claim 13);
- “using at least two of said sound sources[/sound generation protocols]” (Claim 2/Claim 13);
- “timer” (Claim 5/Claim 14);
- “time zone” (Claim 5/Claim 14);
- “calendar function” (Claim 6/Claim 15);
- “period” (Claim 6/Claim 15);
- “pattern[s]” (Claim 12);
- “made of combination of at least two sound sources” (Claim 12);
- “sound generation protocols” (Claim 13).

3. Lack Of Written Description Under 35 U.S.C. § 112, ¶ 1

The Asserted Claims of the '306 patent fail to satisfy the requirements of § 112, ¶ 1 because the specification fails to provide an adequate written description of the following terms:

- “on incoming of a signal” (Claim 2/Claim 12/Claim 13);

- “ringing sound” (Claim 2/Claim 5/Claim 6/Claim 12/Claim 13/Claim 14/Claim 15);
- “ringing sound generator” (Claim 2/Claim 5/Claim 6/Claim 12/Claim 13/Claim 14/Claim 15);
- “sound sources” (Claim 2);
- “controller for controlling operations” (Claim 2/Claim 12/Claim 13);
- “using at least two of said sound sources[/sound generation protocols]” (Claim 2/Claim 13);
- “timer” (Claim 5/Claim 14);
- “time zone” (Claim 5/Claim 14);
- “calendar function” (Claim 6/Claim 15);
- “period” (Claim 6/Claim 15);
- “pattern[s]” (Claim 12);
- “made of combination of at least two sound sources” (Claim 12);
- “sound generation protocols” (Claim 13).

E. Invalidity Under 35 U.S.C. § 101

The Asserted Claims of the '306 patent are invalid under § 101 because they are directed to the ineligible abstract idea of generating sounds using a plurality of sound sources in response to certain signals, and claim implementations of this abstract idea using only conventional technology, as shown by the prior art identified above. The claims thus fail to disclose an inventive concept sufficient to transform the claimed abstract idea into a patent-eligible invention. Instead, the claim recites performing the abstract idea using broad functional language at a high level of generality without providing any specificity.

VIII. '794 PATENT

The '794 patent was filed with the United States Patent and Trademark Office on September 7, 2000. In its Infringement Contentions, Maxell claims a priority date of May 22, 2000. Apple reserves the right to serve additional or modified invalidity contentions should Maxell be permitted to amend or modify its claimed priority date.

A. Prior Art

Apple identifies the following prior art now known to Apple to anticipate and/or render obvious one or more claims of the '794 patent under at least 35 U.S.C. §§ 102(a), (b), (e), (g), and/or 103.

1. Prior Art Patents and Publications

The following patents and publications are prior art for Asserted Claims of the '794 patent under at least 35 U.S.C. §§ 102(a), (b), (e), and/or (g). Invalidity claim charts for these references are attached as Exhibits G1 through G8.

1. U.S. Patent No. 5,870,685 ("Flynn '685"), filed on September 4, 1996, and issued on February 9, 1999 to James M. Flynn.
2. U.S. Patent No. 6,031,999 to Ogawa ("Ogawa '999"), filed on July 25, 1997, and issued on February 29, 2000.
3. U.S. Patent No. 6,363,266 to Nonogaki ("Nonogaki"), filed on March 1, 2000, and issued on March 26, 2002.
4. U.S. Patent No. 6,609,072 to Yamagata ("Yamagata"), filed on December 2, 1998 and issued on Aug. 19, 2003.
5. Japanese Patent App. Pub. No. H10-289038 to Hikishima ("Hikishima"), filed on April 11, 1997, and published on October 27, 1998.
6. Japanese Utility Model Publication No. U306314 to Tagoshi ("Tagoshi"), published on January 14, 2000.
7. Japanese Unexamined Patent Application Publication No. JP H6-209529 to Endo ("Endo"), published on July 26, 1994.
8. Japanese Unexamined Patent Application Publication JP H7-281798 to Tanaka

- (“Tanaka”), published October 27, 1995.
9. U.S. Patent No. 5,886,954 to Asami et al. (“Asami”), issued March 23, 1999.
 10. Ericsson T28s cellular phone (the “T28s”), as described in User’s Guide: Mobile Phone T28s (the “T28s User’s Guide”), published by Ericsson Communications AB by at least September 1999; and “T28 – Slim, Stylist, Smart,” a press release published by Ericsson on January 28, 1999
 11. NEC DB2000 Service Manual (the “DB2000 Manual”), published by NEC Technologies (UK) Ltd. on January 27, 1999.
 12. Duracell Smart Battery Specification, publicly available at least as early as February 15, 1995, and incorporated by reference to Flynn at 9:38-42.
 13. U.S. Patent No. 6,501,968 to Ichimura (“*Ichimura*”), filed April 17, 1998, and issued December 31, 2002.

Apple’s investigation into prior art patent and publication references remains ongoing and Apple reserves the right to identify and rely on additional patent or publication references that describe or are otherwise related to the prior art systems identified below based on information obtained through discovery.

2. Prior Art Systems

The following systems are anticipatory prior art for the Asserted Claims of the ’794 patent under at least 35 U.S.C. §§ 102(a), (b) and/or (g):

1. Products, components, systems, and methods invented, designed, developed, reduced to practice, and/or in public use or on sale related to the Ericsson T28s cellular phone (the “T28s”), as exemplified in claim charts in Exhibit G2. As part of these Invalidity Contentions, Apple has produced documents relating to the T28s. Based on information available to Apple, Apple believes that this system was known to others, in public use, and/or on sale by January 1999.
2. Products, components, systems, and methods invented, designed, developed, reduced to practice, and/or in public use or on sale related to the NEC DB2000 cellular phone (the “DB2000”), as exemplified in claim charts in Exhibit G5. As part of these Invalidity Contentions, Apple has produced documents relating to DB2000. Based on information available to Apple, Apple believes that this system was known to others, in public use, and/or on sale by 1999.

Apple’s investigation into prior art systems remains ongoing and Apple reserves the right

to identify and rely on systems that represent different versions or are otherwise related variations of the systems identified above. Apple further reserves the right to revise, amend, update, and/or supplement the information provided in these Invalidity Contentions (including the attached claim charts) based on additional information and evidence obtained through discovery. Apple also reserves the right to rely on any system, product, or public knowledge or use that embodies or otherwise incorporates any of the prior art patents and publications listed above. In addition to the prior art products, components, systems, and methods described above, Apple also reserves the right to rely on documents and publications relating to the prior art listed above as prior art publications.

B. Anticipation

Apple contends that each prior art reference anticipates one or more claims of the '794 patent under at least 35 U.S.C. §§ 102(a), (b), (e), and/or (g), either expressly or inherently as understood by a PHOSITA:

- Endo. *See* Ex. G1.
- T28s. *See* Ex. G2.
- Flynn. *See* Ex. G3.
- Hikishima. *See* Ex. G4.
- DB2000. *See* Ex. G5.
- Nonogaki. *See* Ex. G6.
- Ogawa. *See* Ex. G7.
- Tagoshi. *See* Ex. G8

C. Obviousness

Apple contends that each prior art reference disclosed in the preceding Anticipation section may be combined with (1) information known to persons skilled in the art at the time of the alleged

invention, (2) the applicant-admitted prior art in the specification, (3) any of the other anticipatory prior art references, and/or (4) any of the additional prior art references identified in this section to render these claims invalid as obvious.

1. Exemplary Combinations

Below is a listing of exemplary combinations of references that render obvious the Asserted Claims of the '794 patent. For at least the reasons described below, it would have been obvious to a PHOSITA to combine any of a number of prior art references, including any combination of those identified below, to meet the limitations of the Asserted Claims of the '794 patent. These exemplary combinations are alternatives to Apple's anticipation and single-reference obviousness contentions, and, thus, they should not be interpreted as indicating that any of the individual references included in the exemplary combinations are not by themselves invalidating prior art under §§ 102 and/or 103. Apple reserves the right to identify additional combinations during expert discovery and later stages of the case.

- Endo, alone or in view of Asami, Flynn, Hikishima, Nonogaki, Ogawa, Tagoshi, or Tanaka. *See* Ex. G1.
- Endo in view of Hikishima, and further in view of Asami, Flynn, Nonogaki, Ogawa, Tagoshi, or Tanaka. *See* Ex. G1.
- Endo in view of Hikishima, in view of Ogawa, and further in view of Asami, Flynn, Nonogaki, Tagoshi, or Tanaka. *See* Ex. G1.
- Endo in view of Hikishima, in view of Tagoshi, and further in view of Asami, Flynn, Nonogaki, or Tanaka. *See* Ex. G1.
- Endo in view of Ogawa, and further in view of Asami, Flynn, Nonogaki, or Tanaka. *See* Ex. G1.
- Endo in view of Ogawa, in view of Nonogaki, and further in view of Tagoshi. *See* Ex. G1.
- Endo in view of Tagoshi, and further in view of Asami, Flynn, Ogawa, Nonogaki, or Tanaka. *See* Ex. G1.

- Endo in view of Tagoshi, in view of Ogawa, and further in view of Asami, Flynn, Nonogaki, or Tanaka. *See* Ex. G1.
- Endo in view of Tagoshi, in view of Tanaka, and further in view of Hikishima. *See* Ex. G1.
- Endo in view of Tagoshi, in view of Nonogaki, and further in view of Hikishima. *See* Ex. G1.
- Endo in view of Tagoshi, Ogawa, Nonogaki, and further in view of Hikishima. *See* Ex. G1.
- Endo in view of Tagoshi, Ogawa, Tanaka, and further in view of Hikishima. *See* Ex. G1.
- T28s, alone or in view of Asami, Hikishima, Nonogaki, Ogawa, Tagoshi, Tanaka, or Yamagata. *See* Ex. G2.
- T28s in view of Hikishima, and further in view of Asami, Nonogaki, Tagoshi, Tanaka, or Yamagata. *See* Ex. G2.
- T28s in view of Hikishima, in view of Tagoshi, and further in view of Asami, Nonogaki, Tanaka, or Yamagata. *See* Ex. G2.
- T28s in view of Ogawa, and further in view of Asami, Hikishima, Nonogaki, Tagoshi, Tanaka, or Yamagata. *See* Ex. G2.
- T28s in view of Ogawa, in view of Hikishima, and further in view of Asami, Nonogaki, Tanaka, or Yamagata. *See* Ex. G2.
- T28s in view of Ogawa, in view of Tagoshi, and further in view of Asami, Nonogaki, Tanaka, or Yamagata. *See* Ex. G2.
- T28s in view of Ogawa, in view of Hikishima, in view of Tagoshi, and further in view of Nonogaki or Tanaka. *See* Ex. G2.
- T28s in view of Tagoshi, and further in view of Asami, Nonogaki, Tanaka, or Yamagata. *See* Ex. G2.
- Flynn, alone or in view of Asami, Duracell Smart Battery Specification, Ichimura, Nonogaki, Ogawa, Tanaka, or Yamagata. *See* Ex. G3.
- Flynn in view of Duracell Smart Battery Specification, and further in view of Asami, Nonogaki, Ogawa, Tanaka, or Yamagata. *See* Ex. G3.
- Flynn in view of Duracell Smart Battery Specification, in view of Ogawa, and further in view of Asami, Nonogaki, Tanaka, or Yamagata. *See* Ex. G3.

- Flynn in view of Ichimura, and further in view of Asami, Nonogaki, Ogawa, Tanaka, or Yamagata. *See* Ex. G3.
- Flynn in view of Ichimura, in view of Ogawa, and further in view of Asami, Nonogaki, or Yamagata. *See* Ex. G3.
- Flynn in view of Ogawa, and further in view of Asami, Nonogaki, Tanaka, or Yamagata. *See* Ex. G3.
- Hikishima, alone or in view of Asami, Flynn, Nonogaki, Ogawa, Tagoshi, or Tanaka. *See* Ex. G4.
- Hikishima in view of Ogawa, and further in view of Asami, Flynn, Nonogaki, Tagoshi, or Tanaka. *See* Ex. G4.
- Hikishima in view of Tagoshi, and further in view of Asami, Flynn, Nonogaki, or Tanaka. *See* Ex. G4.
- Hikishima in view of Tagoshi, in view of Tanaka, and further in view of Ogawa. *See* Ex. G4.
- DB2000 and/or DB2000 Manual, alone or in view of Asami, Flynn, Hikishima, Nonogaki, Tagoshi, Tanaka, or Yamagata. *See* Ex. G5.
- DB2000 and/or DB2000 Manual, in view of Hikishima, and further in view of Asami, Flynn, Nonogaki, Tagoshi, Tanaka, or Yamagata. *See* Ex. G5.
- DB2000 and/or DB2000 Manual, in view of Hikishima, in view of Tagoshi, and further in view of Asami, Flynn, Nonogaki, Tanaka, or Yamagata. *See* Ex. G5.
- DB2000 and/or DB2000 Manual, in view of Ogawa, and further in view of Asami, Flynn, Hikishima, Nonogaki, Tagoshi, Tanaka, or Yamagata. *See* Ex. G5.
- DB2000 and/or DB2000 Manual, in view of Ogawa, in view of Hikishima, and further in view of Asami, Flynn, Nonogaki, Tanaka, or Yamagata. *See* Ex. G5.
- DB2000 and/or DB2000 Manual, in view of Ogawa, in view of Tagoshi, and further in view of Asami, Flynn, Nonogaki, Tanaka, or Yamagata. *See* Ex. G5.
- DB2000 and/or DB2000 Manual, in view of Tagoshi, and further in view of Asami, Flynn, Nonogaki, Tanaka, or Yamagata. *See* Ex. G5.
- Nonogaki, alone or in view of Asami, Flynn, Ogawa, or Tanaka. *See* Ex. G6.
- Nonogaki in view of Flynn, and further in view of Asami, Ogawa, or Tanaka. *See* Ex. G6.

- Nonogaki in view of Flynn, in view of Ogawa, and further in view of Asami. *See* Ex. G6.
- Nonogaki in view of Ogawa, and further in view of Asami or Tanaka. *See* Ex. G6.
- Ogawa, alone or in view of Flynn. *See* Ex. G7.
- Ogawa in view of Flynn, and further in view of Asami, Nonogaki, Tanaka, or Yamagata. *See* Ex. G7.
- Tagoshi, alone or in view of Asami, Flynn, Hikishima, Nonogaki, Ogawa, or Tanaka. *See* Ex. G8.
- Tagoshi in view of Ogawa, and further in view of Asami, Flynn, Hikishima, Nonogaki, or Tanaka. *See* Ex. G8.

2. Motivation To Combine

Apple hereby incorporates the legal background regarding obviousness combinations and motivations to combine from Section □ above. The motivations to combine various references are included in the claim charts attached to these Invalidity Contentions. In addition, Apple discloses additional motivations below.

The Asserted Claims of the '794 patent are generally directed to apparatus and techniques for reducing power consumption of a battery-powered device by turning off components that have lower impact on the core functionality of the device. These technologies were widely known before the alleged priority date of the '794 patent. Indeed, a jury has already found that the elements of the '794 patent were “well-understood, routine, and conventional to a person of ordinary skill in the art as of May 22, 2000.” *Maxell, Ltd. v. ZTE (USA) Inc.*, Case No. 5:16-cv-00179-RWS, Dkt. 228 at *8 (E.D. Tex. June 29, 2018).

For example, the Asserted Claims of the '794 patent recite “an information processing device comprising at least two function devices equipped with independent functions.” By 2000, it was conventional for an information processing device to include several components that have independent functions. To the extent that the terms “function device(s)” or “component device(s)”

are construed to require a specific structure, modem devices, audio communication devices and videophone devices, information processing devices that included such structures were also well known by 2000. *See, e.g.*, Endo, T28s, DB2000, Flynn, Hikishima, Nonogaki, Tagoshi, Yamagata. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits that the conventional approach for battery powered devices disclosed in other references can be applied to Flynn, Hikishima, Nonogaki, Tagoshi, or Yamagata.

The Asserted Claims of the '794 patent recite an information processing device with “at least two function devices equipped with independent functions” or “component devices for performing different functions in the device.” By 2000, it was conventional for an information processing device, such as a mobile station or a camera, to include multiple components, each performing independent functions. *See, e.g.*, Endo at [0018] and Fig. 1; T28s, Hikishima at [0014] and Fig. 1; Tagoshi at [0013-0016], Fig. 2. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented the conventional type of information processing devices.

The Asserted Claims of the '794 patent recite “a power supply circuit for supplying power to each of said function devices, said power supply circuit including a battery, a capacity detector for detecting a remaining capacity of said battery, and a controller for controlling operation of said function devices based on said remaining capacity,” “each of said component devices having a corresponding power supply; a battery supplying power; a capacity detector detecting a remaining battery capacity of said battery; [and] a controller . . . ,” or similar limitations. By 2000, it was conventional for an information processing device, such as a mobile station or a camera, to include

a battery and the ability to determine the remaining battery capacity. *See, e.g.*, Endo at [0018], Fig. 1; T28s, DB2000, Ogawa at 2:1-67. Fig. 1; Flynn at Abstract, Fig. 4; Hikishima at [0020]-[0021], Fig. 1; Nonogaki at Abstract; Tagoshi at [0012], Fig. 1; Yamagata at Fig. 6. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented the conventional approach for battery powered devices.

The Asserted Claims of the '794 patent recite “when said capacity detector detects remaining battery capacities NA and NB (where $NA > NB$), said controller sends a power consumption reduction instruction to each function device included in a set GA if NA is detected, each function device of the set GA having a lower usage priority,” “a controller sending a first power consumption reduction instruction to a portion of said component devices having a lower usage priority when said capacity detector detects a first reference level, and sending a second power consumption reduction instruction to another portion of said component devices having a higher usage priority when said capacity detector detects a second reference level, said second reference level is lower than said first reference level,” or similar limitations. By 2000, it was conventional (and necessary) for battery-powered information processing devices to include power management functions that disable a non-essential component of the information processing device to reduce power consumption. *See, e.g.*, Endo at [0020]-[0024]; T28s, DB2000, Hikishima at [0023]-[0029], Fig. 3; Ogawa at 4:42-5:8, Fig. 2; Flynn at 11:64-12:24, Fig. 8B; Nonogaki at 2:1-34; Tagoshi at [0014]-[0016], Fig. 2; Yamagata at 2:40-59. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented the conventional approach for power consumption management in an

information processing device.

The Asserted Claims of the '794 patent recite “said controller sends a power consumption reduction instruction to each function device included in a set GA if NA is detected,” “a controller sending a first power consumption reduction instruction to a portion of said component devices having a lower usage priority when said capacity detector detects a first reference level,” or similar limitations. By 2000, it was well known that a controller may send an instruction signal to a component device or a function device to cause the component device or the function device to operate in a way that reduces the power consumption. *See, e.g.*, Endo at [0020]-[0021]; T28s, DB2000, Hikishima at [0025]-[0028]; Ogawa at 4:47-5:60; Tagoshi at [0014], Fig. 2. A PHOSITA would have recognized that one obvious way to extend battery life in a battery-powered information processing device is to reduce power consumption by various function devices or component devices included in the information processing device. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented a well-known feature of a battery-powered information processing device with known benefits.

The Asserted Claims of the '794 patent recite “said controller sends a power consumption reduction instruction to each function device included in a set GA if NA is detected, ,each function device of the set GA having a lower usage priority, and to each function device of a set GB if NB is detected,” “a controller . . . sending a second power consumption reduction instruction to another portion of said component devices having a higher usage priority when said capacity detector detects a second reference level” or similar limitations. By 2000, it was well known various function devices or component devices in an information processing device may have different

usage priorities. *See, e.g.*, Endo at [0021]-[0024]; T28s, DB2000, Tagoshi at Abstract, [0007]-[0008]; Ogawa 3:57-4:42, 5:36-58, Fig. 2, 3. A PHOSITA would have recognized that one obvious way to extend battery life in a battery-powered information processing device with minimum impact on user's ability to continue to use the device is to reduce power consumption by the function devices or component devices with lower usage priority. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented a well-known feature of a battery-powered information processing device with known benefits.

The Asserted Claims of the '794 patent recite "each function device of set GB is not included in said set GA," or similar limitations. By 2000, it was well known various function devices or component devices in an information processing device may have different usage priorities and may be stopped at different times to reduce power consumption by the information processing device. *See, e.g.*, Endo at [0021]-[0024]; Hikishima at [0028]-[0031], Fig. 1; T28s, DB2000, Tagoshi at [0014]-[0016]; Ogawa 4:6-5:65; 6:18-31. A PHOSITA would have recognized that one obvious way to extend battery life in a battery-powered information processing device with minimum impact on user's ability to continue to use the device is to reduce power consumption by the function devices or component devices with lower usage priority, and when the battery level is drained further, additional function devices or component devices that were previously impacted may be put into a lower power consumption mode. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented a well-known feature of a battery-powered information

processing device with known benefits.

The Asserted Claims of the '794 patent recite “wherein at least one of said power consumption reduction instructions is an instruction to stop a corresponding function device” or similar limitations. By 2000, it was well known that a component device or a function device may be stopped to reduce the power consumption rate of the information processing device. *See, e.g.*, Endo at [0020]-[0023]; T28s, DB2000, Ogawa at 4:47-5:8; Flynn at 12:8-24, 13:62-14:7, 15:57-60; Hikishima at [0028]-[0031]; Tagoshi at [0014]-[0015]; Nonogaki at 1:27-37; Asami at 13:4-14:19; Yamagata at 1:16-25, 7:33-55, Fig. 2. A PHOSITA would have recognized that one obvious way to achieve power consumption reduction is to stop a function device or a component device that is a part of the information processing device. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented a well-known feature of a battery-powered information processing device with known benefits.

The Asserted Claims of the '794 patent recite “a changeover device capable of cutting off power to part or all of at least one function device” or similar limitations. By 2000, it was well known that battery power consumption could be reduced by cutting off power to part or all of a component that has an independent function within an information processing device. *See, e.g.*, Endo at [0018]-[0023], Fig. 1; T28s, DB20000, Flynn at 8:13-46, Nonogaki at 5:26-38, 10:46-51, Yamagata at 6:57-67, 7:47-53, Fig. 2. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits, and a PHOSITA would have been motivated to incorporate the techniques taught by Flynn, Nonogaki, Nonogaki, or other charted

references to obtain the predictable result with a reasonable expectation of success.

The Asserted Claims of the '794 patent recite “wherein at least a portion of said usage priorities can be set up by a user using a function settings procedure” or similar limitations. By 2000, it was well known to allow a user to set priorities of various functions using a function setting procedure. *See, e.g.*, Endo at [0023]; T28s, Nonogaki at 8:23-27, Tanaka at [0005]-[0007]. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits. A PHOSITA would have been further motivated to incorporate the techniques taught by Nonogaki or Tanaka to benefit from giving users the added control to accommodate the user’s usage preference and do so with a reasonable expectation of success.

The Asserted Claims of the '794 patent recite “wherein if said user does not set up said usage priorities for said function devices, pre-set values are used as usage priorities for said function devices” or similar limitations. By 2000, it was well known that various function devices or component devices may have default usage priorities without a user having to manually set the priority. *See, e.g.*, Endo at [0021]-[0022]; T28s, Hikishima at [0013]-[0016]; Tagoshi at [0014]-[0017]; Ogawa at 3:51-5:8, Figs. 2-3. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits. A PHOSITA would have been motivated to combine the reactivation of previously stopped function devices as taught by Endo, Hikishima, Tagoshi, Ogawa or other charted references into other prior art systems to improve the information processing system to allow the higher default priority function to continue to be used even after the threshold battery level for deactivating a lower priority function is reached, and do so with a reasonable expectation of success.

The Asserted Claims of the '794 patent recite “wherein if said function devices with high usage priorities require another function device, said other function device is reactivated if it is stopped due to reduced capacity” or similar limitations. By 2000, it was well known have various function devices that require operation of another function device. *See, e.g.*, Asami at Fig. 6, 8:38-59, 11:8-55; Tanaka at [0013], [0025]. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits. A PHOSITA would have been motivated to combine the reactivation of previously stopped function devices as taught by Asami, Tanaka, or other charted references into other prior art systems to improve the information processing system to allow the higher priority function to continue to be used even after the threshold battery level for deactivating a lower priority function is reached, and do so with a reasonable expectation of success.

The Asserted Claims of the '794 patent recite “a function device common to a plurality of independent functions, said common function device being allowed to operate to the end” or similar limitations. By 2000, it was well known have certain function devices that perform a function necessary for multiple other independent functions. For example, Tagoshi teaches a function device, e.g., a display that is common to a plurality of independent functions, e.g., both video and audio communications. Flynn discloses a function device (e.g., the charging function) common to a plurality of independent functions that is allowed to operate to the end. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits. A PHOSITA would have been motivated to combine the teachings of Tagoshi, Flynn, or other charted references into other prior art systems to improve the information

processing system to allow the function devices that are used by multiple other functions to continue to operate so as to minimize the impact on the user's ability to continue using the information processing device, and do so with a reasonable expectation of success.

D. Invalidity Under 35 U.S.C. § 112

Apple hereby incorporates the legal background regarding indefiniteness, enablement, and written description from Section II.D.1 above. The identified grounds noted below both individually and collectively render the Asserted Claims of the '794 patent invalid under the statutory requirements of § 112.

1. Indefiniteness Under 35 U.S.C. § 112, ¶ 2

The Asserted Claims of the '794 patent fail to satisfy the requirements of § 112, ¶ 2 because the scope of the following terms cannot be determined with reasonable certainty by a PHOSITA when reading the claims in light of the specification and prosecution history.

- “independent functions” (Claim 1)
- “a capacity detector for detecting a remaining capacity of said battery” (Claim 1)
- “a controller for controlling operation of said function devices based on said remaining capacity” (Claim 1)
- “wherein when said capacity detector detects remaining battery capacities NA and NB (where NA>NB)” (Claim 1)
- “a power consumption reduction instruction” (Claim 1); “a first power consumption reduction instruction,” “a second power consumption reduction instruction” (Claim 9)
- “lower usage priority” (Claim 1)
- “said controller sends a power consumption reduction instruction to each function

device included in a set GA if NA is detected, each function device of the set GA having a lower usage priority” (Claim 1)

- “wherein at least one of said power consumption reduction instruction is an instruction to stop a corresponding function device” (Claim 2)
- “wherein said power supply circuitry includes a changeover device capable of cutting off power to part or all of at least one function device, said controller controlling said changeover device based on said remaining capacities NA and NB of said battery” (Claim 3)
- “wherein at least a portion of said usage priorities can be set up by a user using a function settings procedure” (Claim 5, Claim 11)
- “pre-set values are used as usage priorities” (Claim 6, Claim 12)
- “wherein if said user does not set up said usage priorities for said function devices, pre-set values are used as usage priorities for said function devices” (Claim 6), “wherein if said user does not set up said usage priorities for said component devices, pre-set values are used as usage priorities for said component devices” (Claim 12)
- “high usage priority” (Claim 7)
- “wherein if said function devices with high usage priorities require another function device, said other function device is reactivated if it is stopped due to reduced capacity” (Claim 7)
- “said common function device being allowed to operate to the end” (Claim 8, Claim 14)
- “each of said component devices having a corresponding power supply” (Claim 9)

- “lower usage priority” and “higher usage priority” (Claim 9)
- “wherein the power supplies of said component devices are controlled” (Claim 9)
- “component devices for performing different functions in the device” (Claim 9)
- “a capacity detector detecting a remaining capacity of said battery” (Claim 9)
- “a controller sending a first power consumption reduction instruction to a portion of said component devices having a lower usage priority when said capacity detector detects a first reference level, and sending a second power consumption reduction instruction to another portion of said component devices having a higher usage priority when said capacity detector detects a second reference level, said second reference level is lower than said first reference level” (Claim 9)
- “wherein at least one of said first power consumption reduction instruction and said second power consumption reduction instruction is an instruction to stop a corresponding component device” (Claim 10)
- “wherein if said user does not set up said usage priorities for said component devices, pre-set values are used as usage priorities for said component devices” (Claim 12)
- “wherein if said component devices with higher usage priorities require another component device, said another component device is reactivated if it is stopped due to reduced capacity” (Claim 13)

2. Lack Of Enablement Under 35 U.S.C. § 112, ¶ 1

The Asserted Claims of the '794 patent fail to satisfy the requirements of § 112, ¶ 1 because the specification fails to provide an enabling disclosure for the following terms:

- “a capacity detector for detecting a remaining capacity of said battery” (Claim 1)

- “a power consumption reduction instruction” (Claim 1); “a first power consumption reduction instruction,” “a second power consumption reduction instruction” (Claim 9)
- “said controller sends a power consumption reduction instruction to each function device included in a set GA if NA is detected, each function device of the set GA having a lower usage priority” (Claim 1)
- “wherein at least one of said power consumption reduction instruction is an instruction to stop a corresponding function device” (Claim 2)
- “a changeover device,” “wherein said power supply circuitry includes a changeover device capable of cutting off power to part or all of at least one function device, said controller controlling said changeover device based on said remaining capacities NA and NB of said battery” (Claim 3)
- “functions setting procedure,” “wherein at least a portion of said usage priorities can be set up by a user using a function settings procedure” (Claim 5, Claim 11)
- “wherein if said user does not set up said usage priorities for said function devices, pre-set values are used as usage priorities for said function devices” (Claim 6)
- “wherein if said function devices with high usage priorities require another function device, said other function device is reactivated if it is stopped due to reduced capacity” (Claim 7)
- “said common function device being allowed to operate to the end” (Claim 8, Claim 14)
- “component devices for performing different functions in the device” (Claim 9)
- “a capacity detector detecting a remaining capacity of said battery” (Claim 9)

- “a controller sending a first power consumption reduction instruction to a portion of said component devices having a lower usage priority when said capacity detector detects a first reference level, and sending a second power consumption reduction instruction to another portion of said component devices having a higher usage priority when said capacity detector detects a second reference level, said second reference level is lower than said first reference level” (Claim 9)
- “wherein at least one of said first power consumption reduction instruction and said second power consumption reduction instruction is an instruction to stop a corresponding component device” (Claim 10)
- “wherein if said user does not set up said usage priorities for said component devices, pre-set values are used as usage priorities for said component devices” (Claim 12)
- “wherein if said component devices with higher usage priorities require another component device, said another component device is reactivated if it is stopped due to reduced capacity” (Claim 13)

3. Lack Of Written Description Under 35 U.S.C. § 112, ¶ 1

The Asserted Claims of the '794 patent fail to satisfy the requirements of § 112, ¶ 1 because the specification fails to provide an adequate written description of the following terms:

- Lack of Written Description (and possible lack of enablement):
 - “a capacity detector for detecting a remaining capacity of said battery” (Claim 1)
 - “a controller for controlling operation of said function devices based on said remaining capacity” (Claim 1)
 - “wherein when said capacity detector detects remaining battery capacities NA and

NB (where $NA > NB$)” (Claim 1)

- “a changeover device,” “wherein said power supply circuitry includes a changeover device capable of cutting off power to part or all of at least one function device, said controller controlling said changeover device based on said remaining capacities NA and NB of said battery” (Claim 3)
- “functions setting procedure,” “wherein at least a portion of said usage priorities can be set up by a user using a function settings procedure” (Claim 5, Claim 11)
- “wherein if said user does not set up said usage priorities for said function devices, pre-set values are used as usage priorities for said function devices” (Claim 6)
- “wherein if said function devices with high usage priorities require another function device, said other function device is reactivated if it is stopped due to reduced capacity” (Claim 7)
- “said common function device being allowed to operate to the end” (Claim 8, Claim 14)
- “component devices for performing different functions in the device” (Claim 9)
- “a capacity detector detecting a remaining capacity of said battery” (Claim 9)
- “a controller sending a first power consumption reduction instruction to a portion of said component devices having a lower usage priority when said capacity detector detects a first reference level, and sending a second power consumption reduction instruction to another portion of said component devices having a higher usage priority when said capacity detector detects a second reference level, said second reference level is lower than said first reference level” (Claim 9)
- “wherein if said user does not set up said usage priorities for said component

devices, pre-set values are used as usage priorities for said component devices”
(Claim 12)

- “wherein if said component devices with higher usage priorities require another component device, said another component device is reactivated if it is stopped due to reduced capacity” (Claim 13)

E. Invalidity Under 35 U.S.C. § 101

The Asserted Claims of the ’794 patent are invalid under § 101 because they are directed to the ineligible abstract idea of reducing consumption (e.g., power consumption in an electronic device) to make a limited resource (such as a battery) last longer, and claim implementations of this abstract idea using only conventional technology, as shown by the prior art identified above and as determined by jury in a prior case. *See, e.g., Maxell, Ltd. v. ZTE (USA) Inc.*, Case No. 5:16-cv-00179-RWS, Dkt. 228 at *8 (E.D. Tex. June 29, 2018) (jury verdict finding that the claims of the ’794 patent claimed elements that were “well-understood, routine, and conventional to a person of ordinary skill in the art as of May 22, 2000”). The claims thus fail to disclose an inventive concept sufficient to transform the claimed abstract idea into a patent-eligible invention. Instead, the claim recites performing the abstract idea using broad functional language at a high level of generality without providing any specificity.

IX. ’586 PATENT

The ’586 patent was filed with the United States Patent and Trademark Office on May 1, 2013. In its Infringement Contentions, Maxell claims a priority date of May 23, 2012. Apple reserves the right to serve additional or modified invalidity contentions should Maxell be permitted to amend or modify its claimed priority date.

A. Prior Art

Apple identifies the following prior art now known to Apple to anticipate and/or render

obvious one or more claims of the '586 patent under at least 35 U.S.C. §§ 102(a), (b), (e), (g), and/or 103.

1. Prior Art Patents and Publications

The following patents and publications are prior art for Asserted Claims of the '586 patent under at least 35 U.S.C. §§ 102(a), (b), (e), and/or (g). Invalidity claim charts for these references are attached as Exhibits H1 through H3.

1. U.S. Patent Application Publication No. 2006/0041746 ("Kirkup '746"), filed on August 17, 2004 by Michael G. Kirkup et al., and published on February 23, 2006.
2. U.S. Patent No. 6,871,063 ("Schiffer '063"), filed on June 30, 2000, and issued on March 22, 2005 to Jeffrey L. Schiffer.
3. U.S. Patent No. 7,941,534 ("de la Huerga '534"), filed on June 26, 2004, published on April 28, 2005 as US 2005/0091338, and issued on May 10, 2011 to Carlos de la Huerga.
4. U.S. Patent No. 8,149,089 ("Lin '089") was filed on November 21, 2008 and issued on April 3, 2012 to Jian-Liang Lin, et al.

Apple's investigation into prior art patent and publication references remains ongoing and Apple reserves the right to identify and rely on additional patent or publication references that describe or are otherwise related to the prior art systems identified below based on information obtained through discovery.

2. Prior Art Systems

Apple reserves the right to rely on any system, product, or public knowledge or use that embodies or otherwise incorporates any of the prior art patents and publications listed above.

B. Anticipation

Apple contends that each prior art reference anticipates one or more claims of the '586 patent under at least 35 U.S.C. §§ 102(a), (b), (e), and/or (g), either expressly or inherently as understood by a PHOSITA:

1. Schiffer '063, *see* Ex. H1.
2. Kirkup '746, *see* Ex. H2.
3. de la Huerga '534, *see* Ex. H3.

C. Obviousness

Apple contends that each prior art reference disclosed in the preceding Anticipation section may be combined with (1) information known to persons skilled in the art at the time of the alleged invention, (2) the applicant-admitted prior art in the specification, (3) any of the other anticipatory prior art references, and/or (4) any of the additional prior art references identified in this section to render these claims invalid as obvious.

1. Exemplary Combinations

Below is a listing of exemplary combinations of references that render obvious the Asserted Claims of the '586 patent. For at least the reasons described below, it would have been obvious to a PHOSITA to combine any of a number of prior art references, including any combination of those identified below, to meet the limitations of the Asserted Claims of the '586 patent. These exemplary combinations are alternatives to Apple's anticipation and single-reference obviousness contentions, and, thus, they should not be interpreted as indicating that any of the individual references included in the exemplary combinations are not by themselves invalidating prior art under §§ 102 and/or 103. Apple reserves the right to identify additional combinations during expert discovery and later stages of the case.

- Schiffer '603 in view of one or more of de la Huerga '534, Kirkup '746, and Lin 089. *See* Ex. H1.
- Kirkup '746 in view of one or more of Schiffer '603, de la Huerga '534, and Lin 089. *See* Ex. H2.
- de la Huerga '534 in view of one or more of Schiffer '603, Kirkup '746, and Lin 089. *See* Ex. H3.

2. Motivation To Combine

Apple hereby incorporates the legal background regarding obviousness combinations and motivations to combine from Section □ above. The motivations to combine various references are included in the claim charts attached to these Invalidity Contentions. In addition, Apple discloses additional motivations below.

The Asserted Claims of the '586 patent are generally directed to techniques for unlocking a mobile terminal using a second mobile terminal. These technologies were widely known before the alleged priority date of the '586 patent.

For example, the Asserted Claims of the '586 patent recite “a memory which previously stores information about an another mobile terminal” or similar limitations. Other Asserted Claims of the '586 patent recite “[t]he mobile terminal...further configured to store information about two or more another mobile terminals” or similar limitations. By 2012, it was conventional for mobile terminals capable of unlocking one or more other mobile terminal to include a memory storing information about those mobile terminals. *See, e.g.*, Schiffer '603 at 2:7-13, 2:38-45, 4:23-36; de la Huerga '534 at 15:3-4, 20:1-15; Kirkup '746 at [0047], [0058]. A PHOSITA would have recognized the benefits of storing information about the device or devices to be unlocked because it would provide additional, more granular unlocking capabilities, greater ability to unlock a variety of devices, and greater configurability to the user. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented the conventional approach for storing information about other terminals with known benefits.

The Asserted Claims of the '586 patent also recite “a controller which switches the mobile terminal between an unlocked state and a locked state based on an authentication input to the

mobile terminal, wherein the locked state prevents unauthorized access to the mobile terminal” or similar limitations. By 2012, it was well known for mobile terminals to include a controller for switching the terminal between an unlocked and a locked state based on an authentication input. *See, e.g.*, Schiffer ’603 at 3:25-35; de la Hueraga ’534 at 12:8-12, 65:53-59; Kirkup ’746 at [0045], [0085], Fig. 3. A PHOSITA would have recognized the benefits of incorporating a processor or microcontroller because such a controller would have efficiently performed various functions, including locking/unlocking the device. Indeed, as of the alleged priority date of the ’586 patent, the use of an embedded processor or microcontroller in mobile devices was ubiquitous. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented the conventional approach for controlling functionality in a mobile device with known benefits.

The Asserted Claims of the ’586 patent recite “, when conditions are met, the controller controls the mobile terminal to transmit information to the another mobile terminal for switching a state of the another mobile terminal from a locked state to an unlocked state” or similar limitations. By 2012, it was well known to set certain conditions, before a mobile terminal could be used to unlock another mobile terminal. *See, e.g.*, de la Hueraga ’534 at 12:53-57; Kirkup ’746 at [0040]; Schiffer ’603 at 4:10-13, 53-58, Fig. 2. A PHOSITA would have recognized the benefits of specifying certain conditions that must be met before a user could use a mobile terminal to unlock another device because this would increase the security of the system. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented the conventional approach for remotely unlocking devices with

known benefits.

The Asserted Claims of the '586 patent recite “first, the mobile terminal is in a locked state, the another mobile terminal is in a locked state, and the another mobile terminal is within communication range of the short-range wireless communications of the transceiver while in the locked state” or similar limitations. By 2012, it was well known to set certain conditions, such as being within communication range of a short-range wireless communication, before a mobile terminal could be used to unlock another mobile terminal. *See, e.g.*, Schiffer '603 at 3:23-37, 1:61-2:1 Fig. 2; de la Huerga '534 at 42:12-16, 69:23-29, 71:66-72:6, 72:54-73:1; Kirkup '746 at [0053], [0068]. A PHOSITA would have recognized the benefits of allowing the user to unlock their phone before entering communications range of the computer system because this would increase the convenience and usability of the system. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented the conventional approach for remotely unlocking devices with known benefits.

The Asserted Claims of the '586 patent recite “second, after the mobile terminal is in the locked state, the another mobile terminal is in the locked state, and the another mobile terminal is within communication range of the short-range wireless communications of the transceiver while in the locked state, performing, via the transceiver, the short-range wireless communications with the another mobile terminal” or similar limitations. By 2012, it was well known to set certain conditions, such as communicating wirelessly over a short-range communication, before a mobile terminal could be used to unlock another mobile terminal. *See, e.g.*, Schiffer '603 at 3:64-4:5, 4:10-19; de la Huerga '534 at 69:23-29, 69:50-54, Fig. 42; Kirkup '746 at [0048]-[0049]. A PHOSITA would have recognized the benefits of automatically establishing short-range wireless

communications because it would reduce the delay in unlocking the computer system. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented a well-known approach for allowing short-range communication between locked devices with known benefits.

The Asserted Claims of the '586 patent recite “third, after the performing, receiving, by the controller, the authentication input for switching the mobile terminal from the locked state to the unlocked state” or similar limitations. By 2012, it was well known to set certain conditions, such as receiving an authentication input at a mobile terminal, before the mobile terminal could be used to unlock another mobile terminal. *See, e.g.*, Schiffer '603 at 2:14-19, 3:23-37; de la Huerga '534 at 71:66-72:18, Figs. 42-43; Kirkup '746 at [0049]. A PHOSITA would have recognized the benefits of authentication after communication had been initiated because it would reduce the delay in unlocking the computer system (or second mobile terminal). Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented a common approach for receiving authentication input with known benefits.

The Asserted Claims of the '586 patent recite “wherein the operation includes a biometrics authentication” or similar limitations. By 2012, it was well known that a variety of inputs, including biometrics inputs, could be used as an authentication input for a mobile terminal. *See, e.g.*, Schiffer '603 at 3:25-37; de la Huerga '534 at 72:65-73:7; Lin '089 at 1:9-12, 3:20-33, 4:34-45, Figs. 1, 2. A PHOSITA would have recognized the benefits of utilizing biometric authentication because it would increase the flexibility of the authentication in the wireless system,

thereby increasing user convenience. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented a well-known for providing authentication input with known benefits.

The Asserted Claims of the '586 patent recite “wherein the short-range wireless communication is via a Bluetooth connection” or similar limitations. By 2012 Bluetooth was a well-known wireless communication protocol that allowed devices to communicate wirelessly over short distances. *See, e.g.*, Schiffer '603 at 3:45-50; Kirkup '746 at [0067]. A PHOSITA would have recognized the benefits of utilizing Bluetooth for a short-range connection because Bluetooth was well known and widely used at that time and thus would have standardized the communication technology, thereby increasing the number of compatible devices and reducing the cost of the system by using commercially available components. Thus, to the extent any reference does not explicitly disclose these limitations, they would have been obvious to a PHOSITA in view of the level of skill in the art and/or one of the references charted in the attached exhibits because this represented the conventional approach for wireless communication with known benefits.

D. Invalidity Under 35 U.S.C. § 112

Apple hereby incorporates the legal background regarding indefiniteness, enablement, and written description from Section II.D.1 above. The identified grounds noted below both individually and collectively render the Asserted Claims of the '586 patent invalid under the statutory requirements of § 112.

1. Indefiniteness Under 35 U.S.C. § 112, ¶ 2

The Asserted Claims of the '586 patent fail to satisfy the requirements of § 112, ¶ 2 because the scope of the following terms cannot be determined with reasonable certainty by a PHOSITA

when reading the claims in light of the specification and prosecution history.

- “locked state” (claims 1, 9, 16)
- “unlocked state” (claims 1, 9, 16)
- “within communication range of the short-range wireless communications,” “in communication range of the short-range wireless communications” (claims 1, 9, 16)
- “short-range wireless communications” (claims 1, 9, 16)
- “predetermined operation is limited” (claims 1, 9, 16)
- “a memory which previously stores information about another mobile terminal” (claims 1 and 16)
- “previously stores” (claims 1, 16)
- “wherein the operation includes a biometric authentication” (claims 2, 10, 17)
- “further configured to store” (claim 6)
- Claims 1 and 16 are directed to a “mobile terminal” and a “lock state control system” but claim ordered method steps and accordingly are indefinite for improperly claiming two different subject-matter classes

2. Lack Of Enablement Under 35 U.S.C. § 112, ¶ 1

The Asserted Claims of the ’586 patent fail to satisfy the requirements of § 112, ¶ 1 because the specification fails to provide an enabling disclosure for the following terms:

- “a memory which previously stores information about another mobile terminal” (claim 1)
- “when conditions are met, the controller controls the mobile terminal to transmit information to the another mobile terminal for switching a state of the another

mobile terminal from a locked state to an unlocked state” or similar limitation (claims 1, 9, 16)

- “wherein the conditions include...after the mobile terminal is in the locked state, the another mobile terminal is in the locked state, and the another mobile terminal is within communication range of the short-range wireless communications of the transceiver while in the locked state, performing, via the transceiver, the short-range wireless communications with the another mobile terminal” or similar limitation (claims 1, 9, 16)
- “wherein the conditions include...after the performing, receiving, by the controller, the authentication input for switching the mobile terminal from the locked state to the unlocked state.” or similar limitation (claims 1, 9, 16)
- “wherein the operation includes a biometric authentication” (claims 2, 10, 17)
- “biometrics authentication” (claims 2, 10, 17)

3. Lack Of Written Description Under 35 U.S.C. § 112, ¶ 1

The Asserted Claims of the ’586 patent fail to satisfy the requirements of § 112, ¶ 1 because the specification fails to provide an adequate written description of the following terms:

- “a memory which previously stores information about another mobile terminal” (claim 1)
- “when conditions are met, the controller controls the mobile terminal to transmit information to the another mobile terminal for switching a state of the another mobile terminal from a locked state to an unlocked state” or similar limitation (claims 1, 9, 16)
- “wherein the conditions include...after the mobile terminal is in the locked state,

the another mobile terminal is in the locked state, and the another mobile terminal is within communication range of the short-range wireless communications of the transceiver while in the locked state, performing, via the transceiver, the short-range wireless communications with the another mobile terminal” or similar limitation (claims 1, 9, 16)

- “wherein the conditions include...after the performing, receiving, by the controller, the authentication input for switching the mobile terminal from the locked state to the unlocked state.” or similar limitation (claims 1, 9, 16)
- “wherein the operation includes a biometric authentication” (claims 2, 10, 17)
- “biometrics authentication” (claims 2, 10, 17)

X. DOCUMENT PRODUCTION ACCOMPANYING INVALIDITY CONTENTIONS

Documents required to be produced under the Docket Control Order and Patent Local Rule 3-4 have been or are being produced to Maxell under a separate letter or will be made available for inspection.

Apple reserves the right to produce and rely on additional documents relating to its products in view of, for example, additional information revealed during discovery regarding Maxell’s allegations and/or amendments to Maxell’s Infringement Contentions.

XI. OTHER RESERVATIONS AND EXPLANATIONS

These Invalidity Conditions and the documents that Apple produces are subject to further revision as follows. Nothing in these contentions constitutes an admission concerning the priority date, conception date, or date of reduction to practice of the Asserted Claims. If the Court finds that Maxell is entitled to a different priority date, or Maxell attempts to argue for a different priority date, Apple reserves the right to serve additional or modified invalidity contentions.

For prior art patents and prior art publications identified in these Invalidity Contentions,

Apple reserves the right to rely on the public use, offer for sale, sale, and/or actual products embodying the methods and systems described therein uncovered during discovery. Apple also reserves the right to rely on any related patents and patent applications, foreign patent counterparts and foreign patent applications of U.S. patents identified in these Invalidity Contentions, and U.S. counterparts of foreign patents and foreign patent applications identified in these Invalidity Contentions.

The Court has not yet construed any of the terms in the Asserted Patents. Accordingly, Apple's Invalidity Contentions are based in part on Apple's present understanding of the Asserted Claims and Maxell's apparent interpretation of these claims as reflected in its Infringement Contentions. By including prior art that anticipates or renders obvious claims based on Maxell's apparent claim interpretations, Apple is not agreeing that Maxell's claim interpretations are correct.

The accompanying invalidity claim charts provide examples of prior art that discloses, either expressly or inherently, every limitation of certain claims and/or teachings, suggestions and motivations through which a PHOSITA at the time of the alleged invention would have considered the limitations obvious in view of the state of the art at the time, the differences between the claimed invention and the state of the art, and the foreseeability from a technical perspective and/or marketing and/or natural and expected evolution of the art. Where Apple cites to a particular figure in a reference, the citation should be understood to encompass the caption and description of the figure and any text relating to the figure. Conversely, where Apple cites to particular text referring to a figure, the citation should be understood to include the figure as well. As discovery progresses and the scope and focus of the liability issues become clearer, Apple may rely on uncited portions of the prior art.

Apple reserves the right to revise its ultimate contentions concerning the invalidity of asserted the Asserted Claims, which may change depending upon discovery taken in the case, the Court's construction of the Asserted Claims, any findings as to the priority date of the Asserted Claims, and/or positions that Maxell or expert witness(es) may take concerning claim construction, infringement, and/or invalidity issues.

Apple may rely on Maxell's or any inventor's admissions concerning the scope of prior art relevant to the Asserted Patents; the patent prosecution histories for the Asserted Patents; any deposition testimony of the named inventors on the Asserted Patents; and the papers filed and any evidence submitted by Maxell in connection with this litigation. For example, Apple reserves the right to assert that the Asserted Claims are invalid under 35 U.S.C. § 102(f) in the event that Apple obtains evidence that the named inventors did not invent (either alone or in conjunction with others) the subject matter claimed in the Asserted Patents. Should Apple obtain such evidence, it will provide the name(s) of the person(s) from whom and the circumstances under which the claimed invention or any part of it was derived.

Prior art not included in this disclosure, whether known or not known to Apple, may become relevant. In particular, Apple is currently unaware of the extent, if any, to which Maxell will contend that limitations of the Asserted Patents are not disclosed in the prior art identified by Apple. To the extent such an issue arises, Apple reserves the right to identify other references that would render obvious the allegedly missing limitation(s) of the disclosed device or method. Further, because discovery is ongoing and because Apple has not yet completed its search for or analysis of relevant prior art, Apple reserves the right to revise, amend, update, and/or supplement the information provided herein, including identifying, charting, and relying on additional references, should Apple's further search and analysis yield additional information or references,

consistent with the Federal Rules of Civil Procedure.

Additionally, because third-party discovery is not yet complete, Apple reserves the right to present additional items of prior art under 35 U.S.C. §§ 102(a), (b), (e), and/or (g), and/or § 103, located during the course of such discovery or further investigation, and to assert invalidity under 35 U.S.C. §§ 102(c), (d), or (f), to the extent that such discovery or investigation yields information forming the basis for such invalidity. For example, Apple expects to issue subpoenas to, and receive information from, third parties believed to have knowledge, documentation, and/or corroborating evidence concerning some of the prior art listed below and/or additional prior art. These third parties include, without limitation, the authors, inventors, vendors, or assignees of the references listed in these disclosures.

Apple further reserves the right to modify or add contentions in the event that Maxell provides amended infringement contentions and to the extent the Court orders or allows Maxell to amend its infringement contentions.

Pursuant to the Docket Control Order, and in light of Maxell's Infringement Contentions and accompanying claim charts, Apple lists in these Invalidity Contentions the prior art now known to it that it contend anticipates or renders obvious asserted the Asserted Claims. Although Apple has 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. In an effort to focus the issues, Apple's cites are only representative portions of an identified reference, even where a reference may contain additional support for a particular claim limitation. PHOSITAs 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. Apple may rely on 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.

Apple incorporates in these Invalidity Contentions, in full, all prior art references cited in the Asserted Patents and their prosecution histories and any applicable post-grant proceedings, including *inter partes* reviews (currently pending or otherwise).

Subject to Apple's reservation of rights, Apple identifies each item of prior art that anticipates and/or renders obvious the Asserted Claims. The patents/applications, publications, and systems identified are also relevant to show the state of the art and reasons and motivations for making improvements, additions, and combinations.

Apple also contends that the Asserted Patents are invalid in view of public knowledge and uses and/or offers for sale or sales of products and services that are under 35 U.S.C. § 102(a) and/or 35 U.S.C. § 102(b) and/or prior inventions made in this country by other inventors who had not abandoned, suppressed, or concealed them under 35 U.S.C. § 102(g).

Apple also reserves the right to rely on any system, public knowledge or use embodying or otherwise incorporating any of the prior art disclosed herein alone or in combination. Apple further reserves the right to rely on any other documents or references describing any such system, knowledge or use.

August 14, 2019

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CERTIFICATE OF SERVICE

I hereby certify that all counsel of record who are deemed to have consented to electronic service are being served this 14th day of August, 2019 with a copy of this document via electronic mail.

Dated: August 14, 2019

/s/ Kristin Godfrey
Kristin Godfrey