

**IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
MIDLAND/ODESSA DIVISION**

TOPWIRE LLC,

Plaintiff,

v.

APPLE INC.,

Defendant.

Civil Action No. 7:25-cv-00551-ADA

JURY TRIAL DEMANDED

DEFENDANT APPLE INC.'S PRELIMINARY INVALIDITY CONTENTIONS

Defendant Apple Inc. (“Apple”) hereby provides its Preliminary Invalidity Contentions pursuant to the Court’s March 5, 2025 Order Governing Proceedings (“OGP”) and the Court’s Scheduling Order (Dkt. No. 26).

I. ASSERTED PATENT

Plaintiff TopWire LLC (“Plaintiff”) served its Preliminary Infringement Contentions (“Infringement Contentions”) on February 24, 2026, asserting that Apple infringes claims 1, 2, 3, 4, 6, and 9 (the “Asserted Claims”) of U.S. Patent No. 9,859,202 (the “’202 Patent” or the “Asserted Patent”).

Based on its investigation to date, and subject to Apple’s reservations of rights as set forth below, Apple hereby: (1) identifies each item of prior art that anticipates each Asserted Claim and/or renders it obvious at least under Plaintiff’s apparent interpretation of the Asserted Claims; (2) provides charts setting forth where in the prior art references each element of the Asserted Claim(s) are found; (3) identifies any limitations of the Asserted Claims that are indefinite or lack written description under 35 U.S.C. § 112; and (4) identifies any Asserted Claims that are directed to ineligible subject matter under 35 U.S.C. § 101.

II. RESERVATIONS

Consistent with the Court’s OGP and the Scheduling Order, Apple reserves the right to amend and/or supplement these Preliminary Invalidity Contentions.

Apple bases these Preliminary Invalidity Contentions on its current knowledge and understanding of Plaintiff’s Infringement Contentions, the prior art, and other facts and information available as of the date of these contentions. Discovery has not yet opened and Apple has not yet completed its investigation, collection of information, discovery, or analysis relating to this action. Apple reserves the right to supplement these contentions based on such investigation and/or discovery and to introduce and use such materials at trial.

The prior art cited herein and in the attached claim charts is illustrative and not exhaustive. Further, citations provided for any particular claim limitation in the claim charts are for exemplary purposes only and should not be deemed exhaustive. Other portions of the identified prior art may additionally, implicitly, expressly, or inherently disclose one or more limitations of the Asserted Claims or render one or more limitations of the Asserted Claims obvious. Apple accordingly reserves the right to rely on such uncited portions of the identified prior art to establish the invalidity of the Asserted Claims. Similarly, where Apple cites to a patent figure in the charts, it incorporates the accompanying specification text describing that figure and vice-versa. Moreover, Apple reserves the right to rely on uncited portions of the identified prior art, other prior art, witness testimony, and/or expert testimony to provide context to or to aid in understanding the identified prior art.

To the extent that prior art identified by Apple as anticipating is found not to anticipate, the prior art establishes that the claimed subject matter was obvious to a person of ordinary skill in the art at the time of the alleged invention. Even if a particular claim element is not expressly found in one of the charted references, those charted references render the relevant Asserted Claims obvious without the need to combine with any other references, having in mind the information generally known to those skilled in the art, common sense, and/or routine innovation. Accordingly, Apple discloses each of the references cited as rendering obvious the Asserted Claims as shown in the charts referenced above. In addition, the charted references in combination with one or more of the other charted references render obvious the Asserted Claims.

As explained in these Preliminary Invalidity Contentions, it would have been obvious to a person of skill in the art at the time of the alleged invention of the Asserted Claims to combine the various references cited for the Asserted Patent so as to practice the Asserted Claims. In addition

to the specific combinations of prior art and the specific combinations of groups of prior art disclosed, Apple reserves the right to rely on any other combination of prior art references disclosed in these Preliminary Invalidity Contentions. Apple further reserves the right to rely upon combinations disclosed within the prosecution histories of the references cited in these Preliminary Invalidity Contentions. These obviousness combinations reflect Apple's present understanding of the potential scope of the claims for which Plaintiff appears to be advocating and should not be construed as Apple's acquiescence to Plaintiff's interpretation of the Asserted Claims.

Numerous prior art references, including those identified in the attachments hereto, reflect common knowledge and the state of the art prior to the priority date of the Asserted Patent. As it would be unduly burdensome to create detailed claim charts for the thousands of invalidating combinations, Apple has provided illustrative examples of such invalidating combinations herein and/or in the charts attached hereto. For at least the reasons described herein, as well as in the attached claim charts, it would have been obvious to one of ordinary skill in the art to combine any of a number of prior art references, including any combination of those identified in the attached claim charts for the Asserted Patent, to meet the limitations of the Asserted Claims. As such, Apple's inclusion of exemplary combinations does not preclude Apple from identifying other invalidating combinations as appropriate.

To the extent Plaintiff challenges a combination of prior art with respect to a particular element, Apple reserves all rights to supplement these contentions to further specify the reasons to combine the prior art. Apple may rely on cited or uncited portions of the prior art, other documents, witness testimony, and/or expert testimony to establish that a person of ordinary skill in the art would have been motivated to modify or combine the prior art so as to render the claims invalid as obvious.

The identification of any patent or patent publication shall be deemed to include any counterpart patent or application filed, published, or issued anywhere in the world. The citation to any specifications published by standard-setting organizations shall be deemed to include any product that implements such specifications and that would qualify as prior art under 35 U.S.C. § 102.

Apple further relies on and incorporates all prior art references cited in and/or on the cover of the Asserted Patent and its prosecution history, including for supporting the anticipation and/or obviousness of any Asserted Claim.

Apple reserves the right to identify additional prior art references including patents, non-patent publications, as well as non-patent and non-publication prior art systems that were sold, offered for sale, used, etc. prior to the priority date of the Asserted Patent, to the extent any such prior art becomes known during discovery in this case. Apple also reserves the right to modify, amend, or further supplement its Preliminary Invalidity Contentions to show the invalidity of any additional claims that the Court may allow Plaintiff to later assert.

To the extent that these Preliminary Invalidity Contentions reflect or otherwise appear to embody particular constructions of terms or phrases in the Asserted Claims, Apple is not proposing any such constructions as proper constructions of those terms or phrases. Various positions set forth in these Preliminary Invalidity Contentions are predicated on Plaintiff's incorrect and overbroad interpretation of its claims as evidenced by its Infringement Contentions provided to Apple. Nothing in these Preliminary Invalidity Contentions shall be treated as an admission that Apple's accused technology meets any limitations of any claim of the Asserted Patent. Apple denies that it infringes any claim of the Asserted Patent. These Preliminary Invalidity Contentions are not intended to, and do not necessarily, reflect Apple's interpretation of the true and proper

scope of the Asserted Claims. Apple reserves the right to adopt claim construction positions that differ from or even conflict with positions put forth in these Preliminary Invalidity Contentions. Also, Apple objects to any attempt to infer any claim constructions from any identification of potential prior art. In instances where Apple asserts that the Asserted Claims are invalid under 35 U.S.C. § 112 (*e.g.*, no written description, and/or not enabled), Apple has applied the prior art in accordance with its assumption that Plaintiff contends such Asserted Claims: (1) are definite; (2) have written description support; and (3) are enabled, as evidenced by Plaintiff's Infringement Contentions. As such, Apple's Preliminary Invalidity Contentions do not represent its agreement or view as to the meaning, definiteness, written description support for, or enablement of any Asserted Claim. These Preliminary Invalidity Contentions and accompanying documents are not intended to reflect Apple's claim construction contentions, which will be disclosed in accordance with the Court's schedule.

Apple's contentions may change depending on the Court's construction of the Asserted Claims, any findings as to the priority dates of the Asserted Claims, and/or positions that Plaintiff or its experts may take concerning claim construction, infringement, and/or invalidity issues. Prior art not included in this disclosure, whether known or unknown to Apple, may become relevant. In particular, Apple is currently unaware of the extent, if any, to which Plaintiff will contend that limitations of the Asserted Claims are not disclosed in the prior art identified by Apple, or will contend that any of the identified references do not qualify as prior art. To the extent that such an issue arises, Apple reserves the right to identify other references that, *inter alia*, would have made the addition of the allegedly missing limitation to the disclosed device or method obvious.

Apple also reserves the right to challenge the patentability of the Asserted Claims in the event Apple obtains evidence that the named inventor of the Asserted Patent did not invent the

subject matter claimed therein. Should Apple obtain such evidence, it will provide the name of the person(s) from whom and the circumstances under which the invention or any part of it was derived. Apple further reserves the right to assert that the Asserted Patent is unenforceable due to inequitable conduct.

Further, Plaintiff contends the Asserted Patent is entitled to a priority date of June 24, 2015. That priority date coincides with the June 24, 2015 filing date of Provisional Application No. 62/184,034, to which the Asserted Patent claims relation. However, U.S. Patent Application No. 15/190,695, from which the Asserted Patent issued, was filed on June 23, 2016. Plaintiff has the burden to show that it is entitled to a priority date of June 24, 2015, or any other asserted priority date earlier than June 23, 2016.

In sum, Apple reserves the right to supplement, amend, or change, without prejudice, these Preliminary Invalidity Contentions, including, by way of example and not limitation, based on: (1) any actual or apparent claim construction positions asserted by Plaintiff; (2) any construction, ruling, interpretation, or clarification of the meaning of any claim terms by the Court; (3) any newly identified, amended, supplemented, or in any way altered infringement or validity theories or positions that Plaintiff or its expert witness(es) may assert; (4) any findings as to the priority date of the Asserted Claims; and/or (5) any additional evidence, including information concerning the prior art or Plaintiff's alleged priority, conception, and reduction to practice dates for any of the Asserted Claims, which is identified or able to be reviewed, once discovery commences and/or once sufficient time allows, including any prior art or contentions from any related lawsuit or Patent Office proceeding, and for any other reason, in accordance with the Federal Rules of Civil Procedure, the Local Rules, the Court's OGP and other applicable rules and statutes.

III. PRELIMINARY IDENTIFICATION OF PRIOR ART AND CLAIM CHARTS

Apple contends that each Asserted Claim is invalid under AIA 35 U.S.C. § 102, including subsections 102(a)(1) and 102(a)(2) and/or is invalid as obvious under 35 U.S.C. § 103, at least under Plaintiff's apparent interpretation of the Asserted Claims. Apple identifies herein prior art patents, publications, and disclosures that anticipate or render obvious the Asserted Claims under 35 U.S.C. §§ 102 or 103, at least under Plaintiff's apparent interpretation of the Asserted Claims. Apple reserves the right to rely on other references disclosed or incorporated by reference in these Preliminary Invalidity Contentions, in the prior art identified below, the Asserted Patent or any related patents, in the file history of the Asserted Patent or any related patents, and in the exhibits attached to these Preliminary Invalidity Contentions.

Detailed charts showing how each identified prior art reference either anticipates or renders obvious each Asserted Claim, at least under Plaintiff's apparent interpretation of the Asserted Claims, are attached as Exhibits 1–10. Apple's invalidity claim charts disclose multiple theories of invalidity in a single chart. For example, each chart directed to an anticipatory publication also discloses how that reference in combination with one or more other references and/or the knowledge of one of ordinary skill in the art renders one or more of the Asserted Claims obvious.

Whenever an exhibit includes a figure, diagram, table, or drawing, all of the text associated with that figure, diagram, table, or drawing is incorporated by reference (even if that text is not explicitly cited in the exhibit). Similarly, if an exhibit includes the text associated with a figure, diagram, table, or drawing, the described figure, diagram, or drawing is incorporated by reference (even if that figure, diagram, table, or drawing is not explicitly cited).

While Apple has identified at least one citation per limitation present in a reference or combination, each and every disclosure of the same or similar limitation in the same reference or combination is not necessarily identified. In an effort to focus the issues, Apple cites only

exemplary pertinent portions of identified references, even where a reference or combination may contain additional support for a particular claim element. Thus, Apple may rely on uncited portions of the prior art references for additional support for a particular element. Apple may rely upon other prior art identified in future supplements, corroborating references, documentation, source code, products, and testimony, including materials obtained through further investigation and third-party discovery of the prior art identified herein, that demonstrates the invalidating functionality identified in these Preliminary Invalidity Contentions, or that shows the state of the art in the relevant time period (irrespective of whether such references themselves qualify as prior art to the Asserted Patent), and expert testimony to provide context to or aid in understanding the cited portions of the identified prior art.

Additionally, persons of ordinary skill in the art generally read a prior art reference as a whole and in the context of other publications and literature. Numerous prior art references, including those identified herein and in the attached exhibits, reflect common knowledge and the state, scope, and content of the prior art before the priority date of the Asserted Claims of the Asserted Patent. Apple may rely on uncited portions of the prior art references and on other publications and testimony to provide context and as aids to understanding and interpreting the portions that are cited. The prior art references listed herein and in the accompanying invalidity claim charts may disclose the elements of the Asserted Claims explicitly and/or inherently. The prior art references are also relevant for their showing of the state of the art, as well as reasons and motivations for making improvements, additions, and combinations.

Apple reserves the right to rely on inventor admissions concerning the scope of the prior art relevant to the Asserted Patent found in, inter alia, the prosecution history of the Asserted Patent, related patents, and/or patent application; any testimony or declarations of the named

inventor concerning the Asserted Patent, related patents, patent applications, and/or the claimed inventions; and any papers or evidence submitted by Plaintiff in connection with the Asserted Patent or this litigation, any other future litigation brought by Plaintiff involving the Asserted Patent or related patents, inter partes review, or reexamination proceedings involving the Asserted Patent or related patents.

The following references: (1) anticipate or render obvious (alone, or in combination with other references as set forth in detail in each claim chart and below) the Asserted Claims, at least under Plaintiff's apparent interpretation of the Asserted Claims; and/or (2) provide background and context for the Asserted Claims:

A. Patents And Patent Applications

The following prior art patent references, including those patent references listed in Exhibits 1–10, anticipate and/or render obvious the Asserted Claims, at least under Plaintiff's apparent interpretation of the Asserted Claims. In addition, Apple incorporates by reference all prior art patents listed as prior art in the Asserted Patent.

Country	Patent/Publication No.	Filing/Publication/Issue Date	Inventor(s)
US	2013/0182402 ("Chen")	Filed: Jan. 18, 2012 Published: Jul. 18, 2013	Chen et al.
US	9,258,922 ("Chen")	Filed: Jan. 18, 2012 Issued: Feb. 9, 2016	Chen et al.
US	2016/0056087 ("Wu")	Filed: Aug. 22, 2014 Published: Feb. 25, 2016	Wu et al.
US	10,319,607 ("Wu")	Filed: Aug. 22, 2014 Issued: June 11, 2019	Wu et al.
US	2009/0140415 ("Furuta")	Filed: Jun. 27, 2008 Published: Jun. 4, 2009	Furuta
US	9,136,210 ("Takeda")	Filed: Dec. 5, 2011 Issued: Sep. 15, 2015	Takeda
US	2013/0127054 ("Muthukumar")	Filed: Jan. 14, 2013 Published: May 23, 2013	Muthukumar et al.
US	10,186,480 ("Muthukumar")	Filed: Jan. 14, 2013 Issued: Jan. 22, 2019	Muthukumar et al.
US	2011/0147908	Filed: Dec. 17, 2009	Sun et al.

	("Sun")	Published: Jun. 23, 2011	
US	2015/0061093 ("Kim")	Filed: Aug. 28, 2014 Published: Mar. 5, 2015	Kim et al.
US	8,379,403 ("Waite")	Filed: Mar. 30, 2010 Issued: Feb. 19, 2013	Waite et al.
US	2014/0248742 ("Gonzalez")	Filed: May 15, 2014 Published: Sep. 4, 2014	Gonzalez et al.
US	2011/0159284 ("Choi")	Filed: Dec. 16, 2010 Published: Jun. 30, 2011	Choi et al.
US	2015/0001708 ("Lin")	Filed: Jun. 28, 2013 Published: Jan. 1, 2015	Lin
US	2008/0155820 ("Arai")	Filed: Nov. 13, 2007 Published: Jul. 3, 2008	Arai et al.
US	7,901,986 ("Arai")	Filed: Nov. 13, 2007 Issued: Mar. 8, 2011	Arai et al.
US	5,334,804 ("Love")	Filed: Nov. 17, 1992 Issued: Aug. 2, 1994	Love et al.
US	2013/0249083 ("Hu")	Filed: Jan. 30, 2013 Published: Sep. 26, 2013	Hu et al.
US	9,991,190 ("Huang")	Filed: May 18, 2012 Issued: Jun. 5, 2018	Huang et al.
US	2013/0252378 ("Jeng I")	Filed: May 22, 2013 Published: Sep. 26, 2013	Jeng et al.
US	9,385,095 ("Jeng II")	Filed: Apr. 10, 2014 Issued: Jul. 5, 2016	Jeng et al.
US	9,721,872 ("Nicholls")	Filed: Feb. 16, 2012 Issued: Aug. 1, 2017	Nicholls et al.
US	2008/0251938 ("Wang")	Filed: Apr. 7, 2008 Published: Oct. 16, 2008	Wang et al.
US	7,649,248 ("Baek")	Filed: Jan. 10, 2006 Issued: Jan. 19, 2010	Baek
US	7,291,925 ("Han")	Filed: May 20, 2005 Issued: Nov. 6, 2007	Han et al.
US	7,960,820 ("Shiraishi")	Filed: Nov. 5, 2008 Issued: Jun. 14, 2011	Shiraishi et al.
US	8,709,938 ("Enquist")	Filed: Mar. 4, 2013 Issued: Apr. 29, 2014	Enquist et al.
US	8,138,015 ("Joseph")	Filed: Aug. 29, 2011 Issued: Mar. 20, 2012	Joseph et al.
US	6,962,835 ("Tong")	Filed: Feb. 7, 2003 Issued: Nov. 8, 2005	Tong et al.
US	7,687,899 ("Berry")	Filed: Aug. 7, 2007 Issued: Mar. 30, 2010	Berry
US	8,436,475 ("Dunne")	Filed: Apr. 11, 2012 Issued: May 7, 2013	Dunne et al.

WO	2002/091469 ("Palazzetti")	Filed: May 7, 2002 Published: Nov. 14, 2002	Palazzetti et al.
US	6,621,156 ("Kimura")	Filed: Jan. 24, 2002 Issued: Sep. 16, 2003	Kimura
US	2018/0096969 ("Kraft")	Filed: Oct. 6, 2017 Published: Apr. 5, 2018	Kraft et al.
US	2005/0236695 ("Ghoshal")	Filed: Apr. 27, 2004 Published: Oct. 27, 2005	Ghoshal et al.
US	2013/0341786 ("Hsu")	Filed: Jun. 25, 2012 Published: Dec. 26, 2013	Hsu et al.
US	6,366,467 ("Patel")	Filed: Mar. 31, 2000 Published: Apr. 2, 2002	Patel et al.
US	9,202,742 ("Kim")	Filed: Jan. 15, 2014 Published: Dec. 1, 2015	Kim et al.
US	9,376,541 ("Kang")	Filed: May 28, 2014 Published: Jun. 28, 2016	Kang et al.
US	2002/0179331 ("Brodsky")	Filed: May 31, 2001 Published: Dec. 5, 2002	Brodsky et al.
US	2003/0160325 ("Yoneda")	Filed: Oct. 2, 2002 Published: Aug. 28, 2003	Yoneda et al.
US	2004/0017672 ("Matsuda")	Filed: Dec. 28, 2000 Published: Jan. 29, 2004	Matsuda
US	2004/0173891 ("Imai")	Filed: Mar. 18, 2004 Published: Sep. 9, 2004	Imai et al.
US	2004/0178508 ("Nishimura")	Filed: Jan. 26, 2004 Published: Sep. 16, 2004	Nishimura et al.
US	2004/0184219 ("Otsuka")	Filed: Mar. 17, 2004 Published: Sep. 23, 2004	Otsuka et al.
US	2004/0227258 ("Nakatani")	Filed: May 5, 2004 Published: Nov. 18, 2004	Nakatani
US	2005/0184381 ("Asahi")	Filed: Feb. 18, 2005 Published: Aug. 25, 2005	Asahi et al.
US	2005/0194672 ("Gibson")	Filed: Nov. 4, 2004 Published: Sep. 8, 2005	Gibson et al.
US	2006/0055017 ("Cho")	Filed: Jul. 8, 2005 Published: Mar. 16, 2006	Cho et al.
US	2006/0091538 ("Kabadi")	Filed: Nov. 4, 2004 Published: May 4, 2006	Kabadi
US	2006/0180938 ("Kurihara")	Filed: Oct. 26, 2005 Published: Aug. 17, 2006	Kurihara et al.
US	2007/0057685 ("Garabedian")	Filed: Sep. 14, 2005 Published: Mar. 15, 2007	Garabedian et al.
US	2007/0075717 ("Kinghorn")	Filed: Dec. 4, 2006 Published: Apr. 5, 2007	Kinghorn et al.
US	2007/0090534 ("Iwasaki")	Filed: Oct. 19, 2006 Published: Apr. 26, 2007	Iwasaki et al.

US	2007/0215380 ("Shibamoto")	Filed: Mar. 12, 2007 Published: Sep. 29, 2007	Shibamoto
US	2008/0155820 ("Arai")	Filed: Nov. 13, 2007 Published: Jul. 3, 2008	Arai et al.
US	2008/0157326 ("Han")	Filed: Oct. 16, 2007 Published: Jul. 3, 2008	Han et al.
US	2009/0108425 ("Lee")	Filed: May 5, 2008 Published: Apr. 30, 2009	Lee et al.
US	2009/0145636 ("Miki")	Filed: Nov. 24, 2008 Published: Jun. 11, 2009	Miki et al.
US	2010/0025081 ("Arai")	Filed: Jun. 26, 2009 Published: Feb. 4, 2010	Arai et al.
US	2011/0080713 ("Sunohara")	Filed: Oct. 4, 2010 Published: Apr. 7, 2011	Sunohara
US	2012/0119370 ("Yoo")	Filed: Sep. 16, 2011 Published: May 17, 2012	Yoo
US	2012/0147578 ("Jiu")	Filed: Dec. 10, 2010 Published: Jun. 14, 2012	Jiu et al.
US	2012/0193812 ("Toh")	Filed: Jan. 29, 2012 Published: Aug. 2, 2012	Toh et al.
US	2012/0211885 ("Choi")	Filed: Jul. 22, 2011 Published: Aug. 23, 2012	Choi et al.
US	2012/0326334 ("Sakaguchi")	Filed: Jun. 20, 2012 Published: Dec. 27, 2012	Sakaguchi
US	2013/0001798 ("Choi")	Filed: Jun. 27, 2012 Published: Jan. 3, 2013	Choi
US	2013/0027895 ("Hayashi")	Filed: Oct. 2, 2012 Published: Jan. 31, 2013	Hayashi
US	2013/0037964 ("Lee")	Filed: Aug. 6, 2012 Published: Feb. 14, 2013	Lee et al.
US	2013/0111123 ("Thayer")	Filed: Nov. 1, 2011 Published: May 2, 2013	Thayer
US	2013/0147026 ("Topacio")	Filed: Dec. 12, 2011 Published: Jun. 13, 2013	Topacio et al.
US	2013/0320568 ("Aoki")	Filed: May 13, 2013 Published: Dec. 5, 2013	Aoki
US	2014/0001639 ("Hiraishi")	Filed: Jun. 25, 2013 Published: Jan. 2, 2014	Hiraishi et al.
US	2014/0085850 ("Li")	Filed: Sep. 26, 2012 Published: Mar. 27, 2014	Li et al.
US	2014/0092569 ("Sakurai")	Filed: Sep. 27, 2013 Published: Apr. 3, 2014	Sakurai
US	2014/0117557 ("Chen")	Filed: Aug. 13, 2013 Published: May 1, 2014	Chen et al.
US	2014/0157593 ("Lin")	Filed: Jan. 30, 2013 Published: Jun. 12, 2014	Lin et al.

US	2014/0167263 ("Wu")	Filed: Dec. 13, 2012 Published: Jun. 19, 2014	Wu et al.
US	2014/0252561 ("Lisk")	Filed: Mar. 8, 2013 Published: Sep. 11, 2014	Lisk et al.
US	2015/0061095 ("Choi")	Filed: Aug. 26, 2014 Published: Mar. 5, 2015	Choi et al.
US	2015/0061101 ("Le")	Filed: Oct. 23, 2014 Published: Mar. 5, 2015	Le et al.
US	2015/0102485 ("Kang")	Filed: May 28, 2014 Published: Apr. 16, 2015	Kang et al.
US	2015/0115466 ("Kim")	Filed: Jul. 31, 2014 Published: Apr. 30, 2015	Kim
US	2015/0115467 ("Park")	Filed: Aug. 11, 2014 Published: Apr. 30, 2015	Park et al.
US	2015/0214207 ("Yoshida")	Filed: Feb. 26, 2015 Published: Jul. 30, 2015	Yoshida
US	2015/0255412 ("Meyer")	Filed: Mar. 6, 2014 Published: Sep. 10, 2015	Meyer et al.
US	2016/0027712 ("Hu")	Filed: Jul. 25, 2014 Published: Jan. 28, 2016	Hu
US	2016/0027764 ("Kim")	Filed: Mar. 25, 2015 Published: Jan. 28, 2016	Kim

B. Non-Patent Literature

The following prior art publications, including those publications listed in Exhibits 1–10, anticipate and/or render obvious the Asserted Claims, at least under Plaintiff's apparent interpretation of the Asserted Claims. In addition, Apple incorporates by reference all prior art publications listed as prior art in the Asserted Patent.

Title	Date of Publication	Author or Publisher
IPC-4761 Design Guide for Protection of Printed Board Via Structures ("IPC-4761")	July 2006	IPC
The Requirement of Future Substrate - Maker Point of View	April 22, 2014	Dyi-Chung Hu
Surface Mount Assembly And Board Level Reliability For High Density PoP (Package-on-Package) Utilizing Through Mold Via Interconnect Technology	August 2008	Proceedings of the SMTA International Conference

C. Non-Patent/Publication References

Apple also contends that the Asserted Claims are invalid in view of public knowledge and uses and/or offers for sale or sales of products and services that are prior art under 35 U.S.C. § 102(a)(1), and that anticipate or render obvious the Asserted Claims, at least under Plaintiff's apparent interpretation of the Asserted Claims. Examples of such prior art are listed below including, to the extent now known, the name of the item(s); when the item became publicly known or was used, offered for sale, or sold; and the identities of the persons or entities that made the item public, publicly used it, or made the offer for sale. The following descriptions are stated on information and belief, and Apple expects that it or third parties will produce or otherwise provide supporting information and/or documents. As discovery has not yet opened, Apple continues to investigate these references, as well as additional non-patent/publication references that would be prior art under 35 U.S.C. § 102(a)(1).

1. **Amkor Package-on-Package ("PoP") Technologies:** Amkor Technology, Inc. and/or its affiliates (collectively, "Amkor") have researched, developed, and/or offered various PoP technologies, including Interposer-PoP technologies, which include the stacking of two or more chip packages for use in, *e.g.*, high-end mobile application processors. As non-limiting examples: (a) Amkor's PoP technology using thru mold vias ("TMV") was in public use, on sale, and/or otherwise available by 2008,¹ and is therefore prior art under at least 35 U.S.C. § 102(a)(1); (b) Amkor's laminate-substrate based flip chip Through Mold Via ("fcTMV") package was in public use, on sale, and/or otherwise available by 2012,² and is therefore prior art under at least 35 U.S.C. § 102(a)(1); (c) Amkor's laminate-substrate based interposer-PoP was in public use, on

¹ See, *e.g.*, https://www.researchgate.net/publication/267774454_Next_Generation_Package-on-Package_PoP_Platform_with_Through_Mold_Via_TMV_Interconnection_Technology.

² See, *e.g.*, <https://ieeexplore.ieee.org/document/9501714>.

sale, and/or otherwise available by 2014,³ and is therefore prior art under at least 35 U.S.C. § 102(a)(1); and (d) Amkor’s fan-out RDL based PoP was in public use, on sale, and/or otherwise available by 2016,⁴ and is therefore prior art under at least 35 U.S.C. § 102(a)(1). The Amkor PoP technologies were further disclosed in a number of printed publications that are themselves prior art under 35 U.S.C. § 102(a)(1).

2. **TSMC Chip-on-Wafer-on-Substrate (“CoWoS”) Technologies:** Taiwan Semiconductor Manufacturing Company and/or its affiliates (collectively, “TSMC”) have researched, developed, and/or offered various CoWoS technologies (*e.g.*, CoWoS/CoWoS-S, CoWoS-R, CoWoS-L) that, for example, provide packaging platforms that integrate multiple chips, use of a silicon interposer or local interconnect layer, and mounting onto a package substrate to achieve high-bandwidth, high-density interconnection. As a non-limiting example, TSMC’s CoWoS/CoWoS-S technology was used, placed in public use, and/or offered for sale by 2011,⁵ and is therefore prior art under at least 35 U.S.C. § 102(a)(1). The TSMC CoWoS technologies were further disclosed in a number of printed publications that are themselves prior art under 35 U.S.C. § 102(a)(1).

3. **Apple iPhone (1st Generation):** Apple’s iPhone (retroactively referred to as the iPhone (1st generation)) included a stacked logic board structure and was used, placed in public use, and/or offered for sale by 2007,⁶ and is therefore prior art under at least 35 U.S.C. § 102(a)(1).

³ See, *e.g.*, <https://ieeexplore.ieee.org/document/9501714>.

⁴ See, *e.g.*, <https://ieeexplore.ieee.org/document/9501714>.

⁵ See, *e.g.*, <https://www.3dincites.com/2019/05/tsmcs-2019-technology-symposium-highlights-25-years-of-innovation/>; <https://www.granitefirm.com/blog/us/2025/01/31/tsmc-advanced-packaging-evolution-history/>; <https://www.tsmc.com/english/dedicatedFoundry/technology/cowos>.

⁶ See, *e.g.*, <https://www.apple.com/newsroom/2007/01/09Apple-Reinvents-the-Phone-with-iPhone/>; <https://www.cnet.com/tech/mobile/using-the-2007-iphone-in-2017/>.

The iPhone (1st generation) stacked logic board structure was further disclosed in a number of printed publications that are themselves prior art under 35 U.S.C. § 102(a)(1).

D. Other Prior Art Publications, Public Uses, Public Offers For Sale/Sales

Any physical embodiments of the references described in Sections III.A–B above, for which physical embodiments were publicly available (*e.g.*, used, offered for sale, or sold) before the claimed or actual priority date of the Asserted Patent, also constitute prior art. Apple is not limited to the prior art references identified above, and may also rely on material that expressly identifies and/or describes any physical embodiment of such references as applicable prior art. Any citation to one or more of the above-listed prior art references should be construed to constitute not only a citation to the prior art reference itself (*e.g.*, as a printed publication), but also as reference to product(s) or system(s) described therein.

Similarly, the information described in Section III.C is relied upon as exemplary prior art based on prior public use, sale, and/or offer for sale. With respect to the prior art product(s) or system(s) (*e.g.*, prior public uses, offers for sale and/or sales), Apple reserves the right to rely on additional documents to demonstrate the product(s) or system(s), testimony relating to the product(s) or system(s), and/or other information. Apple further reserves the right to rely on, as invalidating prior art under 35 U.S.C. §§ 102 and/or 103, the product or system itself (including physical embodiments), any document(s) describing the product or system as printed publications, and/or any combinations thereof. It would have been obvious to combine any publications describing the product or system with any other such publications, and/or the product or system itself, since such information is directed to the same underlying subject matter of the prior art.

Further, Apple’s investigation has just begun, and discovery in this case has not yet commenced. In the course of discovery, Apple anticipates identifying additional documents and/or information describing prior public use, offers for sale, and sales regarding the prior art identified

in Section III.C above. Apple also anticipates discovery from Plaintiff, third parties, independent consultants or experts, and/or others will likely identify additional product prior art systems and related documents and/or information. Apple will amend its Invalidity Contentions as such discovery becomes available.

E. Claim Charts

Individual claim charts that identify where each element of each Asserted Claim is found in each item of the charted prior art references, at least under Plaintiff's apparent interpretation of the Asserted Claims, are attached hereto as Exhibits 1–10. A listing of these claim charts is provided below:

- **Exhibit 1:** Chen alone and/or in view of Sun, Wu, Furuta, and/or Hu
- **Exhibit 2:** Sun alone and/or in view of Chen, Wu, Furuta, Love, and/or Hu
- **Exhibit 3:** Furuta alone and/or in view of Chen, Sun, and/or Wu
- **Exhibit 4:** Wu alone and/or in view of Chen, Sun, and/or Furuta
- **Exhibit 5:** Muthukumar alone and/or in view of Chen, Sun, and/or Furuta
- **Exhibit 6:** Takeda alone and/or in view of Chen, Sun, and/or Furuta
- **Exhibit 7:** Kim alone and/or in view of Chen, Sun, Wu, and/or Furuta
- **Exhibit 8:** Arai alone and/or in view of Chen, Sun, and/or Furuta
- **Exhibit 9:** Waite alone and/or in view of Chen, Sun, Furuta, and/or IPC-4761
- **Exhibit 10:** Conventional Knowledge of a Person of Ordinary Skill in the Art

F. Disclosure of Invalidity Due to Anticipation Under 35 U.S.C. § 102 And/Or Obviousness Under 35 U.S.C. § 103

Subject to Apple's reservations of rights above, and based on Apple's present understanding of the Asserted Claims and/or the apparent claim interpretations advanced by Plaintiff in its Complaint and Infringement Contentions, the prior art references charted in Exhibits

1–10 anticipate and/or render obvious the Asserted Claims. The charts identify where each element of each Asserted Claim can be found in each item of prior art,⁷ and set forth the bases for anticipation and obviousness, identifying the disclosures of each reference that can be combined on a limitation-by-limitation basis.

For example, Exhibits 1–9 include exemplary claim charts that describe how the Asserted Claims would have been obvious, at least under Plaintiff’s apparent interpretation of the Asserted Claims, in view of the following references alone: Chen, Sun, Furuta, Wu, Muthukumar, Takeda, Kim, Arai, and Waite (collectively, the “Primary References”). Further, Exhibits 1–10 include exemplary claim charts that describe how the Asserted Claims would have been obvious, at least under Plaintiff’s apparent interpretation of the Asserted Claims, in view of the Primary References in combination with the other references cited or described therein. Each of the Primary References teaches or renders obvious all or, at a minimum, the vast majority of the limitations of the Asserted Claims. To the extent any claim elements are found to be missing from the primary references, secondary references are designated for combination with the primary references.

To the extent a finder of fact finds that a limitation of a given claim was not disclosed by one of the references identified above, any purported differences are such that the claimed subject matter as a whole would have been obvious to one skilled in the art at the time of the alleged invention, in view of the state of the art and knowledge of those skilled in the art under 35 U.S.C. § 103. The Asserted Claims contain nothing that goes beyond ordinary design and

⁷ Nothing in these Preliminary Invalidity Contentions shall be treated as an admission that Apple’s accused technology meets any limitations of any claim of the Asserted Patent. Apple denies that it infringes any claim of the Asserted Patent. Nothing stated herein shall be construed as an admission or a waiver of any particular construction of any claim term. Apple expressly reserves the right to contest any claim construction asserted by Plaintiff and expressly reserves all non-infringement arguments.

implementation; no asserted claim goes beyond combining known elements to achieve predictable results or does more than choose between clear alternatives known to those of skill in the art.

Moreover, to the extent references are found not to anticipate the Asserted Claims, each Asserted Claim would have been obvious to one of ordinary skill in the art in view of the combination of any one of the foregoing prior art references with one or more of the other references. In particular, those of ordinary skill in the art at the time of the alleged invention of the Asserted Patent would have been motivated to modify or combine the prior art references set forth above because, *inter alia*: (a) the references in general deal with the same or related subject matter of semiconductor package; (b) one of ordinary skill in the art would have been motivated by the problem that the inventor was attempting to solve, or with other problems that would have been faced in reaching a solution, and would have looked to references that concerned similar issues or taught how to overcome the problems faced; (c) the combinations were obvious to try and would have operated in their known and expected way; (d) the combinations were within the technical skill and understanding of a person of ordinary skill in the art; (e) the combinations would have been motivated by the developments in technology; (f) the combinations reflect various design choices that would have been known to one of ordinary skill in the art and within that person's technical capability to implement (*i.e.*, technically feasible); (g) a person having ordinary skill in the art of the Asserted Patent would have been motivated to incorporate the benefits into the methods or systems described in the prior art, including to improve semiconductor packaging.

The various reasons and motivations described above provide a basis for combining or modifying references to render each of the Asserted Claims obvious. Such motivations include the nature of the problem being solved, the express, implied and inherent teachings of the prior art, the knowledge of persons of ordinary skill in the art, that such combinations would have yielded

predictable results, and that such combinations would have represented known alternatives to a person of ordinary skill in the art. In addition, the Court can consider the inferences and creative steps a person of ordinary skill in the art would employ in making such combinations. *See KSR*, 550 U.S. at 418 (“[A] court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.”).

In addition to the specific exemplary combinations of prior art and the specific combinations of groups of prior art disclosed, Apple reserves the right to rely on any other combination of any prior art references disclosed herein, consistent with the Federal Rules of Civil Procedure and the Court’s OGP. Apple further reserves the right to rely upon combinations disclosed within the prosecution history of the references cited herein. These obviousness combinations reflect Apple’s present understanding of the potential scope of the claims for which Plaintiff appears to be advocating and should not be construed as Apple’s acquiescence to Plaintiff’s interpretation of the Asserted Claims.

IV. CONTENTIONS UNDER 35 U.S.C. § 112

In accordance with the Court’s OGP and Scheduling Order, Apple includes below the grounds on which Apple contends the Asserted Claims of the Asserted Patent are invalid for failure to meet the requirements of 35 U.S.C. § 112. As noted above, however, Plaintiff has not yet provided a claim construction for any of the terms and phrases that Apple anticipates will be in dispute. Apple, therefore, cannot provide a complete list of its § 112 defenses because Apple does not know whether Plaintiff will proffer a construction for certain terms and phrases that is broader than, or inconsistent with, the construction that would be supportable by the disclosure set forth in the specification. To the extent the following contentions reflect constructions of claim limitations consistent with or implicit in Plaintiff’s Infringement Contentions, no inference is intended nor should any be drawn that Apple agrees with Plaintiff’s claim constructions or apparent

interpretations, and Apple expressly reserves the right to contest such claim constructions. Apple offers these contentions in response to Plaintiff's Infringement Contentions and without prejudice to any position it may ultimately take as to any claim construction issues. Accordingly, Apple reserves the right to supplement, amend, and/or modify these Section 112 invalidity contentions as discovery progresses.

For a claim to be valid, the specification must contain a written description of the invention. 35 U.S.C. § 112(a). To fulfill the written description requirement, it "must clearly allow persons of ordinary skill in the art to recognize that the inventor invented what is claimed." *Ariad Pharm., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (citation and internal quotation marks omitted). "[T]he 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,' and demonstrate that by disclosure in the specification of the patent." *Carnegie Mellon Univ. v. Hoffmann-La Roche Inc.*, 541 F.3d 1115, 1122 (Fed. Cir. 2008) (quoting *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1563–64 (Fed. Cir. 1991)).

The specification must also describe "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 . . . to make and use the" invention. *Ariad*, 598 F.3d at 1343; *see also* 35 U.S.C. § 112(a). "The enablement requirement is satisfied when one skilled in the art, after reading the specification, could practice the claimed invention without undue experimentation." *AK Steel Corp. v. Sollac & Ugine*, 344 F.3d 1234, 1244 (Fed. Cir. 2003) (citation omitted). "[T]he scope of the claims must be less than or equal to the scope of the enablement." *Nat'l Recovery Tech., Inc. v. Magnetic Separation Sys., Inc.*, 166 F.3d 1190, 1196 (Fed. Cir. 1999).

To the extent that the Asserted Claims are not found invalid for the reasons outlined above, they are invalid because the Asserted Patent's specification does not contain an adequate written description and/or an enabling disclosure of at least the following limitations (all of which are present in at least Asserted Claim 1, from which the remaining Asserted Claims depend):

- “a bottom package substrate”
- “a top package substrate”
- “a plurality of metal pillars, each passing through the core substrate”
- “a plurality of top metal pads”
- “a plurality of bottom metal pillars”
- “a plurality of top metal pillars”
- “the at least one spacer connector comprises two spacer connectors arranged on opposite sides of the bottom chip”

V. DOCUMENT PRODUCTION

Pursuant to the Scheduling Order, Apple is concurrently producing the prior art referenced in these Invalidity Contentions and the accompanying claim charts. In addition, based on its investigations to date, Apple is concurrently producing documents required to accompany these Invalidity Contentions under the Scheduling Order.

Apple reserves the right to supplement these productions with additional documentation, in accordance with the Federal Rules of Civil Procedure, the Local Rules, the Court's orders and other applicable rules and statutes.

Dated: April 21, 2026

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that on April 21, 2026, all counsel of record who have appeared in this case and have consented to electronic service, were served with the foregoing document via email.

Dated: April 21, 2026

Respectfully submitted,

/s/ Asim Zaidi

Asim Zaidi