IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT TEXAS
AUSTIN DIVISION

ONE-E-WAY, INC., Plaintiff, v. DELL TECHNOLOGIES INC., AND DELL, INC Defendants.	Civil Action No. 1:24-cv-01558-RP (LEAD) **JURY TRIAL DEMANDED**
ONE-E-WAY, INC., Plaintiff, v. ANKER INNOVATIONS LTD. Defendant.	Civil Action No: 1:24-cv-01559-RP **JURY TRIAL DEMANDED**
ONE-E-WAY, INC., Plaintiff, v. SAMSUNG ELECTRONICS CO., LTD. AND SAMSUNG ELECTRONICS AMERICA, INC., Defendants.	Civil Action No: 1:24-cv-01561-RP **JURY TRIAL DEMANDED**

DEFENDANTS' PRELIMINARY INVALIDITY AND SUBJECT MATTER ELIGIBILITY CONTENTIONS

I. INTRODUCTION

Pursuant to Paragraph 5 of the Agreed Scheduling Order (Dkt. 42, "Scheduling Order"), Defendants Dell Technologies Inc. and Dell Inc. (collectively "Dell") and Samsung Electronics

One-E-Way Exhibit 2009
Samsung Electronics Co., Ltd. et al. v. One-E-Way, Inc.
IPR2025-01540

Co., Ltd. and Samsung Electronics America, Inc. (collectively "Samsung," and collectively with Dell, "Defendants") hereby provide their Preliminary Invalidity and Subject Matter Eligibility Contentions with respect to the claims identified by Plaintiff One-E-Way, Inc. ("Plaintiff" or "OEW") in its Disclosure of Preliminary Infringement Contentions ("Infringement Contentions"), served on June 26, 2025 in the above-captioned case. Plaintiff appears to assert infringement of the following claims:[1]

- Claims 1-5, 8-12 of U.S. Patent No. 9,107,000 (the "'000 patent")[2];
- Claims 1-12 of U.S. Patent No. 10,129,627 (the "'627 patent")[3]; and
- Claims 1-6, 8-15, and 17-20 of U.S. Patent No. 10,468,047 (the "'047 patent")[4].

The '000, '627, and '047 patents are together referenced herein as the "Asserted Patents." Claims 1-5 and 8-12 of the '000 patent, claims 1-12 of the '627 patent, and claims 1-6, 8-15, and 17-20 of the '047 patent are herein together referenced as the "Asserted Claims."

Pursuant to Paragraph 5 of the Scheduling Order, Defendants hereby provide their Preliminary Invalidity and Subject Matter Eligibility Contentions and related documents

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Plaintiff's Infringement Contentions fail to specifically identify the "Asserted Claims."

[2] Attachment A-9 to the Infringement Contentions identifies claims 1, 2, 3, 4, 5, and 9 of the '000 patent. Attachment A-10 to the Infringement Contentions identifies claims 8, 10, 11, and 12 of the '000 patent. Attachment A-11 to the Infringement Contentions identifies claims 1, 5, and 9 of the '000 patent. Attachment A-12 to the Infringement Contentions identifies claims 8, 10, 11, and 12 of the '000 patent.

[3] Attachment A-1 to the Infringement Contentions identifies claims 1, 2, 3, 4, 10, and 11 of the '627 patent. Attachment A-2 to the Infringement Contentions identifies claims 5, 6, and 12 of the '627 patent. Attachment A-3 to the Infringement Contentions identifies claims 1, 2, 3, 4, 7, 8, 10, and 11 of the '627 patent. Attachment A-4 to the Infringement Contentions identifies claims 5, 6, 9, and 12 of the '627 patent.

[4] Attachment A-5 to the Infringement Contentions identifies claims 1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 12, 13, 14, and 15 of the '047 patent. Attachment A-6 to the Infringement Contentions identifies claims 17, 18, 19, and 20 of the '047 patent. Attachment A-7 to the Infringement Contentions identifies claims 1, 2, 3, 4, 5, 8, 9, 10, 11, 12, 13, and 14 of the '047 patent. Attachment A-8 to the Infringement Contentions identifies claims 17, 18, 19, and 20 of the '047 patent.

pertaining only to the Asserted Claims as identified by Plaintiff in its Infringement Contentions. With respect to each Asserted Claim, and based on their investigations to date, Defendants hereby: (a) identify each currently known item of prior art that either anticipates or renders obvious each asserted claim; (b) specify whether such prior art anticipates each Asserted Claim or renders it obvious; (c) submit a chart identifying where each element in each Asserted Claim is disclosed, described, or taught in the prior art; (d) identify the grounds for invalidating Asserted Claims based on indefiniteness under 35 U.S.C. § 112, ¶ 2, or non-enablement or lack of written description under 35 U.S.C. § 112, ¶ 1; and (e) identify any claims that are directed to ineligible subject matter under 35 U.S.C. § 101.

Defendants further rely on and incorporate all prior art references cited in and/or on the cover of the Asserted Patents and their prosecution histories, including for supporting the obviousness of any Asserted Claim. Defendants further rely on and incorporate by reference, as if originally set forth herein, all invalidity positions (but not necessarily claim construction positions), and all associated prior art and claim charts, disclosed to Plaintiff by present or former defendants in any lawsuits or other proceedings or by potential or actual licensees to any claims of the Asserted Patents or any patents related to the Asserted Patents, including, but not limited to, in the following civil actions, ITC actions, and post grant proceedings:

- *One-E-Way, Inc. v. Apple Inc.*, Civ No. 2:20-cv-06339 (C.D. Cal.);
- *One-E-Way, Inc. v. Apple Inc.*, Appeal No. 2022-2020 (Fed. Cir.);
- *Apple Inc. v. One-E-Way, Inc.*, IPR2021-00283;
- *Apple Inc. v. One-E-Way, Inc.*, IPR2021-00284;
- *Apple Inc. v. One-E-Way, Inc.*, IPR2021-00285;
- *Apple Inc. v. One-E-Way, Inc.*, IPR2021-00286;

- *Apple Inc. v. One-E-Way, Inc.*, IPR2021-00287;
- *In the Matter of Certain Wireless Headsets*, Inv. No. 337-TA-943;
- *Sony Corp. v. One-E-Way, Inc.*, IPR2016-01638;
- *Sony Corp. v. One-E-Way, Inc.*, IPR2016-01639;
- *Sony Corp. v. One-E-Way, Inc.*, IPR2016-00216;
- *Sony Corp. v. One-E-Way, Inc.*, IPR2016-00217;
- *Sony Corp. v. One-E-Way, Inc.*, IPR2016-00218;
- *Sony Corp. v. One-E-Way, Inc.*, IPR2016-00219; and
- *One-E-Way v. International Trade Commission*, Appeal No. 2016-2105 (Fed. Cir.).

In addition, based on their investigation to date, Defendants have produced, and hereby produce, the documents currently in their possession, custody, or control required to accompany these Preliminary Invalidity and Subject Matter Eligibility Contentions.

II. RESERVATIONS OF RIGHTS

Defendants reserve the right to modify, amend, or supplement these Preliminary Invalidity and Subject Matter Eligibility Contentions as specifically contemplated by Paragraph 10 of the Court's Scheduling Order. The Court's Scheduling Order contemplate that these Preliminary Invalidity and Subject Matter Eligibility Contentions be prepared and served in response to Plaintiff's Infringement Contentions. However, Plaintiff's Infringement Contentions are insufficient in that they lack proper and complete disclosure as to how each Defendant and each Accused Product allegedly infringes the Asserted Claims. As such, Defendants reserve the right to modify, amend, and/or supplement these Preliminary Invalidity and Subject Matter Eligibility

Contentions should the Court permit Plaintiff to correct, clarify, amend, and/or supplement its Infringement Contentions.

Defendants' Preliminary Invalidity and Subject Matter Eligibility Contentions and selection of documents accompanying them are based on information currently available to Defendants and is subject to further revision. For example, Plaintiff (or its counsel) may be in possession of prior art, deposition transcripts, expert reports, and invalidity claim charts from previous litigations that have not been disclosed to Defendants. As another example, because discovery has only recently begun, Defendants reserve the right to amend or supplement the information provided herein, including identifying and relying on additional references.

To the extent these Preliminary Invalidity and Subject Matter Eligibility Contentions reflect or otherwise embody particular constructions of terms or phrases in the Asserted Claims, Defendants are not proposing any such constructions as proper constructions of those terms or phrases. Various positions put forth in these Preliminary Invalidity and Subject Matter Eligibility Contentions are submitted in view of Plaintiff's incorrect and/or overbroad interpretation of its claims as evidenced by its Infringement Contentions provided to Defendants.[5] These Preliminary Invalidity and Subject Matter Eligibility Contentions are not intended to, and do not necessarily, reflect Defendants' interpretation of the true and proper scope of the Asserted Claims. Defendants reserve the right to adopt claim construction positions that differ from positions put forth in this document as is specifically allowed by the Court's Scheduling Order. Also, Defendants object to

[5] Defendants do not concede that Plaintiff's apparent interpretation of the claims is correct, but rather assert the well-established principle that whatever infringes a claim if later in time anticipates if earlier in time. *Bristol-Myers Squibb Co. v. Ben Venue Lab'ys, Inc*., 246 F.3d 1368, 1378 (Fed. Cir. 2001). Thus, where Plaintiff, for purposes of its infringement case, alleges that a feature of an accused product meets a particular limitation recited in one or more of the Asserted Claims, then that feature, should it be found in the prior art, would also cause that limitation to be met for invalidity purposes.

any attempt to infer any claim constructions from any identification of potential prior art. In those instances where Defendants assert that the Asserted Claims are invalid under 35 U.S.C. § 112 (*e.g.*, no written description, not enabled, and/or indefinite), Defendants have 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, Defendants' Preliminary Invalidity and Subject Matter Eligibility Contentions do not represent their agreement or view as to the meaning, definiteness, written description support for, or enablement of any asserted claim. These Preliminary Invalidity and Subject Matter Eligibility Contentions and accompanying documents are not intended to reflect Defendants' claim construction contentions, which will be disclosed in accordance with the Court's Scheduling Order.

Defendants' Preliminary Invalidity and Subject Matter Eligibility Contentions may change depending on the Court's construction of the Asserted Claims, any findings as to the priority date 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 Defendants, may become relevant. In particular, Defendants are 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 Defendants, or will contend that any of the identified references do not qualify as prior art. To the extent that such an issue arises, Defendants reserve 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.

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 pre-AIA 35 U.S.C. § 102, *e.g.*, under Sections 102(a), 102(b), or 102(g)(2).

Defendants' claim charts cite to particular teachings and disclosures of the prior art as applied to features of the Asserted Claims. Persons having ordinary skill in the art, however, may view an item of prior art in the context of other publications, literature, products, and understanding. As such, the cited portions are only exemplary, and Defendants reserve the right to rely on uncited portions of the prior art references and on other publications and expert testimony as aids in understanding and interpreting the cited portions, as providing context thereto, and as additional evidence that the prior art discloses a claim limitation. Defendants further reserve the right to rely on uncited portions of the prior art references, other publications, and testimony to establish bases for combinations of certain cited references that render the Asserted Claims obvious. Further, for any combination, Defendants reserve the right to rely additionally on information generally known to those skilled in the art or common sense.

The references discussed in the claim charts may disclose the elements of the Asserted Claims explicitly or inherently, or they may be relied upon to show the state of the art in the relevant time frame. The suggested obviousness combinations are provided in the alternative to Defendants' anticipation contentions and are not to be construed to suggest that any reference included in the combinations is not by itself anticipatory.

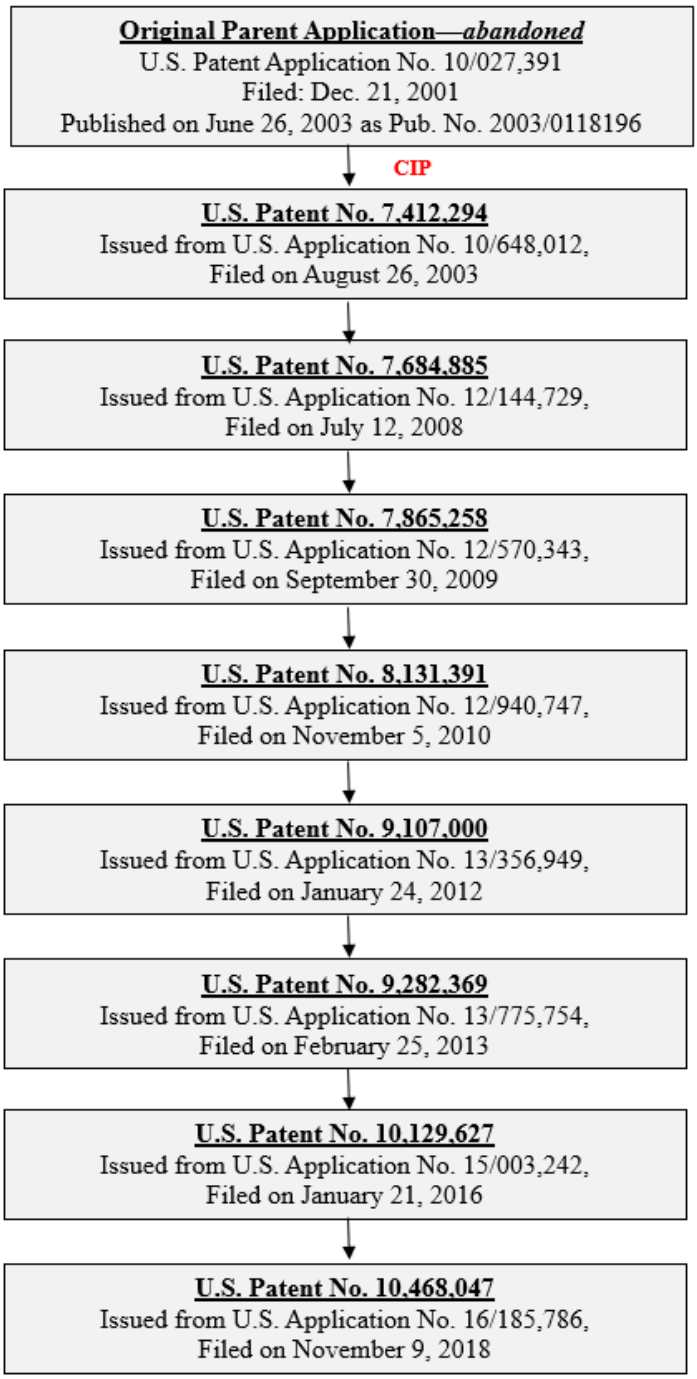
Defendants reserve the right to challenge patentability of the Asserted Claims under pre-AIA 35 U.S.C. § 102(f) in the event Defendants obtain evidence that the named inventor of the Asserted Patents did not invent the subject matter claimed in the Asserted Patents. Should

Defendants obtain such evidence, they will provide the name of the person(s) from whom and the circumstances under which the invention or any part of it was derived.

III. IDENTIFICATION OF PRIOR ART

A. Priority Date of the Asserted Patents

The Asserted Patents issued from the following chain of applications:



In its Infringement Contentions, Plaintiff provided the following priority date for the Asserted Patents:

- "All claims of U.S. Patent Nos. 10,129,627; 10,468,047; 9,107,000 are entitled to a priority date of at least as early as December 21, 2001. Plaintiff reserves the right to amend the priority date as discovery develops."

As discussed below, based on Defendants' current understanding, Defendants do not believe any Asserted Patent is entitled to a priority date earlier than July 12, 2008.

While the Asserted Patents state on their faces that each claims priority to application no. 10/027,391 filed on December 21, 2001 (the "'391 application") and/or application no. 10/648,012 filed on August 26, 2003 (the "'012 application), priority to these applications was broken by the '012 application as filed.

For the claims of the Asserted Patents to be entitled to the priority date of the earliest application in the chain, i.e., the 2001 application, every application between the Asserted Patents and that application must maintain disclosure that supports the claims.

In this case, the applicant broke the chain of disclosure in 2003 by filing a continuation-in-part ("CIP") application directed to a different invention than that of the claims of the Asserted Patents. The 2003 application did not include or incorporate by reference the disclosure of the earlier 2001 application, and the applicant's subsequent amendments to the 2003 application's specification and figures cannot cure the break in the chain because the amendments were not supported by the 2003 application's disclosure as filed, and thus improperly introduced new matter.

The patent owner bears the ultimate burden of demonstrating entitlement to an earlier application's filing date. *See In re NTP, Inc.*, 654 F.3d 1268, 1276-77 (Fed. Cir. 2011). This burden is not satisfied simply because the later application is a "continuation" or a "continuation-in-part" of the earlier one. *See Research Corp. Techs. v. Microsoft Corp.*, 627 F.3d 859, 865, 869-70 (Fed.

Cir. 2010). If the earlier application is not an immediate parent, "in order to gain the benefit of the filing date of an earlier application under 35 U.S.C. § 120, each application in the chain leading back to the earlier application must comply with the written description requirement of 35 U.S.C. § 112," maintaining continuity of disclosure throughout the chain. *Zenon Environmental, Inc. v. U.S. Filter Corp.*, 506 F.3d 1370, 1378–82 (Fed. Cir. 2007) (citations omitted) (reversing district court's finding that the patent-in-suit was entitled to the priority date of an earlier filed patent because an intervening application did not meet the written description requirement, and holding the patent-in-suit anticipated by the earlier patent); *see also Lockwood v. Am. Airlines*, 107 F.3d 1565, 1571 (Fed. Cir. 1997).

The patent owner must show that the claimed invention was disclosed in the earlier applications as originally filed. 35 U.S.C. § 120 (2012); *see Anascape, Ltd. v. Nintendo of Am., Inc*., 601 F.3d 1333, 1337 (Fed. Cir. 2010) (finding a parent application failed to provide written description support to entitle later claims to the benefit of the specification's filing date because the later claims included text not present in the specification as originally filed). Regardless of whether the claim limitations of the later invention may be obvious from the prior disclosure, they must appear in the specification of the earlier application to get the earlier priority date. *See Lockwood*, 107 F.3d at 1571-72 ("Entitlement to a filing date does not extend to subject matter which is not disclosed, but would be obvious over what is expressly disclosed. It extends only to that which is disclosed. While the meaning of terms, phrases, or diagrams in a disclosure is to be explained or interpreted from the vantage point of one skilled in the art, all the limitations must appear in the specification.").

Incorporation by reference can maintain continuity of disclosure. It "provides a method for integrating material from various documents into a host document … by citing such material in a

manner that makes clear that the material is effectively part of the host document as if it were explicitly contained therein." *Zenon*, 506 F.3d at 1378 (citing *Cook Biotech Inc. v. Acell, Inc.*, 460 F.3d 1365, 1376 (Fed. Cir. 2006)). However, claiming priority as a CIP (or continuation or divisional) of a parent application is not an incorporation by reference of a prior application. See *Ex Parte MacLeod*, 2003 WL 25277951, *7-8 (Bd. Pat. App. & Interf. 2003); *In re De Seversky*, 474 F.2d 671, 674 (CCPA 1973); MPEP 201.06(c)(IV). Further, an incorporation-by-reference statement cannot be added after the application's filing date. 35 U.S.C. § 132; MPEP 201.06(c)(IV).

1. <u>The 2001 Application</u>

On December 21, 2001, the earliest application to which the '396 patent claims priority, entitled "Wireless Digital Audio System," was filed and assigned U.S. Application No. 10/027,391 ("the 2001 application"). As filed, the 2001 application included a 5-page specification, 7 claims, an abstract, and 3 figures (shown below).

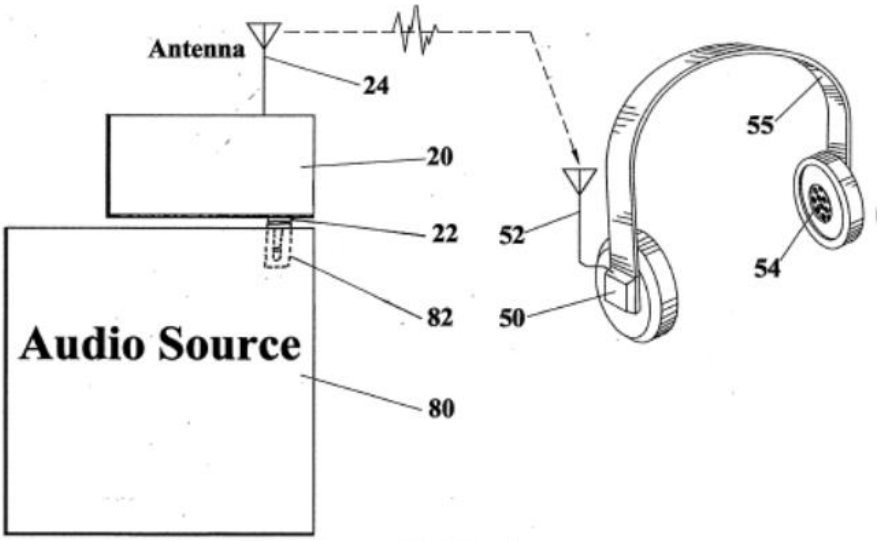


FIG.1

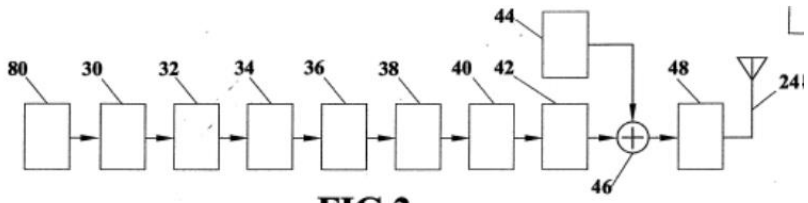


FIG.2

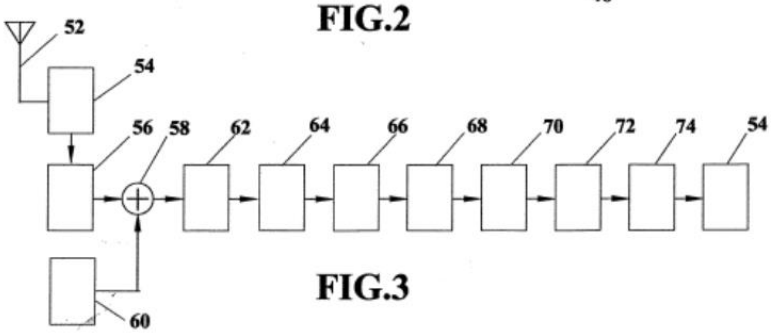


FIG.3

The 2001 application states that "[t]he present invention is directed to wireless digital audio systems for transmission of a signal from an audio player device to a headphone." The 2001 application describes various details of the wireless digital audio system, including that "encoder 36 may be used to reduce intersymbol interference (ISI) by using a transform code to encode the digital signal"; "differential phase shift key (DPSK) transmitter 48 [] modulates the digital signal to be transmitted"; and "direct conversion receiver 56 may provide a method for down converting the received signal." Figures 2 and 3 include functional block diagrams showing the components, including the encoder 36, DPSK transmitter 48, and direct conversion receiver 56, and operational flow of the audio transmitter and audio receiver, respectively.

The examiner rejected all claims in the 2001 application on September 6, 2002 as obvious under 35 U.S.C. § 103 in view of certain prior art. Following the applicant canceling claims 1 and 2 and attempting to argue over the rejection, the examiner again rejected the remaining claims on February 26, 2003 as obvious in view of the prior art. Rather than respond to this rejection, on August 27, 2003 the applicant expressly abandoned the 2001 application in favor of a CIP application.

On June 26, 2003, shortly before abandonment, the 2001 application published as U.S. Publication 2003/0118196 ("the '196 publication").

2. <u>The 2003 Application</u>

On August 26, 2003, the applicant filed a CIP application directed to a different invention, entitled "Fuzzy Audio Wireless Music System," assigned U.S. Application No. 10/648,012 ("the 2003 application"). As filed, the 2003 application included a 6-page specification, 5 claims, an abstract, and 2 figures (shown below).

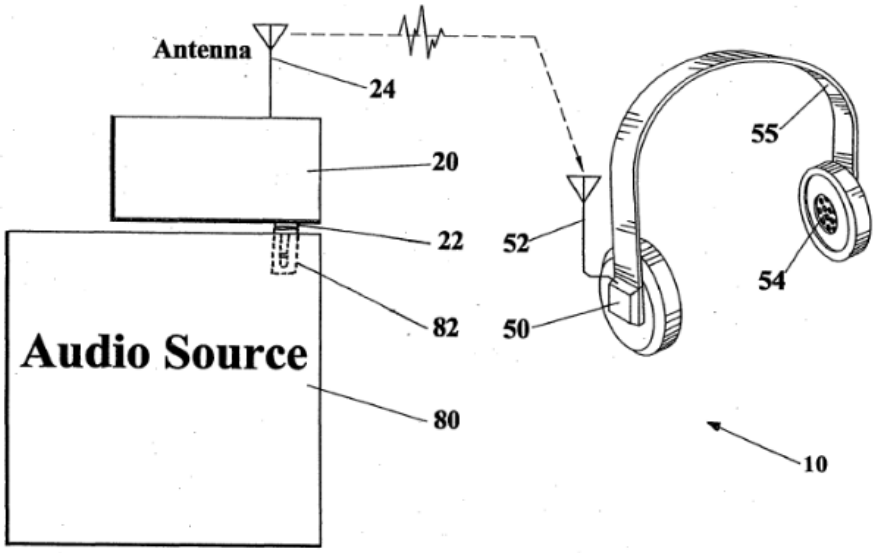


FIG 1

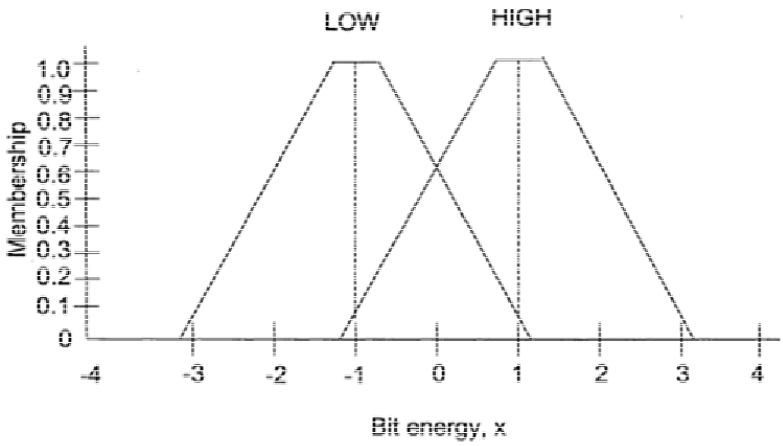


Figure 2

Critically, the 2003 application claimed priority to the 2001 application as a CIP[6], but did not incorporate by reference the 2001 application. The 2003 application as filed also differs substantially from the 2001 application. While Figs. 1 of both applications are nearly identical, Fig. 2 of the 2003 application differs from Figs. 2 and 3 of the 2001 application, which are not included in the 2003 application. In addition, the wireless audio system described in the 2003 application specification differs significantly from that described in the 2001 application.

For example, the 2003 application's "Summary of the Invention" states, "[t]he present invention is directed to FAWM (Fuzzy Audio Wireless Music) systems for coded digital transmission of an audio signal from any audio player device with a headphone jack to a receiver headphone using fuzzy logic technology." Unlike the 2001 application, the 2003 application does not disclose or describe a direct conversion receiver, differential phase shift keying, intersymbol interference, or an encoder to reduce it. The figures of the 2003 application also contain no

[6] The priority claim in the 2003 specification as originally filed contains a typographical error in the parent application number that was later corrected.

functional block diagrams showing the components or operation of the fuzzy audio wireless music system of the invention.

3. **<u>The 2003 Application As Filed Does Not Support the Asserted Claims.</u>**

For the Asserted Claims to be entitled to the 2001 application's filing date, OEW must show that each application in the chain leading back to December 2001—including the 2003 application—complies with the written description requirement of 35 U.S.C. § 112. *See Lockwood*, 107 F.3d at 1571-72. An earlier application supports a claim if the application as originally filed describes the invention with sufficient detail. *See Anascape*, 601 F.3d at 1337; MPEP § 2163.05 ("To comply with the written description requirement of 35 U.S.C. 112(a) or pre-AIA 35 U.S.C. 112, para. 1, or to be entitled to an earlier priority date or filing date under 35 U.S.C. 119, 120, or 365(c), each claim limitation must be expressly, implicitly, or inherently supported in the originally filed disclosure."); *Purdue Pharma L.P. v. Faulding, Inc*., 230 F.3d 1320, 1323 (Fed. Cir. 2000) ("Put another way, one skilled in the art, reading the original disclosure, must immediately discern the limitation at issue in the claims.").

The originally filed 2003 application does not support the claims of the Asserted Patents. The Asserted Claims recite, inter alia, "lowering signal detection error through reduced intersymbol interference coding," "a direct conversion module," and "differential phase shift keying (DPSK)." None of these limitations are expressly described in the 2003 application as originally filed. Nor are any of these limitations inherently disclosed in the 2003 application as originally filed. As a result, the Asserted Claims are not entitled to the 2001 application filing date; the 2003 application, as filed, broke the chain of disclosure.

4. Applicant's Amendments to the 2003 Application Cannot Establish a 2001 or 2003 Priority Date.

As noted above, the applicant failed to incorporate by reference the 2001 application in the originally filed 2003 application. Instead, the applicant added an incorporation by reference of the 2001 application by amendment on August 15, 2006.

An incorporation by reference statement added nearly three years after filing of the 2003 application constitutes improper new matter and is, therefore, ineffective in establishing continuity of disclosure back to the 2001 application. MPEP 201.06(c)(IV) ("An incorporation by reference statement added after an application's filing date is not effective because no new matter can be added to an application after its filing date").[7] December 21, 2001 cannot be the priority date of the Asserted Claims.

In fact, no matter added after the original disclosure is filed may be used to provide written description support. *Anascape*, 601 F.3d at 1337; MPEP 2163.05. In October 2004, more than a year after filing the 2003 application,[8] the applicant began extensively amending the specification and figures of the 2003 application, both to add and remove material. Over the next two years, in addition to the August 2006 incorporation by reference of the 2001 application, amendments included:

- Adding description that the FAWM system utilized Bluetooth technology, including that the transmitter and the receiver are a Bluetooth compliant transmitter and receiver.
- Broadening the disclosure by removing specifics, including removing the statement that "[t]he fuzzy logic detector is the key component to the FAWM system 10."

[7] The CIP priority claim in the 2003 application is not an incorporation by reference of the 2001 application. *In re De Seversky*, 474 F.2d 671, 674 (CCPA 1973).
[8] And more than a year after the 2001 application published in June 2003.

- Changing the application title from "Fuzzy Audio Wireless Music System" to "Wireless Digital Audio Music System"
- Removing all references to "FAWM" and replacing them with "wireless digital audio music"
- Adding new Figs. 2 and 3 and heavily editing the original Fig. 2 from the 2003 application into new Fig. 4
- Adding a description of a "direct conversion receiver 56" to the specification
- Adding a "direct conversion receiver 56" to Fig. 3
- Adding a description of a "DPSK (differential phase shift key) transmitter" to the specification

The examiner did object to many of these amendments under 35 U.S.C. § 132 as introducing new matter in the disclosure, but allowed others.[9] By the time the 2003 application issued as U.S. Patent No. 7,412,294 on August 12, 2008, the specification and figures were completely different from the as-filed 2003 application.

Regardless of the amendments, the priority-date analysis is properly conducted based on the 2003 application as filed. The original 2003 application does not support the Asserted Claims and thus August 26, 2003 cannot be the priority date of the Asserted Claims.

5. <u>July 12, 2008 is the Earliest Priority Date to Which the Asserted Claims Are Entitled.</u>

As discussed above, the Asserted Claims are not entitled to the benefit of the filing date of the 2001 application because the 2003 application broke the chain of disclosure; nor are the

[9] The Applicant cited the 2001 application as support for amendments to the 2003 application even though no incorporation by reference had been made. This was improper. All new matter amendments, including additions from the 2001 application's specification and figures, should have been rejected.

Asserted Claims entitled to the benefit of the filing date of the 2003 application. *See Lockwood*, 107 F.3d at 1571-72; *Ex Parte MacLeod*, 2003 WL 25277951, *7-8 (Bd. Pat. App. & Interf. 2003). No other applications in the family were ever co-pending with the 2001 application. The earliest priority date to which the Asserted Claims are entitled is thus July 12, 2008, the filing date of the 2008 application (application No. 12/144,729, which issued as U.S. Patent No. 7,684,885), because the as-filed specification of the Asserted Patents is substantially the same as the as-filed specification of the 2008 application.

B. Identification of Prior Art Patents and Patent Publications, Non-Patent Publications, and Systems

Subject to Defendants' reservation of rights, Defendants identify each item of prior art that at least evidences the obviousness of one or more of the Asserted Claims. Table 1 identifies each prior art patent to the Asserted Patents by its number, country of origin, and date of issuance. Table 2 identifies each non-patent prior art publication to the Asserted Patents by, where possible, its title, date of publication, and author and/or publisher. Table 3 identifies each prior art system to the Asserted Patents currently known to Defendants by, where possible, its name and date of sale, use, or knowledge. Defendants reserve the right to identify additional non-patent and non-publication prior art systems that were sold, offered for sale, used, etc. prior to the priority date to the extent any such systems becomes known during discovery.

1. Table 1: Prior Art Patents and Applications to the Asserted Patents

Patent	Inventor	Filing Date/Priority Date	Published/Issue Date	Short Name
U.S. 5,048,057	Adel A.M. Saleh Lee-Fang Wei	01/02/1990	09/10/1991	Saleh
U.S. 5,175,558	James E. Dupree	02/10/1992	12/29/1992	DuPree
U.S. 5,420,585	Guy d. W. B. Adams	09/09/1993	05/30/1995	Adams
U.S. 5,491,839	Larry Schotz	05/28/1993	02/13/1996	Schotz

Patent	Inventor	Filing Date/Priority Date	Published/Issue Date	Short Name
U.S. 5,506,861	Gregory E. Bottomley	11/22/1993	04/09/1996	Bottomley
U.S. 5,539,769	Bart Kosko Peter J. Pacini	03/28/1994	07/23/1996	Kosko
EP 0840465 A2	Seppo Kivela Pekka Heinonen Erkki Savilampi Harri Okkonen Ciaron Murphy Heikki Rautila	06/10/1997	05/06/1998	Kivela
GB 2261347 A	Reuven Median Noam Livneh Glora Silbershatz Mordechai Ritz	10/22/1992	05/04/1994	Median
U.S. 5,668,880	Philip M. Alajajian	01/17/1995	09/16/1997	Alajajian
U.S. 5,721,783	James C. Anderson	06/07/1995	02/24/1998	Anderson
U.S. 5,771,441	John E. Altstatt	04/10/1996	06/23/1998	Altstatt
U.S. 5,778,022	John S. Walley	12/06/1995	07/07/1998	Walley-022
U.S. 5,781,542	Hirokazu Tanaka Tatsunori Saito	11/30/1995	07/14/1998	Tanaka
U.S. 5,822,440	Randy Oltman Perry L. Nusbaum Ken Schaffer David Jakubowski	04/07/1997	10/13/1998	Oltman
U.S. 5,946,343	Larry Schotz William R. Steinike Mark R. Wolski	04/24/1998	08/31/1999	Schotz
U.S. 5,963,583	Sorin Davidovici Emmanuel Kanterakis	01/14/1998	10/05/1999	Davidovici
U.S. 6,028,764	John W. Richardson Kelan C. Silvester Marion H. Shimoda Gunjeet Baweja	03/10/1999	02/22/2000	Richardson

Patent	Inventor	Filing Date/Priority Date	Published/Issue Date	Short Name
U.S. 6,072,770	Jin-Meng Ho Ramautar Sharma	03/04/1997	06/06/2000	Ho
U.S. 6,097,711	Koichi Okawa Koji Ohno Manoru Sawahashi Shinji Uebayashi	05/29/1997	08/01/2000	Okawa
U.S. 6,104,913	Alexander I. McAllister	03/11/1998	08/15/2000	McAllister
U.S. 6,115,478	Anthony Todd Schneider	04/16/1998	09/05/2000	Schneider
U.S. 6,130,643	John M. Trippett Robert E. Vaughan	04/14/1999	10/10/2000	Trippett
U.S. 6,236,862	Gamze Erten Faihi M. Salam	12/15/1997	05/22/2001	Erten
U.S. 6,256,303	Niko Drakoulis; Ronald G. Pace; Michael K. Pedigo; Russell A. Phillips	10/15/1999	07/03/2001	Drakoulis
U.S. 6,272,359	Seppo Kalervo Kivelä; Erkki Savilampi; Ciaron Daniel Murphy; Pekka Heinonen; Harri Okkonen; Heikki Rautila	10/30/1997	08/07/2001	Kivela
U.S. 6,317,039	John Allen Thomason	10/19/1998	11/13/2001	Thomason
U.S. 6,339,706	Magnus Tillgren Goran Rundqwist	11/12/1999	01/15/2002	Tillgren
U.S. 6,366,662	Glenn A. Giordano Martin P.J. Cornes Robert E. Montgomery Christopher J. Koath	1/30/1998	04/02/2022	Giordano

Patent	Inventor	Filing Date/Priority Date	Published/Issue Date	Short Name
U.S. 6,373,791	Yoshitaka Ukita Masakazu Hattori	10/26/2000	4/16/2002	Ukita
U.S. 6,381,053	Habib Fathallah Leslie Ann Rusch Sophie La Rochelle	10/08/1998	4/30/2002	Fathallah
U.S. 6,418,558	Harold A. Roberts David S. Russell Calvin G. Nelson Jeffrey Brede	07/23/1997	07/09/2002	Roberts
U.S. 6,424,820	Wayne A. Burdick James H. Boyden William C. Lynch	04/02/1999	07/23/2002	Burdick
U.S. 6,456,645	Jens Kurrat	10/29/1999	09/24/2002	Kurrat
U.S. 6,477,159	Masahiko Yahagi	07/06/1999	11/05.2002	Yahagi
U.S. 6,678,892	Patrick M. Lavelle Thomas C. Malone George C. Schedevy James R. Tranchina	10/27/2000	01/13/2004	Lavelle
U.S. 6,781,977	Yingtao Li	11/08/2000	08/24/2004	Li
U.S. 6,744,808	John S. Walley Norman J. Beamish	06/03/1999	06/01/2004	Walley
U.S. 6,898,585	Eric R. Benson Qin Zhang John F. Reid	02/02/2001	05/24/2005	Benson
U.S. 6,978,162	Paul Grady Russell Kenneth Knaus	08/17/2001	12/20/2005	Russell

Patent	Inventor	Filing Date/Priority Date	Published/Issue Date	Short Name
U.S. 6,982,132	Ronald B. Goldner Te-Yang Liu Mark A. Goldner Alexandra Gerouki	08/14/2000	01/03/2006	Goldner
U.S. 7,035,788	Yutaka Nakajima Yutaka Suzue Kevin G. Gjerstad Dong-Hui Zhang	04/25/2000	04/25/2006	Nakajima
U.S. 7,047,474	Do-Jun Rhee Masaki Sato	12/23/2002	05/16/2006	Rhee
U.S. 7,099,413	Justin C. Chuang Ye Li Lang Lin	02/01/2001	08/29/2006	Chuang
U.S. 7,187,948	Richard P. Alden	03/06/2003	03/06/2007	Alden
U.S. 7,215,269	Wai L. Lee Xudong Zhao Amit Kumar Jianping Wen Garry N. Link	10/12/2005	05/08/2007	Lee
U.S. 7,272,410	Takafumi Ito	03/04/2004	09/18/2007	Ito
U.S. 7,277,520	Takashi Kusubashi	11/19/2003	10/02/2007	Kusubashi
U.S. 7,292,880	Arto Lehtonen	05/23/2001	11/06/2007	Lehtonen
U.S. 7,295,809	Richard A. Moore	07/19/2002	11/13/2007	Moore
U.S. 7,369,532	Kelan C. Silvester	02/26/2002	05/06/2008	Silvester
U.S. 7,460,477	Koichi Yata Tooru Hooma	03/10/2004	12/02/2008	Yata
U.S. 7,467,344	Debarag Narayan Banerjee	12/23/2005	12/16/2008	Banerjee
U.S. 7,505,823	David Bartlett Scott Hommel Michael Reynolds David Alexander Butler	05/25/2001	03/17/2009	Bartlett

Patent	Inventor	Filing Date/Priority Date	Published/Issue Date	Short Name
U.S. 7,890,661	Jeffrey Jonathan Spurgat Stephen Christopher Gladwin Hoyet	05/16/2001	02/15/2011	Spurgat
U.S. 6,810,502 (published as U.S. 2001/0025358)	Donald Brian Eidson Abraham Krieger Ramaswamy Murali	05/25/2001	10/26/2004	Eidson-502
U.S. 2001/0025358 (issued as U.S. Pat. No. 6,810,502)	Donald Brian Eidson Abraham Krieger Ramaswamy Murali	05/25/2001	09/27/2001	Eidson-358
U.S. 2002/0039424	Masanori Watanuki	09/27/2001	04/04/2002	Watanuki
U.S. 2002/0068610	Dinesh Kashinath Anvekar Bhaskarpillai Gopinath	12/05/2000	06/06/2002	Anvekar
U.S. 2002/0080288	Robert J. Davies	12/10/2001	06/27/2002	Davies
U.S. 2002/0098878	Philip D. Mooney Joseph M. Cannon James A. Johanson	01/24/2001	07/25/2002	Mooney
U.S. 7,136,684 (published as U.S. 2003/0130016)	Hiroshi Matsuura Yoichi Takebayashi Shinichi Tanaka Hiroshi Kanazawa	01/07/2003	11/14/2006	Matsuura-684
U.S. 2003/0130016 (issued as U.S. Pat. No. 7,136,684)	Hiroshi Matsuura Yoichi Takebayashi Shinichi Tanaka Hiroshi Kanazawa	01/07/2003	07/10/2003	Matsuura-016

Patent	Inventor	Filing Date/Priority Date	Published/Issue Date	Short Name
U.S. 2003/0223604	Hideyuki Nakagawa	02/06/2003	12/04/2003	Nakagawa
U.S. 2004/0107271	Byung-Koo Ahn Jae-Duk Oh	11/21/2003	06/03/2004	Ahn
U.S. 2004/0215808	Toru Homma	03/03/2004	10/28/2004	Homma
U.S. 2004/0223622	Eric Lee Lindemann John Laurence Melason Jason Lee Carlson James Mitchell Kates	04/06/2001	11/11/2004	Lindemann
U.S. 2004/0242278	Ichiro Tomoda Shigemi Nakasato Junichi Iwasaki Makoto Yamashita	01/30/2004	12/02/2004	Tomoda
U.S. 6,342,844	Alexander Rozin	10/15/1998	01/29/2002	Rozin
U.S. 6,563,892	Jacobus Haartsen Paul Dent	06/15/1999	05/13/2003	Haartsen-892
U.S. 2001/0033621	Ali S. Khayrallah	02/07/2001	10/25/2001	Khayrallah
U.S. 6,978,242 (published as U.S. 2002/0065043)	Osamu Hamada	08/27/2001	12/20/2005	Hamada-242
U.S. 2002/0065043 (issued as U.S. Pat. No. 6,978,242)	Osamu Hamada	08/27/2001	05/30/2002	Hamada-043
U.S. 5,530,929	Bjorn Lindqvist Martin Isberg	09/08/1994	06/25/1996	Lindqvist
U.S. 5,970,058	Daniel J. Declerk James P. Ashley	04/12/1997	10/19/1999	DeClerk
U.S. 6,212,282	Stuart Mershon	10/31/1997	04/03/2001	Mershon
U.S. 6,842,433 (published as U.S. 2002/0181415)	Gerry West Daryl Van Vorst Saul Kato	04/24/2001	01/11/2005	West-433
U.S. 2002/0181415 (issued as U.S. Pat. No. 6,842,433)	Gerry West Daryl Van Vorst Saul Kato	04/24/2001	12/05/2002	West-415
U.S. 7,233,808 (published as U.S. 2003/0045235)	Philip D. Mooney Sangeetha Rao	09/05/2001	06/19/2007	Mooney-808

Patent	Inventor	Filing Date/Priority Date	Published/Issue Date	Short Name
U.S. 2003/0045235 (issued as U.S. Pat. No. 7,233,808)	Philip D. Mooney Sangeetha Rao	09/05/2001	03/06/2003	Mooney-235
U.S. 2003/0118196	C. Earl Woolfork	12/21/2001	06/26/2003	Woolfork-196
KR 2000-0006888 U	Ham Inhwa	09/23/1998	04/24/2000	Ham
U.S. 6,262,944	A. Douglas Meyer Patrick J. Welton James K. Anderson	02/22/1999	07/17/2001	Meyer
WO 00/76109 A1	Jorma Matero Kari Kananen Jouni Hanninen	05/26/2000	06/04/1999	Matero
U.S. 6,618,429	Klein S. Gilhousen Irwin M. Jacobs Roberto Padovani Lindsay A. Weaver JR.	10/02/2002	09/09/2003	Gilhousen
U.S. 6,091,760	Thomas R. Giallorenzi Samuel C. Kingston Lee A. Butterfield William T. Ralston Leon L. Neiczyporowicz Alan E Lundquist	06/10/1999	06/18/2000	Giallorenzi
U.S. 6,626,994	Werner Dirschedl Gerhard Greubel Peter Maurer	11/14/1997	07/17/2001	Dirschedl
U.S. 4,336,861	B. Keith Peter	08/23/1972	06/29/1982	Peter
U.S. 6,683,965	Roman Sapiejewski	10/20/1995	01/27/2004	Sapiejewski
U.S. 4,612,668	Vinko Sarac	07/23/1984	09/16/1986	Sarac

Patent	Inventor	Filing Date/Priority Date	Published/Issue Date	Short Name
U.S. 6,990,312	Richard Gioscia Yumi Sonoda Jan-Christoph Zoels	11/23/1998	01/24/2006	Gioscia
WO 2004/028086 A2	Jacobus Haartsen	09/19/2003	04/01/2004	Haartsen-086
U.S. 9,282,396	C. Earl Woolfork	02/25/2013	03/08/2016	Woolfork-396
U.S. 7,412,294	C. Earl Woolfork	08/26/2003	08/12/2008	Woolfork-294
U.S. 1,687,510	M. Pipkin	06/29/1925	10/16/1928	Pipkin
U.S. 7,865,258	C. Earl Woolfork	09/30/2009	01/04/2011	Woolfork-258
U.S. 8,131,391	C. Earl Woolfork	11/05/2010	03/06/2012	Woolfork-391
U.S. 2003/0083024	Lawrence Richenstein Michael A. Duak Robert J. Withoff	07/03/2002	05/01/2003	Richenstein
U.S. 5,546,424	Masayasu Miyake	06/27/1994	08/13/1996	Miyake
U.S. 5,353,352	Paul W. Dent Gregory E. Bottomley	04/10/1992	10/04/1994	Dent
U.S. 2007/0291822	W. Gary Staley Leslie R. Pingel Benjamin J. Gray E. Dale May	06/07/2007	12/20/2007	Staley
U.S. 7,343,008	David P. Frankel	07/03/2007	03/11/2008	Frankel
U.S. 2009/0037743	Chandrrasekhar Narayanaswami	08/01/2007	02/05/2009	Narayanaswami
U.S. 2007/0069916	Ming-Yu Lin Jui-Jung Huang	09/27/2006	03/29/2007	Lin
U.S. 7,684,885	C. Earl Woolfork	07/12/2008	03/23/2010	Woolfork-885
U.S. 6,603,801	Carl Andren Mark A. Webster	01/14/1999	08/05/2003	Andren
U.S. 4,494,228	Frank S. Gutleber	08/12/1982	01/15/1985	Gutleber
U.S. 5,515,396	Michael D. Kotzin	02/25/1994	05/07/1996	Kotzin
U.S. 6,141,424	Iwao Takiguchi Motoyuki Yoshizumi	12/23/1998	10/31/2000	Takiguchi

Patent	Inventor	Filing Date/Priority Date	Published/Issue Date	Short Name
U.S. 6,772,331	John Raithel Hind Marcia Lambert Peters	05/21/1999	08/03/2004	Hind
U.S. 6,901,241	Peter Bjorndahl	01/15/1999	05/31/2005	Bjorndahl
WO 00/76272 A1	Eric Lindemann John Laurence Melanson Jason Lee Carlson James Mitchell Kates	12/03/1999	12/14/2000	Lindemann
EP 1133135 A1	Ping On Wilson Law	02/29/2000	09/12/2001	Law
U.S. 6,118,882	Philip Ashley Haynes	08/19/1997	09/12/2000	Haynes
U.S. 6,045,224	Neville R. Kallenbach Victor N. Morozov	04/29/1997	04/04/2000	Kallenbach
U.S. 4,845,751	Brian H. Schwab	03/16/1988	07/04/1989	Schwab
U.S. 5,832,024	Larry Schotz William R. Steinike Mark R. Wolski	03/26/1997	11/03/1998	Schotz
U.S. 5,887,006	Alok Sharma	06/26/1997	03/23/1999	Sharma
U.S. 6,327,297	Donald L. Schilling	08/02/2000	12/04/2001	Schilling
U.S. 6,287,751	Tzung-Han Lee Li-Chieh Chao Chun-Te Chen	08/07/1998	09/11/2001	Lee
U.S. 5,671,255	Michael M. Wang Fuyun Ling Kenneth A. Stewart	03/29/1996	09/23/1997	Wang
U.S. 5,960,040	Khiem V. Cai Allan L. Levine Jr.	12/05/1996	09/28/1999	Cai

Patent	Inventor	Filing Date/Priority Date	Published/Issue Date	Short Name
U.S. 6,301,313	John M. Gevargiz David J. Bell Faramaz Davarian	11/02/1998	10/09/2001	Gevargiz
U.S. 5,283,780	Leonard Schuchman John E. Miller Ronald Bruno	10/18/1990	02/01/1994	Schuchman
U.S. 6,477,159	Masahiko Yahagi	07/06/1999	11/5/2002	Yahagi
U.S. 6,272,359	Seppo Kalervo Kivela Erkki Savilampi Ciaron Daniel Murphy Pekka Heinonen Harri Okkonen Heikki Rautila	10/30/1997	08/07/2001	Kivela

2. **Table 2: Non-Patent Prior Art Publications to the Asserted Patents**

Author or Publisher	Reference Title	Publication / Use Date	Short Name
Bluetooth	Specification of the Bluetooth System, Version 1.0B	12/01/1999	Bluetooth V.1.0B
Bluetooth	Specification of the Bluetooth System, Version 1.1	02/22/2001	Bluetooth V.1.1
Riku Mettala	Bluetooth Protocol Architecture version 1.0 White Paper	08/25/1999	Mettala
Jaap Haartsen	Bluetooth—The universal radio interface for ad hoc wireless connectivity	1998	Haartsen-98
Jaap Haartsen	The Bluetooth Radio System	February 2000	Haartsen-00
Anthony Ephremides	WTEC Study on Wireless Technologies and Information Systems	July 2000	Ephremides

Author or Publisher	Reference Title	Publication / Use Date	Short Name
S.R. Kim J.G. Lee Hun Lee B.S. Kang J.W. Jeong	A Coherent Dual-Channel QPSK Modulation for CDMA Systems	1996	Kim-96
Ashkan Mashhour William Domino Norman Beamish	On the Direct Conversion—A Tutorial	06/01/2001	Mashhour
Bernard Sklar	Digital Communications Fundamentals and Applications	1988	Sklar-88
Jean Walrand Pravin Varaiya	High-Performance Communication Networks	2000	Walrand
Onder Kara	A Direct Sequence – Code Division Multiple Access/Differential Phase-Shift Keying (DS-CDMA/DPSK) Modem Design	March 1997	Kara
Federal Register	Vol. 54, No. 78 Rules and Regulations	04/25/1989	Register
Ron Schneiderman	Wireless Personal Communications	1994	Schneiderman
John B. Groe Lawrence E. Larson	CDMA Mobile Radio Design	2000	Groe
Xiang-Gen Xia	New Precoding for Intersymbol Interference Cancellation Using Nonmaximally Decimated Multirate Filterbanks with Ideal FIR Equalizers	October 1997	Xia
Scott R. Bullock	Transceiver and System Design for Digital Communications	1995	Bullock
William C.Y. Lee	Mobile Communications Engineering	10/01/1997	Lee
Theodore S. Rappaport	Wireless Communications Principles and Practice	July 1999	Rappaport-99

Author or Publisher	Reference Title	Publication / Use Date	Short Name
Theodore S. Rappaport	Wireless Communications Principles and Practice	1996	Rappaport-96
Bernard Sklar	Digital Communications Fundamentals and Applications, 2nd Edition	2001	Sklar-01
Ham Inhwa	"Details" Page for Ham, retrieved from <engpat.kipris.or.kr/engpat/biblio/biblioViewAll.jsp>	04/25/2000	Ham Details
The Korean Intellectual Property Office	KIPO Annual Report 2000	2000	KIPO Report
World Intellectual Property Organization	WIPO Standing Committee on Information Technologies, "Annual Technical Report 2001 on Patent Information Activities Submitted by the Republic of Korea"	2001	WIPO Report-01
World Intellectual Property Organization	WIPO Standing Committee on Information Technologies, "Annual Technical Report 1999 on Patent Information Activities Submitted by the Republic of Korea"	1999	WIPO Report-99
Jaap Haartsen	Bluetooth – The universal radio interface for ad hoc, wireless connectivity	1998	Haartsen-Ericsson Review
Georgios B. Giannakis Anastasios Stamoulis Zhengdao Wang Paul A. Anghel	Load-Adaptive MUI/ISI-Resilient Generalized Mutli-Carrier CDMA with Linear DF Receivers	November-December 2000	Giannakis
Shengli Zhou Georgios B. Giannakis Ananthram Swami	Frequency-Hopped Generalized MC-CDMA For Multipath and Interference Suppression	October 2000	Zhou
Andrew Freedman	Mechanisms of Interference Reduction for Bluetooth	November 2000	Freedman

Author or Publisher	Reference Title	Publication / Use Date	Short Name
Yeng-Zhou Lee Rohit Kapoor Mario Gerla	An Efficient and Fair Polling Scheme for Bluetooth	2002	Lee
Milcom	21st Century Military Communications Conference Proceedings	October 2000	Milcom
Bluetooth	Specification of the Bluetooth System, Version 2.0 + EDR	11/04/2004	Bluetooth V.2.0 + EDR
Tommi Heikkila	CDMA – Code Division Multiple Access	2004	Heikkila
Intersil	A Condensed Review of Spread Spectrum Techniques for ISM Band Systems, Application Note	October 1998	Intersil-98
Samuel Sheng Randy Allmon Lapoe Lynn Ian O'Donnell Kevin StoNE Robert Brodersen	A Monolithic CMOS Radio System for Wideband CDMA Communications	1995	Sheng
Chatschik Bisdikian	IBM Research Report, an Overview of the Bluetooth Wireless Technology	06/02/2001	Bisdikian
Department of Defense, Department of the Army	Availability for Licensing of U.S. Patents Concerning Spread Spectrum Multiplexed Noise Codes	04/01/1991	DoD
Jaap C. Haartsen	Bluetooth: A new radio interface providing ubiquitous connectivity	2000	Haartsen-Radio
Jennifer Bray Charles Sturman	Bluetooth: Connect Without Cables	2001	Bray
John G. Proakis Masoud Salehi	Communication Systems Engineering	1994	Proakis

Author or Publisher	Reference Title	Publication / Use Date	Short Name
Marvin K. Simon Sami M. Hinedi William C. Lindsey	Digital Communications Techniques	1995	Simon
Intersil	Direct Sequence Spread Spectrum Baseband Processor, Data Sheet	May 2000	Intersil-00
Agilent Technologies	Testing and Troubleshooting Digital RF Communications Receiver Designs	1999	Agilent
Netcom	GN 9000 Digital User Guide	2002	Netcom-02
Alexandre Joseph Huber Josef Franz Huber	UMTS and Mobile Computing	2002	Huber
Ericsson	Bluetooth Radio	October 2001	Ericsson-01
Ericsson Mobile Communications	Ericsson R520 User Manual	April 2001	EMC-01
Ericsson Mobile Communications	Ericsson HBH-10 User Manual	November 2000	EMC-00
Philips Semiconductors	BGB100 0 dbm TrueBlue radio module, Data Sheet	01/03/2002	Philips-02
IBM	IBM Mobile systems ThinkPad Computer Hardware Maintenance Manual	October 2001	IBM-01
Sony	Wireless Stereo Headset Operating Instructions	2007	Sony-07
Bosch	Integrus – Digital Infra-Red Language Distribution System	February 2003	Bosch-03
Analog Devices	AD6523/AD6524 GSM Direct Conversion Radio Chip Set	1999	Analog-99
Cambridge Silicon Radio	BlueCore 01 Single Chip Bluetooth System	2000	Cambridge-00
Advanced Audio Distribution Profile Specification – Adopted Version 1.0	Bluetooth Audio Video Working Group	05/22/2003	A2DP V1.0

3. Table 3: Prior Art Systems to the Asserted Patents

System Name	Use/Knowledge/Offer Date	Publisher	Short Name
Ericsson R520m	Announced June 5, 2000	Ericsson	Ericsson-R520m
Ericsson T39	June 2001	Ericsson	Ericsson-T39
IBM ThinkPad A30p	October 2001	IBM	IBM
Ericsson Bluetooth headset HBH-10	1999	Ericsson	Ericsson-HBH-10
TriSquare eXRS TSX300	05/26/2007	Trisquare	Trisquare
Wireless Stereo Headset	2007	Sony	Sony
WhiteFire	12/06/2004	UnWired Technology	UnWired
INTEGRUS – Digital IR Language Distribution System	01/31/2003	Bosch	Bosch
AD6523/AD6524 GSM Direct Conversion Radio Chip Set	1999	Analog Devices	Analog Devices
BGB 100, 0 dbm TrueBlue module	2002	Philips Semiconductors	Philips
CSR BlueCore 01, Single Chip Bluetooth System	2000	Cambridge Silicon Radio	Cambridge
GN Netcom GN9000 Bluetooth Headset materials	06/29/2000	Netcom	Netcom
PBA 313 01/2 Bluetooth Radio	December 2000	Ericsson	Ericsson-PBA

To the extent that the references above describe any product(s), embodiment(s), or references that describe other products or embodiments or references, Defendants further allege that the product(s), embodiments, or references are also invalidating prior art and reserve the right to rely upon the product(s) described therein, embodiments or the references to further illustrate and support their invalidity contentions. Defendants reserve the right to rely on foreign counterparts of U.S. patents and published applications identified in these Invalidity Contentions; U.S. counterparts of foreign patents and published applications identified in these Invalidity Contentions; and U.S. and foreign patents and patent applications corresponding to articles and publications identified in these Invalidity Contentions.

Defendants also reserve the right to rely on the prior art references cited herein for any purpose including, for example, to demonstrate the state of the prior art and/or the knowledge of a person of ordinary skill in the art. Similarly, Defendants reserve the right to rely on other prior art references to demonstrate the state of the art at the time of the alleged invention of the subject matter of the Asserted Patents.

Defendants' investigation into the prior art is ongoing, and it will supplement its contentions as more information becomes available to it. Defendants have or anticipate issuing subpoenas to third parties believed to have knowledge, documentation and/or corroborating evidence concerning some of the prior art listed herein and/or additional prior art. These third parties include, but are not limited to, the authors, employers of authors, inventors, assignees, or former or current employees of assignees, of the references and systems identified in these Preliminary Invalidity and Subject Matter Eligibility Contentions.

IV. INVALIDITY DUE TO ANTICIPATION AND/OR OBVIOUSNESS

Prior art references anticipating or rendering obvious some or all of the Asserted Claims are listed in the tables below.

A full citation to each reference is in the Tables above, along with the "Short Name" used to identify each reference throughout this disclosure. The following tables list (i) each anticipating prior art reference, (ii) the Asserted Claims anticipated by each anticipating reference, (iii) for each anticipating reference, the chart identifying where specifically in that reference each element of each asserted claim is found.

The art cited in the claim charts is illustrative and not exhaustive. Further, these claim charts provide illustrative citations to where each element may be found in the prior art references. The cited references may contain other disclosures of each claim element as well, and Defendants reserve the right to argue that any claim elements of the Asserted Claims are disclosed in non-cited portions of these references. Similarly, where Defendants cite to a patent figure in the charts, these citations incorporate the accompanying specification text describing that figure and vice versa.

A. Identification of Combinations of Prior Art Rendering the Asserted Claims Obvious

The Asserted Claims are rendered obvious by single references when combined with the knowledge of a person of ordinary skill in the art, combinations of references, and combinations of references when combined with the knowledge of a person of ordinary skill in the art as explained herein and, in the exhibits attached hereto.

1. Table 4: Prior Art Anticipating and/or Rendering Obvious the Asserted Claims of the '000 Patent

Exhibit	Prior Art Reference
A-1	U.S. Patent Application Publication No. 2003/0118196 to Woolfork ("Woolfork" or the "'196 Publication")
A-2	Bluetooth V1.0B
A-3	Bluetooth V1.1
A-4	Bluetooth V2.0

Exhibit	Prior Art Reference
A-5	Ericsson R520m
A-6	Korean Patent Publication No. 2000-0006888 to Ham Inhwa ("Ham")
A-7	U.S. Patent No. 6,563,892 ("the '892 patent")
A-8	US20070036203A1 (Feher)
A-9	U.S. Patent No. 6,744,808 ("Walley")
A-10	TriSquare eXRS TSX300
A-11	Samsung BlackJack SGH-i607
A-12	Ericsson T39
A-13	IBM Thinkpad A30p

2. <u>Table 5: Prior Art Anticipating and/or Rendering Obvious the Asserted Claims of the '627 Patent</u>

Exhibit	Prior Art Reference
B-1	U.S. Patent Application Publication No. 2003/0118196 to Woolfork ("Woolfork" or the "'196 Publication")
B-2	Bluetooth V1.0B
B-3	Bluetooth V1.1
B-4	Bluetooth V2.0
B-5	Ericsson R520m
B-6	Korean Patent Publication No. 2000-0006888 to Ham Inhwa ("Ham")
B-7	U.S. Patent No. 6,563,892 ("the '892 patent")
B-8	US20070036203A1 (Feher)
B-9	U.S. Patent No. 6,744,808 ("Walley")
B-10	TriSquare eXRS TSX300
B-11	Samsung BlackJack SGH-i607

Exhibit	Prior Art Reference
B-12	Ericsson T39
A-13	IBM Thinkpad A30p

3. Table 6: Prior Art Anticipating and/or Rendering Obvious the Asserted Claims of the '047 Patent

Exhibit	Prior Art Reference
C-1	U.S. Patent Application Publication No. 2003/0118196 to Woolfork ("Woolfork" or the "'196 Publication")
C-2	Bluetooth V1.0B
C-3	Bluetooth V1.1
C-4	Bluetooth V2.0
C-5	Ericsson R520m
C-6	Korean Patent Publication No. 2000-0006888 to Ham Inhwa ("Ham")
C-7	U.S. Patent No. 6,563,892 ("the '892 patent")
C-8	U.S. Patent Pub. No. US20070036203A1 (Feher)
C-9	U.S. Patent No. 6,744,808 ("Walley")
C-10	TriSquare eXRS TSX300
C-11	Samsung BlackJack SGH-i607
C-12	Ericsson T39
C-13	IBM Thinkpad A30p

To the extent that prior art identified by Defendants 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. To the extent not anticipated, 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.

Even if a particular claim element is not expressly found in one of the charted references above, 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, Defendants disclose each of the references cited above 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 herein and/or in the accompanying charts, 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 herein 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, Defendants reserve the right to rely on any other combination of any prior art references disclosed herein. Defendants further reserve the right to rely upon combinations disclosed within the prosecution history of the references cited herein. These obviousness combinations reflect Defendants' present understanding of the potential scope of the claims that Plaintiff appears to be advocating and should not be construed as Defendants' acquiescence to Plaintiff's interpretation of the patent claims.

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. 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. In addition, the combination of the prior art references identified above would have been obvious because the combination represents the known potential options with a reasonable expectation of success.

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; the existence of a known need or problem in the field of the endeavor at the time of the invention(s); and the background knowledge that would have been possessed by a person having ordinary skill in the art.

Thus, the motivation to combine the teachings of the prior art references disclosed herein is found in the references themselves and: (1) the nature of the problem being solved, (2) the express, implied, and inherent teachings of the prior art, (3) the knowledge of persons of ordinary skill in the art, (4) the fact that the prior art is generally directed towards the long-recognized issue within the wireless communication industry of improving data transfer, and (5) the predictable results obtained in combining the different elements of the prior art. Additionally, one would be motivated to address at least the alleged problems or achieve the purported objectives identified in the description of the Asserted Patents.

Any reference or combination of references that anticipates or makes obvious an asserted independent claim also makes obvious any asserted claim dependent on that independent claim because every element of each dependent claim was known by a person of ordinary skill at the time of the alleged invention, and it would have been obvious to combine those known elements with the independent claims at least as a matter of common sense and routine innovation. Accordingly, Defendants contend that each Asserted Claim would have been obvious not only by the combinations explicitly defined in these contentions, but also by any combination of references that renders obvious an Asserted Claim.

Numerous prior art references, including those identified above and in the claim charts, reflect common knowledge and the state of the prior art prior to the priority date of the Asserted Patents. As it would be unduly burdensome to create detailed claim charts for the thousands of invalidating combinations, Defendants have provided illustrative examples of such invalidating combinations below and in the charts attached hereto. For at least the reasons described above and below in the examples provided 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, to meet the limitations of the Asserted Claims. As such, Defendants' inclusion of exemplary combinations does not preclude Defendants from identifying other invalidating combinations as appropriate.

Defendants further note that Defendants' collection of responsive documents relevant to the subject matter of the Asserted Patents is ongoing, and reserves its rights to rely on this information in connection with these Preliminary Invalidity and Subject Matter Eligibility Contentions as it becomes available.

B. <u>Motivations to Combine Prior Art Cited in Claim Chart Exhibits</u>

In *KSR*, the Supreme Court emphasized that an idea that is the result of ordinary innovation, ordinary skill, or common sense should not be patentable. *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398 (2007). The Supreme Court held that a person of ordinary skill in the art 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." *Id.* at 420–21. Although a patent challenger is not required to show that one of ordinary skill in the art would have had a specific motivation to combine prior art references, such a showing may be helpful to the obviousness analysis. *Id.* at 418; *see also id.* at 402.

One of skill in the art would have been motivated to combine the references identified herein because, for example, the identified combinations fall into one or more of the following categories:

- A combination of elements known in the prior art according to known methods to yield a predictable result;
- A combination that is a simple substitution of one or more known elements for another to obtain a predictable result;
- A combination that involves using a known technique to improve a similar device or method in the same way;
- A combination that involves applying a known technique to a known device or method ready for improvement to yield a predictable result;
- A combination that results from a finite number of identified, predictable solutions with a reasonable expectation of success, such that the solution was one which was "obvious to try";
- A combination that results from known work in one field of endeavor prompting variations of it for use either in the same field or a different field based on design incentives or other market forces in which the variations were predictable to one of ordinary skill in the art; and
- A teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill in the art to modify the prior art reference or to combine the teachings of various prior art references to arrive at the claimed invention.

Further, the Federal Circuit has held that a motivation to combine references may be implicit for patents claiming an "improvement":

> [A]n implicit motivation to combine exists not only when a suggestion may be gleaned from the prior art as a whole, but when the "improvement" is technology-independent and the combination of references results in a product or process that is more desirable, for example because it is stronger, cheaper, cleaner, faster, lighter, smaller, more durable, or more efficient. Because the desire to enhance commercial opportunities by improving a product or process is universal—and even commonsensical—we have held that there exists in these situations a motivation to combine prior art references even absent any hint of suggestion in the references themselves. In such situations, the proper question is whether the ordinary artisan possesses knowledge and skills rendering him capable of combining the prior art references.

DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co., 464 F.3d 1356, 1368 (Fed. Cir. 2006). The prior art references identified herein explicitly or implicitly refer to other prior art references, share common authors or inventors, were published in the same journals, presented at the same conferences, were presented as proposals to standards working groups, and/or were developed at common companies, schools, or organizations, all of which would motivate one of skill in the art to combine them. These references are also within the field of the Asserted Patents and are directed to similar subject matter within that field. Additionally, any products, devices, or processes described in the references existed and/or were invented before or during the period in which the claimed inventions were developed, providing further motivation to combine them.

For example, the Ericsson R520m, Ericsson T39, Ericsson Bluethooth Headset HBH-10, and IBM ThinkPad A30 ("Example Commercial Products") were made, used, offered for sale, sold, and imported into the United States and in public use prior to at least October 2001 (before the claimed priority date of each of the Asserted Patents and more than one year before the actual priority date of the Asserted Patents). In addition, product literature describing the Example Commercial Products, including for example user guides, service manuals, brochures and trade magazines, are prior art as printed publications that anticipate or render obvious the Asserted

Claims of the Asserted Patents. Fact discovery is in its early stages; third party discovery has not yet begun; and Defendants reserve all rights to supplement these contentions with additional prior art commercial products as the case proceeds, including based on any change in alleged priority date.

To the extent Plaintiff challenges a combination of prior art with respect to a particular element, Defendants reserve all rights to supplement these contentions to further specify the motivation to combine the prior art. Defendants may rely on cited or uncited portions of the prior art, other documents, 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.

1. Motivation to Combine: ’000 Patent

A POSA would have been motivated to combine the references identified in Exhibits A1–13 herein because the identified combinations involve analogous references that are each directed to wireless communications, including for wireless headphones/speakers. Further, a POSA would have been motivated to combine these references and would have had a reasonable expectation of success in combining the references because the claim limitations in the Asserted Claims of the ’000 patent recite no more than well-known, conventional components and configurations routinely implemented for wireless communication systems. Indeed, the references identified in Exhibits A1–13 demonstrate that each limitation recited in the Asserted Claims was known in the art. To the extent a particular reference does not expressly disclose one of these or the other conventional limitations recited in the Asserted Claims, it would have been obvious to a POSA to implement such features.

As set forth in Exhibits A1–13, the other limitations of the Asserted Claims similarly recite no more than well-known, conventional components and configurations routinely implemented

for wireless communications and a POSA would have been motivated to combine the references for the reasons set forth in Exhibits A1–13 as well as general considerations including (1) well-known wireless communication standards, (2) ways to reduce interference for wireless communications, and (3) market demands, such as improved sound quality for wireless headphones. Additional rationales and motivations are provided in the claim chart Exhibits.

2. Motivation to Combine: ’627 Patent

A POSA would have been motivated to combine the references identified in Exhibits B1–13 herein because the identified combinations involve analogous references that are each directed to wireless communications, including for wireless headphones/speakers. Further, a POSA would have been motivated to combine these references and would have had a reasonable expectation of success in combining the references because the claim limitations in the Asserted Claims of the ’627 patent recite no more than well-known, conventional components and configurations routinely implemented for wireless communication systems. Indeed, the references identified in Exhibits B1–13 demonstrate that each limitation recited in the Asserted Claims was known in the art. To the extent a particular reference does not expressly disclose one of these or the other conventional limitations recited in the Asserted Claims, it would have been obvious to a POSA to implement such features.

As set forth in Exhibits B1–13, the other limitations of the Asserted Claims similarly recite no more than well-known, conventional components and configurations routinely implemented for wireless communications and a POSA would have been motivated to combine the references for the reasons set forth in Exhibits B1–13 as well as general considerations including (1) well-known wireless communication standards, (2) ways to reduce interference for wireless communications, and (3) market demands, such as improved sound quality for wireless headphones. Additional rationales and motivations are provided in the claim chart Exhibits.

3. Motivation to Combine: ’047 Patent

A POSA would have been motivated to combine the references identified in Exhibits C1–13 herein because the identified combinations involve analogous references that are each directed to wireless communications, including for wireless headphones/speakers. Further, a POSA would have been motivated to combine these references and would have had a reasonable expectation of success in combining the references because the claim limitations in the Asserted Claims of the ’047 patent recite no more than well-known, conventional components and configurations routinely implemented for wireless communication systems. Indeed, the references identified in Exhibits C1–13 demonstrate that each limitation recited in the Asserted Claims was known in the art. To the extent a particular reference does not expressly disclose one of these or the other conventional limitations recited in the Asserted Claims, it would have been obvious to a POSA to implement such features.

As set forth in Exhibits C1–13, the other limitations of the Asserted Claims similarly recite no more than well-known, conventional components and configurations routinely implemented for wireless communications and a POSA would have been motivated to combine the references for the reasons set forth in Exhibits C1–13 as well as general considerations including (1) well-known wireless communication standards, (2) ways to reduce interference for wireless communications, and (3) market demands, such as improved sound quality for wireless headphones. Additional rationales and motivations are provided in the claim chart Exhibits.

C. There is No Evidence of Any Indicia of Nonobviousness

There is no evidence of any indicia of nonobviousness, including any long-felt but unsolved need; copying; failure of others; commercial success due to the patented invention; no industry praise; no unexpected results; no industry skepticism and no licensing. Each is address in turn below:

No long felt but unsolved need. There was no long-felt but unsolved need that the Asserted Claims solve. The concepts described in the Asserted Patents were all well known before the alleged invention dates of the Asserted Patents as evidenced by the patents themselves, their file histories and references cited therein, and the prior art identified herein, including those identified in the above-referenced Exhibits. In addition, there was no long felt but unsolved need because there is nothing particularly compelling about the claimed methods, systems, and apparatus.

No copying. Plaintiff has provided no credible evidence that the alleged inventions of the Asserted Patents were copied, or more specifically, that any functionality that practices the Asserted Patents was copied. Copying "requires evidence of efforts to replicate a specific product." *Wyers v. Master Lock Co.*, 616 F.3d 1231, 1246 (Fed. Cir. 2010). Here, Plaintiff has not, and cannot, show that Defendants copied any product that embodies the Asserted Patents. Further, evidence of copying is "not sufficient to demonstrate nonobviousness of the claimed invention" where, as here, there is a "substantial question of validity raised by the prior art references" cited by Defendants. *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1366 (Fed. Cir. 2001). As explained in detail in these contentions, the Asserted Patents are rendered obvious by the prior art. Thus, Plaintiff cannot show any nexus between any alleged copying and the merits of the claimed inventions of the Asserted Patents.

No failure of others. Although "[n]onobviousness is suggested by the failure of others to find a solution to the problem which the patents in question purport to solve," *Symbol Techs., Inc. v. Opticon, Inc.*, 935 F.2d 1569, 1578 (Fed. Cir. 1991), this is not such a case. As explained in detail in these contentions, image correction technology was well known in the art. A person of ordinary skill would have been motivated to apply the teachings of prior art references regarding

wireless communications. Furthermore, a person of ordinary skill in the art would have found combining such teachings to be straightforward, predictable, and a matter of routine optimization.

No commercial success. Plaintiff has not provided any evidence that any alleged success of its products or any other products is due to the alleged inventions claimed in the Asserted Patents. A patentee bears the burden of demonstrating that the relevant commercial success is attributable to the claimed invention "as opposed to other economic and commercial factors unrelated to the technical quality of the patented subject matter." *Cable Elec. Prods, Inc. v. Genmark, Inc.*, 770 F. 2d 1015, 1027 (Fed. Cir. 1985). Here, Plaintiff has not shown and cannot show that Defendants' success is due to the alleged invention of the Asserted Patents. The commercial success of the accused products are unrelated to the purported inventions of the Asserted Patents. Furthermore, if any commercial success is due to any of the concepts disclosed in the Asserted Patents, those concepts are also present in the prior art and thus are irrelevant to the question of obviousness. *See Tokai Corp. v. Easton Enterprises, Inc.*, 632 F.3d 1358, 1369-70 (Fed. Cir. 2011) ("If commercial success is due to an element in the prior art, no nexus exists."); *In re Huai-Hung Kao*, 639 F.3d 1057, 1068 (Fed. Cir. 2011) ("Where the offered secondary consideration actually results from something other than what is both claimed and novel in the claim, there is no nexus to the merits of the claimed invention."); *Ormco Corp. v. Align Tech., Inc.*, 463 F.3d 1299, 1312 (Fed. Cir. 2006) ("[I]f the feature that creates the commercial success was known in the prior art, the success is not pertinent.").

No industry praise. Plaintiff has presented no evidence of industry praise for the alleged inventions of the Asserted Patents or any functionality that allegedly practices the Asserted Patents. To the extent any praise is related to any functionality that allegedly practices the Asserted Patents, that praise is not due to the allegedly novel features of the Asserted Patents, but instead

only to features present in the prior art, which is not a sufficient nexus to be relevant to the question of industry praise for purposes of obviousness. *See Muniauction, Inc. v. Thomson Corp.*, 532 F.3d 1318, 1328 (Fed. Cir. 2008).

No unexpected results. There is no evidence of any unexpected results when the elements of the Asserted Claims were combined. Instead, as discussed above, the concepts claimed in the Asserted Patents were already combined or would have been obvious to combine in the same manner as the Asserted Claims. These prior art systems and products, as described in these contentions, disclosed the same combinations of elements, and the same results of such combinations, that are recited in the Asserted Claims of the Asserted Patents. Thus, there were no unexpected results that arose from combining the well-known elements in the Asserted Claims of the Asserted Patents.

No industry skepticism. Plaintiff has presented no evidence that others were skeptical before the alleged invention date of the Asserted Patents, nor can it. In fact, there was no industry skepticism concerning the claimed concepts that predates the Asserted Patents. Instead, many companies and individuals were already using the concepts claimed in the Asserted Patents as demonstrated by the attached Exhibits. Thus, there was no industry skepticism that using or combining these well-known prior art concepts would be viable; others in the field were already combining them in the same manner as arranged in the Asserted Claims.

Simultaneous Invention. Individuals working independently of the Asserted Patents' named inventor simultaneously or near-simultaneously invented the alleged invention of the Asserted Claims of the Asserted Patents. Such evidence supports a finding that the Asserted Claims would have been obvious to a person of ordinary skill in the art at the time of the invention. *See Geo. M. Martin Co. v. Alliance Mach. Sys.*, 618 F.3d 1294, 1305 (Fed. Cir. 2010) ("Independently

made, simultaneous invention, made within a comparatively short space of time, are persuasive evidence that the claimed apparatus was the product only of ordinary mechanical or engineering skill.") (citing *Concrete Appliances Co. v. Gomery*, 269 U.S. 177, 184 (1925)) (internal quotations omitted); *see also Ecolochem, Inc. v. So. Cal. Edison Co.*, 227 F.3d 1361, 1379 (Fed. Cir. 2000).

For example, the Example Commercial Products, along with the other prior art cited above and in the attached charts, are evidence of simultaneous invention.

V. INVALIDITY UNDER 35 U.S.C. § 112

The following Preliminary Invalidity and Subject Matter Eligibility Contentions set forth below are subject to revision and amendment pursuant to Federal Rule of Civil Procedure 26(e) and the Orders of record in this matter to the extent appropriate in light of further investigation and discovery regarding the defenses below, the Court's construction of the claims at issue, and/or the review and analysis of expert witnesses.

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

Claims are indefinite under 35 U.S.C. § 112, ¶ 2 when they "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). To the extent an asserted apparatus claim includes both apparatus and method limitations, that claim is invalid for indefiniteness under § 112, ¶ 2 because it fails to identify or notify the public of what constitutes direct infringement. *See IPXL Holdings, L.L.C. v. Amazon.com, Inc.*, 430 F.3d 1377 (Fed. Cir. 2005).

Paragraph 2 of 35 U.S.C. § 112 also requires that the claimed subject matter be what "the inventor or a joint inventor regards as the invention." "Where it would be apparent to one of skill in the art, based on the specification, that the invention set forth in a claim is not what the patentee regarded as his invention, we must hold that claim invalid under § 112, paragraph 2." *Allen Eng'g Corp. v. Bartell Indus., Inc.*, 299 F.3d 1336, 1349 (Fed. Cir. 2002).

Defendants hereby incorporate by reference the enablement and written description contentions regarding the same claim limitations. In addition to Defendants' reservation of rights stated above, Defendants specifically reserve the right to present any (or none) of the indefiniteness arguments outlined below and will present their detailed arguments as to any indefiniteness at that time, through the *Markman* meet and confer and briefing processes.

1. <u>The Asserted Claims are Invalid as Indefinite Because Several Similar Claim Limitations Lack an Antecedent Basis</u>

The following limitations of the following Asserted Claims, and all dependent claims thereto, lack an antecedent basis:

- "the shared spectrum", "a shared wireless headphone spectrum", "the shared wireless headphone spectrum", "the shared spectrum", "the wireless digital audio transmitter shared spectrum" ('000 patent: claims 1-5, 8-12)
- "the correct bit sequence" ('000 patent: claims 2, 3, 5)
- "said original audio signal representation" ('000 patent: claim 2)
- "said receiver audio signal representation ('627 patent, claim 1)
- "said decoding" ('627 patent, claim 3)
- "the spread spectrum receiver module" ('000 patent: claims 11, 12)
- "transmitted representation" ('627 patent: claim 5)
- "The portable spread spectrum radio receiver" ('047 patent: claims 6 and 15)
- "wireless digital coded audio spread spectrum transmitter" ('047 patent: claim 19)

2. <u>The Asserted Claims are invalid as indefinite because they contain limitations with no support in the specification.</u>

Defendants reserve the right to argue that the limitation(s) of the Asserted Patents listed below, when read in light of the specification and prosecution history, fail to inform, with

reasonable certainty, those skilled in the art about the scope of the invention, either because the specification does not use phrases that appear in these limitation(s) and/or fails to delineate the scope of each limitation, including with relation to other limitation(s), and therefore, one of ordinary skill would not understand the metes and bounds of the claims in which these limitation(s) appear, as required by 35 U.S.C. § 112, ¶ 2:

- "original audio signal" ('000 patent: claims 1-5, 8-12)
- "each user has their audio receiver configured to communicate with their own separate audio transmitter" ('000 patent: claims 1, 5, 9)
- "each user has their audio headphone configured to communicate with their own separate audio transmitter" ('000 patent: claims 2-4)
- "each user has their own separate transmitter configured to communicate with their receiver" ('000 patent: claims 8, 10)
- "and mobile said transmitter coupled to said music audio source" ('000 patent: claim 8)
- "virtually free from interference" ("virtually free from interference from device transmitted signals operating in the [portable wireless digital audio system / wireless headphone / wireless digital audio system / digital wireless audio receiver] spectrum") ('000 patent: claims 1-5, 8-12)
- "reduced intersymbol interference coding" ('000 patent: claims 1-5, 8-12; '627 patent: claims 1-12; '047 patent: claims 1-6, 8-15, 17-20)
- "high quality audio signal representation" ('627 patent: claims 1-4, 7-8, 10-11)
- "representative of" ("the audio signal representation representative of audio from a portable audio source," "configured to receive wireless spread spectrum signal transmissions representative of the unique user code", "wireless modulation transmissions representative

of an audio signal representation") ('627 patent: claims 1, 3, 6; '047 patent: claims 1-6, 8-15, 17-20)

- "The portable spread spectrum radio receiver" ('047 patent: claims 6 and 15)
- "The wireless digital audio ***receiver*** of claim 8" ('000 patent: claim 11) where claim 8 recites, "A wireless digital coded music audio spread spectrum ***transmitter***…comprising""
- "The wireless digital audio ***receiver*** of claim 10" ('000 patent: claim 12) where claim 10 recites, "A wireless digital coded audio spread spectrum ***transmitter***…comprising:"
- "spread spectrum receiver module" ('000 patent: claim 9, 11, 12)
- "digital modulator module" ('000 patent: claims 8, 10)

3. <u>The Asserted Claims are invalid as indefinite because of the confusing use of punctuation</u>

Claims 1, 8, 9, and 10 of the '000 Patent recite limitations separated by semicolons, but do not recite either the conjunctive "and", or disjunctive "or" at the end of the recited limitations. For example, claims 1, 8, 9, and 10 recite:

> 1. A mobile wireless digital audio receiver, configured to receive a unique user code and an original audio signal representation in the form of packets, said unique user code used to spread a spectrum of said signal and further configured for independent CDMA communication operation, said receiver independent of the operation of another receiver, said mobile wireless digital audio receiver comprising:
>
> > a direct conversion module configured to capture packets and a correct bit sequence within the packets aided by lowering signal detection error through reduced intersymbol interference coding of said original audio signal representation, said packets embedded in the received spread spectrum signal, the captured packets corresponding to the unique user code; **[missing "and", "or", or "and/or"?]**
> >
> > a decoder operative to decode the reduced intersymbol interference coding of said original audio signal representation wherein each user has their audio receiver configured to communicate with their own separate audio transmitter, and said receiver virtually free from

interference from transmission and reception device signals operating in the shared spectrum.

8. A wireless digital coded music audio spread spectrum transmitter operatively coupled to a music audio source and configured to transmit a unique user code and an original audio signal representation in the form of packets, wherein said digital coded music audio transmitter coupled to said music audio source, and configured to be directly communicable with a mobile digital audio spread spectrum receiver, is capable of being moved in any direction during operation, said wireless digital coded audio transmitter comprising:

encoding operative to encode said original audio signal representation to reduce intersymbol interference and aid in lowering signal detection error of said audio representation signal respective to said receiver and mobile said transmitter coupled to said music audio source; **[missing "and", "or", or "and/or"?]**

a digital modulator module configured for independent code division multiple access communication operation, wherein each user has their own separate transmitter configured to communicate with their receiver, said transmitter configured to wirelessly transmit said audio to be reproduced virtually free from interference from transmission and reception device signals operating in the wireless digital audio transmitter shared spectrum.

9. A mobile wireless digital audio receiver capable of being moved in any direction during operation and configured to receive a unique user code and an original audio signal representation in the form of packets, said unique user code used to spread a spectrum of said signal and further configured for independent CDMA communication operation, said receiver independent of the operation of another receiver, said wireless digital audio receiver comprising:

a spread spectrum receiver module configured to capture packets and a correct bit sequence within the packets aided by lowering signal detection error through reduced intersymbol interference coding of said original audio signal representation, said packets embedded in the received spread spectrum signal, the captured packets corresponding to the unique user code; **[missing "and", "or", or "and/or"?]**

a decoder operative to decode the reduced intersymbol interference coding of said original audio signal representation, wherein each user has their audio receiver configured to communicate with their own separate audio transmitter, and said audio virtually free from

interference from transmission and reception device signals operating in the shared spectrum.

10. A wireless digital coded audio spread spectrum transmitter operatively coupled to a audio source and configured to transmit a unique user code and an original audio signal representation in the form of packets, wherein said digital coded audio transmitter coupled to said audio source, and configured to be directly communicable with a mobile digital audio spread spectrum receiver, is capable of being moved in any direction during operation, said wireless digital coded audio transmitter comprising:

an encoding module operative to encode said original audio signal representation to reduce intersymbol interference and aid in lowering signal detection error of said audio signal representation, said transmitter coupled to said audio source; **[missing "and", "or", or "and/or"?]**

a digital modulator module configured for independent code division multiple access communication operation, each user has their own separate transmitter configured to communicate with their receiver, said transmitter configured to wirelessly transmit said audio to be reproduced virtually free from interference from transmission and reception device signals operating in the wireless digital audio transmitter shared spectrum.

4. <u>The Asserted Claims are invalid because they claim both an apparatus and a method</u>

Defendants reserve the right to argue that the Asserted Claims of the Asserted Patents are each invalid for failing to meet the requirements of 35 U.S.C. § 112 at least because they are drawn both to apparatuses and methods of use, failing to inform one of ordinary skill in the art with reasonable certainty the scope of the claims.

The Federal Circuit has held that "a single claim covering both an apparatus and a method of use of that apparatus" fails to meet the requirements of § 112 when "it is unclear whether infringement . . . occurs when one creates a[n infringing] system, or whether infringement occurs when the user actually uses [the system in an infringing manner]." *IPXL Holdings, LLC v. Amazon.com, Inc.*, 430 F.3d 1377, 1384 (Fed. Cir. 2005). *See also In re Katz Interactive Call Processing Patent Litigation*, 639 F.3d 1303, 1318 (Fed. Cir. 2011) (holding that patent was

invalid for hybrid claiming when a system claim limitation was "directed to user actions, not system capabilities."). All Asserted Claims of all Asserted Patents are indefinite under this rule.

The Asserted Patents are entitled wireless digital audio music "system," and each claim purports to claim a device (i.e., a "transmitter" or "receiver"). But each claim then has similar language purporting to cover both a system or apparatus and a method of using that apparatus. Each claim includes component limitations of an apparatus, as well as limitations requiring steps to perform a process (a method). The steps are not mere descriptions of functionality; to the contrary, they are steps that must be performed by the "user." It is not clear, therefore, whether infringement occurs at the creation of a device capable of performing a prescribed method; or if it occurs at the completion of the method. Under the controlling case law, claims that have limitations for both apparatus and methods are invalid as indefinite.

For example, the asserted system claims recite the following method steps that must be performed by the "user":

- "each user has their audio receiver configured to communicate with their own separate audio transmitter" ('000 patent, claims 1, 5, 9)
- "each user has their audio headphone configured to communicate with their own separate audio transmitter" ('000 patent, claims 2-4)
- "each user has their own separate transmitter configured to communicate with their receiver" ('000 patent, claims 8, 10)
- "a user to secure the speaker on to a head of the user" ('047 patent, claim 6, 15)

B. <u>Lack of Enablement/Written Description Under 35 U.S.C. § 112, ¶ 1</u>

35 U.S.C. § 112, ¶ 1 requires that the specification contain a written description of the invention. "[T]he hallmark of written description is disclosure." *Boston Scientific Corp. v. Johnson*

& Johnson, 647 F.3d 1353, 1361–62 (Fed. Cir. 2011) (citation omitted). The test for whether a specification adequately describes an invention is "whether the disclosure of the application relied upon reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date. . . . [T]he test requires an objective inquiry into the four corners of the specification from the perspective of a person of ordinary skill in the art. . . . [It] is a question of fact." *Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (*en banc*); *Boston Scientific*, 647 F.3d at 1362.

The enablement requirement of § 112 demands that the patent specification enable "those skilled in the art 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, 1365 (Fed. Cir. 1997) (quoting *In re Wright*, 999 F.2d 1557, 1561 (Fed. Cir. 1993)). "[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).

1. <u>The Asserted Claims are invalid for lack of written description and enablement because they contain several limitations with no support in the specification</u>

The following terms are limitations in the claims, and dependent claims thereto, and do not have support in the specification of the Asserted Patents:

- "virtually free from interference" ("virtually free from interference from device transmitted signals operating in the [portable wireless digital audio system / wireless headphone / wireless digital audio system / digital wireless audio receiver] spectrum") ('000 patent: claims 1-5, 8-12)
- "reduced intersymbol interference coding" ('000 patent: claims 1-5, 8-12; '627 patent: claims 1-12; '047 patent: claims 1-6, 8-15, 17-20)

- “original audio signal representation” (’000 patent: claims 1-5, 8-12)
- “each user has their audio receiver configured to communicate with their own separate audio transmitter” (’000 patent: claims 1, 5, 9)
- “each user has their audio headphone configured to communicate with their own separate audio transmitter” (’000 patent: claims 2-4)
- “each user has their own separate transmitter configured to communicate with their receiver” (’000 patent: claim 8)
- “independent CDMA communication operation”, “independent code division multiple access communication” (’000 patent: claims 1-5, 8-12; ’627 patent: claims 1-12; ’047 patent: claims 1-6, 8-15, 17-20)
- “configured to capture packets and a correct bit sequence within the packets” (’000 patent: claims 1-5, 9)
- “the shared spectrum”, “a shared wireless headphone spectrum”, “the shared wireless headphone spectrum”, “the wireless digital audio transmitter shared spectrum” (’000 patent: claims 1-5, 8-12)
- “a non-DPSK demodulation” (’047 patent: claims 1-6, 8-15, 17-20; ’627 patent: claims 1-12)
- “in the Industrial Scientific and Medical 2.4 GHz band, ranging from 2.4 GHz to 2.5 GHz” (’627 patent: claims 10-12)
- “wherein the analog audio output signal is capable of representing audio signals below 40 Hz and also capable of representing audio signals above 5 kHz.” (’047 patent: claims 4, 11)
- “power supply” (’047 patent: claims 5, 14, 20)

- "radio receiver" ('047 patent: claims 6, 15)
- "spread spectrum receiver module" ('000 patent, claim 9, 11, 12)
- "a plurality of demodulations, wherein the plurality of demodulations includes a differential phase shift keying (DPSK) demodulation and also includes a non-DPSK demodulation" ('627 patent, claim 1)
- "wherein the plurality of demodulations includes a differential phase shift keying (DPSK) demodulation and a non-DPSK demodulation" ('627 patent, claims 3, 5)
- "wherein said plurality of demodulations includes a differential phase shift keying (DPSK) demodulation and a non-DPSK demodulation" ('047 patent, claims 1, 8, 17)

Without support in the specification, one reasonably skilled in the art would be unable to make or use the invention, incorporating any of these claim limitations, from the disclosures in the patent coupled with information known in the art without undue experimentation. Thus, all of the Asserted Claims are invalid for lack of enablement.

Further, without support for these claim terms in the specification, the written description does not clearly allow persons of ordinary skill in the art to recognize that the alleged inventor invented what is claimed. Thus, all of the Asserted Claims are invalid for failing to meet the written description requirement.

Therefore, all of the Asserted Claims are invalid for lacking sufficient written description and/or an enabling disclosure.

C. <u>The Asserted Claims are Invalid for Improper Dependency Under 35 U.S.C. § 112(d)</u>

Claims 7-12 of the '627 patent and claims 11-12 of the '000 patent are invalid for improper dependency.

VI. IDENTIFICATION OF CLAIMS DIRECTED TO INELIGIBLE SUBJECT MATTER

Section 101 of the Patent Act defines the type of subject matter that is patent-eligible. 35 U.S.C. § 101. The Supreme Court has long interpreted § 101 to hold that "laws of nature, natural phenomena, and abstract ideas are not patentable." *Alice Corp. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2354 (2014). These basic principles are excluded from patent eligibility because they are the very "building blocks of human ingenuity," *id.* at 2354, and should be "free to all men and reserved exclusively to none." *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 71 (2012).

The Supreme Court's *Alice* test sets forth a two-part standard for assessing subject-matter eligibility. In the first step, the court must determine whether the claims are "directed to" patent-ineligible subject matter, such as an abstract idea. *Alice,* 134 S. Ct. at 2355. In deciding whether a claim is "directed to" an abstract idea, the court must look at the "focus of the claimed advance over the prior art to determine if the claim's character as a whole is directed to excluded subject matter." *Affinity Labs of Texas, LLC v. DIRECTV, LLC*, 838 F.3d 1253, 1257 (Fed. Cir. 2016) (internal quotation marks omitted). Limiting the claims directed to an abstract idea to a particular "technological environment" or "field of use" does "not render the claims any less abstract." *Alice*, 134 S. Ct. at 2358 ("the prohibition against patenting abstract ideas cannot be circumvented by attempting to limit the use of [the idea] to a particular technological environment") (internal quotation marks and citation omitted); *Smart Sys. Innovations, LLC v. Chicago Transit Auth*., 873 F.3d 1364, 1373 (Fed. Cir. 2017) (citing *Affinity Labs,* 838 F.3d at 1259 (Fed. Cir. 2016)) (holding that claims applying abstract idea to particular field of use, namely mass transit, were not patent eligible); *ChargePoint, Inc. v. SemaConnect, Inc.*, 920 F.3d 759, 768 (Fed. Cir. 2019), *cert. denied*, 140 S. Ct. 983 (2020) (limiting abstract idea of "communication over a network for interacting with a device" to electric vehicle charging stations did not make claims patent eligible).

Under *Alice* step two, the court must determine whether the patent claims include an "inventive concept" that is "sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [abstract idea] itself." *Alice*, 134 S. Ct. at 2355 (internal quotation marks omitted). The inventive concept must be truly inventive; it is not sufficient to include "well-understood, routine, conventional" features. *Mayo*, 566 U.S. at 79–80. For example, merely reciting conventional computer elements "cannot transform a patent-ineligible abstract idea into a patent-eligible invention." *Alice*, 134 S. Ct. at 2358; *see also Content Extraction and Transmission LLC v. Wells Fargo Bank, N.A.*, 776 F.3d 1343, 1348 (Fed. Cir. 2014) ("use of a generic scanner and computer to perform well-understood, routine, and conventional activities commonly used in industry" did not make claim patent eligible). Moreover, use of "generic functional language" to achieve purported solutions to technical problems, without "any requirements for *how* the desired result is achieved" will not suffice for an inventive concept. *Two-Way Media Ltd. v. Comcast Cable Commc'ns, LLC*, 874 F.3d 1329, 1339 (Fed. Cir. 2017) (internal quotation marks and citation omitted).

All Asserted Claims are directed to ineligible subject matter.

VII. DOCUMENT PRODUCTION

A. Documents Related to Accused Instrumentalities

Based on Defendants' currently available understanding of Plaintiff's Infringement Contentions (and despite the deficiencies found in OEW's Infringement Contentions), Defendants are producing in good faith documents via a separate communication, and will continue to produce documentation sufficient to show the operation of the Accused Instrumentalities of the Accused Products that Defendants understand are accused of infringement. Samsung's Source Code for the relevant accused functionalities is available for inspection once a protective order governing review of Source Code is entered by the Court.

B. Documents Related to Prior Art

Pursuant to P. R. 3-4(b), Defendants are producing concurrently with these Invalidity Contentions documents bates labeled PRIORART-OEW_00000001–18394 reflecting the prior art references identified above and/or in the accompanying charts.

Dated: August 14, 2025

Respectfully submitted,

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CERTIFICATE OF SERVICE

I certify that, on August 14, 2025, I served a true and correct copy of Defendants' Preliminary Invalidity and Subject Matter Ineligibility Contentions including the above pleading and the associated claim charts, upon Plaintiff's counsel of record via electronic mail.

/s/ Omar A. Nesheiwat
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