IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

ZOPHONOS INC., *Plaintiff*, v. SAMSUNG ELECTRONICS CO., LTD., and SAMSUNG ELECTRONICS AMERICA, INC., *Defendants*.	Case No. 2:25-cv-00752 **JURY TRIAL DEMANDED** **Exhibits A-18, B-18 and C-18 Contain Information Designated Confidential by a Third Party**

DEFENDANTS SAMSUNG ELECTRONICS CO., LTD.'S AND
SAMSUNG ELECTRONICS AMERICA, INC.'S INVALIDITY CONTENTIONS

Pursuant to the Local Patent Rules and the Court's First Amended Docket Control Order (Dkt. 39), Defendants Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. (collectively, "Samsung" or "Defendants") provide these Invalidity Contentions with respect to the Asserted Claims of U.S. Patent No. 10,656,906 (the "'906 Patent"), U.S. Patent No. 11,204,736 (the "'736 Patent"), and U.S. Patent No. 11,900,016 (the "'016 Patent") (collectively, the "Asserted Patents") identified by Plaintiffs Zophonos Inc. ("Zophonos").

The Asserted Claims, as reflected in Plaintiff's Infringement Contentions, are as follows:

Asserted Patent No.	Asserted Claims
10,656,906	1-3, 6, 8-12, 13, 15, and 17-20
11,204,736	1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28
11,900,016	39, 40, and 43

As detailed further below, the Asserted Claims of the Asserted Patents are anticipated by, or obvious in view of, one or more of the prior art references produced at SAMSUNG_ZOPHONOS_00021010-24074. The Asserted Claims are invalid pursuant to 35 U.S.C. §§ 102 and/or 103, as well as invalid under 35 U.S.C. §§ 101 and/or 112.[1]

I. PRELIMINARY STATEMENT

These Invalidity Contentions are based on Defendants' current knowledge, understanding, and belief regarding the Asserted Patent and prior art, Plaintiff's infringement theories (inasmuch as they can be inferred from its Infringement Contentions), and the facts and other information available as of the date of these Invalidity Contentions. Defendants' investigation, discovery, and analysis of information related to this action is ongoing.

Additional discovery, including from the named inventor, third parties, or other persons with knowledge, from elucidation of Plaintiff's Infringement Contentions, and/or from orders of the Court may require Defendants to amend or supplement these Invalidity Contentions, and Defendants expressly reserve the right to do so as the case proceeds. These Invalidity Contentions represent Defendants' good-faith effort to provide a comprehensive identification of relevant prior art, but Defendants reserve the right to modify or supplement their prior art list and Invalidity Contentions at a later time with, or based on, pertinent information that may be later discovered.

Prior art not currently included in this disclosure may become relevant, and it may be necessary for Samsung to supplement and/or amend these Invalidity Contentions, and/or rely on this information at trial. Defendants are currently unaware of the extent, if any, to which Plaintiff

[1] As the earliest application in the purported priority chain of the Asserted Patents was filed on September 23, 2014, the Asserted Patents are subject to the provisions of the America Invents Act ("AIA"). All references to sections of Title 35 of the United States Code are to the AIA version unless noted otherwise.

will contend that limitations of the Asserted Claims are not disclosed in the prior art identified by Defendants. Defendants reserve the right to identify other references and/or systems that would have made the addition of the allegedly missing limitation to the disclosed references and/or systems obvious or show that the allegedly missing limitation would have been known or readily apparent to one of ordinary skill in the art at the time of the invention in light of the disclosure of the prior art at issue. Defendants also reserve the right to rely on any of the references produced at SAMSUNG_ZOPHONOS_00021010-24074 to demonstrate the state of the art at the alleged time of invention and as evidence of the knowledge of a person having ordinary skill in the art ("POSITA") in support of any motivations to modify or combine the charted prior art references with other references or knowledge.

Plaintiff may also be aware of additional prior art that is not known to Defendants. If Plaintiff produces additional prior art pursuant to its discovery obligations under the local rules or responsive to Defendants' discovery requests after these contentions are served, Defendants may supplement their Invalidity Contentions with prior art contained in such production once they have had a fair opportunity to review, analyze, and chart such prior art. Defendants reserve the right to amend their Invalidity Contentions with any additional potential prior art known by Plaintiff but not yet disclosed to Defendants.

A. Limitations Arising From Zophonos's Deficient Infringement Contentions

Zophonos's Infringement Contentions are deficient in multiple respects and do not provide Samsung with sufficient information to understand the bases for numerous of Zophonos's infringement allegations or the alleged scope of the claims as Zophonos is applying them in making such allegations. Plaintiff's Infringement Contentions are in most places too general and vague to discern Plaintiff's infringement theories and how exactly Plaintiff contends each Accused Product

meets or practices each element of the Asserted Claims. For example, Zophonos failed to adequately identify each of the Accused Products and features, demonstrate that any Accused Products and/or features are representative of other Accused Products and/or features, and map all the Accused Products and features it does discuss to each of the limitations of the Asserted Claims.

In addition, Plaintiff's Infringement Contentions, in many cases, continue to fail to put Defendants on notice of Plaintiff's interpretation of the Asserted Claims, further prejudicing Defendants' ability to identify relevant prior art.

Separately, Zophonos's production is deficient, and Samsung has not yet had the benefit of discovery into the merits of Zophonos's claims for priority. As such, Samsung reserves the right to amend these Invalidity Contentions when and if such documents are produced by Zophonos, the inventor of the Asserted Patents, or a third party.

Consequently, Samsung is hindered from completely identifying prior art to meet Zophonos's Infringement Contentions. To the extent that Zophonos's Infringement Contentions are understandable, Samsung's Invalidity Contentions are based, at least in part, on Zophonos's apparent constructions of the Asserted Claims and Zophonos's application of those claims.

To the extent that Plaintiff is later permitted by the Court to amend its Infringement Contentions to cure the deficiencies of its current contentions or to pursue any currently undisclosed infringement or doctrine of equivalents theories, Samsung expressly reserves the right to supplement or amend these Invalidity Contentions to account for such amendments.

B. No Waiver or Admission of Infringement

Nothing in these Invalidity Contentions is intended, nor should be construed, as a waiver of any noninfringement position, or invalidity position under 35 U.S.C. §§ 101, 102, 103 and/or 112. Defendants' statements herein (including the accompanying claim charts) reflect Defendants'

present understanding of the purported scope of the Asserted Claim as alleged by Plaintiff in its Infringement Contentions (as best those contentions can be understood).

These Invalidity Contentions are made in the alternative, and should not be interpreted to rely on, or in any way affect, the non-infringement arguments Defendants may assert in this case. Nothing disclosed herein is an admission or acknowledgement that any product accused of infringement by Plaintiff in its Infringement Contentions ("Accused Products"), or any of Defendants' other products or services, infringes the Asserted Claims.

If any of the prior art references disclose the same functionality or feature of any of the Accused Products, Defendants reserve the right to argue that said feature or functionality does not practice any element of the Asserted Claims, and to argue, in the alternative, that if said feature or functionality is found to practice any element of the Asserted Claims, then the prior art reference demonstrates that the element is not novel, is obvious, and/or is otherwise not patentable.

C. Claim Construction

The Asserted Claims have yet to be construed by the Court. As a result, Defendants have based these Invalidity Contentions upon their knowledge and understanding of the potential scope of the Asserted Claims at this time, and, in part, upon the apparent interpretations of the Asserted Claims advanced by Plaintiff in its Infringement Contentions. Defendants may disagree with Plaintiff's interpretation of the meaning of many terms and phrases in the Asserted Claims. Defendants have provided these Invalidity Contentions based in part on their present understanding of Plaintiff's apparent constructions and interpretations of the Asserted Claim.

These Invalidity Contentions do not represent Defendants' agreement or view on the proper interpretation of any claim term. Any similarity between any apparent claim interpretation in any of Defendants' charts of prior art reference(s) and Plaintiff's Infringement Contentions is not an

admission or agreement with Plaintiff about the meaning of any claim term, but a reflection of the fact that the subject matter Plaintiff believes is claimed is present in the prior art, or that the claim is otherwise invalid.

Defendants reserve the right to amend, revise, or change their invalidity positions based upon the Court's claim construction. This includes relying on new or different art or arguments, including what a POSITA would understand from the claims, as interpreted by the Court for any grounds of invalidity, including Sections 101, 102, 103, and/or 112.

D. Application of Local Patent Rules

Samsung provides the information below and in the attached charts and document production in order to comply with Patent Rules 3-3 and 3-4. Samsung reserves the right to prove the invalidity of the Asserted Claims on bases other than those required to be disclosed in these Invalidity Contentions pursuant to Patent Rule 3-3.

Pursuant to the provisions of Patent Rule 3-3, Samsung identifies specific portions of prior art references that disclose the elements of the Asserted Claims. Although Samsung has identified exemplary disclosures for each reference, each and every disclosure in the reference is not necessarily identified. The lack of a citation for an element should not be deemed an admission that the element is not disclosed in (whether explicitly or inherently) or rendered obvious by the reference. In an effort to focus the issues, Samsung has identified only exemplary portions of cited references. It should be recognized that POSITAs generally read a prior art reference as a whole and in the context of other publications, literature, and in light of the knowledge of one of ordinary skill in the art. To understand and interpret any specific statement or disclosure within a prior art reference, such persons would rely on other information within the reference, along with other publications and their scientific or engineering knowledge.

Samsung consequently reserves the right to rely upon other unidentified portions of the prior art references, other publications, and expert testimony as to the knowledge of a POSITA to provide context, and as aids to understanding and interpreting the portions that art identified. Samsung also reserves the right to rely on other portions of other prior art references, other publications, and the testimony of experts to establish that a POSITA would have been motivated to modify or combine certain of the cited references so as to render the Asserted Claims obvious. Further, where Samsung identified a particular figure in a prior art reference, the identification should be understood to encompass the caption and description of the figure, as well as any text relating to the figure in addition to the figure itself. Similarly, where an identified portion of text refers to a figure, the identification should be understood to include the figure as well.

E. Impact of Co-Pending IPRs

Samsung reserves the right to rely upon any applicable industry standards and prior art cited in the file histories, reexamination file histories, and any IPR of the Asserted Patents and all related U.S. and foreign patent applications as invalidating references or to show the state of the art. Defendants herein incorporate by reference all evidence and arguments made in any IPR petitions challenging the Asserted Patents, including but not limited to IPR2026-00083, IPR2026-00084, and IPR2026-00085.

Further, Samsung has charted certain references used in IPRs of the Asserted Patents and that are referenced in stipulations between Samsung and Zophonos. *See* Park Ltrs. to Healy dated December 17, 2025 re Pending IPRs. Samsung's stipulations state that:

> [I]f the Director of the Patent and Trademark Office ("Director") permits Samsung to file this stipulation as an exhibit in the IPR proceeding prior to issuing his decision on institution and, thereafter, institutes this IPR petition on the grounds presented therein, then Samsung will not pursue in the above-captioned litigation (i) any grounds that were raised or reasonably could have been raised in the IPR, and (ii) combinations of the prior art asserted in this IPR with unpublished system

> prior art. *See Sotera Wireless, Inc. v. Masimo Corp*., IPR2020-01019, Paper 12 (PTAB Dec. 1, 2020) (precedential as to § II.A); *Motorola Solutions, Inc. v. Stellar, LLC*, IPR2024-01205, Paper 19 (PTAB March 28, 2025).
>
> For the sake of clarity and to avoid any doubt, if the Director does not permit Samsung to file this stipulation as an exhibit in the IPR proceeding prior to his decision on institution, declines institution, or later vacates institution of this IPR, Samsung reserves the right to pursue in this litigation (i) any ground that was raised or reasonably could have been raised in the IPR, and/or (ii) combinations of the prior art asserted in this IPR with unpublished system prior art. This stipulation is not intended, and should not be construed, to limit Samsung's ability to assert invalidity of the asserted claims of the '016 patent on any other ground, regardless of whether IPR is instituted.

Id.

II. PRIORITY DATES OF THE CLAIMS OF THE ASSERTED PATENTS

At the outset, Samsung has had little to no discovery concerning the claimed priority dates for the Asserted Patents. It is Plaintiff's burden, however, to prove entitlement to its asserted "priority date to which each asserted claim allegedly is entitled." (P.R. 3-1(e)).

Zophonos failed to set forth any evidence in its Infringement Contentions to meet that burden. *See* Zophonos's Contentions Cover Pleading at 3-4. Zophonos asserts, without any support, that the '906 Patent is entitled to a priority date of no later than July 15, 2013 (and in the alternative, a priority date of no later than September 23, 2014, September 23, 2015, October 10, 2018, and May 23, 2019), the '736 Patent is entitled to a priority date of no later than July 15, 2013 (and in the alternative, a priority date of no later than September 23, 2014, September 23, 2015, October 10, 2018, and May 23, 2019), and the '016 Patent is entitled to a priority date of no later than July 15, 2013 (and in the alternative, a priority date of no later than September 23, 2014, September 23, 2015, October 10, 2018, May 23, 2019, and October 17, 2019). Samsung disputes that the disclosures in the provisional and non-provisional filings cited in the Asserted Patents in fact support the purported full scope of the Asserted Claims. Samsung reserves the right to

supplement and/or amend these Invalidity Contentions and the identification and production of prior art accordingly.

Zophonos's further contention that the Asserted Patents are entitled to a priority date as early as July 15, 2013 is frivolous because the Asserted Patents are subject to the AIA and, therefore, legally are not entitled to claim priority earlier than September 23, 2014.

III. THE ASSERTED PATENTS ARE INVALID OVER PRIOR ART

A. Identification of Prior Art

Pursuant to P.R. 3-3(a), (b) and subject to Samsung's reservation of rights, Samsung identifies at least the following prior art that anticipates and/or renders obvious the Asserted Claims. Samsung reserves the right to assert any of the references or systems listed below for one Asserted Patent against other Asserted Patents, regardless of whether such reference or system is or is not identified in these Invalidity Contentions as asserted against such other Asserted Patents. Samsung further incorporates by reference all prior art, publications, and other references identified or asserted in any current or future post-grant proceedings filed by Samsung or any other party challenging the validity of the Asserted Patents, including IPR2026-00083, IPR2026-00084, and IPR2026-00085.

1. Prior Art Patents and Publications

The following patents and publications are prior art to the Asserted Patents under at least 35 U.S.C. § 102 and/or 35 U.S.C. § 103. In addition to the patents and publications listed in the tables below, Samsung incorporates by reference all related patents and patent applications and

foreign counterparts, as well as all patents and applications and other materials they incorporated by reference.[2]

Samsung reserves the right to rely on one or more of the following references as anticipatory references under 35 U.S.C. § 102, as further evidence of obviousness under 35 U.S.C. § 103, as background references demonstrating the state of the art, as a limitation upon the doctrine of equivalents, or for any other purpose. Based on further investigation and discovery, based on positions that Plaintiff may take regarding the scope of the asserted claims, and/or based on the Court's claim construction, Samsung reserves the right to revise these contentions and to rely on these references to prove the invalidity of the Asserted Patents in a manner consistent with the Court's Rules and with the Federal Rules of Civil Procedure.

Country	Patent/Publication No.	Filing Date	Date of Issue/Pub.	Short Name
US	U.S. Patent App. Pub. No. 2015/0195641	January 6, 2014	July 9, 2015	DiCenso641
US	U.S. Patent App. Pub. No. 2008/0137873	November 19, 2007	June 12, 2008	Goldstein873
JP	JP Patent App. Pub. No. 2012-074976	September 29, 2010	April 12, 2012	Zheng
US	U.S. Patent No. 10,455,342	June 5, 2014	October 22, 2019	Kim
US	U.S. Patent App. Pub. No. 2008/0267416	February 22, 2008	October 30, 2008	Goldstein416
US	U.S. Patent App. Pub. No. 2014/0044269	August 9, 2012	February 13, 2014	Anderson
US	U.S. Patent App. Pub. No. 2015/0170645	December 13, 2013	June 18, 2015	DiCenso645

[2] To the extent available, Samsung has produced certified translations of foreign references and otherwise relied on machine translations. Samsung reserve right to produce certified translations for any reference for which only machine translations are currently provided.

Country	Patent/Publication No.	Filing Date	Date of Issue/Pub.	Short Name
US	U.S. Patent App. Pub. No. 2014/0254842	March 7, 2013	September 11, 2014	Smith
US	U.S. Patent No. 6,754,355	December 7, 2000	June 22, 2004	Stetzler
US	U.S. Patent App. Pub. No. 2014/0270200	March 13, 2014	September 18, 2014	Usher200
US	U.S. Patent App. Pub. No. 2007/0275670	April 21, 2006	November 29, 2007	Chen
US	U.S. Patent App. Pub. No. 2009/0076804	September 13, 2007	March 19, 2009	Bradford
US	U.S. Patent App. Pub. No. 2008/0240458	January 6, 2014	October 2, 2008	Goldstein458
US	U.S. Patent App. Pub. No. 2008/0015463	January 6, 2014	January 17, 2008	Goldstein463
KR	KR Patent App. Pub. No. 10-1032521	January 6, 2014	April 25, 2011	Park521
US	U.S. Patent App. Pub. No. 2012/0215519	February 21, 2012	August 23, 2012	Park519
US	U.S. Patent App. Pub. No. 2014/0126748	January 6, 2014	May 8, 2014	Usher748
US	U.S. Patent App. Pub. No. 2008/0031481	January 6, 2014	February 7, 2008	Warren
US	U.S. Patent App. Pub. No. 2013/0316642	January 6, 2014	November 28, 2013	Newham
US	U.S. Patent App. Pub. No. 2014/0337902	January 6, 2014	November 13, 2014	Holland
US	U.S. Patent No. 8,194,864	January 6, 2014	June 5, 2012	Goldstein864
US	U.S. Patent App. Pub. No. 2008/0187149	January 6, 2014	August 7, 2008	Jung
US	U.S. Patent App. Pub. No. 2015/0208188	January 20, 2014	July 23, 2015	Carlsson

Country	Patent/Publication No.	Filing Date	Date of Issue/Pub.	Short Name
US	U.S. Patent App. Pub. No. 2015/0095459	September 30, 2013	April 2, 2015	Schulert
US	U.S. Patent App. Pub. No. 2010/0022283	July 25, 2008	January 28, 2010	Terlizzi283
US	U.S. Patent No. 7,961,869	February 13, 2006	June 14, 2011	Zhang
US	U.S. Patent App. Pub. No. 2015/0289298	April 2, 2014	October 8, 2015	Widner
US	U.S. Patent App. Pub. No. 2012/0224710	May 14, 2012	September 6, 2012	Terlizzi710
US	U.S. Patent No. 9,590,680	August 22, 2007	March 7, 2017	Reuss
US	U.S. Patent App. Pub. No. 2009/0061837	September 4, 2007	March 5, 2009	Chaudhri
US	U.S. Patent App. Pub. No. 2003/0002688	June 27, 2001	January 2, 2003	Kanevsky
US	U.S. Patent App. Pub. No. 2007/0127734	July 11, 2006	June 7, 2007	Brulle
US	U.S. Patent App. Pub. No. 2005/0058181	August 28, 2003	March 17, 2005	Lyle
US	U.S. Patent App. Pub. No. 2011/0058056	September 9, 2009	March 10, 2011	Lindahl
US	U.S. Patent 7,991,171	April 13, 2007	August 2, 2011	Snow
US	U.S. Patent App. Pub. No. 2013/0003998	February 26, 2010	January 3, 2013	Kirkeby
US	U.S. Patent App. Pub. No. 2015/0371643	April 18, 2012	December 24, 2015	Ramo
US	U.S. Patent 8,767,970	June 1, 2011	July 1, 2014	Eppolito
US	U.S. Patent 7,970,144	December 17, 2003	June 28, 2011	Avendano
US	U.S. Patent App. Pub. No. 2015/0012826	May 22, 2014	January 8, 2015	Tengstrand

Country	Patent/Publication No.	Filing Date	Date of Issue/Pub.	Short Name
US	U.S. Patent App. Pub. No. 2013/0064385	July 27, 2012	March 14, 2013	Jeong
US	U.S. Patent App. Pub. No. 2009/0238377	March 16, 2009	September 24, 2009	Ramakrishnan
US	U.S. Patent 7,197,148	September 9, 2002	March 27, 2007	Nourse
US	U.S. Patent 7,315,244	July 14, 2004	January 1, 2008	Carmichel
US	U.S. Patent 5,778,077	September 10, 1996	July 7, 1998	Davidson
US	U.S. Patent 4,836,328	April 27, 1987	June 6, 1989	Ferralli
US	U.S. Patent App. Pub. No. 2002/0118115	February 28, 2001	August 29, 2002	Schendel
US	U.S. Patent 4,580,251	November 9, 1983	April 1, 1986	Koukovinis
US	U.S. Patent 6,614,910	November 3, 1997	September 2, 2003	Clemow
US	U.S. Patent 8,213,629	February 27, 2009	July 3, 2012	Goldstein629
US	U.S. Patent App. Pub. No. 2002/0040254	October 3, 2001	April 4, 2002	Neoh
US	U.S. Patent App. Pub. No. 2005/0037823	May 28, 2004	February 17, 2005	Seshadri
US	U.S. Patent 6,466,832	August 24, 1998	October 15, 2002	Zuqert
US	U.S. Patent 6,944,474	September 20, 2001	September 13, 2005	Rader
US	U.S. Patent 6,424,820	April 2, 1999	July 23, 2002	Burdick
US	U.S. Patent 6,694,034	December 28, 2000	February 17, 2004	Julstrom
US	U.S. Patent 5,615,270	June 6, 1995	July 25, 1997	Miller
WO	WO Patent App. Pub. No. 2000/021194	October 5, 1999	April 13, 2000	Puthuff
WO	WO Patent App. Pub. No. 2003/056790	January 4, 2002	July 10, 2003	Goh790

Country	Patent/Publication No.	Filing Date	Date of Issue/Pub.	Short Name
WO	WO Patent App. Pub. No. 2002/039600	November 6, 2001	May 16, 2002	Griffin
JP	JP Patent 2,638,563	May 16, 1995	August 6, 1996	Tamafuni
US	U.S. Patent 7,295,809	July 19, 2002	November 13, 2007	Moore
US	U.S. Patent 9,172,345	July 26, 2011	October 27, 2015	Kok
US	U.S. Patent App. Pub. No. 2010/0272285	April 22, 2009	October 28, 2010	Loud
US	U.S. Patent App. Pub. No. 2008/0226098	October 26, 2007	September 18, 2008	Haulick
US	U.S. Patent App. Pub. No. 2002/0145521	April 4, 2004	October 10, 2002	Chou
US	U.S. Patent 7,013,301	September 23, 2003	March 14, 2006	Holm
US	U.S. Patent 7,146,015	December 12, 2001	December 5, 2006	Ramsden
US	U.S. Patent 7,791,499	January 15, 2008	September 7, 2010	Mohan
US	U.S. Patent App. Pub. No. 2005/0281423	June 22, 2005	December 22, 2005	Armstrong
US	U.S. Patent App. Pub. No. 2010/0142735	September 2, 2009	June 10, 2010	Yoon
US	U.S. Patent App. Pub. No. 2015/0179181	December 20, 2013	June 25, 2015	Morris
US	U.S. Patent 4,904,992	March 28, 1989	February 27, 1990	Grothause
CN	CN Patent 1,897,054	July 14, 2005	January 17, 2007	Qiu
US	U.S. Patent App. Pub. No. 2015/0358717	June 6, 2014	December 10, 2015	Johnston
US	U.S. Patent 7,024,229	June 28, 2002	April 4, 2006	Nishimura
US	U.S. Patent 8,183,997	November 14, 2011	May 22, 2012	Wong
US	U.S. Patent 8,325,964	March 19, 2007	December 4, 2012	Weisman

Country	Patent/Publication No.	Filing Date	Date of Issue/Pub.	Short Name
US	U.S. Patent 9,135,797	December 28, 2006	September 15, 2015	Couper
US	U.S. Patent App. Pub. No. 2006/0140416	December 23, 2004	June 29, 2006	Berg
US	U.S. Patent App. Pub. No. 2011/0176697	January 17, 2011	July 21, 2011	Apfel
US	U.S. Patent App. Pub. No. 2014/0003625	June 28, 2012	January 2, 2014	Sheen
US	U.S. Patent App. Pub. No. 2002/0057746	February 27, 2001	May 16, 2002	Chen746
US	U.S. Patent App. Pub. No. 2012/0140936	February 1, 2012	June 7, 2012	Bonnick
US	U.S. Patent App. Pub. No. 2011/0116642	November 16, 2009	May 19, 2011	Hall
US	U.S. Patent App. Pub. No. 2006/0104452	June 23, 2005	May 18, 2006	Park452
US	U.S. Patent App. Pub. No. 2012/0275613	July 9, 2012	November 1, 2012	Soulodre
US	U.S. Patent App. Pub. No. 2014/0119561	November 1, 2012	May 1, 2014	Banks
US	U.S. Patent App. Pub. No. 2014/0161265	November 4, 2013	June 12, 2014	Chaikin
US	U.S. Patent App. Pub. No. 2012/0204213	March 2, 2011	August 9, 2012	Lau
US	U.S. Patent App. Pub. No. 2013/0028301	September 28, 2011	January 31, 2013	Sashittal
US	U.S. Patent App. Pub. No. 2011/0103605	October 28, 2010	May 5, 2011	Killion
US	U.S. Patent App. Pub. No. 2015/0347399	February 11, 2015	December 3, 2015	Aue

Country	Patent/Publication No.	Filing Date	Date of Issue/Pub.	Short Name
US	U.S. Patent App. Pub. No. 2014/0358516	July 5, 2012	December 4, 2014	Lin
US	U.S. Patent No. 8,891,786	April 6, 2011	November 18, 2014	Wang
	C. Wiernicki and W. Karoly, "Ultrasound: Biological Effects and Industrial Hygiene Concerns," Am. Ind. Hyg. Assoc. J., 46:488-496		1985	Wiernicki
	H.G. Leventhall, "Low Frequency Noise and Annoyance," Noise and Health, 6(23):59-72		April 2004	Leventhall
	Excerpts from Microsoft Computer Dictionary (5th ed. 2002)		2002	Computer Dictionary
	Excerpts from Robert Oshana, "DSP Software Development Techniques Embedded and Real-Time Systems" (2006)		2006	Oshana
	Excerpts from Thomas D. Rossing, Richard F. Moore, and Paul A. Wheeler, "The Science of Sound" (3rd ed. 2002)		2002	Rossing
	Berger EH. Protection From infrasonic and ultrasonic noise exposure. E-A-RLOG 14, Aearo Company (Cabot Safety Corporation), (1984)		1984	Berger
	Duck FA. Medical and non-medical protection standards for ultrasound and infrasound. Prog		2007	Duck

Country	Patent/Publication No.	Filing Date	Date of Issue/Pub.	Short Name
	Biophys Mol Biol. 2007 Jan-Apr;93(1-3):176-191.			
	Ziaran, S. (2014). The assessment and evaluation of low-frequency noise near the region of infrasound. Noise & Health, 16(68), 10-7		2014	Ziaran

2. Prior Art Systems

On information and belief, the systems identified below were in public use, on sale, or otherwise available to the public before the priority date to which the Asserted Claims of the Asserted Patents are entitled. Defendants' further investigation and/or subsequent discovery from Plaintiff or third parties with knowledge regarding prior art systems may reveal additional relevant prior art systems and/or further information regarding the systems identified below, or other relevant prior art systems. Defendants reserve the right to supplement these Invalidity Contentions, based on subsequent investigation and discovery, including from third parties. Defendants expressly incorporate by reference any documents produced to Samsung by third parties relating to these or other prior art systems, and reserve the right to supplement, amend, or change the exemplary evidence in the table below as well as in Exhibits A-18 to A-26, B-18 to B-26, and C-18 to C-26.

Instrument, Device, or System	Date Known, Used, On Sale, or Made by Another in the U.S.	Currently Known Exemplary Supporting Evidence
Harman HALOsonic System	At least by 2013	https://gglotus.org/ggrace/engineering/le-issue50.pdf SAMSUNG_ZOPHONOS_00023399-460. https://web.archive.org/web/20160813103720/http://news.harman.com:80/releases/industry-first:-harman-quiets-the-car-by-minimizing-road-noise

Instrument, Device, or System	Date Known, Used, On Sale, or Made by Another in the U.S.	Currently Known Exemplary Supporting Evidence
		SAMSUNG_ZOPHONOS_00023461-463. https://web.archive.org/web/20151017120146/https://news.harman.com/releases/harman-quiets-the-road-with-rnc SAMSUNG_ZOPHONOS_00023464-466. https://web.archive.org/web/20200929021217/https://news.harman.com/releases/harman-unleashes-new-potential-for-in-car-listening-experiences-and-sound-management SAMSUNG_ZOPHONOS_00023467-470. https://www.edn.com/audio-synthesis-and-noise-reduction-in-modern-vehicles/ SAMSUNG_ZOPHONOS_00023471-478. HARMAN000001-436.[3]
Sonarworks systems and devices including the Sound ID 510, PSS-Soundflavors, PSS-SoundMate, Sound ID SoundFlavors Bluetooth headset, and Sound ID SM100 (collectively "Sonarworks Devices")	At least by November 11, 2006	https://web.archive.org/web/20201030231038/https://www.phonearena.com/news/Hands-on-with-the-Sound-ID-510_id12498 SAMSUNG_ZOPHONOS_00023987-994. https://web.archive.org/web/20140830005206/https://the-gadgeteer.com/2010/08/03/sound-id-510-bluetooth-headset-review/ SAMSUNG_ZOPHONOS_00023995-4000. https://www.cultofmac.com/reviews/sound-id-510-bluetooth-headset-the-genius-review-primo-headset-week SAMSUNG_ZOPHONOS_00024001-008. https://www.youtube.com/watch?v=AKd-JKZR7JE SAMSUNG_ZOPHONOS_00024009-014. https://www.audiologyonline.com/releases/choose-your-flavor-sound-id-4568

[3] Some of these documents have been marked by Harman as CONFIDENTIAL under the Protective Order, including information appearing in Exhibits A-18, B-18, and C-18. Samsung has marked those Exhibits as CONFIDENTIAL as a result.

Instrument, Device, or System	Date Known, Used, On Sale, or Made by Another in the U.S.	Currently Known Exemplary Supporting Evidence
		SAMSUNG_ZOPHONOS_00024015-018. https://web.archive.org/web/20201126081851/https://www.cnet.com/reviews/soundid-soundflavors-bluetooth-headset-review/ SAMSUNG_ZOPHONOS_00024019-023. https://web.archive.org/web/20130430053855/https://techcrunch.com/2007/06/28/sound-id-sm100-bluetooth-headset-review/ SAMSUNG_ZOPHONOS_00024024-027. https://www.manualslib.com/manual/1212665/Sound-Id-Sm100-Earmodule.html#product-SM100%20EarModule SAMSUNG_ZOPHONOS_00024028-049.
Plantronics systems and devices including the Discovery 655 and the Discovery 975 Bluetooth headsets (collectively "Plantronics Devices")	At least by 2006	https://pocketnow.com/plantronics-discovery-655-bluetooth-headset/ SAMSUNG_ZOPHONOS_00023897-904. https://web.archive.org/web/20140219145611/https://www.siliconpopculture.com/articles/review/plantronics_discovery_655/ SAMSUNG_ZOPHONOS_00023905-909. https://www.headsetexperts.com/documents/pdf/ug_discovery_655.pdf?srsltid=AfmBOoqlcb-Tfxs1pM6M22wMFvKvZdb3FOnrqMzL6xTMQ1V4Qxo6iRRZ SAMSUNG_ZOPHONOS_00023910-925. https://web.archive.org/web/20120910071026/https://www.phonearena.com/news/Plantronics-unveil-new-Discovery-and-Explorer-Bluetooth-headsets_id1441 SAMSUNG_ZOPHONOS_00023926-929. https://www.best4systems.co.uk/pdf-manuals/Plantronics/Plantronics%20Discovery%20975%20Data%20Sheet.pdf SAMSUNG_ZOPHONOS_00023930-931.

Instrument, Device, or System	Date Known, Used, On Sale, or Made by Another in the U.S.	Currently Known Exemplary Supporting Evidence
		https://www.best4systems.co.uk/pdf-manuals/Plantronics/Plantronics%20Discovery%20975%20User%20Guide.pdf SAMSUNG_ZOPHONOS_00023932-952. https://web.archive.org/web/20140413084308/https://crackberry.com/review-plantronics-discovery-975-bluetooth-headset SAMSUNG_ZOPHONOS_00023953-982.
Etymotic systems and devices including the GunSport and MusicPro (collectively "Etymotic Devices")	At least by 2011	https://www.prnewswire.com/news-releases/etymotic-debuts-gunsportpro-high-definition-electronic-earplugs-128175453.html SAMSUNG_ZOPHONOS_00023367- 369. https://etymotic.com/wp-content/uploads/2025/02/GunSport-Pro-Manual-1.pdf SAMSUNG_ZOPHONOS_00023370-381. https://www.prnewswire.com/news-releases/etymotic-launches-musicpro-electronic-earplugs-162184835.html SAMSUNG_ZOPHONOS_00023382-384. https://www.fullcompass.com/common/files/31605-EtymoticResearchMP915MusicPROUserManual.pdf?srsltid=AfmBOor_clATDJOjFiqTVXsq2_cysJsinIq4EzxvfnIUESWLk5VaTIqu SAMSUNG_ZOPHONOS_00023385-398.
3M Peltor systems and devices including the ComTAC III, ComTAC III ARC, ComTAC IV, ComTACIV Hybrid, Ora Tac, WS Lite-Com, and Lite-Com II (collectively "the Peltor Devices")	At least by 1999	https://apps.dtic.mil/sti/tr/pdf/ADA590869.pdf SAMSUNG_ZOPHONOS_00023510-547. https://www.youtube.com/watch?v=mLBs4norgY0 SAMSUNG_ZOPHONOS_00023560-569. https://web.archive.org/web/20230402121219/https://www.atomicdefense.com/products/3m-peltor-comtac-iii-tactical-advanced-combat-headset SAMSUNG_ZOPHONOS_00023554-559. https://web.archive.org/web/20140726064151/https://soldiersystems.net/2011/05/04/comtac-iv-hybrid/ SAMSUNG_ZOPHONOS_00023507-509.

Instrument, Device, or System	Date Known, Used, On Sale, or Made by Another in the U.S.	Currently Known Exemplary Supporting Evidence
		https://web.archive.org/web/20180224064439/https://demm.co.nz/article/ear-communications-headset SAMSUNG_ZOPHONOS_00023548-551. https://www.dnd.hu/uploads/termek_doc/Peltor_OrTac_ENG_le%C3%ADr%C3%A1s.pdf SAMSUNG_ZOPHONOS_00023552-553. https://www.manualslib.com/manual/1254792/3m-Peltor-Ora-Tac.html SAMSUNG_ZOPHONOS_00023570-576. https://www.manualslib.com/manual/1957637/3m-Peltor-Ws-Lite-Com.html SAMSUNG_ZOPHONOS_00023577-890. https://docs.rs-online.com/b52c/0900766b801f5629.pdf SAMSUNG_ZOPHONOS_00023891-896.
Bose systems and devices including AudioPilot, the Lifestyle V20 series ("Lifestyle V20"), the Lifestyle 535/525 Series II, the Lifestyle 235/135 Series II, and the Lifestyle 520/510 (collectively "the Lifestyle Series")	At least by 1998	https://timeline.bose.com/decade/the-nineties SAMSUNG_ZOPHONOS_00023317-332 https://web.archive.org/web/20211019112516/https://automotive.bose.com/news-stories/sounds-success-30-years-working-bose SAMSUNG_ZOPHONOS_00023247-250. https://assets.bosecreative.com/m/77640445b6b4967a/original/OG_LSV10-SPEAKERHT5_enUS.pdf SAMSUNG_ZOPHONOS_00023251-316. https://assets.bosecreative.com/m/601e5441edbd46ae/original/OG_LS135II-SOUNDBAR_ml.pdf SAMSUNG_ZOPHONOS_00023333-336
Honeywell/PIP systems and devices including the QuietPro and the Howard Leight Electronic Earmuffs (collectively "the	At least by September 6, 2007	https://web.archive.org/web/20090207113216/http://soldiermod.com/summer-08/industry-nacre.html SAMSUNG_ZOPHONOS_00023479-481. https://web.archive.org/web/20091107034646/https://www.soldiermod.com/volume-2/nacre.html SAMSUNG_ZOPHONOS_00023488-489.

Instrument, Device, or System	Date Known, Used, On Sale, or Made by Another in the U.S.	Currently Known Exemplary Supporting Evidence
Honeywell/PIP Devices")		https://web.archive.org/web/20070906054101/http://www.howardleightshootingsports.com/page02.html SAMSUNG_ZOPHONOS_00023490-491. https://www.youtube.com/watch?v=7kus1ZR75rE SAMSUNG_ZOPHONOS_00023482-487. https://web.archive.org/web/20240228062420/https://hahnsurvival.com/products/nacre-quietpro-tactical-headset-1 SAMSUNG_ZOPHONOS_00023492-494.
Safariland Group systems and devices including the Liberator II Tactical Headset Series	At least by January 2014	https://web.archive.org/web/20201031160131/https://inside.safariland.com/news/tactical-command-industries-featured-safariland-group-shot-show-booth/ SAMSUNG_ZOPHONOS_00023983-986. The nineteen documents produced by Safariland on January 16, 2026.
MSA systems and devices including the MICH Communication system and the CHIPS Communication system (collectively "the MSA Devices")	At least by 2008	https://media.msanet.com/NA/USA/MICHCommunicationSystems/MICHhighNoiseCommunicationHeadsets/3800-05_MICHHighNoise.pdf SAMSUNG_ZOPHONOS_00023495-498. https://media.msanet.com/na/usa/militaryproducts/chipscommunicasystem/3804-02-CHIPS.pdf SAMSUNG_ZOPHONOS_00023499-504. https://media.msanet.com/na/usa/militaryproducts/chipscommunicasystem/3804-04-quickref.pdf SAMSUNG_ZOPHONOS_00023505-506.

Defendants additionally identify any other prototypes, models, or systems of Zophonos, or any subsidiary, parent or affiliate of the Zophonos. Defendants additionally identify and rely on any system, product, or public knowledge or use that embodies or otherwise incorporates any of the prior art patents and publications listed above. Defendants reserve the right to identify and rely

on systems that represent different versions or are otherwise related variations of the identified systems. Defendants also incorporate by reference any and all other prior art systems identified in any other case brought by Plaintiff and/or involving the Asserted Patents or related patents.

B. Anticipation

Some or all of the Asserted Claims of the Asserted Patents are invalid as anticipated under 35 U.S.C. § 102 in view of each of the prior art references identified above and in the claim charts included in Exhibits A-1 to A-26, B-1 to B-26, and C-1 to C-26 which identify specific examples of where each limitation of the Asserted Claims is found in the prior art references. The cited portions of prior art references identified in the attached claim charts are exemplary only and representative of the content and teaching of the prior art references, and should be understood in the context of the reference as a whole and as they would be understood by a person of ordinary skill in the art.

C. Obviousness

The concepts in each limitation of the Asserted Claims of the Asserted Patents were not new, particularly to the extent these claims are alleged to cover the Accused Products. To the extent any limitation is deemed not to be specifically disclosed by an item of prior art listed above and in Exhibits A-1 to A-26, B-1 to B-26, and C-1 to C-26, any purported differences are such that the claimed subject matter as a whole would have been obvious to one skilled in the art at the time of the alleged invention, in view of the state of the art and knowledge of those skilled in the art. The item of prior art would, therefore, render the relevant claims invalid for obviousness under 35 U.S.C. § 103.

In addition, the references identified above render one or more Asserted Claims of the Asserted Patents obvious when the references are read in combination with each other, and/or

when read in view of the state of the art and knowledge of those skilled in the art. Each and every reference identified is also relevant to the state of the art at the time of the alleged invention. Any of the references disclosed above may be combined to render obvious (and therefore invalid) each of the Asserted Claims. Samsung may rely upon a subset of the above identified references or all of the references identified above, including all references in Exhibits A-1 to A-27, B-1 to B-27, and C-1 to C-27, for purposes of obviousness depending on the Court's claim construction, positions taken by Zophonos during this litigation, and further investigation and discovery.

To the extent the foregoing references are found not to anticipate the Asserted Claims, the foregoing references render the Asserted Claims obvious: (i) either alone or in combination with the knowledge of one of ordinary skill in the art; and/or (ii) either alone or in combination with one or more of the other references identified above pursuant to Patent L.R. 3-3(a). In other words, to the extent that any particular prior art reference is not found to disclose a particular claim element, that reference may be combined with any of the other prior art references disclosed herein as possessing that claim element to render one or more of the Asserted Claims obvious. It would have been obvious to a person of skill in the art at the time of the alleged invention of the Asserted Claims of the Asserted Patents to combine the various features found in one or more of the items of prior art identified in Exhibits A-1 to A-27, B-1 to B-27, and C-1 to C-27, cited herein so as to practice the Asserted Claims of the Asserted Patents or otherwise arrive at the alleged inventions of the Asserted Claims.

In accordance with Patent L.R. 3-3(b), prior art references rendering the Asserted Claims obvious, alone or in combination with other references, are outlined below and included in Exhibits A-1 to A-27, B-1 to B-27, and C-1 to C-27, which include exemplary claim charts for the Asserted

Claims of the Asserted Patents showing specifically where in each reference or combinations of references each Asserted Claim is found.

Moreover, in addition to the information contained elsewhere in these Invalidity Contentions, Samsung has identified additional exemplary motivations and reasons to combine the various references cited herein. *See* III.D.2.a ('906 patent), III.D.2.b ('736 patent), and III.D.2.c ('016 patent). In particular, multiple teachings, suggestions, and/or reasons to modify any of the references and/or to combine any two or more of the references in Exhibits A-1 to A-27, B-1 to B-27, and C-1 to C-27, come from many sources, including the prior art (specific and as a whole), common knowledge, common sense, predictability, expectations, industry trends, design incentives or need, market demand or pressure, market forces, the nature of the problem faced, and/or knowledge possessed by one of ordinary skill. In addition, it would have been obvious to try combining the prior art references identified above. There were only a finite number of predictable solutions to known problems addressed by the asserted patent. Moreover, known work in one field or endeavor prompted variations based on predictable design incentives and/or market forces either in the same field or a different one. The combination of features found in the prior art references identified in these contentions would have been obvious because the claimed combinations represent the known potential options, with each such option having a reasonable expectation of success. Additionally, one of ordinary skill in the art would have been motivated to create combinations identified in these contentions 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 teaching, suggestion, or motivation in the prior art generally. Further, market forces in the industry, and the desire to improve features and performance, would motivate the addition of features to systems as they become available, become

less expensive, become more commonly used, provide better performance, reduce costs, size or weight, or predictably achieve other clearly desirable results.

To the extent Zophonos alleges any other claim limitation or limitations are not disclosed in any reference identified in Section III.A above or Exhibits A-1 to A-27, B-1 to B-27, and C-1 to C-27, it would have been obvious to incorporate the missing feature, as disclosed in Exhibits A-1 to A-27, B-1 to B-27, and C-1 to C-27, into the reference for the reasons disclosed herein. For example, one of ordinary skill in the art would have found ample motivation to combine one or more of the following primary references with one or more of the following secondary references in order to disclose the alleged inventions recited in the Asserted Claims.

Indeed, each of the references disclosed herein were directed at the same or similar field of technology and the same or similar problem as the Asserted Patents. Specific claim limitations with references that render the alleged claims obvious are identified below. For the references identified in Samsung's claim charts, if any particular claim limitation is alleged to not be disclosed or inherent in those references, then Samsung's position is it would have been obvious to combine the charted reference with one or more of the references identified below for the particular claim limitations. Samsung's list is not intended to be exhaustive. Samsung may rely upon all or a subset of the prior art identified in these Invalidity Contentions, in any combination, depending on the Court's claim construction and further investigation. Further, as Samsung is currently unaware of the extent, if any, to which Zophonos will contend that limitations of the Asserted Claims are not disclosed in the art identified herein as anticipatory, Samsung reserves the right to identify other references and combinations that may render an allegedly missing limitation obvious. In addition, if and to the extent that Zophonos challenges the correspondence of any of these references with respect to particular limitations of the Asserted Claims of the Asserted Patents, Samsung reserves

the right to supplement these Invalidity Contentions to identify further motivation to combine particular references with additional particularity.

D. Obviousness Combination

The exemplary combinations listed below render the Asserted Claims obvious. Samsung reserves the right to supplement these Invalidity Contentions when Zophonos provides fulsome infringement contentions as required by P.R. 3-1.

1. Exemplary Combinations

a. '906 Patent

A POSITA would have found it obvious to combine any of the prior art in Section III.A to arrive at the claimed invention of the Asserted Claims of the '906 Patent to render them invalid for obviousness. Samsung further identifies the following exemplary combinations of prior art that render one or more claims of the '906 Patent invalid as obvious under § 103:

- DiCenso641 in view of Smith (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- DiCenso641 in view of Anderson (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- DiCenso641 in view of Bradford (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- DiCenso641 in view of Stetzler (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- DiCenso641 in view of Park519 (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Anderson in view of Smith (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Anderson in view of DiCenso641 (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Anderson in view of Bradford (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Anderson in view of Stetzler (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Anderson in view of Park519 (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Bradford in view of Smith (claims 1-3, 6, 8-12, 13, 15, and 17-20)

- Bradford in view of DiCenso641 (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Bradford in view of Anderson (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Bradford in view of Stetzler (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Bradford in view of Park519 (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Stetzler in view of Smith (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Stetzler in view of DiCenso641 (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Stetzler in view of Anderson (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Stetzler in view of Bradford (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Stetzler in view of Park519 (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Park519 in view of Smith (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Park519 in view of DiCenso641 (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Park519 in view of Anderson (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Park519 in view of Bradford (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Park519 in view of Stetzler (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Park521 in view of Bonnick (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Park521 in view of Hall (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Lifestyle V20 in view of Park521 (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Lifestyle Series in view of Park521 (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Sonarworks Devices in view of DiCenso641 (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Sonarworks Devices in view of Smith (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Sonarworks Devices in view of Anderson (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Sonarworks Devices in view of Bradford (claims 1-3, 6, 8-12, 13, 15, and 17-20)

- Sonarworks Devices in view of Stetzler (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Sonarworks Devices in view of Park519 (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Plantronics Devices in view of DiCenso641 (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Plantronics Devices in view of Smith (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Plantronics Devices in view of Anderson (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Plantronics Devices in view of Bradford (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Plantronics Devices in view of Stetzler (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Plantronics Devices in view of Park519 (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Etymotic Devices in view of DiCenso641 (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Etymotic Devices in view of Smith (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Etymotic Devices in view of Anderson (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Etymotic Devices in view of Bradford (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Etymotic Devices in view of Stetzler (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Etymotic Devices in view of Park519 (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Peltor Devices in view of DiCenso641 (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Peltor Devices in view of Smith (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Peltor Devices in view of Anderson (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Peltor Devices in view of Bradford (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Peltor Devices in view of Stetzler (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Peltor Devices in view of Park519 (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Honeywell/PIP Devices in view of DiCenso641 (claims 1-3, 6, 8-12, 13, 15, and 17-20)

- Honeywell/PIP Devices in view of Smith (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Honeywell/PIP Devices in view of Anderson (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Honeywell/PIP Devices in view of Bradford (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Honeywell/PIP Devices in view of Stetzler (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Honeywell/PIP Devices in view of Park519 (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Liberator II Tactical Headset Series in view of DiCenso641 (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Liberator II Tactical Headset Series in view of Smith (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Liberator II Tactical Headset Series in view of Anderson (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Liberator II Tactical Headset Series in view of Bradford (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Liberator II Tactical Headset Series in view of Stetzler (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Liberator II Tactical Headset Series in view of Park519 (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- MSA Devices in view of DiCenso641 (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- MSA Devices in view of Smith (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- MSA Devices in view of Anderson (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- MSA Devices in view of Bradford (claims 1-3, 6, 8-12, 13, 15, and 17-20)

- MSA Devices in view of Stetzler (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- MSA Devices in view of Park519 (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Each of the above combinations in further view of Goldstein873, or *Terlizzi283*, or *Zhang*, or *Widner* (claims 1-3, 6, 8-12, 13, 15, and 17-20)
- Each of the above combinations in further view of Holland, or *Zhang*, or *Carlsson*, or *Schulert* (claims 2, 12)
- Each of the above combinations in further view of Warren, or *Terlizzi283*, or *Zhang* (claims 3, 13)
- Each of the above combinations in further view of *Wiernicki*, or *Leventhall* or *Berger*, or *Duck* (claims 6, 15)
- Each of the above combinations in view of the teachings of the prior art disclosed in Exhibit A-27 (claims 1-3, 6, 8-12, 13, 15, and 17-20)

b. '736 Patent

A POSITA would have found it obvious to combine any of the prior art in Section III.A to arrive at the claimed invention of the Asserted Claims of the '736 Patent to render them invalid for obviousness. Samsung further identifies the following exemplary combinations of prior art that render one or more claims of the '736 Patent invalid as obvious under § 103:

- DiCenso641 in view of Smith (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- DiCenso641 in view of Anderson (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- DiCenso641 in view of Bradford (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- DiCenso641 in view of Stetzler (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)

- DiCenso641 in view of Park519 (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Anderson in view of Smith (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Anderson in view of DiCenso641 (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Anderson in view of Bradford (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Anderson in view of Stetzler (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Anderson in view of Park519 (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Bradford in view of Smith (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Bradford in view of DiCenso641 (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Bradford in view of Anderson (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Bradford in view of Stetzler (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Bradford in view of Park519 (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Stetzler in view of Smith (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Stetzler in view of DiCenso641 (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Stetzler in view of Anderson (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Stetzler in view of Bradford (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Stetzler in view of Park519 (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Park519 in view of Smith (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Park519 in view of DiCenso641 (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Park519 in view of Anderson (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)

- Park519 in view of Bradford (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Park521 in view of Bonnick (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Park521 in view of Hall (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Lifestyle V20 in view of Park521 (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Lifestyle Series in view of Park521 (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Sonarworks Devices in view of DiCenso641 (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Sonarworks Devices in view of Smith (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Sonarworks Devices in view of Anderson (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Sonarworks Devices in view of Bradford (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Sonarworks Devices in view of Stetzler (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Sonarworks Devices in view of Park519 (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Plantronics Devices in view of DiCenso641 (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Plantronics Devices in view of Smith (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)

- Plantronics Devices in view of Anderson (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Plantronics Devices in view of Bradford (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Plantronics Devices in view of Stetzler (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Plantronics Devices in view of Park519 (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Etymotic Devices in view of DiCenso641 (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Etymotic Devices in view of Smith (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Etymotic Devices in view of Anderson (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Etymotic Devices in view of Bradford (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Etymotic Devices in view of Stetzler (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Etymotic Devices in view of Park519 (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Peltor Devices in view of DiCenso641 (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)

- Peltor Devices in view of Smith (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Peltor Devices in view of Anderson (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Peltor Devices in view of Bradford (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Peltor Devices in view of Stetzler (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Peltor Devices in view of Park519 (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Honeywell/PIP Devices in view of DiCenso641 (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Honeywell/PIP Devices in view of Smith (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Honeywell/PIP Devices in view of Anderson (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Honeywell/PIP Devices in view of Bradford (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Honeywell/PIP Devices in view of Stetzler (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Honeywell/PIP Devices in view of Park519 (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)

- Liberator II Tactical Headset Series in view of DiCenso641 (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Liberator II Tactical Headset Series in view of Smith (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Liberator II Tactical Headset Series in view of Anderson (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Liberator II Tactical Headset Series in view of Bradford (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Liberator II Tactical Headset Series in view of Stetzler (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Liberator II Tactical Headset Series in view of Park519 (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- MSA Devices in view of DiCenso641 (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- MSA Devices in view of Smith (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- MSA Devices in view of Anderson (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- MSA Devices in view of Bradford (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- MSA Devices in view of Stetzler (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- MSA Devices in view of Park519 (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)

- Each of the above combinations in further view of Goldstein873, or Terlizzi283, or Zhang, or Widner (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- Each of the above combinations in further view of Warren, or Terlizzi283, or Zhang (claims 3, 13)
- Each of the above combinations in further view of DiCenso645, or Terlizzi710, or Reuss (claims 21, 23)
- Each of the above combinations in view of the teachings of the prior art disclosed in Exhibit B-27 (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)

c. ’016 Patent

A POSITA would have found it obvious to combine any of the prior art in Section III.A to arrive at the claimed invention of the Asserted Claims of the ’016 Patent to render them invalid for obviousness. Samsung further identifies the following exemplary combinations of prior art that render one or more claims of the ’016 Patent invalid as obvious under § 103:.

- Goldstein 873 in view of Newham (claims 39, 40, and 43)
- Goldstein 458 in view of Newham (claims 39, 40, and 43)
- Goldstein 416 in view of Newham (claims 39, 40, and 43)
- Anderson in view of Smith (claims 39, 40, and 43)
- Anderson in view of DiCenso641 (claims 39, 40, and 43)
- Anderson in view of Bradford (claims 39, 40, and 43)
- Anderson in view of Stetzler (claims 39, 40, and 43)
- Anderson in view of Park519 (claims 39, 40, and 43)
- Bradford in view of Smith (claims 39, 40, and 43)
- Bradford in view of DiCenso641 (claims 39, 40, and 43)

- Bradford in view of Anderson (claims 39, 40, and 43)
- Bradford in view of Stetzler (claims 39, 40, and 43)
- Bradford in view of Park519(claims 39, 40, and 43)
- Stetzler in view of Smith (claims 39, 40, and 43)
- Stetzler in view of DiCenso641 (claims 39, 40, and 43)
- Stetzler in view of Anderson (claims 39, 40, and 43)
- Stetzler in view of Bradford (claims 39, 40, and 43)
- Stetzler in view of Park519 (claims 39, 40, and 43)
- Park519 in view of Smith (claims 39, 40, and 43)
- Park519 in view of DiCenso641 (claims 39, 40, and 43)
- Park519 in view of Anderson (claims 39, 40, and 43)
- Park519 in view of Bradford (claims 39, 40, and 43)
- Park521 in view of Bonnick (claims 39, 40, and 43)
- Park521 in view of Hall (claims 39, 40, and 43)
- Lifestyle V20 in view of Park521 (claims 39, 40, and 43)
- Lifestyle Series in view of Park521 (claims 39, 40, and 43)
- Sonarworks Devices in view of DiCenso641 (claims 39, 40, and 43)
- Sonarworks Devices in view of Smith (claims 39, 40, and 43)
- Sonarworks Devices in view of Anderson (claims 39, 40, and 43)
- Sonarworks Devices in view of Bradford (claims 39, 40, and 43)
- Sonarworks Devices in view of Stetzler (claims 39, 40, and 43)
- Sonarworks Devices in view of Park519 (claims 39, 40, and 43)
- Plantronics Devices in view of DiCenso641 (claims 39, 40, and 43)

- Plantronics Devices in view of Smith (claims 39, 40, and 43)
- Plantronics Devices in view of Anderson (claims 39, 40, and 43)
- Plantronics Devices in view of Bradford (claims 39, 40, and 43)
- Plantronics Devices in view of Stetzler (claims 39, 40, and 43)
- Plantronics Devices in view of Park519 (claims 39, 40, and 43)
- Etymotic Devices in view of DiCenso641 (claims 39, 40, and 43)
- Etymotic Devices in view of Smith (claims 39, 40, and 43)
- Etymotic Devices in view of Anderson (claims 39, 40, and 43)
- Etymotic Devices in view of Bradford (claims 39, 40, and 43)
- Etymotic Devices in view of Stetzler (claims 39, 40, and 43)
- Etymotic Devices in view of Park519 (claims 39, 40, and 43)
- Peltor Devices in view of DiCenso641 (claims 39, 40, and 43)
- Peltor Devices in view of Smith (claims 39, 40, and 43)
- Peltor Devices in view of Anderson (claims 39, 40, and 43)
- Peltor Devices in view of Bradford (claims 39, 40, and 43)
- Peltor Devices in view of Stetzler (claims 39, 40, and 43)
- Peltor Devices in view of Park519 (claims 39, 40, and 43)
- Honeywell/PIP Devices in view of DiCenso641 (claims 39, 40, and 43)
- Honeywell/PIP Devices in view of Smith (claims 39, 40, and 43)
- Honeywell/PIP Devices in view of Anderson (claims 39, 40, and 43)
- Honeywell/PIP Devices in view of Bradford (claims 39, 40, and 43)
- Honeywell/PIP Devices in view of Stetzler (claims 39, 40, and 43)
- Honeywell/PIP Devices in view of Park519 (claims 39, 40, and 43)

- Liberator II Tactical Headset Series in view of DiCenso641 (claims 39, 40, and 43)
- Liberator II Tactical Headset Series in view of Smith (claims 39, 40, and 43)
- Liberator II Tactical Headset Series in view of Anderson (claims 39, 40, and 43)
- Liberator II Tactical Headset Series in view of Bradford (claims 39, 40, and 43)
- Liberator II Tactical Headset Series in view of Stetzler (claims 39, 40, and 43)
- Liberator II Tactical Headset Series in view of Park519 (claims 39, 40, and 43)
- MSA Devices in view of DiCenso641 (claims 39, 40, and 43)
- MSA Devices in view of Smith (claims 39, 40, and 43)
- MSA Devices in view of Anderson (claims 39, 40, and 43)
- MSA Devices in view of Bradford (claims 39, 40, and 43)
- MSA Devices in view of Stetzler (claims 39, 40, and 43)
- MSA Devices in view of Park519 (claims 39, 40, and 43)
- Each of the above combinations in view of the teachings of the prior art disclosed in Exhibit C-27 (claims 39, 40, and 43)

2. Motivation to Combine

For a claim to be obvious, there must be a motivation to modify or combine the disclosures of multiple references. *See Forest Labs., LLC v. Sigmapharm Labs., LLC*, 918 F.3d 928, 934 (Fed. Cir. 2019) ("An invention is not obvious simply because all of the claimed limitations were known in the prior art at the time of the invention. Instead, we ask 'whether there is a reason, suggestion, or motivation in the prior art that would lead one of ordinary skill in the art to combine the references, and that would also suggest a reasonable likelihood of success.'") (citation omitted).

The Supreme Court in *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398, 415 (2007), counseled "an expansive and flexible approach" to that inquiry. The Court explained: The

obviousness analysis cannot be confined by overemphasis on the importance of published articles and the explicit content of issued patents. The diversity of inventive pursuits and of modern technology counsels against limiting the analysis in this way. In many fields it may be that there is little discussion of obvious techniques or combinations, and it often may be the case that market demand, rather than scientific literature, will drive design trends. *Id*. at 419. "That the proposed combination of [Reference A] and [Reference B]—rather than one of the individual references—discloses the disputed claim limitations does not defeat the Board's conclusion of obviousness." *Fleming v. Cirrus Design Corp.*, 28 F.4th 1214, 1222 (Fed. Cir. 2022).

The Federal Circuit has explained that the motivation to modify or combine may be explicit (*Optivus Technology, Inc. v. Ion Beam Applications S.A.*, 469 F.3d 978, 990-91 (Fed. Cir. 2006)) or implicit (*DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1368 (Fed. Cir. 2006)). Indeed, the motivation to combine may come from "common sense." *See, e.g.*, *Perfect Web Techs., Inc. v. InfoUSA, Inc.*, 918 F.3d 928, 1331 (Fed. Cir. 2009). In addition, there is no need to show that there was a known problem with the prior art. *Unwired Planet, LLC v. Google Inc.*, 841 F.3d 995, 1003 (Fed. Cir. 2016). And the evidence supporting a motivation to combine need not itself be prior art. *See National Steel Car, Ltd. v. Canadian Pacific Ry., Ltd.*, 357 F.3d 1319, 1337-39 (Fed. Cir. 2004).

If the Asserted Claims of the Asserted Patents are not anticipated, they are obvious because a POSITA would have been motivated to modify or combine the prior art references identified in Section III.A, including the exemplary combinations in the below sections, for a variety of reasons. All of the prior art identified in Section III.A is analogous to their respective Asserted Patent because they are from the same field of endeavor and are also pertinent to the same problem(s) with which the named inventors of the Asserted Patents were involved. As explained further

below, their modification or combination would have amounted to combining prior art elements according to known methods to yield predictable results; the use of known techniques to improve similar devices or methods in the same way; a simple substitution of one known, equivalent element for another to obtain predictable results; applying a known technique to a known device or method that is ready for improvement to yield predictable results; choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success; and/or there was an express teaching, suggestion, or motivation in the prior art for their combination. *See Q.I. Press Controls v. Lee*, 732 F.3d 1371, 1379 (Fed. Cir. 2014); *Randall Mfg. v. Rea*, 733 F.3d 1355, 1362-63 (Fed. Cir. 2013); *KSR*, 550 U.S. at 421.

a. '906 Patent

In addition to the motivations to combine set forth above in Section III.C and in IPR2026-00083 (which are expressly incorporated herein), a POSITA would have had specific motivations to combine the exemplary prior art to arrive at the inventions claimed in the '906 patent for the exemplary reasons that follow:

(i) DiCenso641-Smith

A POSITA would have been motivated to combine *DiCenso641* and *Smith.* For example, both *DiCenso641* and *Smith* disclose earpiece(s) that include at least one microphone and a speaker. *See DiCenso641* at [0022]; *Smith* at [0020].

DiCenso641 describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece speakers. *See DiCenso641* at [0028] (the user "create[s] a personalized or customized auditory experience by setting his/her preferences … for associated sound types to indicate which sounds to amplify, cancel, add or insert, or attenuate, respectively"), [0042] ("DSP 310 … modifies the signal for each type of sound in the ambient auditory environment …. The modified signal is output to

amp(s) 314 and speaker(s) 316 to generate the auditory environment for the user.”). *DiCenso641* also discloses that “[o]ther functions may be used to enhance a sound by providing equalization or filtering, selective attenuation or amplification of one or more frequencies of an associated sound, or replacing an undesired sound with a more pleasant sound (using a combination of cancellation and addition/insertion, for example).” *Id.*

Like *DiCenso641*, *Smith* similarly discloses a system and method for modifying select sounds within an ambient environment. *See Smith* at [0020] (“The electronics 103 can process the signal and provide a processed signal to the speaker 105 … to provide sound to the user’s eardrum.”), [0082] (“[A] user can select which types of noise are to be attenuated and the level of attenuation. For example, the user can select to attenuate gunshot noise by 12 dB, dog barking by 6 dB, and car noise by 3 dB.”), [0085] (“[A] user can select which types of information are to be amplified and the level of amplification. For example, the user can select to amplify low level human voice (such as below 50 dB) by 18 dB, high level human voice (such as above 50 dB) by 9 dB, noise associated with furtive movements by 6 dB, and non-shooting gun noises (such as loading and cocking noises) by 3 dB.”).

The benefits of combining *DiCenso641*’s teachings with *Smith* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design

incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(ii) DiCenso641-Anderson

A POSITA would have been motivated to combine *DiCenso641* and *Anderson.* For example, both *DiCenso641* and *Anderson* disclose earpiece(s) that include at least one microphone and a speaker. *See DiCenso641* at [0022]; *Anderson* at [0020], [0022].

DiCenso641 describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece speakers. *See DiCenso641* at [0028] (the user "create[s] a personalized or customized auditory experience by setting his/her preferences … for associated sound types to indicate which sounds to amplify, cancel, add or insert, or attenuate, respectively"), [0042] ("DSP 310 … modifies the signal for each type of sound in the ambient auditory environment …. The modified signal is output to amp(s) 314 and speaker(s) 316 to generate the auditory environment for the user."). *DiCenso641* also discloses that "[o]ther functions may be used to enhance a sound by providing equalization or filtering, selective attenuation or amplification of one or more frequencies of an associated sound, or replacing an undesired sound with a more pleasant sound (using a combination of cancellation and addition/insertion, for example)." *Id.*

Like *DiCenso641*, *Anderson* describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece. *See Anderson* at [0023] ("After the sounds from the user's ambient environment are detected by microphone 101 … the sounds are compared to one or more preset sound signatures that are associated with the sounds deemed to be critical … For example, while the preset sound signature may correspond to an alarm or siren, the preset sound signature(s) may also correspond

to human speech, a ringing telephone, a crying baby, a barking dog, a horn, or any other sound"), [0028] ("[S]ystems 100/200 may use filters to only pass a narrow band of frequencies on to the user … if the critical sounds are located between 2500 and 3500 Hz, frequencies outside of this range may be filtered out. In an embodiment in which headphones 105 are … coupled to an audio source … the system is configured to automatically lower the volume or completely suppress the signal from the audio source when the critical sound is passed through to the user, thus emphasizing the critical sound over the user's audio source.")

The benefits of combining *DiCenso641*'s teachings with *Anderson* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(iii) DiCenso641-Bradford

A POSITA would have been motivated to combine *DiCenso641* and *Bradford.* For example, both *DiCenso641* and *Bradford* disclose earpiece(s) that include at least one microphone and output sounds (e.g., through a speaker). *See DiCenso641* at [0022]; *Bradford* at [0045].

DiCenso641 describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece speakers. *See DiCenso641* at [0028] (the user "create[s] a personalized or customized auditory experience by setting his/her preferences … for associated sound types to indicate which sounds to amplify, cancel, add or insert, or attenuate, respectively"), [0042] ("DSP 310 … modifies the signal for each type of sound in the ambient auditory environment …. The modified signal is output to amp(s) 314 and speaker(s) 316 to generate the auditory environment for the user."). *DiCenso641* also discloses that "[o]ther functions may be used to enhance a sound by providing equalization or filtering, selective attenuation or amplification of one or more frequencies of an associated sound, or replacing an undesired sound with a more pleasant sound (using a combination of cancellation and addition/insertion, for example)." *Id.*

Like *DiCenso641*, *Bradford* describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece speakers. *See Bradford* at [0092] ("the user can further customize enhancement of each incoming audio source according to the user's own hearing deficits and/or hearing preferences"), [0092] ("the user may have several different enhancement modules 194E that have been developed for different environmental conditions, i.e. volume control, multi-band equalization, balance, multiple sound source mixing, multiple microphone beam forming, echo reduction, compression decompression, signal recognition, error correction, etc."), [0095] ("After application of the master volume and equalization adjustments 196, the audio signal streams are mixed 190 into a single audio stream for output.").

The benefits of combining *DiCenso641*'s teachings with *Bradford* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a

person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(iv) DiCenso641-Stetzler

A POSITA would have been motivated to combine *DiCenso641* and *Stetzler.* For example, both *DiCenso641* and *Stetzler* disclose earpiece(s) that include at least one microphone and output sounds (e.g., through a speaker). *See DiCenso641* at [0022]; *Stetzler* at 4:61-67, 5:20-26*,* 1:48-49.

DiCenso641 describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece speakers. *See DiCenso641* at [0028] (the user "create[s] a personalized or customized auditory experience by setting his/her preferences … for associated sound types to indicate which sounds to amplify, cancel, add or insert, or attenuate, respectively"), [0042] ("DSP 310 … modifies the signal for each type of sound in the ambient auditory environment …. The modified signal is output to amp(s) 314 and speaker(s) 316 to generate the auditory environment for the user."). *DiCenso641* also discloses that "[o]ther functions may be used to enhance a sound by providing equalization or filtering, selective attenuation or amplification of one or more frequencies of an associated

sound, or replacing an undesired sound with a more pleasant sound (using a combination of cancellation and addition/insertion, for example)." *Id.*

Like *DiCenso641*, *Stetzler* describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece. *See Stetzler* at 3:44-49 ("Different frequency bands may be defined with respect to the frequencies that need to be eliminated or enhanced. Sounds, such as speech, may be identified and amplified to improve signal-to-noise ratio. The number of bands may be increased, or may be narrowly focused on one or more specific frequency bands."); 4:3-11, 4:37-42 ("The n filtered signals are passed to compression filters 306_1-306_n, where they undergo further processing …Adaptive filters in the detection blocks may actively determine repetitive noises (such as hums, vibrations, whistles, etc) and adjust the frequency response of the filters in order to remove these noises in the continuously changing environment of the user. Techniques for doing such are known in the art."), 4:43-53.

The benefits of combining *DiCenso641*'s teachings with *Stetzler* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA

would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(v) DiCenso641-Park519

A POSITA would have been motivated to combine *DiCenso641* and *Park519*. For example, both *DiCenso641* and *Park519* disclose earpiece(s) that include at least one microphone and a speaker. *See DiCenso641* at [0022]; *Park519* at [0060].

DiCenso641 describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece speakers. *See DiCenso641* at [0028] (the user "create[s] a personalized or customized auditory experience by setting his/her preferences … for associated sound types to indicate which sounds to amplify, cancel, add or insert, or attenuate, respectively"), [0042] ("DSP 310 … modifies the signal for each type of sound in the ambient auditory environment …. The modified signal is output to amp(s) 314 and speaker(s) 316 to generate the auditory environment for the user."). *DiCenso641* also discloses that "[o]ther functions may be used to enhance a sound by providing equalization or filtering, selective attenuation or amplification of one or more frequencies of an associated sound, or replacing an undesired sound with a more pleasant sound (using a combination of cancellation and addition/insertion, for example)." *Id.*

Like *DiCenso641*, *Park519* describes spatially selecting sounds captured by microphones of earbuds. *See Park519* at [0060], [0077]. Through a spatially selective processing operation, a source component of a multichannel signal is separated from a background component. *Id.* at [0085]. Example operations performed on the source component include "amplification, equalization, dereverberation, noise reduction, speech speed alteration, and speech pitch shifting." *Id.* at [0096], [00100], [0101]. *Park519* describes applications of this technique including a "bionic ear" using "directionally selective amplification," and "the live replacement

of a received speech signal with a version that has been, for example, translated, slowed, equalized, and/or amplified." *Id.* at [0105], [0113].

The benefits of combining *DiCenso641*'s teachings with *Park519* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(vi) Anderson-Smith

A POSITA would have been motivated to combine *Anderson* and *Smith.* For example, both *Anderson* and *Smith* disclose earpiece(s) that include at least one microphone and output sounds (e.g., through a speaker). *See Anderson* at [0020], [0022]; *Smith* at [0020].

Anderson describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece. *See Anderson* at [0023] ("After the sounds from the user's ambient environment are detected by microphone 101 … the sounds are compared to one or more preset sound signatures that are associated with the sounds deemed to be critical … For example, while the preset sound signature may correspond to an alarm or siren, the preset sound signature(s) may also correspond to human speech, a ringing telephone, a crying baby, a barking dog, a horn, or any other sound"), [0028] ("[S]ystems

100/200 may use filters to only pass a narrow band of frequencies on to the user … if the critical sounds are located between 2500 and 3500 Hz, frequencies outside of this range may be filtered out. In an embodiment in which headphones 105 are … coupled to an audio source … the system is configured to automatically lower the volume or completely suppress the signal from the audio source when the critical sound is passed through to the user, thus emphasizing the critical sound over the user's audio source.").

Like *Anderson*, *Smith* similarly discloses a system and method for modifying select sounds within an ambient environment. *See Smith* at [0020] ("The electronics 103 can process the signal and provide a processed signal to the speaker 105 … to provide sound to the user's eardrum."); [0082] ("[A] user can select which types of noise are to be attenuated and the level of attenuation. For example, the user can select to attenuate gunshot noise by 12 dB, dog barking by 6 dB, and car noise by 3 dB."), [0085] ("[A] user can select which types of information are to be amplified and the level of amplification. For example, the user can select to amplify low level human voice (such as below 50 dB) by 18 dB, high level human voice (such as above 50 dB) by 9 dB, noise associated with furtive movements by 6 dB, and non-shooting gun noises (such as loading and cocking noises) by 3 dB.").

The benefits of combining *Anderson*'s teachings with *Smith* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of

endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(vii) Anderson-DiCenso641

Likewise, a POSITA would have been motivated to combine *Anderson* and *DiCenso641* for the same reasons described in Section III.D.2.a(ii).

(viii) Anderson-Bradford

A POSITA would have been motivated to combine *Anderson* and *Bradford.* For example, both *Anderson* and *Bradford* disclose earpiece(s) that include at least one microphone and output sounds (e.g., through a speaker). *See Anderson* at [0020], [0022]; *Bradford* at [0045].

Anderson describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece. *See Anderson* at [0023] ("After the sounds from the user's ambient environment are detected by microphone 101 … the sounds are compared to one or more preset sound signatures that are associated with the sounds deemed to be critical … For example, while the preset sound signature may correspond to an alarm or siren, the preset sound signature(s) may also correspond to human speech, a ringing telephone, a crying baby, a barking dog, a horn, or any other sound"), [0028] ("[S]ystems 100/200 may use filters to only pass a narrow band of frequencies on to the user … if the critical sounds are located between 2500 and 3500 Hz, frequencies outside of this range may be filtered out. In an embodiment in which headphones 105 are … coupled to an audio source … the system is configured to automatically lower the volume or completely suppress the signal from the audio source when the critical sound is passed through to the user, thus emphasizing the critical sound over the user's audio source.").

Like *Anderson*, *Bradford* describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece speakers. *See Bradford* at [0092] ("the user can further customize enhancement of each incoming audio source according to the user's own hearing deficits and/or hearing preferences"), [0092] ("the user may have several different enhancement modules 194E that have been developed for different environmental conditions, i.e. volume control, multi-band equalization, balance, multiple sound source mixing, multiple microphone beam forming, echo reduction, compression decompression, signal recognition, error correction, etc."), [0095] ("After application of the master volume and equalization adjustments 196, the audio signal streams are mixed 190 into a single audio stream for output.").

The benefits of combining *Anderson*'s teachings with *Bradford* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(ix) Anderson-Stetzler

A POSITA would have been motivated to combine *Anderson* and *Stetzler.* For example, both *Anderson* and *Stetzler* disclose earpiece(s) that include at least one microphone and output

sounds (e.g., through a speaker). *See Anderson* at [0020], [0022]; *Stetzler* at 4:61-67, 5:20-26, 1:48-49.

Anderson describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece. *See Anderson* at [0023] ("After the sounds from the user's ambient environment are detected by microphone 101 … the sounds are compared to one or more preset sound signatures that are associated with the sounds deemed to be critical … For example, while the preset sound signature may correspond to an alarm or siren, the preset sound signature(s) may also correspond to human speech, a ringing telephone, a crying baby, a barking dog, a horn, or any other sound"), [0028] ("[S]ystems 100/200 may use filters to only pass a narrow band of frequencies on to the user … if the critical sounds are located between 2500 and 3500 Hz, frequencies outside of this range may be filtered out. In an embodiment in which headphones 105 are … coupled to an audio source … the system is configured to automatically lower the volume or completely suppress the signal from the audio source when the critical sound is passed through to the user, thus emphasizing the critical sound over the user's audio source.").

Like *Anderson*, *Stetzler* describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece. *See Stetzler* at 3:44-49 ("Different frequency bands may be defined with respect to the frequencies that need to be eliminated or enhanced. Sounds, such as speech, may be identified and amplified to improve signal-to-noise ratio. The number of bands may be increased, or may be narrowly focused on one or more specific frequency bands."); 4:3-11, 4:37-42 ("The n filtered signals are passed to compression filters 306_1-306_n, where they undergo further processing …Adaptive filters in the detection blocks may actively determine repetitive noises (such as

hums, vibrations, whistles, etc) and adjust the frequency response of the filters in order to remove these noises in the continuously changing environment of the user. Techniques for doing such are known in the art."), 4:43-53.

The benefits of combining *Anderson*'s teachings with *Stetzler* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(x) Anderson-Park519

A POSITA would have been motivated to combine *Anderson* and *Park519.* For example, both *Anderson* and *Park519* disclose earpiece(s) that include at least one microphone and output sounds (e.g., through a speaker). *See Anderson* at [0020], [0022] *Park519* at [0060].

Anderson describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece. *See Anderson* at [0023] ("After the sounds from the user's ambient environment are detected by microphone 101 … the sounds are compared to one or more preset sound signatures that are associated with the sounds deemed to be critical … For example, while the preset sound signature may correspond to an alarm or siren, the preset sound signature(s) may also correspond to human speech, a ringing

telephone, a crying baby, a barking dog, a horn, or any other sound"), [0028] ("[S]ystems 100/200 may use filters to only pass a narrow band of frequencies on to the user … if the critical sounds are located between 2500 and 3500 Hz, frequencies outside of this range may be filtered out. In an embodiment in which headphones 105 are … coupled to an audio source … the system is configured to automatically lower the volume or completely suppress the signal from the audio source when the critical sound is passed through to the user, thus emphasizing the critical sound over the user's audio source.").

Like *Anderson*, *Park519* describes spatially selecting sounds captured by microphones of earbuds. *See Park519* at [0060], [0077]. Through a spatially selective processing operation, a source component of a multichannel signal is separated from a background component. *Id.* at [0085]. Example operations performed on the source component include "amplification, equalization, dereverberation, noise reduction, speech speed alteration, and speech pitch shifting." *Id.* at [0096], [00100], [0101]. *Park519* describes applications of this technique including a "bionic ear" using "directionally selective amplification," and "the live replacement of a received speech signal with a version that has been, for example, translated, slowed, equalized, and/or amplified." *Id.* at [0105], [0113].

The benefits of combining *Anderson*'s teachings with *Park519* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of

endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(xi) Bradford-Smith

A POSITA would have been motivated to combine *Bradford* and *Smith.* For example, both *Bradford* and *Smith* disclose earpiece(s) that include at least one microphone and a speaker. *See Bradford* at [0045]; *Smith* at [0020].

Bradford describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece speakers. *See Bradford* at [0092] ("the user can further customize enhancement of each incoming audio source according to the user's own hearing deficits and/or hearing preferences"), [0092] ("the user may have several different enhancement modules 194E that have been developed for different environmental conditions, i.e. volume control, multi-band equalization, balance, multiple sound source mixing, multiple microphone beam forming, echo reduction, compression decompression, signal recognition, error correction, etc."), [0095] ("After application of the master volume and equalization adjustments 196, the audio signal streams are mixed 190 into a single audio stream for output.").

Like *Bradford*, *Smith* similarly discloses a system and method for modifying select sounds within an ambient environment. *Smith* at [0020] ("The electronics 103 can process the signal and provide a processed signal to the speaker 105 … to provide sound to the user's eardrum."). [0082] ("[A] user can select which types of noise are to be attenuated and the level of attenuation. For example, the user can select to attenuate gunshot noise by 12 dB, dog barking by 6 dB, and car noise by 3 dB."), [0085] ("[A] user can select which types of information are to

be amplified and the level of amplification. For example, the user can select to amplify low level human voice (such as below 50 dB) by 18 dB, high level human voice (such as above 50 dB) by 9 dB, noise associated with furtive movements by 6 dB, and non-shooting gun noises (such as loading and cocking noises) by 3 dB.”).

The benefits of combining *Bradford*’s teachings with *Smith* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA’s routine skill.

(xii) Bradford-DiCenso641

Likewise, a POSITA would have been motivated to combine *Bradford* and *DiCenso641* for the same reasons described in Section III.D.2.a(iii).

(xiii) Bradford-Anderson

Likewise, a POSITA would have been motivated to combine *Bradford* and *Anderson* for the same reasons described in Section III.D.2.a(viii).

(xiv) Bradford-Stetzler

A POSITA would have been motivated to combine *Bradford* and *Stetzler.* For example, both *Bradford* and *Stetzler* disclose earpiece(s) that include at least one microphone and a speaker. *See Bradford* at [0045]; *Stetzler* at 4:61-67, 5:20-26, 1:48-49.

Bradford describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece speakers. *See Bradford* at [0092] ("the user can further customize enhancement of each incoming audio source according to the user's own hearing deficits and/or hearing preferences"), [0092] ("the user may have several different enhancement modules 194E that have been developed for different environmental conditions, i.e. volume control, multi-band equalization, balance, multiple sound source mixing, multiple microphone beam forming, echo reduction, compression decompression, signal recognition, error correction, etc."), [0095] ("After application of the master volume and equalization adjustments 196, the audio signal streams are mixed 190 into a single audio stream for output.").

Like *Bradford*, *Stetzler* describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece. *See Stetzler* at 3:44-49 ("Different frequency bands may be defined with respect to the frequencies that need to be eliminated or enhanced. Sounds, such as speech, may be identified and amplified to improve signal-to-noise ratio. The number of bands may be increased, or may be narrowly focused on one or more specific frequency bands."); 4:3-11, 4:37-42 ("The n filtered signals are passed to compression filters 306_1-306_n, where they undergo further processing …Adaptive filters in the detection blocks may actively determine repetitive noises (such as hums, vibrations, whistles, etc) and adjust the frequency response of the filters in order to

remove these noises in the continuously changing environment of the user. Techniques for doing such are known in the art."), 4:43-53.

The benefits of combining *Bradford*'s teachings with *Stetzler* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(xv) Bradford-Park519

A POSITA would have been motivated to combine *Bradford* and *Park519.* For example, both *Bradford* and *Park519* disclose earpiece(s) that include at least one microphone and a speaker. *See Bradford* at [0045]; *Park519* at [0060].

Bradford describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece speakers. *See Bradford* at [0092] ("the user can further customize enhancement of each incoming audio source according to the user's own hearing deficits and/or hearing preferences"), [0092] ("the user may have several different enhancement modules 194E that have been developed for different environmental conditions, i.e. volume control, multi-band equalization, balance, multiple sound source mixing, multiple microphone beam forming, echo reduction, compression decompression,

signal recognition, error correction, etc."), [0095] ("After application of the master volume and equalization adjustments 196, the audio signal streams are mixed 190 into a single audio stream for output.").

Like *Bradford*, *Park519* describes spatially selecting sounds captured by microphones of earbuds. *See Park519* at [0060], [0077]. Through a spatially selective processing operation, a source component of a multichannel signal is separated from a background component. *Id.* at [0085]. Example operations performed on the source component include "amplification, equalization, dereverberation, noise reduction, speech speed alteration, and speech pitch shifting." *Id.* at [0096], [00100], [0101]. *Park519* describes applications of this technique including a "bionic ear" using "directionally selective amplification," and "the live replacement of a received speech signal with a version that has been, for example, translated, slowed, equalized, and/or amplified." *Id.* at [0105], [0113].

The benefits of combining *Bradford*'s teachings with *Park519* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(xvi) Stetzler-Smith

A POSITA would have been motivated to combine *Stetzler* and *Smith.* For example, both *Stetzler* and *Smith* disclose earpiece(s) that include at least one microphone and output sounds (e.g., through a speaker). *See Stetzler* at 4:61-67, 5:20-26, 1:48-49; *Smith* at [0020].

Stetzler describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece. *See Stetzler* at 3:44-49 ("Different frequency bands may be defined with respect to the frequencies that need to be eliminated or enhanced. Sounds, such as speech, may be identified and amplified to improve signal-to-noise ratio. The number of bands may be increased, or may be narrowly focused on one or more specific frequency bands."); 4:3-11, 4:37-42 ("The n filtered signals are passed to compression filters 306_1-306_n, where they undergo further processing …Adaptive filters in the detection blocks may actively determine repetitive noises (such as hums, vibrations, whistles, etc) and adjust the frequency response of the filters in order to remove these noises in the continuously changing environment of the user. Techniques for doing such are known in the art."), 4:43-53.

Like *Stetzler*, *Smith* similarly discloses a system and method for modifying select sounds within an ambient environment. *See Smith* at [0020] ("The electronics 103 can process the signal and provide a processed signal to the speaker 105 … to provide sound to the user's eardrum."); [0082] ("[A] user can select which types of noise are to be attenuated and the level of attenuation. For example, the user can select to attenuate gunshot noise by 12 dB, dog barking by 6 dB, and car noise by 3 dB."), [0085] ("[A] user can select which types of information are to be amplified and the level of amplification. For example, the user can select to amplify low level human voice (such as below 50 dB) by 18 dB, high level human voice (such as above 50 dB) by

9 dB, noise associated with furtive movements by 6 dB, and non-shooting gun noises (such as loading and cocking noises) by 3 dB.”).

The benefits of combining *Stetzler*’s teachings with *Smith* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA’s routine skill.

(xvii) Stetzler-DiCenso641

Likewise, a POSITA would have been motivated to combine *Stetzler* and *DiCenso641* for the same reasons described in Section III.D.2.a(iv).

(xviii) Stetzler-Anderson

Likewise, a POSITA would have been motivated to combine *Stetzler* and *Anderson* for the same reasons described in Section III.D.2.a(ix)

(xix) Stetzler-Bradford

Likewise, a POSITA would have been motivated to combine *Stetzler* and *Bradford* for the same reasons described in Section III.D.2.a(xiv).

(xx) Stetzler-Park519

A POSITA would have been motivated to combine *Stetzler* and *Park519.* For example, both *Stetzler* and *Park519* disclose earpiece(s) that include at least one microphone and output sounds (e.g., through a speaker). *See Stetzler* at 4:61-67, 5:20-26, 1:48-49; *Park519* at [0060].

Stetzler describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece. *See Stetzler* at 3:44-49 ("Different frequency bands may be defined with respect to the frequencies that need to be eliminated or enhanced. Sounds, such as speech, may be identified and amplified to improve signal-to-noise ratio. The number of bands may be increased, or may be narrowly focused on one or more specific frequency bands."); 4:3-11, 4:37-42 ("The n filtered signals are passed to compression filters 306_1-306_n, where they undergo further processing …Adaptive filters in the detection blocks may actively determine repetitive noises (such as hums, vibrations, whistles, etc) and adjust the frequency response of the filters in order to remove these noises in the continuously changing environment of the user. Techniques for doing such are known in the art."), 4:43-53.

Like *Stetzler*, *Park519* describes spatially selecting sounds captured by microphones of earbuds. *See Park519* at [0060], [0077]. Through a spatially selective processing operation, a source component of a multichannel signal is separated from a background component. *Id.* at [0085]. Example operations performed on the source component include "amplification, equalization, dereverberation, noise reduction, speech speed alteration, and speech pitch shifting." *Id.* at [0096], [00100], [0101]. *Park519* describes applications of this technique including a "bionic ear" using "directionally selective amplification," and "the live replacement of a received speech signal with a version that has been, for example, translated, slowed, equalized, and/or amplified." *Id.* at [0105], [0113].

The benefits of combining *Stetzler*'s teachings with *Park519* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(xxi) Park519-Smith

A POSITA would have been motivated to combine *Park519* and *Smith*. For example, both *Park519* and *Smith* disclose earpiece(s) that include at least one microphone and a speaker. *See Park519* at [0060]; *Smith* at [0020].

Park519 describes spatially selecting sounds captured by microphones of earbuds. *See Park519* at [0060], [0077]. Through a spatially selective processing operation, a source component of a multichannel signal is separated from a background component. *Id.* at [0085]. Example operations performed on the source component include "amplification, equalization, dereverberation, noise reduction, speech speed alteration, and speech pitch shifting." *Id.* at [0096], [00100], [0101]. *Park519* describes applications of this technique including a "bionic ear" using "directionally selective amplification," and "the live replacement of a received speech signal with a version that has been, for example, translated, slowed, equalized, and/or amplified." *Id.* at [0105], [0113].

Like *Park519*, *Smith* similarly discloses a system and method for modifying select sounds within an ambient environment. *See Smith* at [0020] ("The electronics 103 can process the signal and provide a processed signal to the speaker 105 … to provide sound to the user's eardrum."), [0082] ("[A] user can select which types of noise are to be attenuated and the level of attenuation. For example, the user can select to attenuate gunshot noise by 12 dB, dog barking by 6 dB, and car noise by 3 dB."), [0085] ("[A] user can select which types of information are to be amplified and the level of amplification. For example, the user can select to amplify low level human voice (such as below 50 dB) by 18 dB, high level human voice (such as above 50 dB) by 9 dB, noise associated with furtive movements by 6 dB, and non-shooting gun noises (such as loading and cocking noises) by 3 dB.").

The benefits of combining *Park519*'s teachings with *Smith* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(xxii) Park519-DiCenso641

Likewise, a POSITA would have been motivated to combine *Park519* and *DiCenso641* for the same reasons described in Section III.D.2.a(v).

(xxiii) Park519-Anderson

Likewise, a POSITA would have been motivated to combine *Park519* and *Anderson* for the same reasons described in Section III.D.2.a(x).

(xxiv) Park519-Bradford

Likewise, a POSITA would have been motivated to combine *Park519* and *Bradford* for the same reasons described in Section III.D.2.a(xv).

(xxv) Park519-Stetzler

Likewise, a POSITA would have been motivated to combine *Park519* and *Stetzler* for the same reasons described in Section III.D.2.a(xx).

(xxvi) Park521-Bonnick

A POSITA would have been motivated to combine *Park521* and *Bonnick*. For example, *Park521* and *Bonnick* both use microphones to adjust speaker outputs.

Park521 discloses using a sensor nodes that include microphones. *Park521* at [0019]. Using the information gathered by the sensor nodes, a main processor controls outputs of specific speakers to improve the audio. *Id.* at [0031].

Like *Park521*, *Bonnick* discloses a system with multiple microphones distributed throughout a location. *Bonnick* at 6:21-39. These microphones receive the audio from the loudspeakers and provide the signal as a signature response to the equalizer. *Id.* at 8:19-26. The system compensates for changes in loudspeaker performance and changes in the venue due to patrons, or other influences. *Id.* at 9:13-10-11:23.

The benefits of combining *Park521*'s teachings with *Bonnick* to improve audio by adjusting the outputs based on microphones signals would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple

substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(xxvii) Park521-Hall

A POSITA would have been motivated to combine *Park521* and *Hall*. For example, *Park521* and *Bonnick* both use microphones to adjust speaker outputs.

Park521 discloses using a sensor nodes that include microphones. *Park521* at [0019]. Using the information gathered by the sensor nodes, a main processor controls outputs of specific speakers to improve the audio. *Id.* at [0031].

Like *Park521*, *Hall* discloses an audio enhancement device that uses microphone signals "for further quality enhancement." *Hall* at [0032]. A DSP analyzes the microphone audio signal and calculates "an appropriate calibration or correction filter" to adjust for deficiencies in the audio. *Id.* at [0035].

The benefits of combining *Park521*'s teachings with *Hall* to improve audio by adjusting the outputs based on microphones signals would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of

endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(xxviii) Lifestyle V20-Park521

A POSITA would have been motivated to combine Lifestyle V20 and *Park521*. For example, both Lifestyle V20 and *Park521* disclose using microphones to adjust speaker outputs.

Lifestyle V20 includes, for example, a "special headset" that "contains two miniature microphones that take acoustic measurements during calibration," which "optimizes system performance to your listening room."[4] Like Lifestyle V20, *Park521* discloses using a sensor nodes that include microphones. *Park521* at [0019]. Using the information gathered by the sensor nodes, a main processor controls outputs of specific speakers. *Id.* at [0031].

Park521 discloses using a sensor nodes that include microphones. *Park521* at [0019]. Using the information gathered by the sensor nodes, a main processor controls outputs of specific speakers to improve the audio. *Id.* at [0031].

The benefits of combining Lifestyle V20's teachings with *Park* to improve audio by adjusting the outputs based on microphones signals would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v)

[4] *E.g.*, https://assets.bosecreative.com/m/77640445b6b4967a/original/OG_LSV10-SPEAKERHT5_enUS.pdf (Last accessed January 7, 2026).

known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(xxix) Lifestyle Series-Park521

A POSITA would have been motivated to combine Lifestyle Series and *Park*. For example, both Lifestyle Series and *Park* disclose using microphones to adjust speaker outputs.

Lifestyle Series includes, for example, a "ADAPTiQ® audio calibration headset" to "[o]ptimize the system audio."[5] Like Lifestyle Series, *Park* discloses using a sensor nodes that include microphones. *Park* at [0019]. Using the information gathered by the sensor nodes, a main processor controls outputs of specific speakers. *Id.* at [0031].

Park521 discloses using a sensor nodes that include microphones. *Park521* at [0019]. Using the information gathered by the sensor nodes, a main processor controls outputs of specific speakers to improve the audio. *Id.* at [0031].

The benefits of combining Lifestyle Series' teachings with *Park* to improve audio by adjusting the outputs based on microphones signals would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different

[5] *E.g.*, https://assets.bosecreative.com/m/601e5441edbd46ae/original/OG_LS135II-SOUNDBAR_ml.pdf (Last accessed January 7, 2026).

field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(xxx) Sonarworks Devices-DiCenso641

A POSITA would have been motivated to combine Sonarworks Devices and *DiCenso641*. For example, both Sonarworks Devices and *DiCenso641* disclose using microphones to measure sound and provide a modified sound environment.

Sonarworks Devices include, for example, microphones to detect sounds from the ambient environment and allows for selective modification of the ambient environment sounds.[6]

Like Sonarworks Devices, *DiCenso641* describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece speakers. *See DiCenso641* at [0028] (the user "create[s] a personalized or customized auditory experience by setting his/her preferences … for associated sound types to indicate which sounds to amplify, cancel, add or insert, or attenuate, respectively"), [0042] ("DSP 310 … modifies the signal for each type of sound in the ambient auditory environment …. The modified signal is output to amp(s) 314 and speaker(s) 316 to generate the auditory environment for the user."). *DiCenso641* also discloses that "[o]ther functions may be used to enhance a sound by providing equalization or filtering, selective attenuation or amplification of one or more frequencies of an associated sound, or replacing an undesired sound with a more pleasant sound (using a combination of cancellation and addition/insertion, for example)." *Id.*

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[6] *E.g.*, https://web.archive.org/web/20140830005206/https://the-gadgeteer.com/2010/08/03/sound-id-510-bluetooth-headset-review/ (Last accessed January 7, 2026); https://www.audiologyonline.com/releases/choose-your-flavor-sound-id-4568 (Last accessed January 7, 2026); https://web.archive.org/web/20130430053855/https://techcrunch.com/2007/06/28/sound-id-sm100-bluetooth-headset-review/ (Last accessed January 12, 2026).

The benefits of combining Sonarworks Devices' teachings with *DiCenso641* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(xxxi) Sonarworks Devices-Smith

A POSITA would have been motivated to combine Sonarworks Devices and *Smith*. For example, both Sonarworks Devices and *Smith* disclose using microphones to measure sound and provide a modified sound environment.

Sonarworks Devices include, for example, microphones to detect sounds from the ambient environment and allows for selective modification of the ambient environment sounds.[7]

Like Sonarworks Devices, *Smith* similarly discloses a system and method for modifying select sounds within an ambient environment. *See Smith* at [0020] ("The electronics 103 can process the signal and provide a processed signal to the speaker 105 … to provide sound to the

[7] *E.g.*, https://web.archive.org/web/20140830005206/https://the-gadgeteer.com/2010/08/03/sound-id-510-bluetooth-headset-review/ (Last accessed January 7, 2026); https://www.audiologyonline.com/releases/choose-your-flavor-sound-id-4568 (Last accessed January 7, 2026); https://web.archive.org/web/20130430053855/https://techcrunch.com/2007/06/28/sound-id-sm100-bluetooth-headset-review/ (Last accessed January 12, 2026).

user's eardrum."), [0082] ("[A] user can select which types of noise are to be attenuated and the level of attenuation. For example, the user can select to attenuate gunshot noise by 12 dB, dog barking by 6 dB, and car noise by 3 dB."), [0085] ("[A] user can select which types of information are to be amplified and the level of amplification. For example, the user can select to amplify low level human voice (such as below 50 dB) by 18 dB, high level human voice (such as above 50 dB) by 9 dB, noise associated with furtive movements by 6 dB, and non-shooting gun noises (such as loading and cocking noises) by 3 dB.").

The benefits of combining Sonarworks Devices' teachings with *Smith* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(xxxii) Sonarworks Devices-Anderson

A POSITA would have been motivated to combine Sonarworks Devices and *Anderson*. For example, both Sonarworks Devices and *Anderson* disclose using microphones to measure sound and provide a modified sound environment.

Sonarworks Devices include, for example, microphones to detect sounds from the ambient environment and allows for selective modification of the ambient environment sounds.[8]

Like Sonarworks Devices, *Anderson* describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece. *See Anderson* at [0023] ("After the sounds from the user's ambient environment are detected by microphone 101 … the sounds are compared to one or more preset sound signatures that are associated with the sounds deemed to be critical … For example, while the preset sound signature may correspond to an alarm or siren, the preset sound signature(s) may also correspond to human speech, a ringing telephone, a crying baby, a barking dog, a horn, or any other sound"), [0028] ("[S]ystems 100/200 may use filters to only pass a narrow band of frequencies on to the user … if the critical sounds are located between 2500 and 3500 Hz, frequencies outside of this range may be filtered out. In an embodiment in which headphones 105 are … coupled to an audio source … the system is configured to automatically lower the volume or completely suppress the signal from the audio source when the critical sound is passed through to the user, thus emphasizing the critical sound over the user's audio source.").

The benefits of combining Sonarworks Devices' teachings with *Anderson* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of

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[8] *E.g.*, https://web.archive.org/web/20140830005206/https://the-gadgeteer.com/2010/08/03/sound-id-510-bluetooth-headset-review/ (Last accessed January 7, 2026); https://www.audiologyonline.com/releases/choose-your-flavor-sound-id-4568 (Last accessed January 7, 2026); https://web.archive.org/web/20130430053855/https://techcrunch.com/2007/06/28/sound-id-sm100-bluetooth-headset-review/ (Last accessed January 12, 2026).

one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(xxxiii) Sonarworks Devices-Bradford

A POSITA would have been motivated to combine Sonarworks Devices and *Bradford*. For example, both Sonarworks Devices and *Bradford* disclose using microphones to measure sound and provide a modified sound environment.

Sonarworks Devices include, for example, microphones to detect sounds from the ambient environment and allows for selective modification of the ambient environment sounds.[9]

Like Sonarworks Devices, *Bradford* describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece speakers. *See Bradford* at [0092] ("the user can further customize enhancement of each incoming audio source according to the user's own hearing deficits and/or hearing preferences"), [0092] ("the user may have several different enhancement modules 194E that have been developed for different environmental conditions, i.e. volume control, multi-band equalization, balance, multiple sound source mixing, multiple microphone beam forming, echo reduction,

[9] *E.g.*, https://web.archive.org/web/20140830005206/https://the-gadgeteer.com/2010/08/03/sound-id-510-bluetooth-headset-review/ (Last accessed January 7, 2026); https://www.audiologyonline.com/releases/choose-your-flavor-sound-id-4568 (Last accessed January 7, 2026); https://web.archive.org/web/20130430053855/https://techcrunch.com/2007/06/28/sound-id-sm100-bluetooth-headset-review/ (Last accessed January 12, 2026).

compression decompression, signal recognition, error correction, etc."), [0095] ("After application of the master volume and equalization adjustments 196, the audio signal streams are mixed 190 into a single audio stream for output.").

The benefits of combining Sonarworks Devices' teachings with *Bradford* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(xxxiv)Sonarworks Devices-Stetzler

A POSITA would have been motivated to combine Sonarworks Devices and *Stetzler*. For example, both Sonarworks Devices and *Stetzler* disclose using microphones to measure sound and provide a modified sound environment.

Sonarworks Devices include, for example, microphones to detect sounds from the ambient environment and allows for selective modification of the ambient environment sounds.[10]

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[10] *E.g.*, https://web.archive.org/web/20140830005206/https://the-gadgeteer.com/2010/08/03/sound-id-510-bluetooth-headset-review/ (Last accessed January 7, 2026); https://www.audiologyonline.com/releases/choose-your-flavor-sound-id-4568 (Last accessed January 7, 2026); https://web.archive.org/web/20130430053855/https://techcrunch.com/2007/06/28/sound-id-sm100-bluetooth-headset-review/ (Last accessed January 12, 2026).

Like Sonarworks Devices, *Stetzler* describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece. *See Stetzler* at 3:44-49 ("Different frequency bands may be defined with respect to the frequencies that need to be eliminated or enhanced. Sounds, such as speech, may be identified and amplified to improve signal-to-noise ratio. The number of bands may be increased, or may be narrowly focused on one or more specific frequency bands."); 4:3-11, 4:37-42 ("The n filtered signals are passed to compression filters 306_1-306_n, where they undergo further processing …Adaptive filters in the detection blocks may actively determine repetitive noises (such as hums, vibrations, whistles, etc) and adjust the frequency response of the filters in order to remove these noises in the continuously changing environment of the user. Techniques for doing such are known in the art."), 4:43-53.

The benefits of combining Sonarworks Devices' teachings with *Stetzler* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(xxxv) Sonarworks Devices-Park519

A POSITA would have been motivated to combine Sonarworks Devices and *Park519*. For example, both Sonarworks Devices and *Park519* disclose using microphones to measure sound and provide a modified sound environment.

Sonarworks Devices include, for example, microphones to detect sounds from the ambient environment and allows for selective modification of the ambient environment sounds.[11]

Like Sonarworks Devices, *Park519* describes spatially selecting sounds captured by microphones of earbuds. *See Park519* at [0060], [0077]. Through a spatially selective processing operation, a source component of a multichannel signal is separated from a background component. *Id.* at [0085]. Example operations performed on the source component include "amplification, equalization, dereverberation, noise reduction, speech speed alteration, and speech pitch shifting." *Id.* at [0096], [00100], [0101]. *Park519* describes applications of this technique including a "bionic ear" using "directionally selective amplification," and "the live replacement of a received speech signal with a version that has been, for example, translated, slowed, equalized, and/or amplified." *Id.* at [0105], [0113].

The benefits of combining Sonarworks Devices' teachings with *Park519* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to

[11] *E.g.*, https://web.archive.org/web/20140830005206/https://the-gadgeteer.com/2010/08/03/sound-id-510-bluetooth-headset-review/ (Last accessed January 7, 2026); https://www.audiologyonline.com/releases/choose-your-flavor-sound-id-4568 (Last accessed January 7, 2026); https://web.archive.org/web/20130430053855/https://techcrunch.com/2007/06/28/sound-id-sm100-bluetooth-headset-review/ (Last accessed January 12, 2026).

improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(xxxvi)Plantronics Devices-DiCenso641

A POSITA would have been motivated to combine Plantronics Devices and *DiCenso641*. For example, both Plantronics Devices and *DiCenso641* disclose using microphones to measure sound and provide a modified sound environment.

Plantronics Devices include, for example, "AudioIQ" which improves audio quality and provides noise cancellation.[12]

Like Plantronics Devices, *DiCenso641* describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece speakers. *See DiCenso641* at [0028] (the user "create[s] a personalized or customized auditory experience by setting his/her preferences … for associated sound types to indicate which sounds to amplify, cancel, add or insert, or attenuate, respectively"), [0042] ("DSP 310 … modifies the signal for each type of sound in the ambient auditory environment …. The modified signal is output to amp(s) 314 and speaker(s) 316 to generate the auditory environment for the user."). *DiCenso641* also discloses that "[o]ther functions may be used to enhance a sound by

[12] *E.g.*, https://web.archive.org/web/20140219145611/https://www.siliconpopculture.com/articles/review/plantronics_discovery_655/ (Last accessed January 7, 2026); https://web.archive.org/web/20140413084308/https://crackberry.com/review-plantronics-discovery-975-bluetooth-headset (Last accessed January 7, 2026).

providing equalization or filtering, selective attenuation or amplification of one or more frequencies of an associated sound, or replacing an undesired sound with a more pleasant sound (using a combination of cancellation and addition/insertion, for example)." *Id.*

The benefits of combining Plantronics Devices' teachings with *DiCenso641* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(xxxvii) Plantronics Devices-Smith

A POSITA would have been motivated to combine Plantronics Devices and *Smith*. For example, both Plantronics Devices and *Smith* disclose using microphones to measure sound and provide a modified sound environment.

Plantronics Devices include, for example, "AudioIQ" which improves audio quality and provides noise cancellation.[13]

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[13] *E.g.*, https://web.archive.org/web/20140219145611/https://www.siliconpopculture.com/articles/review/plantronics_discovery_655/ (Last accessed January 7, 2026); https://web.archive.org/web/20140413084308/https://crackberry.com/review-plantronics-discovery-975-bluetooth-headset (Last accessed January 7, 2026).

Like Plantronics Devices, *Smith* similarly discloses a system and method for modifying select sounds within an ambient environment. *See Smith* at [0020] ("The electronics 103 can process the signal and provide a processed signal to the speaker 105 … to provide sound to the user's eardrum."), [0082] ("[A] user can select which types of noise are to be attenuated and the level of attenuation. For example, the user can select to attenuate gunshot noise by 12 dB, dog barking by 6 dB, and car noise by 3 dB."), [0085] ("[A] user can select which types of information are to be amplified and the level of amplification. For example, the user can select to amplify low level human voice (such as below 50 dB) by 18 dB, high level human voice (such as above 50 dB) by 9 dB, noise associated with furtive movements by 6 dB, and non-shooting gun noises (such as loading and cocking noises) by 3 dB.").

The benefits of combining Plantronics Devices' teachings with *Smith* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(xxxviii) Plantronics Devices-Anderson

A POSITA would have been motivated to combine Plantronics Devices and *Anderson*. For example, both Plantronics Devices and *Anderson* disclose using microphones to measure background noise and provide a modified sound environment.

Plantronics Devices include, for example, "AudioIQ" which improves audio quality and provides noise cancellation.[14]

Like Plantronics Devices, *Anderson* describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece. *See Anderson* at [0023] ("After the sounds from the user's ambient environment are detected by microphone 101 … the sounds are compared to one or more preset sound signatures that are associated with the sounds deemed to be critical … For example, while the preset sound signature may correspond to an alarm or siren, the preset sound signature(s) may also correspond to human speech, a ringing telephone, a crying baby, a barking dog, a horn, or any other sound"), [0028] ("[S]ystems 100/200 may use filters to only pass a narrow band of frequencies on to the user … if the critical sounds are located between 2500 and 3500 Hz, frequencies outside of this range may be filtered out. In an embodiment in which headphones 105 are … coupled to an audio source … the system is configured to automatically lower the volume or completely suppress the signal from the audio source when the critical sound is passed through to the user, thus emphasizing the critical sound over the user's audio source.").

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[14] *E.g.*, https://web.archive.org/web/20140219145611/https://www.siliconpopculture.com/articles/review/plantronics_discovery_655/ (Last accessed January 7, 2026); https://web.archive.org/web/20140413084308/https://crackberry.com/review-plantronics-discovery-975-bluetooth-headset (Last accessed January 7, 2026).

The benefits of combining Plantronics Devices' teachings with *Anderson* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(xxxix)Plantronics Devices-Bradford

A POSITA would have been motivated to combine Plantronics Devices and *Bradford*. For example, both Plantronics Devices and *Bradford* disclose using microphones to measure sound and provide a modified sound environment.

Plantronics Devices include, for example, "AudioIQ" which improves audio quality and provides noise cancellation.[15]

Like Plantronics Devices, *Bradford* describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece speakers. *See Bradford* at [0092] ("the user can further customize enhancement of each incoming

[15] *E.g.*, https://web.archive.org/web/20140219145611/https://www.siliconpopculture.com/articles/review/plantronics_discovery_655/ (Last accessed January 7, 2026); https://web.archive.org/web/20140413084308/https://crackberry.com/review-plantronics-discovery-975-bluetooth-headset (Last accessed January 7, 2026).

audio source according to the user's own hearing deficits and/or hearing preferences"), [0092] ("the user may have several different enhancement modules 194E that have been developed for different environmental conditions, i.e. volume control, multi-band equalization, balance, multiple sound source mixing, multiple microphone beam forming, echo reduction, compression decompression, signal recognition, error correction, etc."), [0095] ("After application of the master volume and equalization adjustments 196, the audio signal streams are mixed 190 into a single audio stream for output.").

The benefits of combining Plantronics Devices' teachings with *Bradford* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(xl) Plantronics Devices-Stetzler

A POSITA would have been motivated to combine Plantronics Devices and *Stetzler*. For example, both Plantronics Devices and *Stetzler* disclose using microphones to measure sound and provide a modified sound environment.

Plantronics Devices include, for example, "AudioIQ" which improves audio quality and provides noise cancellation.[16]

Like Plantronics Devices, *Stetzler* describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece. *See Stetzler* at 3:44-49 ("Different frequency bands may be defined with respect to the frequencies that need to be eliminated or enhanced. Sounds, such as speech, may be identified and amplified to improve signal-to-noise ratio. The number of bands may be increased, or may be narrowly focused on one or more specific frequency bands."); 4:3-11, 4:37-42 ("The n filtered signals are passed to compression filters 306_1-306_n, where they undergo further processing …Adaptive filters in the detection blocks may actively determine repetitive noises (such as hums, vibrations, whistles, etc) and adjust the frequency response of the filters in order to remove these noises in the continuously changing environment of the user. Techniques for doing such are known in the art."), 4:43-53.

The benefits of combining Plantronics Devices' teachings with *Stetzler* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of

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[16] *E.g.*, https://web.archive.org/web/20140219145611/https://www.siliconpopculture.com/articles/review/plantronics_discovery_655/ (Last accessed January 7, 2026); https://web.archive.org/web/20140413084308/https://crackberry.com/review-plantronics-discovery-975-bluetooth-headset (Last accessed January 7, 2026).

endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(xli) Plantronics Devices-*Park519*

A POSITA would have been motivated to combine Plantronics Devices and *Park519*. For example, both Plantronics Devices and *Park519*disclose using microphones to measure sound and provide a modified sound environment.

Plantronics Devices include, for example, "AudioIQ" which improves audio quality and provides noise cancellation.[17]

Like Plantronics Devices, *Park519* describes spatially selecting sounds captured by microphones of earbuds. *See Park519* at [0060], [0077]. Through a spatially selective processing operation, a source component of a multichannel signal is separated from a background component. *Id.* at [0085]. Example operations performed on the source component include "amplification, equalization, dereverberation, noise reduction, speech speed alteration, and speech pitch shifting." *Id.* at [0096], [00100], [0101]. *Park519* describes applications of this technique including a "bionic ear" using "directionally selective amplification," and "the live replacement of a received speech signal with a version that has been, for example, translated, slowed, equalized, and/or amplified." *Id.* at [0105], [0113].

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[17] *E.g.*, https://web.archive.org/web/20140219145611/https://www.siliconpopculture.com/articles/review/plantronics_discovery_655/ (Last accessed January 7, 2026); https://web.archive.org/web/20140413084308/https://crackberry.com/review-plantronics-discovery-975-bluetooth-headset (Last accessed January 7, 2026).

The benefits of combining Plantronics Devices' teachings with *Park519* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(xlii) Etymotic Devices-DiCenso641

A POSITA would have been motivated to combine Etymotic Devices and *DiCenso641*. For example, both Etymotic Devices and *DiCenso641* disclose using microphones to measure sound and provide a modified sound environment.

Etymotic Devices include, for example, attenuates ambient noise to protect against hearing damage.[18]

Like Etymotic Devices, *DiCenso641* describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece speakers. *See DiCenso641* at [0028] (the user "create[s] a personalized or customized auditory experience by setting his/her preferences … for associated sound types to indicate

[18] *E.g.*, https://etymotic.com/wp-content/uploads/2025/02/GunSport-Pro-Manual-1.pdf (Last accessed January 7, 2026); https://www.fullcompass.com/common/files/31605-EtymoticResearchMP915MusicPROUserManual.pdf?srsltid=AfmBOor_clATDJOjFiqTVXsq2_cysJsinIq4EzxvfnIUESWLk5VaTIqu (Last accessed January 7, 2026).

which sounds to amplify, cancel, add or insert, or attenuate, respectively"), [0042] ("DSP 310 … modifies the signal for each type of sound in the ambient auditory environment …. The modified signal is output to amp(s) 314 and speaker(s) 316 to generate the auditory environment for the user."). *DiCenso641* also discloses that "[o]ther functions may be used to enhance a sound by providing equalization or filtering, selective attenuation or amplification of one or more frequencies of an associated sound, or replacing an undesired sound with a more pleasant sound (using a combination of cancellation and addition/insertion, for example)." *Id.*

The benefits of combining Etymotic Devices' teachings with *DiCenso641* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(xliii) Etymotic Devices-Smith

A POSITA would have been motivated to combine Etymotic Devices and *Smith*. For example, both Etymotic Devices and *Smith* disclose using microphones to measure sound and provide a modified sound environment.

Etymotic Devices include, for example, attenuates ambient noise to protect against hearing damage.[19]

Like Etymotic Devices, *Smith* similarly discloses a system and method for modifying select sounds within an ambient environment. *See Smith* at [0020] ("The electronics 103 can process the signal and provide a processed signal to the speaker 105 … to provide sound to the user's eardrum."), [0082] ("[A] user can select which types of noise are to be attenuated and the level of attenuation. For example, the user can select to attenuate gunshot noise by 12 dB, dog barking by 6 dB, and car noise by 3 dB."), [0085] ("[A] user can select which types of information are to be amplified and the level of amplification. For example, the user can select to amplify low level human voice (such as below 50 dB) by 18 dB, high level human voice (such as above 50 dB) by 9 dB, noise associated with furtive movements by 6 dB, and non-shooting gun noises (such as loading and cocking noises) by 3 dB.").

The benefits of combining Etymotic Devices' teachings with *Smith* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design

[19] *E.g.*, https://etymotic.com/wp-content/uploads/2025/02/GunSport-Pro-Manual-1.pdf (Last accessed January 7, 2026); https://www.fullcompass.com/common/files/31605-EtymoticResearchMP915MusicPROUserManual.pdf?srsltid=AfmBOor_clATDJOjFiqTVXsq2_cysJsinIq4EzxvfnIUESWLk5VaTIqu (Last accessed January 7, 2026).

incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(xliv) Etymotic Devices-Anderson

A POSITA would have been motivated to combine Etymotic Devices and *Anderson*. For example, both Etymotic Devices and *Anderson* disclose using microphones to measure sound and provide a modified sound environment.

Etymotic Devices, for example, attenuate ambient noise to protect against hearing damage.[20]

Like Etymotic Devices, *Anderson* describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece. *See Anderson* at [0023] ("After the sounds from the user's ambient environment are detected by microphone 101 … the sounds are compared to one or more preset sound signatures that are associated with the sounds deemed to be critical … For example, while the preset sound signature may correspond to an alarm or siren, the preset sound signature(s) may also correspond to human speech, a ringing telephone, a crying baby, a barking dog, a horn, or any other sound"), [0028] ("[S]ystems 100/200 may use filters to only pass a narrow band of frequencies on to the user … if the critical sounds are located between 2500 and 3500 Hz, frequencies outside of this range may be filtered out. In an embodiment in which headphones 105 are … coupled to an audio source … the system is configured to automatically lower the volume or completely

[20] *E.g.*, https://etymotic.com/wp-content/uploads/2025/02/GunSport-Pro-Manual-1.pdf (Last accessed January 7, 2026); https://www.fullcompass.com/common/files/31605-EtymoticResearchMP915MusicPROUserManual.pdf?srsltid=AfmBOor_clATDJOjFiqTVXsq2_cysJsinIq4EzxvfnIUESWLk5VaTIqu (Last accessed January 7, 2026).

suppress the signal from the audio source when the critical sound is passed through to the user, thus emphasizing the critical sound over the user's audio source.").

The benefits of combining Etymotic Devices' teachings with *Anderson* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(xlv) Etymotic Devices-Bradford

A POSITA would have been motivated to combine Etymotic Devices and *Bradford*. For example, both Etymotic Devices and *Bradford* disclose using microphones to measure sound and provide a modified sound environment.

Etymotic Devices, for example, attenuate ambient noise to protect against hearing damage.[21]

Like Etymotic Devices, *Bradford* describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece

[21] *E.g.*, https://etymotic.com/wp-content/uploads/2025/02/GunSport-Pro-Manual-1.pdf (Last accessed January 7, 2026); https://www.fullcompass.com/common/files/31605-EtymoticResearchMP915MusicPROUserManual.pdf?srsltid=AfmBOor_clATDJOjFiqTVXsq2_cysJsinIq4EzxvfnIUESWLk5VaTIqu (Last accessed January 7, 2026).

speakers. *See Bradford* at [0092] ("the user can further customize enhancement of each incoming audio source according to the user's own hearing deficits and/or hearing preferences"), [0092] ("the user may have several different enhancement modules 194E that have been developed for different environmental conditions, i.e. volume control, multi-band equalization, balance, multiple sound source mixing, multiple microphone beam forming, echo reduction, compression decompression, signal recognition, error correction, etc."), [0095] ("After application of the master volume and equalization adjustments 196, the audio signal streams are mixed 190 into a single audio stream for output.").

The benefits of combining Etymotic Devices' teachings with *Bradford* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(xlvi) Etymotic Devices-Stetzler

A POSITA would have been motivated to combine Etymotic Devices and *Stetzler*. For example, both Etymotic Devices and *Stetzler* disclose using microphones to measure sound and provide a modified sound environment.

Etymotic Devices, for example, attenuate ambient noise to protect against hearing damage.[22]

Like Etymotic Devices, *Stetzler* describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece. *See Stetzler* at 3:44-49 ("Different frequency bands may be defined with respect to the frequencies that need to be eliminated or enhanced. Sounds, such as speech, may be identified and amplified to improve signal-to-noise ratio. The number of bands may be increased, or may be narrowly focused on one or more specific frequency bands."); 4:3-11, 4:37-42 ("The n filtered signals are passed to compression filters 306_1-306_n, where they undergo further processing …Adaptive filters in the detection blocks may actively determine repetitive noises (such as hums, vibrations, whistles, etc) and adjust the frequency response of the filters in order to remove these noises in the continuously changing environment of the user. Techniques for doing such are known in the art."), 4:43-53.

The benefits of combining Etymotic Devices' teachings with *Stetzler* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of

[22] *E.g.*, https://etymotic.com/wp-content/uploads/2025/02/GunSport-Pro-Manual-1.pdf (Last accessed January 7, 2026); https://www.fullcompass.com/common/files/31605-EtymoticResearchMP915MusicPROUserManual.pdf?srsltid=AfmBOor_clATDJOjFiqTVXsq2_cysJsinIq4EzxvfnIUESWLk5VaTIqu (Last accessed January 7, 2026).

endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(xlvii) Etymotic Devices-Park519

A POSITA would have been motivated to combine Etymotic Devices and *Park519*. For example, both Etymotic Devices and *Park519* disclose using microphones to measure sound and provide a modified sound environment.

Etymotic Devices, for example, attenuate ambient noise to protect against hearing damage.[23]

Like Etymotic Devices, *Park519* describes spatially selecting sounds captured by microphones of earbuds. *See Park519* at [0060], [0077]. Through a spatially selective processing operation, a source component of a multichannel signal is separated from a background component. *Id.* at [0085]. Example operations performed on the source component include "amplification, equalization, dereverberation, noise reduction, speech speed alteration, and speech pitch shifting." *Id.* at [0096], [00100], [0101]. *Park519* describes applications of this technique including a "bionic ear" using "directionally selective amplification," and "the live replacement of a received speech signal with a version that has been, for example, translated, slowed, equalized, and/or amplified." *Id.* at [0105], [0113].

The benefits of combining Etymotic Devices' teachings with *Park519* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious

[23] *E.g.*, https://etymotic.com/wp-content/uploads/2025/02/GunSport-Pro-Manual-1.pdf (Last accessed January 7, 2026); https://www.fullcompass.com/common/files/31605-EtymoticResearchMP915MusicPROUserManual.pdf?srsltid=AfmBOor_clATDJOjFiqTVXsq2_cysJsinIq4EzxvfnIUESWLk5VaTIqu (Last accessed January 7, 2026).

to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(xlviii) Peltor Devices-DiCenso641

A POSITA would have been motivated to combine Peltor Devices and *DiCenso641*. For example, both Peltor Devices and *DiCenso641* disclose using microphones to measure sound and provide a modified sound environment.

Peltor Devices include, for example microphones providing situational awareness while protecting against noises including impulse noises that reach dangerous levels.[24]

Like Peltor Devices, *DiCenso641* describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece speakers. *See DiCenso641* at [0028] (the user "create[s] a personalized or customized auditory experience by setting his/her preferences … for associated sound types to indicate which sounds to amplify, cancel, add or insert, or attenuate, respectively"), [0042] ("DSP 310 … modifies the signal for each type of sound in the ambient auditory environment …. The modified signal is

[24] *E.g.*, https://apps.dtic.mil/sti/tr/pdf/ADA590869.pdf (Last accessed January 7, 2026); https://www.manualslib.com/manual/1254792/3m-Peltor-Ora-Tac.html (Last accessed January 9, 2026); https://www.manualslib.com/manual/1957637/3m-Peltor-Ws-Lite-Com.html (Last accessed January 9, 2026).

output to amp(s) 314 and speaker(s) 316 to generate the auditory environment for the user.”). *DiCenso641* also discloses that “[o]ther functions may be used to enhance a sound by providing equalization or filtering, selective attenuation or amplification of one or more frequencies of an associated sound, or replacing an undesired sound with a more pleasant sound (using a combination of cancellation and addition/insertion, for example).” *Id.*

The benefits of combining Peltor Devices’ teachings with *DiCenso641* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA’s routine skill.

(xlix) Peltor Devices-Smith

A POSITA would have been motivated to combine Peltor Devices and *Smith*. For example, both Peltor Devices and *Smith* disclose using microphones to measure sound and provide a modified sound environment.

Peltor Devices include, for example microphones providing situational awareness while protecting against noises including impulse noises that reach dangerous levels.[25]

[25] *E.g.*, https://apps.dtic.mil/sti/tr/pdf/ADA590869.pdf (Last accessed January 7, 2026); https://www.manualslib.com/manual/1254792/3m-Peltor-Ora-Tac.html (Last accessed January 9,

Like Peltor Devices, *Smith* similarly discloses a system and method for modifying select sounds within an ambient environment. *See Smith* at [0020] ("The electronics 103 can process the signal and provide a processed signal to the speaker 105 … to provide sound to the user's eardrum."), [0082] ("[A] user can select which types of noise are to be attenuated and the level of attenuation. For example, the user can select to attenuate gunshot noise by 12 dB, dog barking by 6 dB, and car noise by 3 dB."), [0085] ("[A] user can select which types of information are to be amplified and the level of amplification. For example, the user can select to amplify low level human voice (such as below 50 dB) by 18 dB, high level human voice (such as above 50 dB) by 9 dB, noise associated with furtive movements by 6 dB, and non-shooting gun noises (such as loading and cocking noises) by 3 dB.").

The benefits of combining Peltor Devices' teachings with *Smith* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

2026); https://www.manualslib.com/manual/1957637/3m-Peltor-Ws-Lite-Com.html (Last accessed January 9, 2026).

(l) Peltor Devices-Anderson

A POSITA would have been motivated to combine Peltor Devices and *Anderson*. For example, both Peltor Devices and *Anderson* disclose using microphones to measure sound and provide a modified sound environment.

Peltor Devices include, for example microphones providing situational awareness while protecting against noises including impulse noises that reach dangerous levels.[26]

Like Peltor Devices, *Anderson* describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece. *See Anderson* at [0023] ("After the sounds from the user's ambient environment are detected by microphone 101 … the sounds are compared to one or more preset sound signatures that are associated with the sounds deemed to be critical … For example, while the preset sound signature may correspond to an alarm or siren, the preset sound signature(s) may also correspond to human speech, a ringing telephone, a crying baby, a barking dog, a horn, or any other sound"), [0028] ("[S]ystems 100/200 may use filters to only pass a narrow band of frequencies on to the user … if the critical sounds are located between 2500 and 3500 Hz, frequencies outside of this range may be filtered out. In an embodiment in which headphones 105 are … coupled to an audio source … the system is configured to automatically lower the volume or completely suppress the signal from the audio source when the critical sound is passed through to the user, thus emphasizing the critical sound over the user's audio source.").

The benefits of combining Peltor Devices' teachings with *Anderson* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a

[26] *E.g.*, https://apps.dtic.mil/sti/tr/pdf/ADA590869.pdf (Last accessed January 7, 2026); https://www.manualslib.com/manual/1254792/3m-Peltor-Ora-Tac.html (Last accessed January 9, 2026); https://www.manualslib.com/manual/1957637/3m-Peltor-Ws-Lite-Com.html (Last accessed January 9, 2026).

person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(li) Peltor Devices-Bradford

A POSITA would have been motivated to combine Peltor Devices and *Bradford*. For example, both Peltor Devices and *Bradford* disclose using microphones to measure sound and provide a modified sound environment.

Peltor Devices include, for example microphones providing situational awareness while protecting against noises including impulse noises that reach dangerous levels.[27]

Like Peltor Devices, *Bradford* describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece speakers. *See Bradford* at [0092] ("the user can further customize enhancement of each incoming audio source according to the user's own hearing deficits and/or hearing preferences"), [0092] ("the user may have several different enhancement modules 194E that have been developed for different environmental conditions, i.e. volume control, multi-band equalization, balance,

[27] *E.g.*, https://apps.dtic.mil/sti/tr/pdf/ADA590869.pdf (Last accessed January 7, 2026); https://www.manualslib.com/manual/1254792/3m-Peltor-Ora-Tac.html (Last accessed January 9, 2026); https://www.manualslib.com/manual/1957637/3m-Peltor-Ws-Lite-Com.html (Last accessed January 9, 2026).

multiple sound source mixing, multiple microphone beam forming, echo reduction, compression decompression, signal recognition, error correction, etc."), [0095] ("After application of the master volume and equalization adjustments 196, the audio signal streams are mixed 190 into a single audio stream for output.").

The benefits of combining Peltor Devices' teachings with *Bradford* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(lii) Peltor Devices-Stetzler

A POSITA would have been motivated to combine Peltor Devices and *Stetzler*. For example, both Peltor Devices and *Stetzler* disclose using microphones to measure sound and provide a modified sound environment.

Peltor Devices include, for example microphones providing situational awareness while protecting against noises including impulse noises that reach dangerous levels.[28]

[28] *E.g.*, https://apps.dtic.mil/sti/tr/pdf/ADA590869.pdf (Last accessed January 7, 2026); https://www.manualslib.com/manual/1254792/3m-Peltor-Ora-Tac.html (Last accessed January 9, 2026); https://www.manualslib.com/manual/1957637/3m-Peltor-Ws-Lite-Com.html (Last accessed January 9, 2026).

Like Peltor Devices, *Stetzler* describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece. *See Stetzler* at 3:44-49 ("Different frequency bands may be defined with respect to the frequencies that need to be eliminated or enhanced. Sounds, such as speech, may be identified and amplified to improve signal-to-noise ratio. The number of bands may be increased, or may be narrowly focused on one or more specific frequency bands."); 4:3-11, 4:37-42 ("The n filtered signals are passed to compression filters 306_1-306_n, where they undergo further processing …Adaptive filters in the detection blocks may actively determine repetitive noises (such as hums, vibrations, whistles, etc) and adjust the frequency response of the filters in order to remove these noises in the continuously changing environment of the user. Techniques for doing such are known in the art."), 4:43-53.

The benefits of combining Peltor Devices' teachings with *Stetzler* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(liii) Peltor Devices-Park519

A POSITA would have been motivated to combine Peltor Devices and *Park519*. For example, both Peltor Devices and *Park519* disclose using microphones to measure sound and provide a modified sound environment.

Peltor Devices include, for example microphones providing situational awareness while protecting against noises including impulse noises that reach dangerous levels.[29]

Like Peltor Devices, *Park519* describes spatially selecting sounds captured by microphones of earbuds. *See Park519* at [0060], [0077]. Through a spatially selective processing operation, a source component of a multichannel signal is separated from a background component. *Id.* at [0085]. Example operations performed on the source component include "amplification, equalization, dereverberation, noise reduction, speech speed alteration, and speech pitch shifting." *Id.* at [0096], [00100], [0101]. *Park519* describes applications of this technique including a "bionic ear" using "directionally selective amplification," and "the live replacement of a received speech signal with a version that has been, for example, translated, slowed, equalized, and/or amplified." *Id.* at [0105], [0113].

The benefits of combining Peltor Devices' teachings with *Park519* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known

[29] *E.g.*, https://apps.dtic.mil/sti/tr/pdf/ADA590869.pdf (Last accessed January 7, 2026); https://www.manualslib.com/manual/1254792/3m-Peltor-Ora-Tac.html (Last accessed January 9, 2026); https://www.manualslib.com/manual/1957637/3m-Peltor-Ws-Lite-Com.html (Last accessed January 9, 2026).

device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(liv) Honeywell/PIP Devices-DiCenso641

A POSITA would have been motivated to combine Honeywell/PIP Devices and *DiCenso641*. For example, both Honeywell/PIP Devices and *DiCenso641* disclose using microphones to measure sound and provide a modified sound environment.

Honeywell/PIP Devices include, for example, a "microphone and loudspeaker," providing situational awareness for the user and amplifying low-level sounds and reducing harmful sounds.[30]

Like Honeywell/PIP Devices, *DiCenso641* describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece speakers. *See DiCenso641* at [0028] (the user "create[s] a personalized or customized auditory experience by setting his/her preferences … for associated sound types to indicate which sounds to amplify, cancel, add or insert, or attenuate, respectively"), [0042] ("DSP 310 … modifies the signal for each type of sound in the ambient auditory environment …. The modified signal is output to amp(s) 314 and speaker(s) 316 to generate the auditory environment for the user."). *DiCenso641* also discloses that "[o]ther functions may be used to enhance a sound by providing equalization or filtering, selective attenuation or amplification of one or more

[30] *E.g.*, https://web.archive.org/web/20090207113216/http://soldiermod.com/summer-08/industry-nacre.html (Last accessed January 7, 2026); https://web.archive.org/web/20070906054101/http://www.howardleightshootingsports.com/page02.html (Last accessed January 9, 2026).

frequencies of an associated sound, or replacing an undesired sound with a more pleasant sound (using a combination of cancellation and addition/insertion, for example)." *Id.*

The benefits of combining Honeywell/PIP Devices' teachings with *DiCenso641* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(lv) Honeywell/PIP Devices-Smith

A POSITA would have been motivated to combine Honeywell/PIP Devices and *Smith*. For example, both Honeywell/PIP Devices and *Smith* disclose using microphones to measure sound and provide a modified sound environment.

Honeywell/PIP Devices include, for example, a "microphone and loudspeaker," providing situational awareness for the user and amplifying low-level sounds and reducing harmful sounds.[31]

[31] *E.g.*, https://web.archive.org/web/20090207113216/http://soldiermod.com/summer-08/industry-nacre.html (Last accessed January 7, 2026); https://web.archive.org/web/20070906054101/http://www.howardleightshootingsports.com/page02.html (Last accessed January 9, 2026).

Like Honeywell/PIP Devices, *Smith* similarly discloses a system and method for modifying select sounds within an ambient environment. *See Smith* at [0020] ("The electronics 103 can process the signal and provide a processed signal to the speaker 105 … to provide sound to the user's eardrum."), [0082] ("[A] user can select which types of noise are to be attenuated and the level of attenuation. For example, the user can select to attenuate gunshot noise by 12 dB, dog barking by 6 dB, and car noise by 3 dB."), [0085] ("[A] user can select which types of information are to be amplified and the level of amplification. For example, the user can select to amplify low level human voice (such as below 50 dB) by 18 dB, high level human voice (such as above 50 dB) by 9 dB, noise associated with furtive movements by 6 dB, and non-shooting gun noises (such as loading and cocking noises) by 3 dB.").

The benefits of combining Honeywell/PIP Devices' teachings with *Smith* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(lvi) Honeywell/PIP Devices-Anderson

A POSITA would have been motivated to combine Honeywell/PIP Devices and *Anderson*. For example, both Honeywell/PIP Devices and *Anderson* disclose using microphones to measure sound and provide a modified sound environment.

Honeywell/PIP Devices include, for example, a "microphone and loudspeaker," providing situational awareness for the user and amplifying low-level sounds and reducing harmful sounds.[32]

Like Honeywell/PIP Devices, *Anderson* describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece. *See Anderson* at [0023] ("After the sounds from the user's ambient environment are detected by microphone 101 … the sounds are compared to one or more preset sound signatures that are associated with the sounds deemed to be critical … For example, while the preset sound signature may correspond to an alarm or siren, the preset sound signature(s) may also correspond to human speech, a ringing telephone, a crying baby, a barking dog, a horn, or any other sound"), [0028] ("[S]ystems 100/200 may use filters to only pass a narrow band of frequencies on to the user … if the critical sounds are located between 2500 and 3500 Hz, frequencies outside of this range may be filtered out. In an embodiment in which headphones 105 are … coupled to an audio source … the system is configured to automatically lower the volume or completely suppress the signal from the audio source when the critical sound is passed through to the user, thus emphasizing the critical sound over the user's audio source.").

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[32] *E.g.*, https://web.archive.org/web/20090207113216/http://soldiermod.com/summer-08/industry-nacre.html (Last accessed January 7, 2026); https://web.archive.org/web/20070906054101/http://www.howardleightshootingsports.com/page02.html (Last accessed January 9, 2026).

The benefits of combining Honeywell/PIP Devices' teachings with *Anderson* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(lvii) Honeywell/PIP Devices-Bradford

A POSITA would have been motivated to combine Honeywell/PIP Devices and *Bradford*. For example, both Honeywell/PIP Devices and *Bradford* disclose using microphones to measure sound and provide a modified sound environment.

Honeywell/PIP Devices include, for example, a "microphone and loudspeaker," providing situational awareness for the user and amplifying low-level sounds and reducing harmful sounds.[33]

Like Honeywell/PIP Devices, *Bradford* describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece speakers. *See Bradford* at [0092] ("the user can further customize enhancement of each

[33] *E.g.*, https://web.archive.org/web/20090207113216/http://soldiermod.com/summer-08/industry-nacre.html (Last accessed January 7, 2026); https://web.archive.org/web/20070906054101/http://www.howardleightshootingsports.com/page02.html (Last accessed January 9, 2026).

incoming audio source according to the user's own hearing deficits and/or hearing preferences"), [0092] ("the user may have several different enhancement modules 194E that have been developed for different environmental conditions, i.e. volume control, multi-band equalization, balance, multiple sound source mixing, multiple microphone beam forming, echo reduction, compression decompression, signal recognition, error correction, etc."), [0095] ("After application of the master volume and equalization adjustments 196, the audio signal streams are mixed 190 into a single audio stream for output.").

The benefits of combining Honeywell/PIP Devices' teachings with *Bradford* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(lviii) Honeywell/PIP Devices-Stetzler

A POSITA would have been motivated to combine Honeywell/PIP Devices and *Stetzler*. For example, both Honeywell/PIP Devices and *Stetzler* disclose using microphones to measure sound and provide a modified sound environment.

Honeywell/PIP Devices include, for example, a "microphone and loudspeaker," providing situational awareness for the user and amplifying low-level sounds and reducing harmful sounds.[34]

Like Honeywell/PIP Devices, *Stetzler* describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece. *See Stetzler* at 3:44-49 ("Different frequency bands may be defined with respect to the frequencies that need to be eliminated or enhanced. Sounds, such as speech, may be identified and amplified to improve signal-to-noise ratio. The number of bands may be increased, or may be narrowly focused on one or more specific frequency bands."); 4:3-11, 4:37-42 ("The n filtered signals are passed to compression filters 306_1-306_n, where they undergo further processing …Adaptive filters in the detection blocks may actively determine repetitive noises (such as hums, vibrations, whistles, etc) and adjust the frequency response of the filters in order to remove these noises in the continuously changing environment of the user. Techniques for doing such are known in the art."), 4:43-53.

The benefits of combining Honeywell/PIP Devices' teachings with *Stetzler* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known

[34] *E.g.*, https://web.archive.org/web/20090207113216/http://soldiermod.com/summer-08/industry-nacre.html (Last accessed January 7, 2026); https://web.archive.org/web/20070906054101/http://www.howardleightshootingsports.com/page02.html (Last accessed January 9, 2026).

device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(lix) Honeywell/PIP Devices-Park519

A POSITA would have been motivated to combine Honeywell/PIP Devices and *Park519*. For example, both Honeywell/PIP Devices and *Park519* disclose using microphones to measure sound and provide a modified sound environment.

Honeywell/PIP Devices include, for example, a "microphone and loudspeaker," providing situational awareness for the user and amplifying low-level sounds and reducing harmful sounds.[35]

Like Honeywell/PIP Devices, *Park519* describes spatially selecting sounds captured by microphones of earbuds. *See Park519* at [0060], [0077]. Through a spatially selective processing operation, a source component of a multichannel signal is separated from a background component. *Id.* at [0085]. Example operations performed on the source component include "amplification, equalization, dereverberation, noise reduction, speech speed alteration, and speech pitch shifting." *Id.* at [0096], [00100], [0101]. *Park519* describes applications of this technique including a "bionic ear" using "directionally selective amplification," and "the live replacement of a received speech signal with a version that has been, for example, translated, slowed, equalized, and/or amplified." *Id.* at [0105], [0113].

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[35] *E.g.*, https://web.archive.org/web/20090207113216/http://soldiermod.com/summer-08/industry-nacre.html (Last accessed January 7, 2026); https://web.archive.org/web/20070906054101/http://www.howardleightshootingsports.com/page02.html (Last accessed January 9, 2026).

The benefits of combining Honeywell/PIP Devices' teachings with *Park519* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(lx) Liberator II Tactical Headset Series-DiCenso641

A POSITA would have been motivated to combine Liberator II Tactical Headset Series and *DiCenso641*. For example, both Liberator II Tactical Headset Series and *DiCenso641* disclose using microphones to measure sound and provide a modified sound environment.

The Liberator II Tactical Headset Series includes, for example, "patented Digital Threat Compression Technology (DTCT) to safely reduce hazardous noise while enhancing low-level sounds with Digital Situational Awareness Enhancement (DSAE), which simultaneously provides the user with 360° of ambient sound reproduction and unbelievable situational awareness."[36]

[36] *E.g.*, https://web.archive.org/web/20201031160131/https://inside.safariland.com/news/tactical-command-industries-featured-safariland-group-shot-show-booth/ (Last accessed January 9, 2026).

Like Liberator II Tactical Headset Series, *DiCenso641* describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece speakers. *See DiCenso641* at [0028] (the user "create[s] a personalized or customized auditory experience by setting his/her preferences … for associated sound types to indicate which sounds to amplify, cancel, add or insert, or attenuate, respectively"), [0042] ("DSP 310 … modifies the signal for each type of sound in the ambient auditory environment …. The modified signal is output to amp(s) 314 and speaker(s) 316 to generate the auditory environment for the user."). *DiCenso641* also discloses that "[o]ther functions may be used to enhance a sound by providing equalization or filtering, selective attenuation or amplification of one or more frequencies of an associated sound, or replacing an undesired sound with a more pleasant sound (using a combination of cancellation and addition/insertion, for example)." *Id.*

The benefits of combining Liberator II Tactical Headset Series' teachings with *DiCenso641* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(lxi) Liberator II Tactical Headset Series-Smith

A POSITA would have been motivated to combine Liberator II Tactical Headset Series and *Smith*. For example, both Liberator II Tactical Headset Series and *Smith* disclose using microphones to measure sound and provide a modified sound environment.

The Liberator II Tactical Headset Series includes, for example, "patented Digital Threat Compression Technology (DTCT) to safely reduce hazardous noise while enhancing low-level sounds with Digital Situational Awareness Enhancement (DSAE), which simultaneously provides the user with 360° of ambient sound reproduction and unbelievable situational awareness."[37]

Like Liberator II Tactical Headset Series, *Smith* similarly discloses a system and method for modifying select sounds within an ambient environment. *See Smith* at [0020] ("The electronics 103 can process the signal and provide a processed signal to the speaker 105 … to provide sound to the user's eardrum."), [0082] ("[A] user can select which types of noise are to be attenuated and the level of attenuation. For example, the user can select to attenuate gunshot noise by 12 dB, dog barking by 6 dB, and car noise by 3 dB."), [0085] ("[A] user can select which types of information are to be amplified and the level of amplification. For example, the user can select to amplify low level human voice (such as below 50 dB) by 18 dB, high level human voice (such as above 50 dB) by 9 dB, noise associated with furtive movements by 6 dB, and non-shooting gun noises (such as loading and cocking noises) by 3 dB.").

The benefits of combining Liberator II Tactical Headset Series' teachings with *Smith* to provide modified sounds from the ambient environment would have been clear, predictable, and

[37] *E.g.*, https://web.archive.org/web/20201031160131/https://inside.safariland.com/news/tactical-command-industries-featured-safariland-group-shot-show-booth/ (Last accessed January 9, 2026).

obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(lxii) Liberator II Tactical Headset Series-Anderson

A POSITA would have been motivated to combine Liberator II Tactical Headset Series and *Anderson*. For example, both Liberator II Tactical Headset Series and *Anderson* disclose using microphones to measure sound and provide a modified sound environment.

The Liberator II Tactical Headset Series includes, for example, "patented Digital Threat Compression Technology (DTCT) to safely reduce hazardous noise while enhancing low-level sounds with Digital Situational Awareness Enhancement (DSAE), which simultaneously provides the user with 360° of ambient sound reproduction and unbelievable situational awareness."[38]

Like Liberator II Tactical Headset Series, *Anderson* describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece. *See Anderson* at [0023] ("After the sounds from the user's ambient environment

[38] *E.g.*, https://web.archive.org/web/20201031160131/https://inside.safariland.com/news/tactical-command-industries-featured-safariland-group-shot-show-booth/ (Last accessed January 9, 2026).

are detected by microphone 101 … the sounds are compared to one or more preset sound signatures that are associated with the sounds deemed to be critical … For example, while the preset sound signature may correspond to an alarm or siren, the preset sound signature(s) may also correspond to human speech, a ringing telephone, a crying baby, a barking dog, a horn, or any other sound"), [0028] ("[S]ystems 100/200 may use filters to only pass a narrow band of frequencies on to the user … if the critical sounds are located between 2500 and 3500 Hz, frequencies outside of this range may be filtered out. In an embodiment in which headphones 105 are … coupled to an audio source … the system is configured to automatically lower the volume or completely suppress the signal from the audio source when the critical sound is passed through to the user, thus emphasizing the critical sound over the user's audio source.").

The benefits of combining Liberator II Tactical Headset Series' teachings with *Anderson* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(lxiii) Liberator II Tactical Headset Series-Bradford

A POSITA would have been motivated to combine Liberator II Tactical Headset Series and *Bradford*. For example, both Liberator II Tactical Headset Series and *Bradford* disclose using microphones to measure sound and provide a modified sound environment.

The Liberator II Tactical Headset Series includes, for example, "patented Digital Threat Compression Technology (DTCT) to safely reduce hazardous noise while enhancing low-level sounds with Digital Situational Awareness Enhancement (DSAE), which simultaneously provides the user with 360° of ambient sound reproduction and unbelievable situational awareness."[39]

Like Liberator II Tactical Headset Series, *Bradford* describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece speakers. *See Bradford* at [0092] ("the user can further customize enhancement of each incoming audio source according to the user's own hearing deficits and/or hearing preferences"), [0092] ("the user may have several different enhancement modules 194E that have been developed for different environmental conditions, i.e. volume control, multi-band equalization, balance, multiple sound source mixing, multiple microphone beam forming, echo reduction, compression decompression, signal recognition, error correction, etc."), [0095] ("After application of the master volume and equalization adjustments 196, the audio signal streams are mixed 190 into a single audio stream for output.").

The benefits of combining Liberator II Tactical Headset Series' teachings with *Bradford* to provide modified sounds from the ambient environment would have been clear, predictable,

[39] *E.g.*, https://web.archive.org/web/20201031160131/https://inside.safariland.com/news/tactical-command-industries-featured-safariland-group-shot-show-booth/ (Last accessed January 9, 2026).

and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(lxiv) Liberator II Tactical Headset Series-Stetzler

A POSITA would have been motivated to combine Liberator II Tactical Headset Series and *Stetzler*. For example, both Liberator II Tactical Headset Series and *Stetzler* disclose using microphones to measure sound and provide a modified sound environment.

The Liberator II Tactical Headset Series includes, for example, "patented Digital Threat Compression Technology (DTCT) to safely reduce hazardous noise while enhancing low-level sounds with Digital Situational Awareness Enhancement (DSAE), which simultaneously provides the user with 360° of ambient sound reproduction and unbelievable situational awareness."[40]

Like Liberator II Tactical Headset Series, *Stetzler* describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece. *See Stetzler* at 3:44-49 ("Different frequency bands may be defined with respect

[40] *E.g.*, https://web.archive.org/web/20201031160131/https://inside.safariland.com/news/tactical-command-industries-featured-safariland-group-shot-show-booth/ (Last accessed January 9, 2026).

to the frequencies that need to be eliminated or enhanced. Sounds, such as speech, may be identified and amplified to improve signal-to-noise ratio. The number of bands may be increased, or may be narrowly focused on one or more specific frequency bands."); 4:3-11, 4:37-42 ("The n filtered signals are passed to compression filters 306_1-306_n, where they undergo further processing …Adaptive filters in the detection blocks may actively determine repetitive noises (such as hums, vibrations, whistles, etc) and adjust the frequency response of the filters in order to remove these noises in the continuously changing environment of the user. Techniques for doing such are known in the art."), 4:43-53.

The benefits of combining Liberator II Tactical Headset Series' teachings with *Stetzler* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(lxv) Liberator II Tactical Headset Series-Park519

A POSITA would have been motivated to combine Liberator II Tactical Headset Series and *Park519*. For example, both Liberator II Tactical Headset Series and *Park519* disclose using microphones to measure sound and provide a modified sound environment.

The Liberator II Tactical Headset Series includes, for example, "patented Digital Threat Compression Technology (DTCT) to safely reduce hazardous noise while enhancing low-level sounds with Digital Situational Awareness Enhancement (DSAE), which simultaneously provides the user with 360° of ambient sound reproduction and unbelievable situational awareness."[41]

Like Liberator II Tactical Headset Series, *Park519* describes spatially selecting sounds captured by microphones of earbuds. *See Park519* at [0060], [0077]. Through a spatially selective processing operation, a source component of a multichannel signal is separated from a background component. *Id.* at [0085]. Example operations performed on the source component include "amplification, equalization, dereverberation, noise reduction, speech speed alteration, and speech pitch shifting." *Id.* at [0096], [00100], [0101]. *Park519* describes applications of this technique including a "bionic ear" using "directionally selective amplification," and "the live replacement of a received speech signal with a version that has been, for example, translated, slowed, equalized, and/or amplified." *Id.* at [0105], [0113].

The benefits of combining Liberator II Tactical Headset Series' teachings with *Park519* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v)

[41] *E.g.*, https://web.archive.org/web/20201031160131/https://inside.safariland.com/news/tactical-command-industries-featured-safariland-group-shot-show-booth/ (Last accessed January 9, 2026).

known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(lxvi) MSA Devices-DiCenso641

A POSITA would have been motivated to combine MSA Devices and *DiCenso641*. For example, both MSA Devices and *DiCenso641* disclose using microphones to measure sound and provide a modified sound environment.

MSA Devices include, for example, "[c]up-mounted microphones" or "spy microphones" that enhance user-situational awareness by "allowing users to hear ambient environmental sounds while wearing hearing protection microphone installed in the cabin continuously monitors noise levels, and digital electronics intelligently adjust the sound coming out of the speakers."[42]

Like MSA Devices, *DiCenso641* describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece speakers. *See DiCenso641* at [0028] (the user "create[s] a personalized or customized auditory experience by setting his/her preferences … for associated sound types to indicate which sounds to amplify, cancel, add or insert, or attenuate, respectively"), [0042] ("DSP 310 … modifies the signal for each type of sound in the ambient auditory environment …. The modified signal is output to amp(s) 314 and speaker(s) 316 to generate the auditory environment for the user.").

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[42] *E.g.*, https://media.msanet.com/NA/USA/MICHCommunicationSystems/MICHhighNoiseCommunicationHeadsets/3800-05_MICHHighNoise.pdf (Last accessed January 7, 2026); https://media.msanet.com/na/usa/militaryproducts/chipscommunicasystem/3804-02-CHIPS.pdf (Last accessed January 7, 2026).

DiCenso641 also discloses that "[o]ther functions may be used to enhance a sound by providing equalization or filtering, selective attenuation or amplification of one or more frequencies of an associated sound, or replacing an undesired sound with a more pleasant sound (using a combination of cancellation and addition/insertion, for example)." *Id.*

The benefits of combining MSA Devices' teachings with *DiCenso641* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(lxvii) MSA Devices-Smith

A POSITA would have been motivated to combine MSA Devices and *Smith*. For example, both MSA Devices and *Smith* disclose using microphones to measure sound and provide a modified sound environment.

MSA Devices include, for example, "[c]up-mounted microphones" or "spy microphones" that enhance user-situational awareness by "allowing users to hear ambient environmental sounds while wearing hearing protection microphone installed in the cabin continuously

monitors noise levels, and digital electronics intelligently adjust the sound coming out of the speakers."[43]

Like MSA Devices, *Smith* similarly discloses a system and method for modifying select sounds within an ambient environment. *See Smith* at [0020] ("The electronics 103 can process the signal and provide a processed signal to the speaker 105 … to provide sound to the user's eardrum."), [0082] ("[A] user can select which types of noise are to be attenuated and the level of attenuation. For example, the user can select to attenuate gunshot noise by 12 dB, dog barking by 6 dB, and car noise by 3 dB."), [0085] ("[A] user can select which types of information are to be amplified and the level of amplification. For example, the user can select to amplify low level human voice (such as below 50 dB) by 18 dB, high level human voice (such as above 50 dB) by 9 dB, noise associated with furtive movements by 6 dB, and non-shooting gun noises (such as loading and cocking noises) by 3 dB.").

The benefits of combining MSA Devices' teachings with *Smith* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design

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[43] *E.g.*, https://media.msanet.com/NA/USA/MICHCommunicationSystems/MICHhighNoiseCommunicationHeadsets/3800-05_MICHHighNoise.pdf (Last accessed January 7, 2026); https://media.msanet.com/na/usa/militaryproducts/chipscommunicasystem/3804-02-CHIPS.pdf (Last accessed January 7, 2026).

incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(lxviii) MSA Devices-Anderson

A POSITA would have been motivated to combine MSA Devices and *Anderson.* For another example, both MSA Devices and *Anderson* discloses using microphones to measure sound and provide a modified sound environment.

MSA Devices include, for example, "[c]up-mounted microphones" or "spy microphones" that enhance user-situational awareness by "allowing users to hear ambient environmental sounds while wearing hearing protection microphone installed in the cabin continuously monitors noise levels, and digital electronics intelligently adjust the sound coming out of the speakers."[44]

Like MSA Devices, *Anderson* describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece. *See Anderson* at [0023] ("After the sounds from the user's ambient environment are detected by microphone 101 … the sounds are compared to one or more preset sound signatures that are associated with the sounds deemed to be critical … For example, while the preset sound signature may correspond to an alarm or siren, the preset sound signature(s) may also correspond to human speech, a ringing telephone, a crying baby, a barking dog, a horn, or any other sound"), [0028] ("[S]ystems 100/200 may use filters to only pass a narrow band of frequencies on to the

[44] *E.g.*, https://media.msanet.com/NA/USA/MICHCommunicationSystems/MICHhighNoiseCommunicationHeadsets/3800-05_MICHHighNoise.pdf (Last accessed January 7, 2026); https://media.msanet.com/na/usa/militaryproducts/chipscommunicasystem/3804-02-CHIPS.pdf (Last accessed January 7, 2026).

user … if the critical sounds are located between 2500 and 3500 Hz, frequencies outside of this range may be filtered out. In an embodiment in which headphones 105 are … coupled to an audio source … the system is configured to automatically lower the volume or completely suppress the signal from the audio source when the critical sound is passed through to the user, thus emphasizing the critical sound over the user's audio source.").

(lxix) MSA Devices-Bradford

A POSITA would have been motivated to combine MSA Devices and *Bradford*. For example, both MSA Devices and *Bradford* disclose using microphones to measure sound and provide a modified sound environment.

MSA Devices include, for example, "[c]up-mounted microphones" or "spy microphones" that enhance user-situational awareness by "allowing users to hear ambient environmental sounds while wearing hearing protection microphone installed in the cabin continuously monitors noise levels, and digital electronics intelligently adjust the sound coming out of the speakers."[45]

Like MSA Devices, *Bradford* describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece speakers. *See Bradford* at [0092] ("the user can further customize enhancement of each incoming audio source according to the user's own hearing deficits and/or hearing preferences"), [0092] ("the user may have several different enhancement modules 194E that have been developed for different environmental conditions, i.e. volume control, multi-band equalization, balance,

[45] *E.g.*, https://media.msanet.com/NA/USA/MICHCommunicationSystems/MICHhighNoiseCommunicationHeadsets/3800-05_MICHHighNoise.pdf (Last accessed January 7, 2026); https://media.msanet.com/na/usa/militaryproducts/chipscommunicasystem/3804-02-CHIPS.pdf (Last accessed January 7, 2026).

multiple sound source mixing, multiple microphone beam forming, echo reduction, compression decompression, signal recognition, error correction, etc."), [0095] ("After application of the master volume and equalization adjustments 196, the audio signal streams are mixed 190 into a single audio stream for output.").

The benefits of combining MSA Devices' teachings with *Bradford* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(lxx) MSA Devices-Stetzler

A POSITA would have been motivated to combine MSA Devices and *Stetzler*. For example, both MSA Devices and *Stetzler* disclose using microphones to measure sound and provide a modified sound environment.

MSA Devices include, for example, "[c]up-mounted microphones" or "spy microphones" that enhance user-situational awareness by "allowing users to hear ambient environmental sounds while wearing hearing protection microphone installed in the cabin continuously

monitors noise levels, and digital electronics intelligently adjust the sound coming out of the speakers."[46]

Like MSA Devices, *Stetzler* describes modifying select sounds within the ambient environment captured by the microphones and providing the modified sounds via the earpiece. *See Stetzler* at 3:44-49 ("Different frequency bands may be defined with respect to the frequencies that need to be eliminated or enhanced. Sounds, such as speech, may be identified and amplified to improve signal-to-noise ratio. The number of bands may be increased, or may be narrowly focused on one or more specific frequency bands."); 4:3-11, 4:37-42 ("The n filtered signals are passed to compression filters 306_1-306_n, where they undergo further processing …Adaptive filters in the detection blocks may actively determine repetitive noises (such as hums, vibrations, whistles, etc) and adjust the frequency response of the filters in order to remove these noises in the continuously changing environment of the user. Techniques for doing such are known in the art."), 4:43-53.

The benefits of combining MSA Devices' teachings with *Stetzler* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of

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[46] *E.g.*, https://media.msanet.com/NA/USA/MICHCommunicationSystems/MICHhighNoiseCommunicationHeadsets/3800-05_MICHHighNoise.pdf (Last accessed January 7, 2026); https://media.msanet.com/na/usa/militaryproducts/chipscommunicasystem/3804-02-CHIPS.pdf (Last accessed January 7, 2026).

endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(lxxi) MSA Devices-Park519

A POSITA would have been motivated to combine MSA Devices and *Park519*. For example, both MSA Devices and *Park519* disclose using microphones to measure sound and provide a modified sound environment.

MSA Devices include, for example, "[c]up-mounted microphones" or "spy microphones" that enhance user-situational awareness by "allowing users to hear ambient environmental sounds while wearing hearing protection microphone installed in the cabin continuously monitors noise levels, and digital electronics intelligently adjust the sound coming out of the speakers."[47]

Like MSA Devices, *Park519* describes spatially selecting sounds captured by microphones of earbuds. *See Park519* at [0060], [0077]. Through a spatially selective processing operation, a source component of a multichannel signal is separated from a background component. *Id.* at [0085]. Example operations performed on the source component include "amplification, equalization, dereverberation, noise reduction, speech speed alteration, and speech pitch shifting." *Id.* at [0096], [00100], [0101]. *Park519* describes applications of this technique including a "bionic ear" using "directionally selective amplification," and "the live

[47] *E.g.*, https://media.msanet.com/NA/USA/MICHCommunicationSystems/MICHhighNoiseCommunicationHeadsets/3800-05_MICHHighNoise.pdf (Last accessed January 7, 2026); https://media.msanet.com/na/usa/militaryproducts/chipscommunicasystem/3804-02-CHIPS.pdf (Last accessed January 7, 2026).

replacement of a received speech signal with a version that has been, for example, translated, slowed, equalized, and/or amplified." *Id.* at [0105], [0113].

The benefits of combining MSA Devices' teachings with *Park519* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(lxxii) Each of the Above Combinations and in further view of Goldstein873, or Terlizzi283, or Zhang, or Widner

As another example, a POSITA would have been motivated to combine each of the above combinations and *Goldstein873*, or *Terlizzi283*, or *Zhang*, or *Widner*. For example, each of the above combinations include earpieces with microphones. *See* Sections III.D.2.a(i)-III.D.2.a(lxxi).

Likewise, *Goldstein873* explains that earpieces "can further include a transceiver 204 that can support singly or in combination any number of wireless access technologies including without limitation Bluetooth™, Wireless Fidelity (WiFi), Worldwide Interoperability for Microwave Access (WiMAX), and/or other short or long range communication protocols." *Goldstein873* at [0028].

Likewise, *Terlizzi283* explains that earpieces include "circuitry operative to initiate a communications request, connect to a communications network, and/or to transmit communications data to one or more servers or devices within the communications network." *Terlizzi283* at [0045]. *Terlizzi283* explains the circuitry "may support one or more of Wi-Fi (e.g., a 802.11 protocol), Bluetooth™ (trademark owned by Bluetooth Sig, Inc.), high frequency systems, infrared, GSM, GSM plus EDGE, CDMA, other cellular protocols, VoIP, FTP, P2P, SSH, or any other communication protocol and/or any combination thereof." *Id.*

Likewise, *Zhang* explains that earpieces include a communication module which is "a wireless module that may implement Bluetooth, IEEE 802.11 (which is also called Wi-Fi), a cordless phone channel, and/some other wireless protocol. Communication module 180 may also be a wireline module that may implement Universal Serial Bus USB or some other wireline protocol. Communication module 180 may also support both wireless and wireline communication." *Zhang* at 3:62–4:8.

Likewise, *Widner* explains that headphones include Bluetooth devices include transceivers for pairing with another Bluetooth device. *Widner* at [0017].

The benefits of combining each of the above combinations' teachings and *Goldstein873*, or *Terlizzi283*, or *Zhang*, or *Widner* to provide modified sounds from the ambient environment, including but not limited to providing a transceiver in an earpiece, would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or

(v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(lxxiii) Each of the Above Combinations and in further view of Holland, or Zhang, or Carlsson, or Schulert

As another example, a POSITA would have been motivated to combine each of the above combinations and *Holland*, or *Zhang*, or *Carlsson*, or *Schulert*. For example, each of the above combinations include electronic devices in communication with one another. *See* Sections III.D.2.a(i)-III.D.2.a(lxxi).

Likewise, *Holland* discloses a "media player 110, display device 120, and speakers 130 [that] are integrated on a single device such as a computer, a laptop, an enhanced television, or an enhanced cell phone." *Holland* at [0040]. *Holland* explains that this single device may function as a "media player device" or a "companion content device." *See id.* ("In some such embodiments this media player device can also function as a companion content device (similar to any one of the companion content devices 140-148) simultaneously."). *Holland* discloses sending signals between such devices "wirelessly or through a wired connection." *Id.* at [0043] ("Some embodiments allow both wired and wireless signals; while other embodiments allow only wired signals from the media player or only wireless signals from the media player."). *Holland* also provides implementation details for facilitating wired or wireless communication between electronic devices. *See id.* at [0156] ("FIG. 20 conceptually illustrates an electronic system 2000 with which some embodiments of the invention are implemented. The electronic system 2000 may be a computer (e.g., a desktop computer, personal computer, tablet computer, etc.), phone, PDA, or any other sort of electronic device."). For example, *Holland* explains that

the electronic device (*e.g.*, mobile phone) includes a network adapter through which it couples to a network. *See id.* at [0162] ("Finally, as shown in FIG. 20, bus 2005 also couples electronic system 2000 to a network 2065 through a network adapter (not shown). In this manner, the electronic can be a part of a network of computers ….").

Likewise, *Zhang* explains that earpieces include a communication module which is "a wireless module that may implement Bluetooth, IEEE 802.11 (which is also called Wi-Fi), a cordless phone channel, and/some other wireless protocol. Communication module 180 may also be a wireline module that may implement Universal Serial Bus USB or some other wireline protocol. Communication module 180 may also support both wireless and wireline communication." *Zhang* at 3:62–4:8.

Likewise, *Carlsson* explains that speakers may connect with a consumer electronics device like a television "over wired and/or wireless links." *Carlsson* at [0033]-[0035].

Likewise, *Schulert* explains in devices with speakers, "a network interface 402 can include one or both of a wireless interface 404 and a wired interface 406." *Schulert* at [0066].

The benefits of combining each of the above combinations' teachings and *Holland*, or *Zhang*, or *Carlsson*, or *Schulert*, to provide modified sounds from the ambient environment, including but not limited to sending signals and/or data between electronic devices wirelessly or through a wired connection, would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination is would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of

endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(lxxiv) Each of the Above Combinations and in further view of Warren, or Terlizzi283, or Zhang

As another example, a POSITA would have been motivated to combine each of the above combinations and *Warren*, or *Terlizzi283*, or *Zhang*. For example, each of the above combinations include devices with microphones. *See* Sections III.D.2.a(i)-III.D.2.a(lxxi).

Likewise, *Warren* explains that such devices may include any of a number of types of microphones, such as "a silicon (MEMS) condenser microphone, an electret [sic] microphone, an omni-directional microphone, a directional microphone, a dynamic microphone, or a monitor microphone." *Warren* at [0029];

Likewise, *Terlizzi283* explains that "wireless headsets and cellular phones typically employ omni-directional microphones which pick up audio signals received from every direction." *Terlizzi283* at [0003]; *see also id.* at [0053].

Likewise, *Zhang* explains that the hands-free apparatus includes omni-directional microphones. *Zhang* at 3:45–57.

The benefits of combining each of the above combinations' teachings and *Warren*, or *Terlizzi283*, or *Zhang*, to provide modified sounds from the ambient environment, including but not limited to incorporating any one of different types of microphones (including omni-directional microphones) in such devices, would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of

one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(lxxv) Each of the Above Combinations and in further view of Wiernicki, or Leventhall, or Berger, or Duck

As another example, a POSITA would have been motivated to combine each of the above combinations and *Wiernicki*, or *Leventhall*, or *Berger*, or *Duck*, because, for example, each of the above combinations output modified sounds. *See* Sections III.D.2.a(i)-III.D.2.a(lxxi).

Likewise, *Wiernicki* details the biological effects of ultrasound along with proposed exposure standards for "airborne ultrasound" to reduce harmful effects. *See, e.g.*, *Wiernicki* at 13-14 ("These standards are consistent in that they present exposure limits to prevent subjective effects at one-third octave bands centered at or below 20 kHz and exposure limits for one-third octave bands at 20 kHz and above to prevent thermal effects and hearing loss from possible subharmonics.").

Likewise, *Leventhall* details how "[l]ow frequency noise, considered as the frequency range from about 10Hz to 200Hz, causes extreme distress to a number of people who are sensitive to its effects." Leventhall at 59. "The World Health Organization recognizes the special place of low frequency noise as an environmental problem." *Id.*

Likewise, *Berger* details "suggested limits for exposures to very low and very high frequency acoustical energy" Berger at 1.

Likewise, *Duck* details "international standards and national regulations" for "[p]rotection from inappropriate or hazardous exposure to ultrasound." Duck at 177.

The benefits of combining each of the above combinations' teachings and *Wiernicki*, or *Leventhall*, or *Berger*, or *Duck*, to provide modified sounds from the ambient environment, including but not limited to accounting for and modifying audio based on risk of harm to a user's hearing, would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(lxxvi) Each of the Above Combinations in further view of the teachings of the references disclosed in Exhibit A-27

As another example, a POSITA would have been motivated to combine each of the above combinations with the teachings of the references discloses in Exhibit A-27. Exhibit A-27 demonstrates how each of the elements of the '906 patent were well known in the prior art. As demonstrated by Exhibit A-27, each element of the Asserted Claims of the '906 patent was well-known. To the extent that any one of the combinations above does not render obvious one or more Asserted Claims of the '906 patent, the claim would have been obvious based on the combination in view of one or more of the references discloses in Exhibit A-27.

All of the combinations above and the references in Exhibit A-27 are analogous because they are directed to the same field of endeavor. The benefits of combining each of the above combinations' teachings with one or more of the references in Exhibit A-27 to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

b. '736 Patent

In addition to the motivations to combine set forth above, in Section III.C and in IPR2026-00084 (which are expressly incorporated herein), the POSITA would have had specific motivations to combine the exemplary prior art to arrive at the inventions claimed in the '736 patent for the exemplary reasons that follow:

(i) DiCenso641-Smith

Likewise, a POSITA would have been motivated to combine *DiCenso641* and *Smith* for the same reasons described in Section III.D.2.a(i).

(ii) DiCenso641-Anderson

Likewise, a POSITA would have been motivated to combine *DiCenso641-Anderson* for the same reasons described in Section III.D.2.a(ii).

(iii) DiCenso641-Bradford

Likewise, a POSITA would have been motivated to combine *DiCenso641-Bradford* for the same reasons described in Section III.D.2.a(iii).

(iv) DiCenso641-Stetzler

Likewise, a POSITA would have been motivated to combine *DiCenso641-Stetzler* for the same reasons described in Section III.D.2.a(iv).

(v) DiCenso641-Park519

Likewise, a POSITA would have been motivated to combine *DiCenso641-Stetzler* for the same reasons described in Section III.D.2.a(v).

(vi) Anderson-Smith

Likewise, a POSITA would have been motivated to combine *Anderson* and *Smith* for the same reasons described in Section III.D.2.a(vi).

(vii) Anderson-DiCenso641

Likewise, a POSITA would have been motivated to combine *Anderson* and *DiCenso641* for the same reasons described in Section III.D.2.a(vii).

(viii) Anderson-Bradford

Likewise, a POSITA would have been motivated to combine *Anderson* and *Bradford* for the same reasons described in Section III.D.2.a(viii).

(ix) Anderson-Stetzler

Likewise, a POSITA would have been motivated to combine *Anderson* and *Stetzler* for the same reasons described in Section III.D.2.a(ix).

(x) Anderson-Park519

Likewise, a POSITA would have been motivated to combine *Anderson* and *Park519* for the same reasons described in Section III.D.2.a(x).

(xi) Bradford-Smith

Likewise, a POSITA would have been motivated to combine *Bradford* and *Smith* for the same reasons described in Section III.D.2.a(xi).

(xii) Bradford-DiCenso641

Likewise, a POSITA would have been motivated to combine *Bradford* and *DiCenso641* for the same reasons described in Section III.D.2.a(xii).

(xiii) Bradford-Anderson

Likewise, a POSITA would have been motivated to combine *Bradford* and *Anderson* for the same reasons described in Section III.D.2.a(xiii).

(xiv) Bradford-Stetzler

Likewise, a POSITA would have been motivated to combine *Bradford* and *Stetzler* for the same reasons described in Section III.D.2.a(xiv).

(xv) Bradford-Park519

Likewise, a POSITA would have been motivated to combine *Bradford* and *Park519* for the same reasons described in Section III.D.2.a(xv).

(xvi) Stetzler-Smith

Likewise, a POSITA would have been motivated to combine *Stetzler* and *Smith* for the same reasons described in Section III.D.2.a(xvi).

(xvii) Stetzler-DiCenso641

Likewise, a POSITA would have been motivated to combine *Stetzler* and *DiCenso641* for the same reasons described in Section III.D.2.a(xvii).

(xviii) Stetzler-Anderson

Likewise, a POSITA would have been motivated to combine *Stetzler* and *Anderson* for the same reasons described in Section III.D.2.a(xviii).

(xix) Stetzler-Bradford

Likewise, a POSITA would have been motivated to combine *Stetzler* and *Bradford* for the same reasons described in Section III.D.2.a(xix).

(xx) Stetzler-Park519

Likewise, a POSITA would have been motivated to combine *Stetzler* and *Park519* for the same reasons described in Section III.D.2.a(xx).

(xxi) Park519-Smith

Likewise, a POSITA would have been motivated to combine *Park519* and *Smith* for the same reasons described in Section III.D.2.a(xxi).

(xxii) Park519-DiCenso641

Likewise, a POSITA would have been motivated to combine *Park519* and *Anderson* for the same reasons described in Section III.D.2.a(xxii).

(xxiii) Park519-Anderson

Likewise, a POSITA would have been motivated to combine *Park519* and *Anderson* for the same reasons described in Section III.D.2.a(xxiii).

(xxiv) Park519-Bradford

Likewise, a POSITA would have been motivated to combine *Park519* and *Bradford* for the same reasons described in Section III.D.2.a(xxiv).

(xxv) Park519-Stetzler

Likewise, a POSITA would have been motivated to combine *Park519* and *Stetzler* for the same reasons described in Section III.D.2.a(xxv).

(xxvi) Park521-Bonnick

Likewise, a POSITA would have been motivated to combine *Park521* and *Bonnick* for the same reasons described in Section III.D.2.a(xxvi).

(xxvii) Park521-Hall

Likewise, a POSITA would have been motivated to combine *Park521* and *Hall* for the same reasons described in Section III.D.2.a(xxvii).

(xxviii) Lifestyle V20-Park521

Likewise, a POSITA would have been motivated to combine Lifestyle V20 and *Park521* for the same reasons described in Section III.D.2.a(xxviii).

(xxix) Lifestyle Series-Park521

Likewise, a POSITA would have been motivated to combine Lifestyle Series and *Park521* for the same reasons described in Section III.D.2.a(xxix).

(xxx) Sonarworks Devices-DiCenso641

Likewise, a POSITA would have been motivated to combine Sonarworks Devices and DiCenso641for the same reasons described in Section III.D.2.a(xxx).

(xxxi) Sonarworks Devices-Smith

Likewise, a POSITA would have been motivated to combine Sonarworks Devices and *Smith* for the same reasons described in Section III.D.2.a(xxxi).

(xxxii) Sonarworks Devices-Anderson

Likewise, a POSITA would have been motivated to combine Sonarworks Devices and *Anderson* for the same reasons described in Section III.D.2.a(xxxii).

(xxxiii) Sonarworks Devices-Bradford

Likewise, a POSITA would have been motivated to combine Sonarworks Devices and *Bradford* for the same reasons described in Section III.D.2.a(xxxiii).

(xxxiv)Sonarworks Devices-Stetzler

Likewise, a POSITA would have been motivated to combine Sonarworks Devices and *Stetzler* for the same reasons described in Section III.D.2.a(xxxiv).

(xxxv) Sonarworks Devices-Park519

Likewise, a POSITA would have been motivated to combine Sonarworks Devices and *Park519* for the same reasons described in Section III.D.2.a(xxxv).

(xxxvi)Plantronics Devices-DiCenso641

Likewise, a POSITA would have been motivated to combine Plantronics Devices and *DiCenso641* for the same reasons described in Section III.D.2.a(xxxvi).

(xxxvii) Plantronics Devices-Smith

Likewise, a POSITA would have been motivated to combine Plantronics Devices and *Smith* for the same reasons described in Section III.D.2.a(xxxvii).

(xxxviii) Plantronics Devices-Anderson

Likewise, a POSITA would have been motivated to combine Plantronics Devices and *Anderson* for the same reasons described in Section III.D.2.a(xxxviii).

(xxxix)Plantronics Devices-Bradford

Likewise, a POSITA would have been motivated to combine Plantronics Devices and *Bradford* for the same reasons described in Section III.D.2.a(xxxix).

(xl) Plantronics Devices-Stetzler

Likewise, a POSITA would have been motivated to combine Plantronics Devices and *Stetzler* for the same reasons described in Section III.D.2.a(xl).

(xli) Plantronics Devices-Park519

Likewise, a POSITA would have been motivated to combine Plantronics Devices and *Park519* for the same reasons described in Section III.D.2.a(xli).

(xlii) Etymotic Devices-DiCenso641

Likewise, a POSITA would have been motivated to combine Etymotic Devices and *DiCenso641* for the same reasons described in Section III.D.2.a(xlii).

(xliii) Etymotic Devices-Smith

Likewise, a POSITA would have been motivated to combine Etymotic Devices and *Smith* for the same reasons described in Section III.D.2.a(xliii).

(xliv) Etymotic Devices-Anderson

Likewise, a POSITA would have been motivated to combine Etymotic Devices and *Anderson* for the same reasons described in Section III.D.2.a(xliv).

(xlv) Etymotic Devices-Bradford

Likewise, a POSITA would have been motivated to combine Etymotic Devices and *Bradford* for the same reasons described in Section III.D.2.a(xlv).

(xlvi) Etymotic Devices-Stetzler

Likewise, a POSITA would have been motivated to combine Etymotic Devices and *Stetzler* for the same reasons described in Section III.D.2.a(xlvi).

(xlvii) Etymotic Devices-Park519

Likewise, a POSITA would have been motivated to combine Etymotic Devices and *Park519* for the same reasons described in Section III.D.2.a(xlvii).

(xlviii) Peltor Devices-DiCenso641

Likewise, a POSITA would have been motivated to combine Peltor Devices and *DiCenso641* for the same reasons described in Section III.D.2.a(xlviii).

(xlix) Peltor Devices-Smith

Likewise, a POSITA would have been motivated to combine Peltor Devices and *Smith* for the same reasons described in Section III.D.2.a(xlix).

(l) Peltor Devices-Anderson

Likewise, a POSITA would have been motivated to combine Peltor Devices and *Anderson* for the same reasons described in Section III.D.2.a(l).

(li) Peltor Devices-Bradford

Likewise, a POSITA would have been motivated to combine Peltor Devices and *Bradford* for the same reasons described in Section III.D.2.a(li).

(lii) Peltor Devices-Stetzler

Likewise, a POSITA would have been motivated to combine Peltor Devices and *Stetzler* for the same reasons described in Section III.D.2.a(lii).

(liii) Peltor Devices-Park519

Likewise, a POSITA would have been motivated to combine Peltor Devices and *Park519* for the same reasons described in Section III.D.2.a(liii).

(liv) Honeywell/PIP Devices-DiCenso641

Likewise, a POSITA would have been motivated to combine Honeywell/PIP Devices and *DiCenso641* for the same reasons described in Section III.D.2.a(liv).

(lv) Honeywell/PIP Devices-Smith

Likewise, a POSITA would have been motivated to combine Honeywell/PIP Devices and *Bradford* for the same reasons described in Section III.D.2.a(lv).

(lvi) Honeywell/PIP Devices-Anderson

Likewise, a POSITA would have been motivated to combine Honeywell/PIP Devices and *Anderson* for the same reasons described in Section III.D.2.a(lvi).

(lvii) Honeywell/PIP Devices-Bradford

Likewise, a POSITA would have been motivated to combine Honeywell/PIP Devices and *Bradford* for the same reasons described in Section III.D.2.a(lvii).

(lviii) Honeywell/PIP Devices-Stetzler

Likewise, a POSITA would have been motivated to combine Honeywell/PIP Devices and *Stetzler* for the same reasons described in Section III.D.2.a(lviii).

(lix) Honeywell/PIP Devices-Park519

Likewise, a POSITA would have been motivated to combine Honeywell/PIP Devices and *Park519* for the same reasons described in Section III.D.2.a(lix).

(lx) Liberator II Tactical Headset Series-DiCenso641

Likewise, a POSITA would have been motivated to combine Liberator II Tactical Headset Series and *DiCenso641* for the same reasons described in Section III.D.2.a(lx).

(lxi) Liberator II Tactical Headset Series-Smith

Likewise, a POSITA would have been motivated to combine Liberator II Tactical Headset Series and *Smith* for the same reasons described in Section III.D.2.a(lxi).

(lxii) Liberator II Tactical Headset Series-Anderson

Likewise, a POSITA would have been motivated to combine Liberator II Tactical Headset Series and *Anderson* for the same reasons described in Section III.D.2.a(lxii).

(lxiii) Liberator II Tactical Headset Series-Bradford

Likewise, a POSITA would have been motivated to combine Liberator II Tactical Headset Series and *Bradford* for the same reasons described in Section III.D.2.a(lxiii).

(lxiv) Liberator II Tactical Headset Series-Stetzler

Likewise a POSITA would have been motivated to combine Liberator II Tactical Headset Series and *Stetzler* for the same reasons described in Section III.D.2.a(lxiv).

(lxv) Liberator II Tactical Headset Series-Park519

Likewise a POSITA would have been motivated to combine Liberator II Tactical Headset Series and *Park519* for the same reasons described in Section III.D.2.a(lxv).

(lxvi) MSA Devices-DiCenso641

Likewise, a POSITA would have been motivated to combine MSA Devices and *DiCenso641* for the same reasons described in Section III.D.2.a(lxvi).

(lxvii) MSA Devices-Smith

Likewise, a POSITA would have been motivated to combine MSA Devices and *Smith* for the same reasons described in Section III.D.2.a(lxvii).

(lxviii) MSA Devices-Anderson

Likewise, a POSITA would have been motivated to combine MSA Devices and *Anderson* for the same reasons described in Section III.D.2.a(lxviii).

(lxix) MSA Devices-Bradford

Likewise, a POSITA would have been motivated to combine MSA Devices and *Bradford* for the same reasons described in Section III.D.2.a(lxix).

(lxx) MSA Devices-Stetzler

Likewise, a POSITA would have been motivated to combine MSA Devices and *Stetzler* for the same reasons described in Section III.D.2.a(lxx).

(lxxi) MSA Devices-Park519

Likewise, a POSITA would have been motivated to combine MSA Devices and *Park519* for the same reasons described in Section III.D.2.a(lxxi).

(lxxii) Each of the Above Combinations and in further view of Goldstein873, or Terlizzi283, or Zhang, or Widner

Likewise, a POSITA would have been motivated to combine each of the above combinations and *Goldstein873*, or *Terlizzi283*, or *Zhang*, or *Widner* for the same reasons described in Section III.D.2.a(lxxii).

(lxxiii) Each of the Above Combinations and in further view of Warren, or Terlizzi283, or Zhang

Likewise, a POSITA would have been motivated to combine each of the above combinations and *Warren*, or *Terlizzi283*, or *Zhang* for the same reasons described in Section III.D.2.a(lxxiv).

(lxxiv) Each of the Above Combinations and in further view of DiCenso645, or Terlizzi710, or Reuss

As another example, a POSITA would have been motivated to combine each of the above combinations and *DiCenso645*, or *Terlizzi710*, or *Reuss*. For example, each of the above combinations include earpieces with at least one microphone and a speaker that modify the auditory environment for the user. *See* Sections III.D.2.b(i)-III.D.2.b(lxxi).

Likewise, *DiCenso645* is generally directed to "a method for providing audio enhancement to a user of a listening device" that "includes, in response to detecting the voice trigger, pausing or attenuating the first audio stream and reproducing a second audio stream associated with ambient sound." *DiCenso645* at [0007]. *DiCenso645* explains that "the listening device 100 may include a pair of headphones, such as the over-the-ear headphones …. However, any type of wired or wireless headphones, including … in-ear headphones, may be used …." *Id.* at [0024].

Likewise, *Terlizzi710* details a headset including a display system "for providing visual feedback." *Terlizzi710* at [0119]. "The display system may be a complex display system comprising an LED or other related display device capable of displaying graphical information and/or it may be an indicator assembly that only provides simple visual feedback as for example via an LED assembly." *Id.*

Likewise, *Reuss* details a technique for reducing the power consumed by "a wireless headset with an integrated display." *Reuss* at 2:28–33. The integrated display may be an LCD for displaying alphanumeric data." *Id.* at 10:12–33.

The benefits of combining each of the above combinations' teachings with *DiCenso645*, or *Terlizzi710*, or *Reuss*, to provide modified sounds from the ambient environment, including but not limited to providing visual indicators on earpieces, would have been clear, predictable,

and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(lxxv) Each of the Above Combinations in further view of the teachings of the references disclosed in Exhibit B-27

As another example, a POSITA would have been motivated to combine each of the above combinations with the teachings of the references discloses in Exhibit B-27. Exhibit B-27 demonstrates how each of the elements of the '906 patent were well known in the prior art. As demonstrated by Exhibit B-27, each element of the Asserted Claims of the '906 patent was well-known. To the extent that any one of the combinations above does not render obvious one or more Asserted Claims of the '906 patent, the claim would have been obvious based on the combination in view of one or more of the references discloses in Exhibit B-27.

All of the combinations above and the references in Exhibit B-27 are analogous because they are directed to the same field of endeavor. The benefits of combining each of the above combinations' teachings with one or more of the references in Exhibit B-27 to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of

one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

c. '016 Patent

In addition to the motivations to combine set forth above, in Section III.C and in IPR2026-00085 (which are expressly incorporated herein), the POSITA would have had specific motivations to combine the exemplary prior art to arrive at the inventions claimed in the '016 patent for the exemplary reasons that follow:

(i) Goldstein873-Newham

A POSITA would have been motivated to combine *Goldstein873* and *Newham.*

For example, both *Goldstein873* and *Newham* disclose earpieces with similar components including a processor, microphone, and speaker. *Goldstein873*, [0024], [0027] (describing earpiece 100 including an Ambient Sound Microphone (ASM) 110, an Ear Canal Receiver (ECR) 120 to deliver audio to an ear canal 140, an ear canal microphone (ECM) 130, and a processor 206 operatively coupled to the ASM 110, ECR 120, and ECM 130), [0029] (also describing earpiece 100 as including a power supply 210 "for supplying energy to the components of the earpiece 100"); *Newham*, [0064] (describing *Newham*'s wireless earpiece as including one or more physical buttons, a speaker, and a microphone, all coupled to a processor, as well as a battery). Both *Goldstein873* and *Newham* disclose earpieces that operate in a "master-slave arrangement. *Goldstein873* at [0030] (stating that earpiece 100 can represent "a

single operational device or a family of devices configured in a master-slave arrangement," and that "the components of the earpiece 100 can be reused in different form factors for the master and slave devices"); *Newham* at [0046] (stating that "the first earpiece 206, by operating as the master device, may both send and receive information in such streams, which may cause the first earpiece 206 to deplete its battery faster than the slave devices (e.g., second earpiece 208)").

The benefits of combining *Goldstein873*'s teachings with *Newham* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(ii) Goldstein458-Newham

A POSITA would have been motivated to combine *Goldstein458* and *Newham.*

For example, both *Goldstein458* and *Newham* disclose earpieces with similar components including a processor, microphone, and speaker. *Goldstein458*, [0025], [0028] (describing earpiece 100 including an Ambient Sound Microphone (ASM) 110, an Ear Canal Receiver (ECR) 120 to deliver audio to an ear canal, an ear canal microphone (ECM) 130, and a processor 206 operatively coupled to the ASM 110, ECR 120, and ECM 130), [0031] (also describing earpiece 100 as including a power supply 210 "for supplying energy to the components of the

earpiece 100"); *Newham*, [0064] (describing *Newham*'s wireless earpiece as including one or more physical buttons, a speaker, and a microphone, all coupled to a processor, as well as a battery). Both *Goldstein458* and *Newham* disclose earpieces that operate in a "master-slave arrangement. *Goldstein458* at [0032] (stating that earpiece 100 can represent "a single operational device or a family of devices configured in a master-slave arrangement," and that "the components of the earpiece 100 can be reused in different form factors for the master and slave devices"); *Newham* at [0046] (stating that "the first earpiece 206, by operating as the master device, may both send and receive information in such streams, which may cause the first earpiece 206 to deplete its battery faster than the slave devices (e.g., second earpiece 208)").

The benefits of combining *Goldstein458*'s teachings with *Newham* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(iii) Goldstein416-Newham

A POSITA would have been motivated to combine *Goldstein416* and *Newham.*

For example, both *Goldstein416* and *Newham* disclose earpieces with similar components including a processor, microphone, and speaker. *Goldstein416* at [0176], [0181] (describing

earpiece 100 including an Ambient Sound Microphone (ASM) 104, an Ear Canal Receiver (ECR) 102 to deliver audio to an ear canal, an Ear Canal Microphone (ECM) 110, and a processor 106 operatively coupled to the ASM 104, ECR 102, and ECM 110), [0188] (also describing earpiece 100 as including a power supply 136 "for supplying energy to the components of the earpiece 100"); *Newham*, [0064] (describing *Newham*'s wireless earpiece as including one or more physical buttons, a speaker, and a microphone, all coupled to a processor, as well as a battery). Both *Goldstein416* and *Newham* disclose earpieces that operate in a "master-slave arrangement. *Goldstein416* at [0189] ("earpiece 100 can further represent a single operational device or a family of devices configured in a master-slave arrangement, for example, a mobile device and an earpiece;" and "the components of the earpiece 100 can be reused in different form factors for the master and slave devices"); *Newham* at [0046] (stating that "the first earpiece 206, by operating as the master device, may both send and receive information in such streams, which may cause the first earpiece 206 to deplete its battery faster than the slave devices (e.g., second earpiece 208)").

The benefits of combining *Goldstein416*'s teachings with *Newham* to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA

would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

(iv) Anderson-Smith

Likewise, a POSITA would have been motivated to combine *Anderson* and *Smith* for the same reasons described in Section III.D.2.a(v).

(v) Anderson-DiCenso641

Likewise, a POSITA would have been motivated to combine *Anderson* and *DiCenso641* for the same reasons described in Section III.D.2.a(ii).

(vi) Anderson-Bradford

Likewise, a POSITA would have been motivated to combine *Anderson* and *Bradford* for the same reasons described in Section III.D.2.a(viii).

(vii) Anderson-Stetzler

Likewise, a POSITA would have been motivated to combine *Anderson* and *Stetzler* for the same reasons described in Section III.D.2.a(ix).

(viii) Anderson-Park519

Likewise, a POSITA would have been motivated to combine *Anderson* and *Park519* for the same reasons described in Section III.D.2.a(x).

(ix) Bradford-Smith

Likewise, a POSITA would have been motivated to combine *Bradford* and *Stetzler* for the same reasons described in Section III.D.2.a(xi).

(x) Bradford-DiCenso641

Likewise, a POSITA would have been motivated to combine *Bradford* and *Stetzler* for the same reasons described in Section III.D.2.a(xii).

(xi) Bradford-Anderson

Likewise, a POSITA would have been motivated to combine *Bradford* and *Anderson* for the same reasons described in Section III.D.2.a(xiii).

(xii) Bradford-Stetzler

Likewise, a POSITA would have been motivated to combine *Bradford* and *Stetzler* for the same reasons described in Section III.D.2.a(xiv).

(xiii) Bradford-Park519

Likewise, a POSITA would have been motivated to combine *Bradford* and *Park519* for the same reasons described in Section III.D.2.a(xv).

(xiv) Stetzler-Smith

Likewise, a POSITA would have been motivated to combine *Stetzler* and *Smith* for the same reasons described in Section III.D.2.a(xvi).

(xv) Stetzler-DiCenso641

Likewise, a POSITA would have been motivated to combine *Stetzler* and *DiCenso641* for the same reasons described in Section III.D.2.a(xvii).

(xvi) Stetzler-Anderson

Likewise, a POSITA would have been motivated to combine *Stetzler* and *Anderson* for the same reasons described in Section III.D.2.a(xviii).

(xvii) Stetzler-Bradford

Likewise, a POSITA would have been motivated to combine *Stetzler* and *Bradford* for the same reasons described in Section III.D.2.a(xix).

(xviii) Stetzler-Park519

Likewise, a POSITA would have been motivated to combine *Stetzler* and *Park519* for the same reasons described in Section III.D.2.a(xx).

(xix) Park519-Smith

Likewise, a POSITA would have been motivated to combine *Park519* and *Smith* for the same reasons described in Section III.D.2.a(xxi).

(xx) Park519-DiCenso641

Likewise, a POSITA would have been motivated to combine *Park519* and *DiCenso641* for the same reasons described in Section III.D.2.a(xxii).

(xxi) Park519-Anderson

Likewise, a POSITA would have been motivated to combine *Park519* and *Anderson* for the same reasons described in Section III.D.2.a(xxiii).

(xxii) Park519-Bradford

Likewise, a POSITA would have been motivated to combine *Park519* and *Bradford* for the same reasons described in Section III.D.2.a(xxiv).

(xxiii) Park519-Stetzler

Likewise, a POSITA would have been motivated to combine *Park519* and *Stetzler* for the same reasons described in Section III.D.2.a(xxv).

(xxiv) Park521-Bonnick

Likewise, a POSITA would have been motivated to combine *Park521* and *Bonnick* for the same reasons described in Section III.D.2.a(xxvi).

(xxv) Park521-Hall

Likewise, a POSITA would have been motivated to combine *Park521* and *Hall* for the same reasons described in Section III.D.2.a(xxvii).

(xxvi) Lifestyle V20-Park521

Likewise, a POSITA would have been motivated to combine Lifestyle V20 and *Park521* for the same reasons described in Section III.D.2.a(xxviii).

(xxvii) Lifestyle Series-Park521

Likewise, a POSITA would have been motivated to combine Lifestyle Series and *Park521* for the same reasons described in Section III.D.2.a(xxix).

(xxviii) Sonarworks Devices-DiCenso641

Likewise, a POSITA would have been motivated to combine Sonarworks Devices and DiCenso641for the same reasons described in Section III.D.2.a(xxx).

(xxix) Sonarworks Devices-Smith

Likewise, a POSITA would have been motivated to combine Sonarworks Devices and *Smith* for the same reasons described in Section III.D.2.a(xxxi).

(xxx) Sonarworks Devices-Anderson

Likewise, a POSITA would have been motivated to combine Sonarworks Devices and *Anderson* for the same reasons described in Section III.D.2.a(xxxii).

(xxxi) Sonarworks Devices-Bradford

Likewise, a POSITA would have been motivated to combine Sonarworks Devices and *Bradford* for the same reasons described in Section III.D.2.a(xxxiii).

(xxxii) Sonarworks Devices-Stetzler

Likewise, a POSITA would have been motivated to combine Sonarworks Devices and *Stetzler* for the same reasons described in Section III.D.2.a(xxxiv).

(xxxiii) Sonarworks Devices-Park519

Likewise, a POSITA would have been motivated to combine Sonarworks Devices and *Park519* for the same reasons described in Section III.D.2.a(xxxv).

(xxxiv)Plantronics Devices-DiCenso641

Likewise, a POSITA would have been motivated to combine Plantronics Devices and *DiCenso641* for the same reasons described in Section III.D.2.a(xxxvi).

(xxxv) Plantronics Devices-Smith

Likewise, a POSITA would have been motivated to combine Plantronics Devices and *Smith* for the same reasons described in Section III.D.2.a(xxxvii).

(xxxvi)Plantronics Devices-Anderson

Likewise, a POSITA would have been motivated to combine Plantronics Devices and *Anderson* for the same reasons described in Section III.D.2.a(xxxviii).

(xxxvii) Plantronics Devices-Bradford

Likewise, a POSITA would have been motivated to combine Plantronics Devices and *Bradford* for the same reasons described in Section III.D.2.a(xxxix).

(xxxviii) Plantronics Devices-Stetzler

Likewise, a POSITA would have been motivated to combine Plantronics Devices and *Stetzler* for the same reasons described in Section III.D.2.a(xl).

(xxxix)Plantronics Devices-Park519

Likewise, a POSITA would have been motivated to combine Plantronics Devices and *Park519* for the same reasons described in Section III.D.2.a(xli).

(xl) Etymotic Devices-DiCenso641

Likewise, a POSITA would have been motivated to combine Etymotic Devices and *DiCenso641* for the same reasons described in Section III.D.2.a(xlii).

(xli) Etymotic Devices-Smith

Likewise, a POSITA would have been motivated to combine Etymotic Devices and *Smith* for the same reasons described in Section III.D.2.a(xliii).

(xlii) Etymotic Devices-Anderson

Likewise, a POSITA would have been motivated to combine Etymotic Devices and *Anderson* for the same reasons described in Section III.D.2.a(xliv).

(xliii) Etymotic Devices-Bradford

Likewise, a POSITA would have been motivated to combine Etymotic Devices and *Bradford* for the same reasons described in Section III.D.2.a(xlv).

(xliv) Etymotic Devices-Stetzler

Likewise, a POSITA would have been motivated to combine Etymotic Devices and *Stetzler* for the same reasons described in Section III.D.2.a(xlvi).

(xlv) Etymotic Devices-Park519

Likewise, a POSITA would have been motivated to combine Etymotic Devices and *Park519* for the same reasons described in Section III.D.2.a(xlvii).

(xlvi) Peltor Devices-DiCenso641

Likewise, a POSITA would have been motivated to combine Peltor Devices and *DiCenso641* for the same reasons described in Section III.D.2.a(xlviii).

(xlvii) Peltor Devices-Smith

Likewise, a POSITA would have been motivated to combine Peltor Devices and *Smith* for the same reasons described in Section III.D.2.a(xlix).

(xlviii) Peltor Devices-Anderson

Likewise, a POSITA would have been motivated to combine Peltor Devices and *Anderson* for the same reasons described in Section III.D.2.a(l).

(xlix) Peltor Devices-Bradford

Likewise, a POSITA would have been motivated to combine Peltor Devices and *Bradford* for the same reasons described in Section III.D.2.a(li).

(l) Peltor Devices-Stetzler

Likewise, a POSITA would have been motivated to combine Peltor Devices and *Stetzler* for the same reasons described in Section III.D.2.a(lii).

(li) Peltor Devices-Park519

Likewise, a POSITA would have been motivated to combine Peltor Devices and *Park519* for the same reasons described in Section III.D.2.a(liii).

(lii) Honeywell/PIP Devices-DiCenso641

Likewise, a POSITA would have been motivated to combine Honeywell/PIP Devices and *DiCenso641* for the same reasons described in Section III.D.2.a(liv).

(liii) Honeywell/PIP Devices-Smith

Likewise, a POSITA would have been motivated to combine Honeywell/PIP Devices and *Bradford* for the same reasons described in Section III.D.2.a(lv).

(liv) Honeywell/PIP Devices-Anderson

Likewise, a POSITA would have been motivated to combine Honeywell/PIP Devices and *Anderson* for the same reasons described in Section III.D.2.a(lvi).

(lv) Honeywell/PIP Devices-Bradford

Likewise, a POSITA would have been motivated to combine Honeywell/PIP Devices and *Bradford* for the same reasons described in Section III.D.2.a(lvii).

(lvi) Honeywell/PIP Devices-Stetzler

Likewise, a POSITA would have been motivated to combine Honeywell/PIP Devices and *Stetzler* for the same reasons described in Section III.D.2.a(lviii).

(lvii) Honeywell/PIP Devices-Park519

Likewise, a POSITA would have been motivated to combine Honeywell/PIP Devices and *Park519* for the same reasons described in Section III.D.2.a(lix).

(lviii) Liberator II Tactical Headset Series-DiCenso641

Likewise, a POSITA would have been motivated to combine Liberator II Tactical Headset Series and *DiCenso641* for the same reasons described in Section III.D.2.a(lx).

(lix) Liberator II Tactical Headset Series-Smith

Likewise, a POSITA would have been motivated to combine Liberator II Tactical Headset Series and *Smith* for the same reasons described in Section III.D.2.a(lxi).

(lx) Liberator II Tactical Headset Series-Anderson

Likewise, a POSITA would have been motivated to combine Liberator II Tactical Headset Series and *Anderson* for the same reasons described in Section III.D.2.a(lxii).

(lxi) Liberator II Tactical Headset Series-Bradford

Likewise, a POSITA would have been motivated to combine Liberator II Tactical Headset Series and *Bradford* for the same reasons described in Section III.D.2.a(lxiii).

(lxii) Liberator II Tactical Headset Series-Stetzler

Likewise a POSITA would have been motivated to combine Liberator II Tactical Headset Series and *Stetzler* for the same reasons described in Section III.D.2.a(lxiv).

(lxiii) Liberator II Tactical Headset Series-Park519

Likewise a POSITA would have been motivated to combine Liberator II Tactical Headset Series and *Park519* for the same reasons described in Section III.D.2.a(lxv).

(lxiv) MSA Devices-DiCenso641

Likewise, a POSITA would have been motivated to combine MSA Devices and *DiCenso641* for the same reasons described in Section III.D.2.a(lxvi).

(lxv) MSA Devices-Smith

Likewise, a POSITA would have been motivated to combine MSA Devices and *Smith* for the same reasons described in Section III.D.2.a(lxvii).

(lxvi) MSA Devices-Anderson

Likewise, a POSITA would have been motivated to combine MSA Devices and *Anderson* for the same reasons described in Section III.D.2.a(lxviii).

(lxvii) MSA Devices-Bradford

Likewise, a POSITA would have been motivated to combine MSA Devices and *Bradford* for the same reasons described in Section III.D.2.a(lxix).

(lxviii) MSA Devices-Stetzler

Likewise, a POSITA would have been motivated to combine MSA Devices and *Stetzler* for the same reasons described in Section III.D.2.a(lxx).

(lxix) MSA Devices-Park519

Likewise, a POSITA would have been motivated to combine MSA Devices and *Park519* for the same reasons described in Section III.D.2.a(lxxi).

(lxx) Each of the Above Combinations in further view of the teachings of the references disclosed in Exhibit C-27

As another example, a POSITA would have been motivated to combine each of the above combinations with the teachings of the references discloses in Exhibit C-27. Exhibit C-27 demonstrates how each of the elements of the ’906 patent were well known in the prior art. As demonstrated by Exhibit C-27, each element of the Asserted Claims of the ’906 patent was well-known. To the extent that any one of the combinations above does not render obvious one or more Asserted Claims of the ’906 patent, the claim would have been obvious based on the combination in view of one or more of the references discloses in Exhibit C-27.

All of the combinations above and the references in Exhibit C-27 are analogous because they are directed to the same field of endeavor. The benefits of combining each of the above combinations’ teachings with one or more of the references in Exhibit C-27 to provide modified sounds from the ambient environment would have been clear, predictable, and obvious to a person of ordinary skill. Such a combination would have amounted to (i) combining prior art elements according to known methods to yield predictable results, (ii) the simple substitution of

one known element to another to obtain predictable results, (iii) the use of a known technique to improve similar devices in the same way, (iv) the application of a known technique to a known device ready for improvement to yield predictable results, and/or (v) known work in one field of endeavor prompting variations of it for use in the same or different field based on design incentives or other market forces if the variations are predictable to a POSITA. A POSITA would have had a reasonable expectation of success because such a combination would have required nothing more than a POSITA's routine skill.

IV. THE ASSERTED PATENTS ARE INVALID UNDER 35 U.S.C. § 112

Based on Samsung's present understanding of Zophonos's asserted scope of the claims of the Asserted Patents, to the extent such positions can be understood from Zophonos's Infringement Contentions, and to the extent Zophonos contends that the Asserted Claims are not anticipated or obvious in view of the prior art, Samsung contends that the following limitations render the Asserted Claims invalid based on 35 U.S.C. § 112.

Pursuant to P.R. 3-3(d), Samsung hereby identifies the below grounds upon which the Asserted Claims are invalid based on 35 U.S.C. § 112. Below are exemplary limitations that are invalid for failing to comply with these requirements. Samsung contends that each dependent claim that depends from an independent claim that is invalid, as identified below, is also invalid for the same reasons. Samsung reserves the right to raise and address, once the parties have exchanged claim terms and constructions, any indefiniteness issues arising out of those exchanges. Although complete phrases are sometimes identified below, Samsung reserves the right to argue any word or sub-phrase within a larger phrase also violates the requirements of 35 U.S.C. § 112.

A. Legal Background Regarding Section 112 Requirements

Section 112 requires enablement of the claims: "The specification shall contain a written description . . . of the manner and process of making and using [the invention] in such full, clear, concise and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same[.]" 35 U.S.C. § 112(a). To satisfy the enablement requirement, the disclosure "must teach those skilled in the art how to make and use the full scope of the claimed invention without 'undue experimentation.'" *Genentech, Inc. v. Novo Nordisk A/S*, 108 F.3d 1361, 1366 (Fed. Cir. 1997); *MagSil Corp. v. Hitachi Glob. Storage Techs., Inc.*, 687 F.3d 1377, 1381 (Fed. Cir. 2012); *Sitrick v. Dreamworks, LLC*, 516 F.3d 993, 999 (Fed. Cir. 2008). If a specification teaches away from a substantial portion of the claim or does not enable the full scope of the claim, there is no enablement. *AK Steel Corp. v. Sollac*, 344 F.3d 1234 (Fed. Cir. 2003); *see also MagSil Corp.*, 687 F.3d at 1383-84.

Section 112 further includes a written description requirement: "The specification shall contain a written description of the invention[.]" 35 U.S.C. § 112(a). "To satisfy the written description requirement, a patent applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention." *ICU Med. Inc. v. Alaris Med. Sys., Inc.*, 558 F.3d 1368, 1377 (Fed. Cir. 2009) (internal quotation marks and citations omitted); *see also Synthes USA, LLC v. Spinal Kinetics, Inc.*, 734 F.3d 1332, 1340 (Fed. Cir. 2013). "The test [for written description support] requires an objective inquiry into the four corners of the specification from the perspective of a POSITA. Based on that inquiry, the specification must describe an invention understandable to that skilled artisan and show that the inventor actually invented the invention claimed." *Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc).

The specification must describe the claimed invention in sufficient detail so that a POSITA can recognize what is claimed. "The appearance of mere indistinct words in a specification or a claim, even an original claim, does not necessarily satisfy that requirement." *Univ. of Rochester v. G.D. Searle & Co.*, 358 F.3d 916, 923 (Fed. Cir. 2004) (internal quotation marks and citations omitted); *see also Nuvo Pharms. (Ireland) Designated Activity Co. v. Dr. Reddy's Labs. Inc.*, 923 F.3d 1368, 1380 (Fed. Cir. 2019) ("We have expressly rejected the 'argument that the written description requirement … is necessarily met as a matter of law because the claim language appears *in ipsis verbis* in the specification.'" (quoting *Enzo Biochem, Inc. v. Gen-Probe Inc.*, 323 F.3d 956, 968 (Fed. Cir. 2002)).

Section 112 also includes a definiteness requirement: "[T]he specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant [or inventor or joint invention] regards as his invention." 35 U.S.C. § 112(b). "[A] patent is invalid for indefiniteness if its claims, read in light of the patent's specification and prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention." *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2124 (2014).

The definiteness requirement requires that the claim must set forth what the applicant regards as the invention, and do so with sufficient particularity and definiteness. *Allen Eng'g Corp. v. Bartell Indus.*, 299 F.3d 1336, 1348 (Fed. Cir. 2002). Where it would be apparent to one of skill in the art, based on the patent specification, that the "invention" set forth in a claim is not what the patent applicant regarded as the invention, the claim is invalid. *Id.*

B. Invalidity Grounds Under 35 U.S.C. § 112

The grounds identified below both individually and collectively render the Asserted Claims invalid under the statutory requirements of § 112. By identifying certain claim language below,

Samsung does not imply that such language is entitled to any patentable weight when comparing the claim as a whole to the prior art. Samsung's identifications are made based on Samsung's present understanding of the Asserted Claims and Zophonos's apparent interpretation of these claims as reflected in its Infringement Contentions, and Samsung reserves the right to amend these identifications, including in response to claim constructions and claim interpretations that would render claim invalid under Section 112.

Based on Samsung's present understanding of the Asserted Claims and Zophonos's apparent interpretation of these claims as reflected in its Infringement Contentions, the Asserted Claims fail to satisfy one or more of the requirements of Section 112 because one or more claim terms is indefinite, the specifications and original patent applications fail to provide an enabling disclosure of the claimed subject matter, and/or written description support is lacking for at least the following limitations:

'906 Patent:

- "a sound sensing mechanism, configured to sense a noise" (claims 1-3, 6, 8-12, 13, 15, 17-20)
- "the audio control source, in electronic communication the at least one cluster and the at least one output device" (claims 1-3, 6, 8-12, 13, 15, 17-20)
- "identifying one or more sounds within the noise" (claims 1-3, 6, 8-12, 13, 15, 17-20)
- "isolating the one or more sounds" (claims 1-3, 6, 8-12, 13, 15, 17-20)
- "determining if one or more of the one or more sounds includes a frequency outside of a predetermined threshold" (claims 1-3, 6, 8-12, 13, 15, 17-20)

- “if the one or more sounds includes the frequency outside of the predetermined threshold, altering the one or more of the one or more sounds so that the frequency does not fall outside of the predetermined threshold” (claims 1-3, 6, 8-12, 13, 15, 17-20)
- “interfacing mechanism” (claims 2, 12)
- “manipulate the interfacing mechanism” (claims 2, 12)
- “wherein the predetermined threshold equates to a frequency determined to pose a risk of harm to a user’s hearing capabilities” (claim 6, 15)
- “wherein the computer executable instructions further include steps selected from the group consisting of: panning the sensed noise; and equalizing the sensed noise” (claim 8)
- “panning the sensed noise” (claims 8, 17)
- “equalizing the sensed noise” (claims 8, 19)
- “wherein an audio output of the in-ear device auto-adjusts based on signal energy sensed within a cluster or surrounding clusters” (claim 9)
- “wherein the altering the one or more of the one or more sounds so that the frequency does not fall outside of the predetermined threshold is performed automatically” (claims 10, 20)
- “wherein the sound-sensing mechanism is selected from the group consisting of: an omnidirectional transducer, an ultrasonic transducer, an infrasonic transducer, an electro-optical transducer, and a microwave transducer” (claim 13)
- “adding one or more audio effects to the sensed noise” (claim 18)

’736 Patent:

- “data source” (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- “a sound sensing mechanism, configured to sense a noise” (1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- “an electronic bus which is configured to transmit and receive data from the data source, wherein the data source is in electronic communication with the at least one cluster and at least one output device” (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- “identifying one or more sounds within the noise” (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- “isolating the one or more sounds” (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- “determining if one or more of the isolated one or more sounds includes a frequency outside of a predetermined threshold” (claims 1, 3, 8, 9, 11, 13, 17-19, 21, 23, 27, and 28)
- “wherein the computer executable instructions further include steps selected from the group consisting of: panning the sensed noise; and equalizing the sensed noise” (claim 8)
- “panning the sensed noise” (claims 8, 17)
- “equalizing the sensed noise” (claims 8, 19)
- “wherein an audio output of the in-ear device auto-adjusts based on signal energy sensed within a cluster or surrounding clusters” (claim 9)

- "wherein the sound-sensing mechanism is selected from the group consisting of: an omnidirectional transducer, an ultrasonic transducer, an infrasonic transducer, an electro-optical transducer, and a microwave transducer" (claim 13)
- "adding one or more audio effects to the sensed noise" (claim 18)
- "a communication mechanism, for receiving electronic information from the data source" (claims 21, 23)
- "display" (claims 21, 23)
- "if one or more of the isolated one or more sounds includes the frequency outside the predetermined threshold, altering the one or more of the isolated one or more sounds so that the frequency does not fall outside of the predetermined threshold" (claims 27, 28)

'016 Patent:

- "sound sensing mechanism, configured to: detect a sensed energy, wherein the sensed energy comprises one or more sounds; and monitor one or more parameters selected from the group of (i) an amplitude of the one or more sounds and (ii) a frequency of the one or more sounds" (claims 39, 40, 43)
- "detect a sensed energy, wherein the sensed energy comprises one or more sounds" (claim 39, 40, 43)
- "monitor one or more parameters selected from the group of (i) an amplitude of the one or more sounds and (ii) a frequency of the one or more sounds" (claims 39, 40, 43)
- "determining if at least one of the monitored one or more parameters falls outside of a predetermined threshold" (claim 39, 40, 43)

- "if the at least one of the monitored one or more parameters falls outside of the predetermined threshold, altering one or more of the one or more sounds so that at least one of the monitored one or more parameters does not fall outside of the predetermined threshold" (claim 39, 40, 43)
- "sensed energy originated form an … an in-ear device paired with the system" (claim 40)
- "smart speaker" (claim 43)

V. THE ASSERTED PATENTS ARE INVALID Under 35 U.S.C. § 101

A. Legal Background Regarding Patent Eligibility

Patent claims directed to laws of nature, natural phenomena, and abstract ideas are not patent eligible. *Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208, 216 (2014). To determine whether a patent is directed to eligible subject matter, courts apply the two-step *Alice /Mayo* test. *See id*. at 217-18.

First, a court must "determine whether the claims at issue are directed to a patent-ineligible concept," such as an abstract idea. *Id*. at 217. The court must distinguish between ineligible claims covering "general purpose computer components [that] are added post-hoc to a fundamental economic practice or mathematical equation," to those eligible claims that are "directed to a specific implementation of a solution to a problem in the software arts." *See Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1339 (Fed. Cir. 2016). Although many claims may embody abstract ideas at some level, the court's task is to examine "whether the claims [] focus on a specific means or method that improves the relevant technology or are instead directed to a result or effect that itself is the abstract idea and merely invokes generic processes and machinery." *McRO, Inc. v. Bandai Namco Games Am., Inc.*, 837 F.3d 1299, 1314 (Fed. Cir. 2016).

Second, if the challenged claims recite a patent-ineligible concept, the court must then determine if there is an "inventive concept," *i.e.*, "consider the elements of each claim both individually and 'as an ordered combination' to determine whether the additional elements 'transform the nature of the claim' into a patent eligible application." *Alice*, 573 U.S. at 217-18 (quoting *Mayo Collaborative Servs. v. Prometheus Lab'ys, Inc.*, 566 U.S. 66, 78-79 (2012)). It is clear that an "inventive concept" must be "sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [abstract idea] itself." *See Alice*, 573 U.S. at 217-18. To satisfy this step, the claims must "involve more than performance of 'well understood, routine, [and] conventional activities previously known to the industry.'" *Content Extraction & Transmission LLC v. Wells Fargo Bank, Nat'l Ass'n*, 776 F.3d 1343, 1347-48 (Fed. Cir. 2014).

B. Invalidity Grounds Under 35 U.S.C. § 101

First, the Asserted Claims are directed to the abstract idea of data gathering and processing for sound management systems because they are directed to detecting, and/or monitoring for one or more sounds, identifying one or more sounds, determining if the one or more sounds includes an amplitude and/or a frequency, altering the one or more sounds if a threshold value has been met, and outputting the one or more altered sounds on an output device. *See Content Extraction & Transmission LLC*, 776 F.3d at 1347 (holding "the claims of the asserted patents are drawn to the abstract idea of 1) collecting data, 2) recognizing certain data within the collected data set, and 3) storing that recognized data in a memory"). Further, the Asserted Claims fail to recite *how* to implement the systems and methods of data gathering and processing. *See, e.g.*, *Affinity Labs of Texas, LLC v. DIRECTV, LLC*, 838 F.3d 1253, 1258 (Fed. Cir. 2016) (holding that "[t]here is nothing in claim 1 that is directed to *how* to implement out-of-region broadcasting on a cellular telephone").

Second, the Asserted Claims lack an inventive concept and the specification describes no more than well-known, conventional features and components such as microphones for detecting sounds, generic processors for audio signal processing, standard memory for executing processes, and speakers for outputting sound. Indeed, the patent specifications provides: "the apparatus is configurable and uses standard computing devices, such as wearables, tablets, and mobile phones, to measure various frequency bands across multiple points, allowing a single user to visualize and adjust sound output, and in some cases, detect and report hazardous signals." '906 Patent, 9:58-63; '736 Patent, 10:17-22; '016 Patent, 10:15-20. Even when viewed as an ordered combination, the Asserted Claims provide no improvement to computer technology.

For at least these reasons, the Asserted Claims are ineligible for patent protection under the subject matter requirements of Section 101 of the Patent Act. In accordance with the Standing Order Regarding Subject Matter Eligibility Contentions issued by this Court on July 25, 2019, Defendants submit their subject matter eligibility contentions concurrently herewith as Exhibits D, E, and F.

VI. DOCUMENT PRODUCTION ACCOMPANYING PRELIMINARY INVALIDITY CONTENTIONS

Pursuant to P.R. 3-4(a), (b) and concurrently with the service of these Invalidity Contentions, Samsung is producing prior art references and preliminary corroborating evidence concerning prior art systems that do not appear in the file histories of the asserted patents, as well as technical documentation concerning the operation of the Accused Instrumentalities (as defined in Zophonos's Infringement Contentions). SAMSUNG_ZOPHONOS_00021010-30067. Many of these prior art references and corroborating evidence are cited in and support the accompanying invalidity charts. In addition, pursuant to Paragraph 10 of the Protective Order (Dkt. No. 37),

Samsung is making available for inspection upon reasonable request a computer containing source code for the Accused Instrumentalities (as defined in Zophonos's Infringement Contentions).

Dated: January 19, 2026

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CERTIFICATE OF SERVICE

I hereby certify that on January 19, 2026, the foregoing Invalidity Contentions were served or delivered electronically, via email, to all counsel of record.

/s/ Abby L. Parsons
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