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November 21, 2023

APPEAL BRIEF OF PATENT OWNER STATON TECHIYA LLC

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Further to the Notice of Appeal filed September 22, 2023, Appellant hereby submits this Appeal Brief under 37 C.F.R. § 191 according to § 41.37 to appeal the Examiner's rejections of pending claims 1-42 in the above-referenced application under 35 U.S.C. §§305, 112, and 103.

The Commissioner is authorized to charge any required fees or credit any overpayment of fees associated with this submission to Deposit Account No. 11-0980.

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I. REAL PARTIES IN INTEREST

The real party in interest is Staton Techiya LLC.

II. RELATED APPEALS, INTERFERENCES, AND TRIALS

Patent Owner provides the following information regarding other proceedings involving the '836 patent.

The '836 patent was challenged in IPR2022-00410, filed on January 14, 2022. The Patent Trial and Appeal Board ("PTAB") denied institution of IPR on August 12, 2022. *Samsung Elecs. Co., Ltd., et al. v. Staton Techiya, LLC*, IPR2022-00410, Paper 12.

The '836 patent is asserted by Patent Owner in *Staton Techiya, LLC, et al. v. Samsung Elecs. Co., Ltd., et al.*, Case No. 2:21-cv-00413-JRG-RSP (E.D. Tex.). The litigation is pending. Trial is scheduled to begin on December 11, 2023. Certain claim terms of the '836 patent were construed by the court as follows:

Term	Construction
"a processor . . . the processor" (claims 1, 9, 14)	The same processor must perform each of the recited functions.
"An earphone configured to perform an eartip fit test comprising:" (claims 1, 9, 14)	Preamble is limiting.

Ex. 1 at 48, 49. The term "processor" was not construed as subject to 35 U.S.C. §112 ¶6.

Additional pending litigation proceedings involving patents owned by Patent Owner and addressing related technologies include:

Staton Techiya, LLC v. Samsung Electronics Co., Ltd. et al. Case No. 2:23-cv-00319-JRG-RSP (E.D. Tx.) (U.S. Patent Nos. 11,610,587, 11,659,315, 11,665,493, 11,683,643, 11,710,473, and 11,750,965);

Staton Techiya, LLC v. Harman Int'l Indus., Inc., et al. 1:23-cv-00802-CFC-RJB (D. Del.) (U.S. Patent Nos. 11,683,643, 11,665,493, 11,659,315, 11,610,587, 11,521,631, 11,489,966, 8,805,692, 8,150,044, and 8,081,780);

Staton Techiya, LLC v. Harman Int'l Indus., Inc., 1:23-cv-00801-CFC-RJB (D. Del.) (U.S. Patent Nos. 11,610,587, 11,589,329, and 8,319,620).

Additional IPR proceedings involving patents owned by Patent Owner and addressing related technologies include:

Samsung Elecs. Co., Ltd., et al. v. Staton Techiya, LLC, IPR2022-00242 (U.S. Pat. No. 8,111,839);

Samsung Elecs. Co., Ltd., et al. v. Staton Techiya, LLC, IPR2022-00243 (U.S. Pat. No. 8,111,839);

Samsung Elecs. Co., Ltd., et al. v. Staton Techiya, LLC, IPR2022-00282 (U.S. Pat. No. 8,315,400) (not construing “processor” under 35 U.S.C. §112 ¶(6));

Samsung Elecs. Co., Ltd., et al. v. Staton Techiya, LLC, IPR2022-00234 (U.S. Pat. No. 9,124,982);

Samsung Elecs. Co., Ltd., et al. v. Staton Techiya, LLC, IPR2022-00302 (U.S. Pat. No. 9,609,424) (not construing the term “processor” under 35 U.S.C. §112 ¶(6));

Samsung Elecs. Co., Ltd., et al. v. Staton Techiya, LLC, IPR2022-00369 (U.S. Pat. No. 10,405,082);

Samsung Elecs. Co., Ltd., et al. v. Staton Techiya, LLC, IPR2022-00388 (U.S. Pat. No. 10,966,015);

Samsung Elecs. Co., Ltd., et al. v. Staton Techiya, LLC, IPR2022-01098 (U.S. Pat. No. 11,217,237); and

Samsung Elecs. Co., Ltd., et al. v. Staton Techiya, LLC, IPR2022-01099 (U.S. Pat. No. 11,244,666).

III. SUMMARY OF CLAIMED SUBJECT MATTER

U.S. Patent No. 10,979,836 (“the ’836 Patent”), entitled Acoustic Sealing Analysis System, issued to Usher et al. on April 13, 2021. As issued, the patent included 18 claims, of which claims 1, 9, and 14 are independent. As part of this Ex Parte Reexamination proceeding, Patent Owner added additional claims 19-42, of which claims 31, 33, 37, 38, 41, and 42 are independent. Patent Owner has cancelled claims 31-42 from the proceeding, leaving only claims 1-30, including independent claims 1, 9, and 14, at issue here.

In the following summary of independent claims 1, 9, and 14, references to column and line numbers are to those in the ’836 Patent, as issued on April 13, 2021.

Claim 1: An earphone configured to perform an eartip fit test (Figs. 1 and 3, 4:1-29 and 51-63, 7:51-8:19) comprising:

a microphone (Fig. 1, ECM 106; Spec. 4:15-19 and 51-63);

a speaker, where the speaker is configured to emit an audio test signal in response to receiving a test fit signal (Fig. 1, ECR 114; Spec. 4:15-19 and 51-63);

an eartip, configured to seal the earphone between the first side and a second side of the earphone (Fig. 1, sealing unit 108; Spec. 4:15-50);

a memory that stores instructions (Figs. 1, memory 104, Fig. 2, Random Access Memory (RAM) 202, Read Only Memory (ROM) 204; Spec. 4:51-63, 5:58-67, 6:39-53, and 8:46-58);
and

a processor, operatively connected to the microphone, where the processor is operatively connected to the speaker, where the processor is operatively connected to the memory, where the

processor is configured to execute the instructions to perform operations (Figs. 1, processor 116, Fig. 2, processor or microprocessor 206; Spec. 4:51-63, 5:47-67, 6:39-53, and 8:46-58), the operations comprising:

receiving a microphone signal from the microphone (Fig. 3, step 308, Fig. 4, step 408; Spec. 8:9-11 and 46-58, 9:32-39);

comparing the microphone signal to the test fit signal to determine eartip seal (Fig. 3, step 310, Fig. 4, step 412, Fig. 5, steps 500-528; Spec. 8:24-38, 9:40-11:13);

sending a first message if the eartip seal is above a threshold level indicating a good seal (Fig. 4, step 420; Spec. 8:20-24 and 36-38, 9:40-50);

sending a second message if the eartip seal is below a threshold level, indicating that a new eartip or adjustment of the current eartip is needed (Fig. 4, step 418; Spec. 8:20-24 and 36-38, 9:40-50).

Claim 9: An earphone configured to perform an eartip fit test (Figs. 1 and 3; Spec. 4:1-29 and 51-63, 7:51-8:19) comprising:

a first microphone, configured to output a first microphone signal based on a measurement of sound measured from a first side of the earphone (Fig. 1, ASM 120; Spec. 4:15-19 and 51-63);

a second microphone, configured to output a second microphone signal based on a measurement of sound measured closer to the second side the earphone than the sound measured by the first microphone (Fig. 1, ECM 106; Spec. 4:15-19 and 51-63);

a speaker (Fig. 1, ECR 114; Spec. 4:15-19 and 51-63);

an eartip, configured to seal the earphone between the first side and a second side of the earphone (Fig. 1, sealing unit 108; Spec. 4:15-50);

a memory that stores instructions (Fig. 1, memory 104, Fig. 2, Random Access Memory (RAM) 202, Read Only Memory (ROM) 204; Spec. 4:51-63, 5:58-67, 6:39-53, and 8:46-58);
and

a processor, operatively connected to the first microphone, where the processor is operatively connected to the speaker, where the processor is operatively connected to the memory, where the processor is configured to execute the instructions to perform operations (Fig. 1, processor 116, Fig. 2, processor 206 or microprocessor 206; Spec. 4:51-63, 5:47-67, 6:39-53, and 8:46-58) the operations comprising:

sending a test fit signal to the speaker, where the speaker emits an audio test signal in response to the test fit signal (Fig. 3, step 304; Spec. 8:3-23 and 46-58);

receiving the first microphone signal (Fig. 3, step 308, Fig. 4, step 408; Spec. 8:9-11 and 46-58, 9:32-39);

comparing the first microphone signal to the test fit signal to determine eartip seal (Fig. 3, step 310, Fig. 4, step 412, Fig. 5, steps 500-528; Spec. 8:24-38, 9:40-11:13);

sending a first message to a user if the eartip seal is above a threshold level indicating a good seal, where the first message is visually displayed on a device communicatively coupled to the earphone (Fig. 4, step 420; Spec. 8:20-24 and 36-38, 9:40-50);

sending a second message to a user if the eartip seal is below a threshold level, indicating that a new eartip or adjustment of the current eartip is needed, where the second message is visually displayed on the device communicatively coupled to the

earphone (Fig. 4, step 418; Spec. 8:20-24 and 36-38, 9:40-50).

Claim 14: An earphone configured to perform an eartip fit test (Figs. 1 and 3; Spec. 4:1-29 and 51-63, 7:51-8:19) comprising:

- a microphone, configured to output a microphone signal based on a measurement of sound captured from a first side of the earphone (Fig. 1, ECM 106; Spec. 4:15-19 and 51-63);

- a speaker (Fig. 1, ECR 114; Spec. 4:15-19 and 51-63);

- an eartip, configured to seal the earphone between the first side and a second side of the earphone, where the eartip does not encapsulate a sealed eartip volume when inserted (Fig. 1, sealing unit 108; Spec. 4:15-50);

- a memory that stores instructions and buffers the microphone signal (Figs. 1, memory 104, Fig. 2, Random Access Memory (RAM) 202, Read Only Memory (ROM) 204; Spec. 4:51-63, 5:58-67, 6:39-53, and 8:46-58); and

- a processor, operatively connected to the first microphone; where the processor is operatively connected to the speaker, where the processor is operatively connected to the memory, where the processor is configured to execute the instructions to perform operations (Figs. 1, processor 116, Fig. 2, processor or microprocessor 206; Spec. 4:51-63, 5:47-67, 6:39-53, and 8:46-58), the operations comprising:

- sending a test fit signal to the speaker, where the speaker emits an audio test signal in response to the test fit signal (Fig. 3, step 304; Spec. 8:3-23 and 46-58);

retrieving the microphone signal from memory where the time span of the retrieved microphone signal corresponds to the timespan of emission of the audio test signal (Fig. 3, step 308, Fig. 4, step 408; Spec. 8:9-11 and 46-58, 9:32-39);

comparing the retrieved microphone signal to the test fit signal to determine eartip seal (Fig. 3, step 310, Fig. 4, step 412, Fig. 5, steps 500-528; Spec. 8:24-38, 9:40-11:13);

sending a first message if the eartip seal is above a threshold level indicating a good seal (Fig. 4, step 420; Spec. 8:20-24 and 36-38, 9:40-50);

sending a second message if the eartip seal is below a threshold level, indicating that a new eartip or adjustment of the current eartip is needed (Fig. 4, step 418; Spec. 8:20-24 and 36-38, 9:40-50).

IV. ISSUES TO BE REVIEWED ON APPEAL

Patent Owner submits that the following issues should be addressed in this appeal.

A. *Whether the “Processor” Terms Used in the Claims Are Properly Construed Under 35 U.S.C. §112 ¶6.*

The claims of the '836 Patent do not use the term “means.” Thus, presumptively, 35 U.S.C. §112 ¶6 does not apply. That presumption has not been overcome. All record evidence shows that the “processor” terms used in the claims connote structure and not “pure function” to a person of ordinary skill in the art. As a result, numerous Federal Circuit and District Court cases confirm that 35 U.S.C. §112 ¶6 should not apply here.

B. *Whether Claims 1-3, 5-8, 14-16, 18, 20-22, and 28-30 Are Obvious Over U.S. Pat. PGPUB 2004/0196992 A1 to Ryan (“Ryan”) in view of U.S. Pat. 6,567,524 B1 to Svean et al. (Svean”) and U.S. Pat. PGPUB 2005/0096899 A1 to Padhi et al. (“Phadi”).*

Ryan does not disclose and, in fact, teaches away from the use of any “test fit signal” as recited in the claims. Adding such functionality to *Ryan* would degrade multiple functions of the *Ryan* hearing aid. Thus, it is not proper to read the generation or use of “test fit signals” into *Ryan*. Further, *Ryan* is not properly combinable with other references that teach or suggest the use of test signals, because adding use of such signals to *Ryan* would degrade and not enhance the *Ryan* hearing aid’s functionality. Finally, regardless of whether a combination with *Svean* or *Padhi* is proper, neither *Svean* nor *Padhi* addresses the deficiencies of *Ryan*, because neither teaches that a “test fit signal” should be compared to a microphone signal, as required by the claims.

C. *Whether Claims 9-13 and 24-26 Are Obvious Over U.S. Pat. PGPUB 2004/0196992 A1 to Ryan (“Ryan”) in view of U.S. Pat. 6,567,524 B1 to Svean et al. (Svean”) and U.S. Pat. PGPUB 2005/0096899 A1 to Padhi et al. (“Phadi”), and U.S. PGPUB 2006/0188105 A1 to Baskerville et al. (“Baskerville”).*

As explained above, *Ryan* does not disclose and, in fact, teaches away from the use of any “test fit signal” as recited in the claims. Adding such functionality to *Ryan* would degrade multiple functions of the *Ryan* hearing aid. Thus, it is not proper to read the generation or use of “test fit signals” into *Ryan*. Further, *Ryan* is not properly combinable with other references that teach or suggest the use of test signals, because adding use of such signals to *Ryan* would degrade and not enhance the *Ryan* hearing aid’s functionality. Finally, regardless of whether a combination with *Svean*, *Padhi*, or *Baskerville* is proper, none of *Svean*, *Padhi*, or *Baskerville* addresses the deficiencies of *Ryan*, because none teaches that a “test fit signal” should be compared to a microphone signal, as required by the claims.

D. *Whether Dependent Claims 6, 8, 20, 21, 24-26, and 28-30 Are Allowable Independent of Whether Their Respective Independent Base Claims Are Allowable.*

Dependent claims 6, 8, 20, 21, 24-46, and 28-30 contain additional limitations, such as requiring masking of a test fit signal, that would be inconsistent with incorporation in Ryan. These claims are allowable for reasons in addition to those applicable to their respective base independent claims, specifically claims 1, 9, and 14. Therefore, regardless of how independent claims 1, 9, and 14 may be treated in this proceeding, claims 6, 8, 20, 21, 24-46, and 28-30 should be allowed and deemed patentable.

E. *Whether 4 and Are Obvious Over U.S. Pat. PGPUB 2004/0196992 A1 to Ryan (“Ryan”) in view of U.S. Pat. 6,567,524 B1 to Svean et al. (Svean”) and U.S. Pat. PGPUB 2005/0096899 A1 to Padhi et al. (“Phadi”), and Further in View of U.S. PGPUB 2006/0188105 A1 to Baskerville et al. (“Baskerville”).*

Claims 4 and 17 are patentable for the same reasons that the claims from which they depend are patentable.

F. *Whether Claims 19, 23, and 27 Are Obvious Over U.S. Pat. PGPUB 2004/0196992 A1 to Ryan (“Ryan”) in view of U.S. Pat. 6,567,524 B1 to Svean et al. (Svean”) and U.S. Pat. PGPUB 2005/0096899 A1 to Padhi et al. (“Phadi”), and Further in View of U.S. Pat. 6,879,692 B2 to Nielsen et. al. Nielsen).*

Claims 19, 23, and 27 are patentable for the same reasons that the claims from which they depend are patentable

V. ARGUMENT - LEGAL STANDARD

A patent may not be obtained although the invention is not identically disclosed or described if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was

made to a person having ordinary skill in the art to which said subject matter pertains. 35 U.S.C §103(a).

The ultimate determination of obviousness under 35 USC §103(a) is a question of law, but that determination is based on underlying factual findings. See, e.g., *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1326 (Fed. Cir. 2016). These underlying factual findings include (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) objective evidence of non-obviousness such “as commercial success, long felt but unsolved needs, failure of others,” and unexpected results. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966) (“Graham”).

The person of ordinary skill in the art is a hypothetical person presumed to have known the relevant art at the time of the invention. MPEP §2141.03(III). Factors that may be considered in determining the level of ordinary skill in the art may include: (1) “type of problems encountered in the art;” (2) “prior art solutions to those problems;” (3) “rapidity with which innovations are made;” (4) “sophistication of the technology; and” (5) “educational level of active workers in the field.” *In re GPAC*, 57 F.3d 1573, 1579, 35 USPQ2d 1116, 1121 (Fed. Cir. 1995). “In a given case, every factor may not be present, and one or more factors may predominate.” *Id.* An invention may be held to have been obvious without a specific finding of a particular level of skill where the prior art itself reflects an appropriate level. MPEP §2140.3(II).

The examiner bears the initial burden of presenting a prima facie case of unpatentability. MPEP §2142. The analysis must be explicit. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007) (“KSR”) (“[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to

support the legal conclusion of obviousness.”) (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)). As the Supreme Court in *KSR* explained, “because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known”... “it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does.” *Id.* at 418–19. Moreover, the Federal Circuit recently confirmed that the level of unpredictability in the art may require a more definitive motivation to combine. *BASF Corp. vs. Enthone, Inc.*, No. 18-1095 (Fed. Cir. 2018) (“BASF”) (“The PTAB adhered to our precedent when it considered whether the level of unpredictability in the art demanded BASF demonstrate a more definite motivation to combine the prior art in the manner alleged within BASF’s petition”).

An obviousness determination also requires that “that the skilled artisan would have had a reasonable expectation of success.” *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1367-68 (Fed. Cir. 2016). *See also Ex Parte Douglas J. Jolly*, Appeal 2017-007211, Appl. No. 13/376,827 (PTAB, Nov. 16, 2018) (Finding the examiner did not make a sufficient showing regarding existence of a reasonable expectation of success, where the examiner made only a conclusory assertion that because the retrovirus in a first reference was “highly similar” to the retrovirus in a second reference). “To the extent an art is unpredictable, . . . *KSR*’s focus on these identified, predictable solutions may present a difficult hurdle because potential solutions are less likely to be genuinely predictable.” *Eisai Co. v. Dr. Reddy’s Labs., Ltd.*, 533 F.3d 1353, 1359 (Fed. Cir. 2008).

MPEP § 2143(i) includes several exemplary rationales that may support a prima facie obviousness rejection, including MPEP §2143(i)(a), Combining prior art elements according to known methods to yield predictable results. To rely on MPEP §2143(i)(a), Office personnel must resolve the Graham factual inquiries. Then, Office personnel must articulate the following:

(1) a finding that the prior art included each element claimed, although not necessarily in a single prior art reference, with the only difference between the claimed invention and the prior art being the lack of actual combination of the elements in a single prior art reference;

(2) a finding that one of ordinary skill in the art could have combined the elements as claimed by known methods, and that in combination, each element merely performs the same function as it does separately;

(3) a finding that one of ordinary skill in the art would have recognized that the results of the combination were predictable; and

(4) whatever additional findings based on the Graham factual inquiries may be necessary, in view of the facts of the case under consideration, to explain a conclusion of obviousness.

If the examiner Examiner does not produce a prima facie case, the applicant Applicant is under no obligation to submit secondary evidence to show non-obviousness. MPEP § 2141. If the Examiner determines there is factual support for rejecting the claimed invention under 35 U.S.C. §103, **the Examiner must then consider any evidence supporting the patentability of the claimed invention.** MPEP § 2141. (emphasis added).

Rebuttal evidence and arguments can be presented in the specification, by counsel or by way of an affidavit or declaration under 37 CFR 1.132, MPEP §2145.

The competent rebuttal evidence should be weighed against the evidence supporting the prima facie case. *In re Piasecki*, 745 F.2d 1468, 1472, (Fed. Cir. 1984) (“Piasecki”). Office personnel should avoid giving evidence no weight, except in rare circumstances. MPEP §2145. If the evidence is deemed insufficient to rebut the prima facie case of obviousness, Office personnel should specifically set forth the facts and reasoning that justify this conclusion. *Id.*

VI. CLAIM INTERPRETATION.

A. *The “Processor” Terms of the Claims Do Not Invoke 35 U.S.C. §112 ¶6.*

The Examiner erred by (1) concluding that the “processor” terms of the ’836 patent are means-plus-function elements; and (2) applying an incorrect methodology to reach that conclusion. The conclusion reached by the Examiner and the methodology applied by the Examiner are inconsistent with substantial Federal Circuit and District Court precedent.

The “processor” terms are presumed not to invoke 35 U.S.C. § 112 ¶ 6. A claim term that does not include the word “means” is presumptively not subject to 35 U.S.C. §112 ¶ 6. MPEP § 2181.I (“[A] claim limitation that does not use the term ‘means’ or ‘step’ will trigger the rebuttable presumption that 35 U.S.C. 112(f) does not apply.”); *Dyfan, LLC v. Target Corp.*, 28 F.4th 1360, 1365 (Fed. Cir. 2022) (“[W]e presume that a claim limitation is not drafted in means-plus-function format in the absence of the term ‘means’.”). None of the “processor” terms recite “means” and all are thus presumptively not means-plus-function elements.

The presumption that the “processor” terms are not subject to 35 U.S.C. §112 ¶6 has not been overcome. To overcome the presumption that results from the absence of “means,” evidence must be provided that a person of ordinary skill would not have understood the limitation to recite sufficiently definite structure. *VDPP LLC v. Vizion, Inc.*, Appeal No. 2021-2040, 2022 WL

885771, at *3 (Fed. Cir. Mar. 25, 2022). It is improper to simply acknowledge the presumption against §112 ¶6 but then to conclude, without evidence, that the presumption is overcome. *Id.* That a term, such as “processor,” may refer to a class of structures does not overcome the presumption that §112 ¶6 does not apply. *See Dyfan*, 28 F.4th at 1366 (“Claim terms need not connote a single, specific structure, and may instead describe a class of structures and still recite sufficiently definite structure to not invoke § 112 ¶ 6.”); *Skky, Inc. v. MidGeek, s.a.r.l.*, 859 F.3d 1014, 1019 (Fed. Cir. 2017) (“[I]t is sufficient if the claim term is used in common parlance or by persons of skill in the pertinent art to designate structure, even if the term covers a broad class of structures and even if the term identifies the structures by their function.”).

There is no categorical rule regarding whether the term “processor” connotes sufficient structure to avoid interpretation in means-plus-function format. *WSOU Investments LLC v. Google LLC*, Nos. 2022-1063 and 2022-1065, Dkt. 57 at 8 (Fed. Cir. Oct. 19, 2023) (“WSOU”). Each claim term must be construed on its own in light of the intrinsic and extrinsic evidence. *Id.*

1. Substantial Federal Circuit precedent supports holding that the ’836 patent “processor” limitations do not invoke §112 ¶6.

The Federal Circuit has made clear that the terms “processor” and “digital processing unit,” even when executing custom computer code, need not be construed as means-plus-function elements. *See, e.g., WSOU* at 10-12; *VDPP* at *3-4; and *Samsung Elecs. Am., Inc. v. Prisia Eng’g Corp.*, 948 F.3d 1342, 1353-54 (Fed. Cir. 2020).

WSOU, quite recently decided, affirmed and overturned separate district court decisions construing the term “processor” under 35 U.S.C. ¶112, ¶6. *WSOU* at 10-12. The decision overturning the district court is particularly relevant here. *VDPP* overturned a district court decision construing the term “processor” under 35 U.S.C. §112 ¶6 (*VDPP* at *3-4), and *Samsung*

overturned a PTAB decision construing the term “digital processing unit” under 35 U.S.C. §112 ¶6. *Samsung*, 948 F.3d at 1353-54. The rationale of all of these cases applies here.

In *WSOU*, the Federal Circuit addressed the term “at least one memory including computer program code, where the at least one memory and the computer program code are configured, with the at least one processor, to cause the apparatus to” accomplish several functions dictated by the software. *WSOU* at 10. The Court found with respect to this term that Google had failed to rebut the presumption against application of §112 ¶6. The Court found, in light of the intrinsic record, that “a person of ordinary skill in the art would understand the structure of the claimed ‘computer program code,’ ‘memory,’ and ‘processor.’” *Id.* Virtually identical structure is recited in the “processor” claims of the ’836 patent. *See, e.g.,* ’836 Patent, Claim 1 (reciting that the “memory” stores instructions, that the “processor” is operatively connected to the “memory,” and that the “processor” is configured to execute the instructions to perform operations). As was the case in *WSOU*, a person skilled in the art would understand the structure of the memory, instructions, and processor recited in the ’836 patent claims. Further, in *WSOU* the specification described “the ‘processor’ as hardware that runs the computer program code ... that the memory stores a computer program comprising computer program instructions [and] ... that the computer program instructions ‘provide the logic and routines that enable [] the apparatus to perform the methods’ described in the patent.” *WSOU* at 12. Similar structure is described in the ’836 patent:

Microprocessor 116 (or processor 116) can be a logic circuit, a digital signal processor, controller or the like for performing calculations and operations for the earpiece. Microprocessor 116 is coupled to the memory 104, ECM 106, ASM 120, ECR 114, and user interface 122.

’836 Patent, 4:55-60. Here, the evidence goes beyond that provided in *WSOU*. Mr. Struck confirms that “the term ‘processor’ [in the ’836 patent claims] refers to a collection of circuits,

contained on one or more chips, that are arranged to control the interpretation and execution of instructions, not any and all structures that are capable of performing the recited functions.” Struck Dec., ¶46.

The *WSOU* Court found on the evidentiary record before it that Google failed to rebut the presumption against invocation of §112 ¶6. Proper analysis here leads to the same result.

In *VDPP*, the Federal Circuit found that the term “a processor adapted to” perform certain functions, such as to (i) obtain a first image, (ii) expand the first image frame, (iii) generate a bridge frame, and (iv) blend the modified image frame with the bridge frame, was **not** a means-plus-function limitation invoking §112 ¶6. *VDPP* at *3-4. Further and important here, in *VDPP*, the Federal Circuit explained that “[The patent challenger] was required **to provide at least some evidence that a person of ordinary skill would not have understood the limitations to ‘recite sufficiently definite structure[s].’**” *Id.* at *5 (emphasis added). The Examiner here likewise presented no evidence that a person of ordinary skill would **not** have understood the “processor” limitations to recite sufficiently definite structure. Contrary evidence was presented -- both the intrinsic record, which identifies an exemplary processor, a “Texas Instruments TMS320C6713,” that can be held in a user’s hand, and the Declaration of Christopher J. Struck in Support of Patent Owner’s Amendment and Response to Non-Final Office Action (“Struck Dec.”) confirm that a person of ordinary skill would understand “processor” to refer to a structure sufficient to perform the recited operations. ’836 Patent, 5:51-52; and Struck Dec. at ¶¶ 45-46. Once such a determination is made, the analysis ends; the functions performed by the processor do not negate that finding:

[T]he mere fact that the disputed limitations incorporate functional language does not automatically convert [them] into means for performing such functions.

VDPP at *5 (quoting *Zeroclick LLC v. Apple, Inc.*, 891 F.3d 1003, 1008 (Fed. Cir. 2018)).

Similarly, in *Samsung*, the Federal Circuit found that the term “digital processing unit,” performing functions including (i) identifying ... at least one pixel; (ii) extracting the at least one pixel as the second image; (iii) storing the second image in a memory device; (iv) receiving a selection of the first image from the original data stream; (v) extracting the first image; and (vi) spatially matching an area of the second image with an area of the first image, did **not** invoke §112 ¶6. *Samsung*, 948 F.3d at 1353-54. The Federal Circuit emphasized that the “**Board pointed to no evidence that a person skilled in the relevant art would regard the term ‘digital processing unit’ as purely functional.**” *Id.* at 1354 (emphasis added). And, like here, the patent holder had provided testimony from its expert, the inventor, that the “digital processing unit” recited in the claims was “an image processing device that people in the art are generally familiar with.” *Id.* Based on this evidence, the Federal Circuit concluded, “As used in the claims of the ’591 patent, the term ‘digital processing unit’ clearly serves as a stand-in for a ‘general purpose computer’ or ‘central processing unit,’ each of which would be understood as a reference to structure in this case, not simply any device that can perform a particular function.” *Id.* Referencing the intrinsic record, the Federal Circuit noted that “claim 1 requires that the ‘digital processing unit’ be operably connected to a ‘data entry device’ such as a keyboard, which in turn is connected to other components.” *Id.* And, the Federal Circuit held, “That portion of claim 1 constitutes further evidence of the structural nature of the term ‘digital processing unit,’ as used in the claim.” *Id.* Just as the “digital processing unit” in *Samsung* was described as being connected to other structural elements in the claim, the “processor” recited in the ’836 patent claims is described as being “operatively connected to the microphone,” “operatively connected to the speaker,” and

“operatively connected to the memory,” (*see, e.g.*, claims 1, 9, and 14) all of which favors finding that the term “processor” is sufficiently structural to avoid application of §112 ¶6.

Following this analysis, the *Samsung* court held:

[W]e conclude that **the Board erred in ruling that the term “digital processing unit” does not recite structure and instead is a purely functional term.** We therefore reject the Board’s conclusion that the term “digital processing unit,” as used in claim 1, invoked means-plus-function claiming....

Samsung, 948 F.3d at 1354 (emphasis added). The court reached this determination despite the fact that the “digital processing unit” referenced in the claims must necessarily execute instructions to perform the functions described in those claims.

The Examiner’s position in applying §112 ¶6, to the “processor” terms in the ’836 patent is inconsistent with both *Samsung*’s conclusion and its analysis.

2. Substantial district court precedent holds that “processor” limitations do not invoke §112 ¶6.

District court cases also confirm that, where the term “means” is not used in a claim, the presumption against application of §112 ¶6, must be overcome by a presentation of evidence demonstrating that the claims-in-question fail to “present sufficient structure.” *See, e.g., Palm Top Prods. v. LO-Q PLC*, 450 F. Supp. 2d 1344, 1353-54, 1368-69 (N.D. Ga. 2006) (refusing to apply §112 ¶6, to a recited “personal communication device” and “request processor”); *Smartflash LLC v. Apple Inc.*, 77 F. Supp. 3d 535 (E.D. Tex. 2014) (“[P]rocessor’ is a structure-connoting term . . . [A] processor can be purchased, can perform certain functions even without specific instructions, and has a design for interpreting and executing instructions. Thus, the term ‘processor,’ even on its own, recites at least some structure.”); *SEVEN Networks, LLC v. Apple Inc.*, No. 2:19-CV-115-JRG, 2020 U.S. Dist. LEXIS 55476, at *145 (E.D. Tex. Mar. 31, 2020) (“[T]he term ‘processor’

refers to a well-known structure."); and *CA, Inc. v. Netflix, Inc.*, 2021 U.S. Dist. LEXIS 221133 *19-21; 2021 WL 5323413 (E.D. Tex. Nov. 16, 2021) (refusing to treat “processors operable to” and “processors ... further operable to” as means-plus-function terms). The cases demonstrate that, where a claim recites the term “processor,” that recitation often represents a well-known structure that does not invoke §112 ¶6. *Id.* Further, that the “processor” terms may recite additional functionality does not convert those terms into means for performing those functions. *VDPP* at *5.

3. Contrary to Precedent, the Examiner conflates the first step and second step of a §112 ¶6 analysis.

Analysis of §112 ¶6 is a two-step analysis, in the Final Office Action, the Examiner conflates the analysis of whether 35 U.S.C. §112 ¶6 applies with an analysis of what must be done after a determination is made that §112 ¶6 applies. The two issues are separate and distinct:

Vizio’s argument misses the mark. Whether the specifications disclose adequate corresponding structures for the claimed functions is a question we review in step two of the §112(f) analysis. As explained above, this appeal centers on step 1. And, because we conclude at step 1 that §112(f) does not apply to the disputed limitations, we need not address whether, at step two, the specifications adequately disclose the structures for those functions.

VDPP at *5.

Adopting the Examiner’s approach provides at “gotcha” for any processor limitation that recites innovative computer instructions and related functionality, because it ignores the structural aspects of the processor that in most cases preclude application of §112 ¶6. *See, e.g., WSOU* at 10-12; *VDPP* at *3-4; and *Samsung* 948 F.3d at 1353-54.

Here, both the intrinsic and extrinsic evidence demonstrates that the “processor” limitations of the claims connote sufficient structure to a person of ordinary skill. Even the

Examiner acknowledges that the “processor” limitations are structural. (See, e.g., Final Office Action, p. 80 (“While the Examiner agrees that the term ‘processor’ or ‘circuit’ implies some structure, it isn’t merely a matter of whether the claim term implies structure; the presumption ... may be overcome when the term implies structure that is not sufficient *for performing the claimed function.*”¹)). The Examiner, thus, allows the claimed functionality of the “processor” to negate his own structural findings. The position of the Examiner is inconsistent with the holdings in *WSOU*, *VDPP*, and *Samsung*, all of which addressed a “processor” or “digital processing unit” with functionality prescribed by software. *WSOU* at 10-12; *VDPP* at *3-4; and *Samsung* 948 F.3d at 1353-54. Stated somewhat differently, the Examiner’s analysis and conclusions run afoul of *WSOU*, *VDPP*, and *Samsung*, because like here, the processors in each of the referenced cases were only capable of performing the referenced functions by executing applicable code or instructions. As in *WSOU*, *VDPP*, and *Samsung*, once the determination is made that a “processor” or “digital processing unit” connotes structure, the functionality of that structure does not negate the presumption against application of §112 ¶6. *VDPP* at *5. In other words, if in step 1 sufficient structure is found, that is the end of the §112 ¶6 analysis.

As in *WSOU*, *VDPP*, and *Samsung*, §112 ¶6, should not apply to the “processor” terms presented here.

¹ The Federal Circuit in *Samsung* criticized the Board for treating the term “digital processing unit” as a “black box” in some portions of its Final Written Decision and as “structural” in other portions. See, e.g., *Samsung*, 948 F.3d at 1354. This favored finding the term “digital processing unit” to be structural. *Id.* The Examiner does the same thing here, accepting the structural aspects of the “processor” limitations in some portions but not all of the Final Office Action. See, e.g., Final Office Action, pp. 17 and 80.

4. The cases cited as support by the Examiner are, with one exception, inapposite.

With one exception, the cases relied upon by the Examiner fail to address whether the term “processor” (or any similar term, such as “digital processing unit”) is properly the subject of §112 ¶6. The cited cases address the term “means,” or other nonce terms, such as “module,” which are presumed to invoke §112 ¶6, unlike the term “processor.” *See, e.g., Williamson v. Citrix Online, LLC*, 792 F.3d 1339 (Fed. Cir. 2015) (addressing a “**distributed learning control module**”); *Net MoneyIN, Inc. v. Verisign, Inc.*, 545 F.3d 1359 (Fed. Cir. 2008) (“**means** for generating an authorization indicia”); *In re Aoyama*, 656 F.3d 1293 (Fed. Cir. 2011) (“reverse logistics **means** for generating transfer data”); *Aristrocrat Techs. Australia PTY Ltd. v. Int’l Game Tech.*, 521 F.3d 1328 (Fed. Cir. 2008) (“control **means**”); *Finisar Corp. v. DirecTV Grp., Inc.*, 523 F.3d 1323 (Fed. Cir. 2008) (“database editing **means** . . . for generating . . . and for embedding”); *WMS Gaming, Inc. v. Int’l Game Tech.*, 184 F.3d 1339 (Fed. Cir. 1999) (“**means** for assigning a plurality of numbers,” “**means** for randomly selecting one of said plurality of assigned numbers,” and “**means** for stopping said reel”). These cases miss the mark, because they fail to address whether use of the term “processor,” or similar terms that connote sufficient structure to persons of ordinary skill in the art, invokes §112 ¶6.

In the single case cited by the Examiner that addresses a term similar to “processor,” the Federal Circuit reversed a determination that the term “digital detector” invoked §112 ¶6, highlighting the importance of extrinsic evidence, such as dictionaries, to the analysis:

Instead, as noted by the ALJ by reference to dictionary definitions, “detector” had a well-known meaning to those of skill in the electrical arts connotative of structure, including a rectifier or demodulator.

See Personalized Media Communications, LLC v. Int'l Trade Comm'n, 161 F.3d 696, 704-705 (Fed. Cir. 1998). The same applies here. The Oxford Dictionary of Electronics and Electrical Engineering defines “processor” as “[a]n electronic device that performs some sort of calculations or complex manipulation on information to obtain the desired result.” *See Struck Dec.*, Ex. 2. Consistent with that, Mr. Struck explains how a person of ordinary skill would understand “processor” to refer to a structure sufficient to perform the recited operations. *Struck Dec.* at ¶¶ 45-46. This un rebutted evidence confirms that the term “processor” confers sufficient structure to avoid application of §112 ¶6. *See WSOU* at 10-12; *Samsung*, 948 F.3d at 1353-54; *VDPP* at *5; and *Personalized Media*, 161 F.3d at 704-705.

5. All record evidence demonstrates that the “processor” limitations are structural, and thus, §112 ¶6, does not apply.

All intrinsic and extrinsic evidence in this proceeding confirms that a person of ordinary skill would understand “processor” to connote sufficient structure to preclude application of §112 ¶6. For example, Mr. Struck explains how a person of ordinary skill would understand “processor” to refer to a structure sufficient to perform the recited operations. *Struck Dec.* at ¶¶ 45-46. Similarly, technical dictionaries make clear that a “processor” refers to structure. As noted above, the Oxford Dictionary of Electronics and Electrical Engineering defines “processor” as “[a]n electronic device that performs some sort of calculations or complex manipulation on information to obtain the desired result.” *Struck Dec.* Ex. 2. This is consistent with the intrinsic record which states:

Microprocessor 116 (or processor 116) can be a logic circuit, a digital signal processor, controller, or the like for performing calculations and operations for the earpiece.

'836 Patent, 4:55-58.

The specification identifies an exemplary processor as a “Texas Instruments TMS320C6713.” *Id.* at 5:51-52. The exemplary processor is structural, as it can be purchased and incorporated into a device such as an earphone. The fact that term “processor” may refer to a class of structures does not overcome the presumption against application of §112 ¶6. *See Dyfan*, 28 F.4th at 1366 (“Claim terms need not connote a single, specific structure, and may instead describe a class of structures and still recite sufficiently definite structure to not invoke §112 ¶6.”); *Skky, Inc. v. MindGeek, s.a.r.l.*, 859 F.3d 1014, 1019 (Fed. Cir. 2017) (“[I]t is sufficient if the claim term is used in common parlance or by persons of skill in the pertinent art to designate structure, even if the term covers a broad class of structures and even if the term identifies the structures by their function.”).

The Examiner has failed to introduce or cite any contradictory evidence but maintains that “the limitations recite function without reciting sufficient structure for performing that function.” Final Office Action at 10. As established above, Federal Circuit precedent holds that, absent production of relevant evidence, the presumption against application of §112 ¶6 cannot be overcome. The Examiner’s claim construction position should therefore be overruled.

6. No one else has taken the position the Examiner asserts.

No one but the Examiner in this proceeding has taken the position that the term “processor” recited in the claims invokes §112 ¶6.

- During original prosecution, neither the Examiner nor the applicant suggested that the claims should be interpreted under §112 ¶6.
- During the Inter Partes Review proceeding (IPR2022-00410), none of Petitioners, Patent Owner, or the PTAB suggested the “processor” terms invoke §112 ¶6.

- During the district court litigation, none of Defendants, Plaintiffs, or the court argued or even suggested that §112 ¶6 applies to the term “processor.”
- Finally, in this proceeding, Requesters did not advance a means-plus-function construction.

7. Conclusion.

The “processor” terms of the ’836 patent are presumptively not means-plus-function elements, and that presumption has not been overcome. The Final Office Action interpreted the “processor” terms under §112 ¶6, and that was error.

VII. REJECTIONS UNDER 35 U.S.C. §§305 AND 112.

The Examiner has rejected claims 31-42 under 35 U.S.C. §§305 and 112, first paragraph, and rejected claims 31-37 under 35 U.S.C. §112, second paragraph. In view of the rejections under 35 U.S.C. §305, Patent Owner has canceled claims 31-42 from the current proceeding without prejudice. Patent Owner will pursue those claims in a proper continuation application.

VIII. REJECTIONS UNDER 35 U.S.C. §103.

A. *Rejection of Claims 1-3, 5-8, 14-16, 18, 20-22, and 28-30.*

The Examiner rejected claims 1-3, 5-8, 14-16, 18, 20-22, and 28-30 under pre-AIA 35 U.S.C. §103(a) as being unpatentable over U.S. Pat. PGPUB 2004/0196992 A1 to Ryan (“Ryan”) in view of U.S. Pat. 6,567,524 B1 to Svean et al. (Svean”) and U.S. Pat. PGPUB 2005/0096899 A1 to Padhi et al. (“Phadi”).

Patent Owner submits that the Examiner erred in making these rejections by (1) reading structure into Ryan that is not there and would be inconsistent with the teaching of Ryan; (2) improperly combining Ryan with Svean and other references, when the references teach away from doing so; and (3) improperly employing hindsight in the obviousness analysis.

1. Independent Claims 1 and 14.

Claims 1 and 14 require that the recited processor perform the function of “comparing the microphone signal to the test fit signal to determine eartip seal.” Claim 14, in addition, requires that the processor perform the function of “sending a test fit signal to the speaker, where the speaker emits an audio test signal in response to the test fit signal.” Neither of these limitations is disclosed in Ryan.

a. Ryan Does Not Teach the Generation or Use of Test Fit Signals and, in Fact, Teaches Away from Using Such Signals.

The Ryan system does not generate or use a test fit signal. The Examiner correctly recognizes that “Ryan fails to disclose that the processor receives the microphone signal from the microphone as well as the test fit signal for comparison.” Final Office Action at 25.

A “test fit signal” is a signal that is stored in memory or generated by a microprocessor, provided to an acoustic transducer, and used for testing acoustic signal leakage between one acoustic volume and another. ’836 Patent, 8:3-23. As further explained in the ’836 Patent, the test fit signal may be a single frequency sinewave. *Id.* at 20-23. No test fit signal is produced, stored, or utilized within the Ryan system. Nor is the use of one suggested.

The Ryan system functions to determine whether a hearing instrument is inserted in or removed from an ear canal. *See, e.g.*, Ryan, Abstract, [0002]-[0004], [0006], and [0020]. Ryan makes this determination “automatically” using whatever audio signal may be provided to the loudspeaker 20, likely a signal from an ambient microphone since Ryan is directed to a hearing instrument, when the loudspeaker is operating. *Id.* at [0022], [0024], and [0025]. To do this, the Ryan system filters the signal provided at the input of the loudspeaker 20 and the signal produced by a microphone 30 to select designated frequency components. *Id.* at [0025] and [0028]. For example, the Ryan system “monitors low frequency levels at the input to the loudspeaker 20 to

obtain a loudspeaker drive level, and the low-frequency signal levels at the output of the microphone to obtain an acoustic output level.” *Id.* at [0025]. The Ryan system uses the acquired “low-frequency signal levels” to generate a “first intensity signal I_D ” and a “second intensity signal I_O .” *Id.* at [0025] and [0026]. Finally, the intensity signal levels are compared to determine “if the loudspeaker 20 is driving into a sealed acoustic cavity.” *Id.* at [0030]. This is all done automatically and without the use of any “test fit signal,” so that the hearing instrument can determine whenever it is inserted or removed, and functionality of the hearing instrument can be modified, whenever such a determination is made. *See, e.g., Id.* at [0004 (using detection of insertion to answer a call)], [0022 (using detection of removal to put the unit in standby mode)], [0033 (adjusting gain and providing automatic power reduction upon removal)], and [0057 (notification of need for fitting adjustment)]. Importantly, all of this is done without interrupting audio delivery to the loudspeaker 20 to perform the test, and without interfering with activity or support of the user.

User generation of a test signal, as described in the ’836 Patent, would interfere with all of the automatic processes described in Ryan and would render those processes less effective. Indeed, using a test signal in Ryan would render function of the Ryan device far less desirable to users. *See, Struck Dec.*, ¶83. Were test signals to be automatically and repeatedly generated in the Ryan system, those signals would provide a great distraction and great frustration to hearing instrument users. *Id.* Further, continuing to generate test signals, when the hearing aid has been removed from the ear canal, would unnecessarily consume power during periods when the Ryan device is described as operating in an “automatic power reduction” state. Ryan at {0003}, [0021], and [0033]. Ryan, thus, teaches away from the generation, storage, and use of such test signals and any circuitry used to generate such signals. Indeed, the entire focus of Ryan is on automatically and in real-time determining whether a hearing instrument is inserted or not by analyzing and selecting

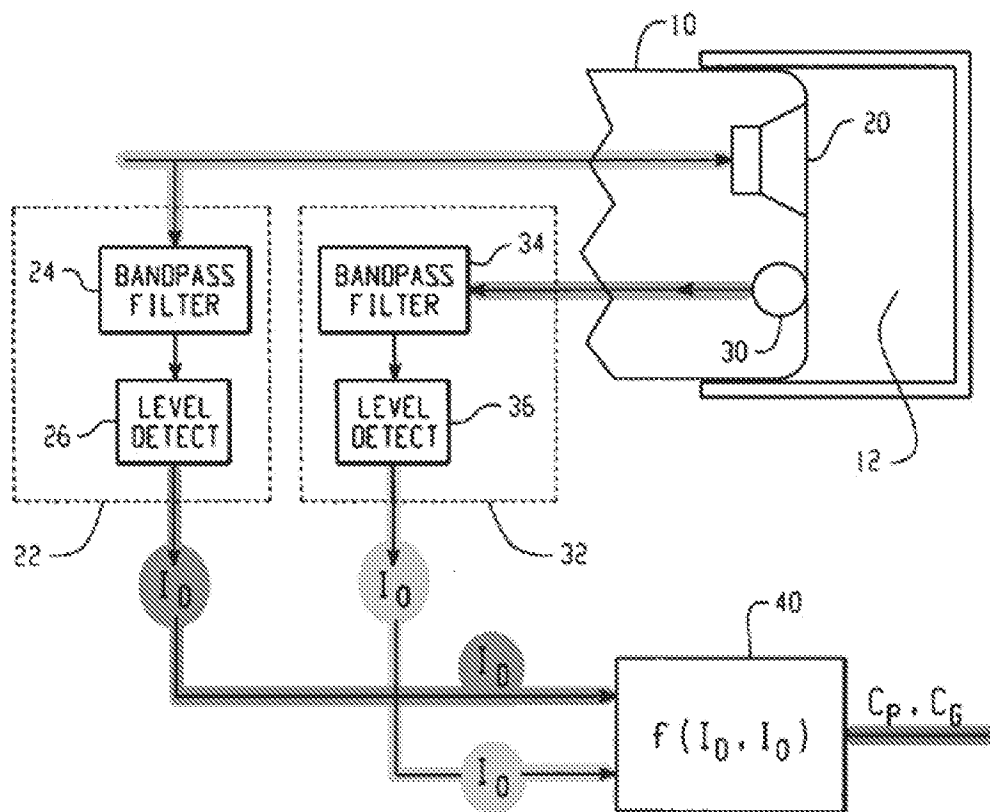
designated signal levels from whatever audio signaling, likely ambient signaling from an external microphone, is input to the loudspeaker 20. Ryan's approach is fundamentally different from that described and claimed in the '836 Patent.

Determining (1) whether a hearing instrument is inserted in an ear and (2) evaluating the quality of a seal for the hearing instrument already inserted in an ear are different things. Test fit signal generation and comparison in the systems and methods claimed in the '836 Patent provide benefits not achievable using the disclosed Ryan methodology. *See, e.g.,* Struck Dec., ¶¶78-83. For example, test fit signals can be tuned and repeated for the seal evaluation process, and test fit signals need not be filtered or sampled for frequency evaluation. *Id.*

b. The Processing Circuitry of Ryan Does Not Generate Any Test Signal.

Claim 14 requires that the processor “send a test fit signal to the speaker.” Nothing in Ryan teaches or suggests doing that. To the contrary, as noted above, the Ryan system automatically and continuously monitors “low-frequency signals” at the input to the loudspeaker 20 and output of the microphone 30 to determine whether the hearing instrument is inserted in, or removed from, an ear canal. Ryan at ¶¶[0025] and [0026]. Further, nothing in Ryan suggests that the processing circuit 40 sends any type of signal to the microphone 30 let alone a test fit signal.

A person of ordinary skill would understand the relationship between signal processing circuitry 40 and speaker 20 to be as follows:



Struck Dec. at ¶ 69.

A person of ordinary skill would understand that the source of the electrical signal (green) to loudspeaker 20 is not from signal processing circuitry 40. For example, in Ryan's hearing aid, an external microphone that captures ambient sound is the source of the first electrical signal. Struck Dec. at ¶ 70. Ryan includes multiple indications that lead to this fact.

First, a person of ordinary skill would understand that Ryan continuously monitors the hearing aid sealing level without interfering with basic functionality of the device. Ambient sound would be the most logical sound to use for such monitoring as introducing a foreign sound would undermine the primary purpose of the hearing aid -- to faithfully amplify and transmit the user's surrounding auditory environment. Struck Dec. at ¶ 71.

Second, the purpose of the hearing aid application of Ryan is to capture and amplify ambient sounds for a hearing impaired user. Struck Dec. at ¶ 72. Thus, a person of ordinary skill would understand that the signal that is being transmitted into loudspeaker 20 is generated by the ambient microphone. *Id.*

Third, Ryan discloses that signal processing circuitry 40 receives the outputs of the level detection circuitry 22 and 32 and outputs control signals unrelated to ear seal quality determinations. As shown in the illustration above, the inputs to the signal processing circuitry 40, I_D (purple) and I_O (orange), are outputs from the first level detection circuitry 22 and the second level detection circuitry 32, respectively.

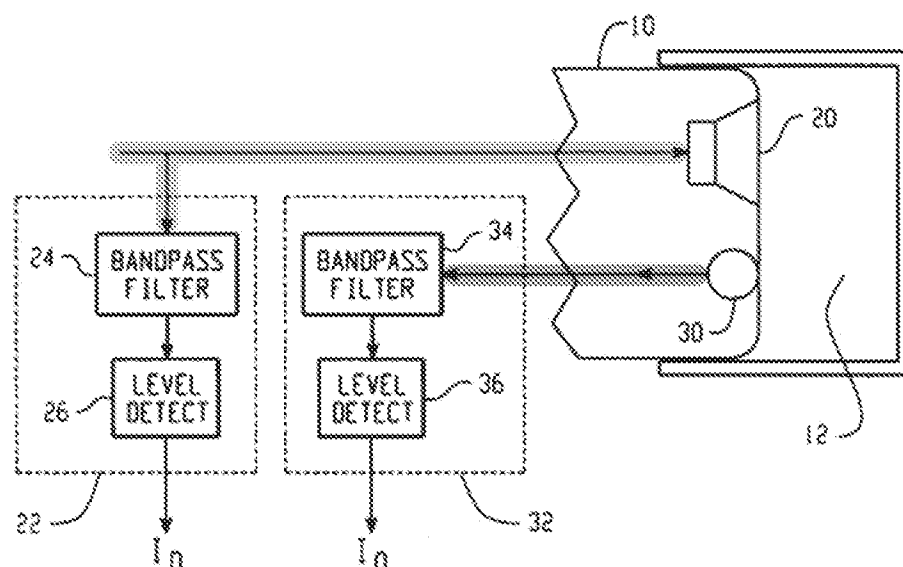
The input to the first level detection circuitry 22 (green) is the so-called “first electrical signal,” which is the only signal disclosed or depicted in Ryan to be an input into the ear canal loudspeaker 20 to perform an ear seal quality test. The first level detection circuit 22 generates a first intensity signal I_D (purple) by using a bandpass filter 24 and a level detector 26. Ryan at ¶ [0025]. Signal I_D (purple) is an input to the signal processing circuitry 40 not an output thereof.

The ear canal microphone 30 outputs a second electrical signal (blue) corresponding to the sound pressure level within the ear canal as a consequence of the audio output of the ear canal loudspeaker 20. The second electrical signal is provided to the second level detection circuitry 32 to generate a second intensity signal I_O (orange). The second level detection circuitry 32 comprises a bandpass filter 34 and a level detector 36. Ryan at ¶ [0026].

The intensity signals I_D (purple) and I_O (orange) are inputs to signal processing circuitry 40, which is disclosed as having only two outputs, namely gain control signal CG and the power control signal CP (red).

The gain control signal, CG, is a signal used to control the degree of amplification of the audio output of the ear canal loudspeaker 20. Ryan at ¶ [0033]; Struck Dec. at ¶ 74. The gain control signal CG, is not a signal driven or excited into the ear canal loudspeaker 20 by the processor, as required by the claim. *Id.*

Fourth, Ryan discloses that the level of the first electrical signal must be detected. As shown in Figure 3, level detector 26 detects the level of the portion of the first electrical signal after bandpass filter 24, as illustrated below.



Ryan at Fig. 3.

Ryan discloses that the level detector 26 “estimate[s] the RMS level[] . . . present at the input of the loudspeaker 20.” Ryan at ¶ [0029]. If signal processing circuitry 40 generated the first electrical signal, the system of Ryan would know the level of that signal and would not need to detect it. Struck Dec. at ¶ 76. Likewise, any processor-driven signal would have the frequency components that are desired. However, Ryan uses bandpass filters 24 and 34, within a “stable band differential β ” on incoming signals. Ryan at [0027]-[0028]. This confirms that Ryan does

not employ a processor-driven signal. If Ryan used a processor-driven signal, Ryan would not need bandpass filters since the processor could drive signals only with the desired frequencies. Struck Dec., ¶76.

There is no contrary evidence. Indeed, in connection with another IPR filed by Requesters with respect to another of Patent Owner's patents, when asked to interpret the arrow of Figure 3 of Ryan that leads to speaker 20, Requesters' declarant Dr. Kyriakakis testified that "a reasonable interpretation would be that that is connected to a microphone, external microphone." Amendment and Response to Non-Final Office Action, Ex. 4 at 25:18-26:11. Dr. Kyriakakis also testified that the source of that arrow could not be signal processing circuitry 40 by itself and that Ryan does not contain "direct disclosure" that suggests signal processing circuitry 40 is the source of the signal sent to speaker 20. *Id.* at 26:24-27:18.

In sum, a POSITA would understand that the first electrical signal is not sent by signal processing circuitry 40.

The Ryan approach stands in contrast to claim 14 of the '836 patent, which requires that the processor send a "test fit signal" to the speaker. The differences between the approach taken by Ryan on the one hand (using ambient sound) and the '836 patent on the other hand (using a test fit signal from a processor) are significant. An advantage of the claimed solution in conducting ear leakage tests over time is that the signals for performing the tests may be uniform for all measurements and the signal(s) used to conduct the test can be preselected to have the frequency and amplitude range(s) best suited for the tests. Struck Dec. at ¶ 78. Consistent with the disclosure of the '836 patent, claim 14 requires that the signal emitted by the ear canal speaker is provided by the processor.

By contrast, as Mr. Struck explains, Ryan’s use of a signal that is not sent by a processor and is instead, for example, the output of an ambient microphone, does not provide the advantages of a processor-supplied signal as disclosed and claimed in the ’836 patent. In the hearing aid embodiment of Ryan, because the first electrical signal is the contemporaneous output of the ambient sound microphone, the signals provided to the ear canal microphone will not be uniform and repeatable. Struck Dec. at ¶ 78. Rather, they will be whatever signals happen to constitute the ambient sound where the user happens to be. This is one of the reasons why Ryan discloses bandpass filters to isolate useful parts of the ambient signal. Thus, a POSITA would understand that Ryan’s system, which uses uncontrolled signals as inputs, would perform differently than a system built in accordance with claim 14 of the ’836 patent, which uses a test fit signal from the processor. *Id.*

c. It Would Not Have Been Obvious to Modify Ryan to Include a “Test Fit Signal” Generator.

The Office Action argues that “it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Ryan in such a manner, namely as to including the filtering/level detection elements 22 and 32 in the processing means *as well as the test fit signal* . . .” Final Office Action at 33 (emphasis added). Patent Owner respectfully disagrees. Such a modification would impair Ryan’s ability to perform its intended purpose. Indeed, the proposed modification would require generation of additional signals input into a user’s ear canal via speaker 20 of Ryan *on a continuous basis*. This would clearly undermine Ryan’s goal, and the primary goal of all hearing aids, which is to aid a user in hearing desired content, such as voices and other sounds in the user’s environment.

Ryan is premised on the ability to determine whether a hearing instrument is inserted or removed on a continuous basis without interfering with basic hearing aid functionality. For example, Ryan discloses as follows:

When a hearing instrument is removed from the ear canal, the increased acoustic coupling between the receiver (loudspeaker) and the microphone can cause howling or feedback. Furthermore, the device is typically not in use when removed. Therefore, knowledge that the device has been removed can be used to lower the acoustical gain to *prevent feedback* and/or to *reduce power consumption* by switching the unit off or entering a low-power standby mode.

Ryan at ¶ [0003]. A person of ordinary skill would understand from the foregoing disclosure that the Ryan solution detects on a continuous basis whether a hearing instrument is inserted or removed. In particular, a person of ordinary skill would understand that, to prevent feedback, the Ryan solution makes the determination that the hearing instrument has been removed soon after the hearing instrument is removed. Similarly, to most usefully reduce power consumption, the Ryan solution would determine that the hearing instrument has been removed soon after the hearing instrument is removed. To determine that a hearing instrument has been removed soon after it is removed and to determine that a hearing instrument has been inserted soon after it is inserted, the solution makes such determinations on a continuous basis. Struck Dec. at ¶ 81. Ryan's solution is able to perform continuous evaluation without introducing a foreign signal into the loudspeaker because Ryan uses the signal of the desired audio content (for example, a signal from an ambient microphone) in its insertion/removal analysis.

Adding an audio signal to the desired audio content on a continuous basis would significantly impair the operability of the Ryan solution. For example, in the embodiment of Ryan in which the hearing instrument is a hearing aid, adding a continuous test signal to the audio signal captured by an ambient microphone would obscure the ambient sound and would be distracting to

the user. Struck Dec. at ¶ 83. Further, continuously generating a test signal, when a hearing aid is removed from an ear canal, would add to power consumption, not reduce power consumption, when reducing power consumption at that time is a stated goal of Ryan. *See* Ryan at [0003], [0021], and [0033]. Accordingly, a person of ordinary skill would have been discouraged from modifying Ryan so that a predetermined test signal is delivered by a processor, as the Final Office Action proposes. Struck Dec. at ¶ 83.

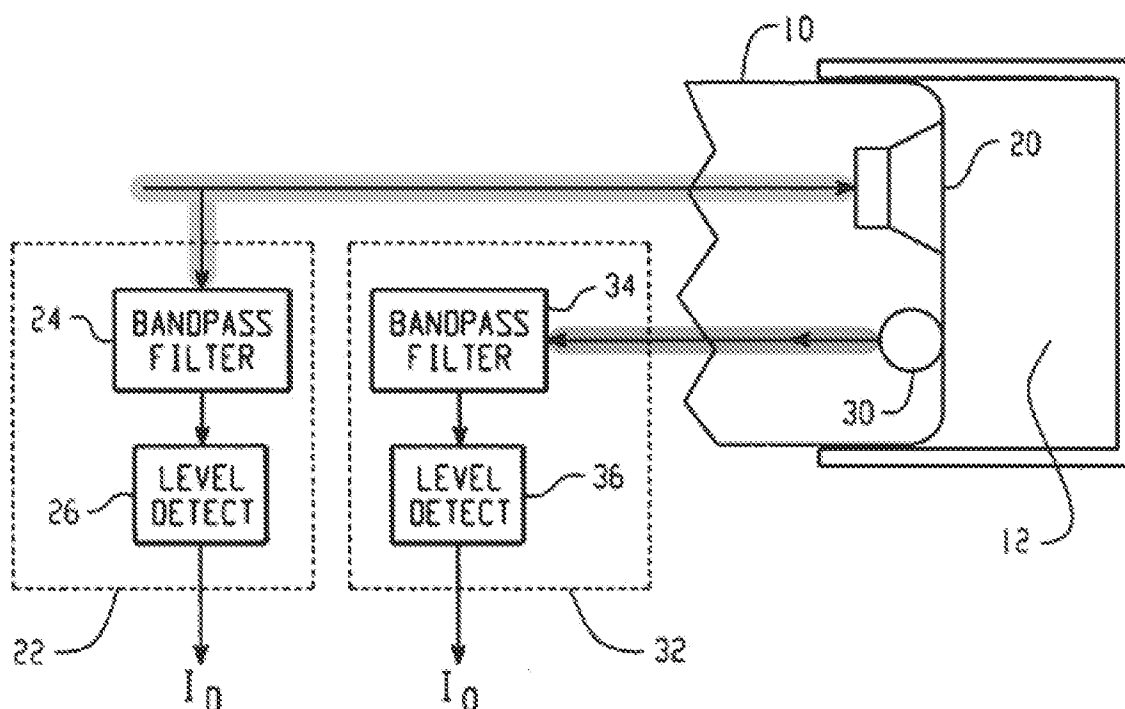
For the foregoing reasons, a person of ordinary skill would not have been prompted to modify Ryan to use a predetermined test fit signal or to have the processing circuitry 40 of Ryan deliver that test fit signal to the loudspeaker 20. *See Polaris Indus., Inc. v. Arctic Cat, Inc.*, 882 F.3d 1056, 1069 (Fed. Cir. 2018) (vacating determination of obviousness in view of deficient treatment of evidence that the proposed modification would run contrary to one of reference's stated purposes).

d. Ryan Does Not Disclose Comparing a Test Fit Signal to a Microphone Signal to Determine Eartip Seal as Required by the Claims.

As explained above, not only does Ryan not describe or suggest the use of any test fit signal within the system, it teaches away from such use. Accordingly, Ryan does not teach the test fit signal comparison limitations of the '836 Patent claims.

Ryan also fails to disclose “comparing [a] microphone signal to [a] test fit signal to determine eartip seal.” *See, e.g.,* Struck Dec., ¶¶48-53. The Final Office Action argues that “Ryan discloses that the processor compares the microphone signal to a test fit signal to determine seal.” Final Office Action at 25. However, the Final Office Action fails to explicitly identify the “processor,” “microphone signal” and “test fit signal” as recited in claim 1. *Id.*

Referring to the illustration below, the Final Office Action appears to interpret the signal generated by microphone 30 (blue) as the “microphone signal” and the signal delivered to speaker 20 (green) as the “test fit signal,” even though the signal delivered to the speaker is not prepared in any way for testing and is most likely the signal from an ambient sound transducer. *Id.* at ¶72.



Ryan at Fig. 3 (annotated); Struck Dec. at ¶ 49. The Office Action also appears to interpret signal processing circuitry 40 of Ryan as the “processor” of claim 1.

But the Final Office Action concedes, “Ryan fails to disclose that the processor [signal processing circuitry 40] receives the microphone signal [blue] from the microphone [30] as well as the test fit signal [green] for the comparison, rather Ryan discloses that the processor [signal processing circuitry 40] receives a filtered and level detected signal from elements 22 and 32 (FIG 3) which are connected to the test fit signal [green] and microphone [30], respectively.” Final

Office Action at 25. This is correct; the intensities I_D and I_O are used to determine if the acoustic cavity is sealed. Struck Dec. at ¶ 50.

The Ryan disclosure is clear. Ryan discloses that (1) band pass filters 24 and 34 are used to monitor “low-frequency signal levels” at the input to the loudspeaker 20 and output of the microphone 30, ensuring that neither the signal input to the loudspeaker 20 nor the signal output from the microphone 30 is used for any comparison; (2) first level detection circuitry 22 “generates a first intensity signal I_D ” from the “low-frequency signal levels” at the input to the loudspeaker 20; and (3) level detection circuitry 36 “generate[s] a second intensity signal I_O ” from the “low-frequency signal levels” at the output of the microphone 30. Ryan at ¶¶ [0025]-[0026]. Ryan further discloses that signal processing circuitry 40 (not shown in Figure 3) uses I_D and I_O “to determine if the loudspeaker 20 is driving into a sealed acoustic cavity.” Ryan at ¶ [0030]. For example, “the ratio of these levels” may be used. *Id.* Ryan further discloses that “[t]he expected ratio of the signal levels I_D and I_O under the sealed and unsealed conditions is derived from knowledge of the electro-acoustic transfer function from the loudspeaker 20 to the microphone 30 under the various operating conditions.” *Id.* at ¶ [0031]. For example, Ryan explains, “at a frequency of 200 Hz, a ratio of acoustic output to loudspeaker drive of about -3 dB would indicate a sealed cavity, and a ratio of -25 dB would indicate an open cavity.” *Id.* at [0032].

In sum, Ryan does not compare the signal used to drive the loudspeaker 20 (green) to the signal received from microphone 30 (blue). Struck Dec. at ¶ 52. Thus, the signal from microphone 30 (blue) and the signal to loudspeaker 20 (green) are not compared by signal processing circuitry 40 (as the Final Office Action concedes) or any other component in Ryan.

Further, the Final Office Action's argument that it would have been obvious to "include[] the filtering/level detection elements 22 and 32 in the processing means [signal processing circuitry 40]" does not support the rejection. Final Office Action at 26. Such an arrangement would not satisfy the claim requirement of "comparing the microphone signal to the test fit signal to determine eartip seal." Instead, the intensity levels I_D and I_O , representing only low-level frequency components of the input to the loudspeaker 20 and the output of microphone 30, would continue to be used to determine if the acoustic cavity is sealed. Ryan at ¶ [0030]. The Final Office Action appears to contend that the claims require only that a processor be provided with some portion, no matter how insignificant, of a microphone signal and some portion of another signal, regardless of whether the other signal is a test fit signal or not. Patent Owner respectfully disagrees. The claims require that a processor *compare* a microphone signal and a test fit signal, and the Final Office Action's reading is wrong as Ryan does not perform such a comparison. Struck Dec. at ¶ 53.

Simply put, the Examiner's proposed hind-sight reconstruction of Ryan (Final Office Action, pp. 85-86) fails to consider (1) the fundamental objectives of the automatic functionality presented in Ryan and (2) the structures in Ryan that are designed to operate in an uncontrolled environment. The band pass filters 24 and 34, used to exclude substantial signal content, are exemplary. The Examiner's hind-sight reconstruction creates entirely new structure and functionality for Ryan, all of which is inconsistent with the fundamental automatic, real-time functionality of the described system.

e. Svean Is Not Properly Combinable with Ryan, and Svean Does Not Teach or Suggest Comparing a Test Fit Signal to a Microphone Signal.

The Examiner argues that “Svean discloses an analogous art, namely an earphone test fitment system and method.” Final Office Action at p. 25. But Svean describes a system that uses a test signal for purposes other than comparison, and Ryan teaches away from the production, storage, or use of any such signals. Ryan and Svean, thus, are not properly combinable to add test signal generation and use to Ryan. Further, the test signals produced in Svean are not compared to any microphone signal. Struck Dec., ¶¶54-60; *Samsung Elecs. Co. Ltd. et al. v. Staton Techiya, LLC*, IPR2022-00410, Paper 12 (Decision Denying Institution of Inter Parties Review) (PTAB Aug. 12, 2012) at 18. Thus, Ryan and Svean are not properly combined to add test signal comparison to Ryan.

Regarding claims 1 and 14, the Final Office Action appears to accept these facts, because it fails to point to Svean as support for adding to Ryan either (1) the production of a test fit signal or (2) comparison of a test fit signal to a microphone signal. Svean, thus, fails to remedy the defects of the Ryan disclosure. The Examiner’s findings with respect to Claims 1 and 14 should be overturned.

f. Padhi Is Not Properly Combinable with Ryan and Does Not Teach or Suggest Comparing a Test Fit Signal to a Microphone Signal.

The Examiner states that Padhi is analogous art and that “one of ordinary skill in the art would have looked to Padhi for examples of comparing signals, and would have been motivated by Padhi’s disclosure that cross correlating a microphone signal and a reference signal is an improvement over merely comparing the levels of the signal (such as in Ryan), improving accuracy.” Final Office Action at 33-34. Only hindsight, using the claims of the ‘836 Patent as a guide, supports this analysis. Further, the Examiner’s rationale is fundamentally flawed because

the prior art technology teaches away from any such combination. Ryan compares single values of ratio levels to stored values or thresholds. *See, e.g.*, Ryan at ¶¶[0032] and [0038]. Correlation and cross-correlation, however, are only useful when applied to vectors (e.g., signals that have multiple values versus time or frequency). Such signals are not processed in Ryan. Only intensity signal levels I_D and I_O are processed in Ryan. *See, e.g.*, Ryan at ¶¶[0025], [0026], [0030]-[0032], and [0038]. One of ordinary skill would not modify Ryan to utilize cross-correlation, as taught in Padhi, because using cross correlation on intensity signals I_D and I_O would be impossible. *See, e.g.*, Struck Dec., ¶63 (concluding that “Padhi’s cross-correlation technique is not applicable to the intensities I_D and I_O of Ryan”).

Further, even if Ryan was somehow modified such that the intensities I_D and I_O would be cross-correlated, that would not satisfy the claim limitation “comparing the microphone signal to the test fit signal to determine eartip seal.” Neither of intensities I_D and I_O is a microphone signal or a test fit signal, as the Final Office Action has conceded. *See* Final Office Action at 39 (“Ryan fails to disclose that the processor receives the microphone signal from the microphone as well as the test fit signal for the comparison, rather Ryan discloses that the processor receives a filtered and level-detected signal from elements 22 and 32 (FIG 3) which are connected to the test fit signal and microphone, respectively.”); and Struck Dec. at ¶ 66.

Finally and compelling on this point, the Final Office Action does not contend that Padhi discloses the limitation “comparing the microphone signal to the test fit signal to determine eartip seal.” Rather, the Final Office Action relies on Padhi only in connection with Ryan’s failure to disclose cross-correlation and time alignment. Final Office Action at 33. Patent Owner notes, however, for the reasons discussed in Section I, above, the processor elements of the claims are

not means-plus-function limitations and are not governed by 35 U.S.C. §112 ¶6. Hence, the claims do not require cross-correlation.

2. Dependent Claims 6, 8, 20, 21, and 28-30.

Dependent claims 6, 8, 20, 21, and 28-30 should be deemed patentable for reasons beyond those articulated above.

a. Claim 6.

Claim 6 covers “The microphone according to claim 3, where the microphone signal is buffered in memory.” With regard to claim 6, the Examiner states:

While the combination of Ryan in view of Svean and Padhi fails to disclose buffering one or more of the signals to be processed, Ryan discloses storing ratio data of the two signals prior to further processing, and Padhi discloses that the two signals are arranged such that frames line up in the time domain. Ryan at ¶[0051], Padhi at Fig. 2 and ¶[0039]. One of ordinary skill in the art at the time would have found it obvious to modify the combined teachings of Ryan in view of Svean and Padhi in such a manner, namely as to storing one or both of the compared signals in order to provide the analysis at a later time in the manner of the other teachings of Ryan, as it would help adjust the device after initial fitting as specifically stated by Ryan. *Id.* at ¶[0050]. Likewise, one of ordinary skill in the art would have understood buffering a signal in a processor to have been an obvious modification as it was in consistent use at the time of the invention in digital systems for processing and comparing two signals such that the signals are compared or processed at the same time, as shown by Padhi.

Final Office Action, at p. 28.

This statement is at odds with the automatic, real-time functionality of Ryan, and the fact that real-time conditions at one point in time will have little to no effect on later derived intensity signal determinations. The reason for this is clear – ambient signals provided to the input of loudspeaker 20 will differ, likely substantially, at different points in time. Further, nothing in Ryan suggests buffering portions of the input to the loudspeaker 20 or output of the microphone 30, as that is avoided in Ryan. Ryan develops first and second intensity signal levels, I_D and I_O , from the

input to the loudspeaker 20 and output of the microphone 30, but no buffering of the described loudspeaker or microphone signals is taught or suggested. Ryan makes no effort at all to buffer those signals for good reason, namely the Ryan detection methodology operates automatically and continuously, such that any provided buffers would be consistently and repeatedly overrun. This is in stark contrast to the '836 Patent which describes buffering of both the test fit signal and microphone signal. *See, e.g., '836 Patent, Figs. 4 and 5, 9:13 to 11:13.*

Accordingly, the Examiner's rejection of claim 6 should be overturned.

b. Claim 8.

Claim 8 covers "The earphone according to claim 6, where the received microphone signal is recording when the audio test signal is being emitted by the speaker."

The Examiner's rejection of claim 8 should be overturned for all of the reasons set forth above, but also because the Examiner has pointed to nothing in Ryan indicating that the output of microphone 30 is ever recorded or stored in any form. The test fit signal and ECM signal, the latter of which the '836 Patent specification notes can be filtered for noise before or after buffering ('836 Patent at 9:32-39, Fig. 4), are recorded, i.e., stored, as part of the buffering process (*see, e.g., '836 Patent, Figs. 4 and 5, 9:13 to 11:13*), but nothing similar is described or suggested in Ryan.

c. Claim 20.

Claim 20 covers "The earphone according to claim 1, wherein the test signal is acoustically masked." The Examiner states in support of this rejection that "Svean discloses that the test signal may be acoustically masked."

The Examiners rejection of claim 20 should be overturned for all of the reasons stated regarding claim 1 and also because introducing the test signal generator of Svean would be inconsistent and at odds with the teaching of Ryan. As explained above, the entirety of Ryan

focuses on automatic, real-time determinations where use of an additional test signal generator would degrade or destroy the system's objectives, including that of minimizing power consumption in a down state and continuously providing detected ambient sound to a user through the hearing aid. Further, masking makes no sense in context of Ryan where the input to loudspeaker 20 and output of microphone 30 are monitored for "low-frequency signal levels." Ryan at ¶¶[0025] and [0026].

The Examiner has failed to show why a test fit signal generator, such as that described in Svean, should be added to Ryan, when Ryan teaches away from doing so, and the Examiner has failed to show why any test signal generated in Svean would be useful in Ryan, as the test signals of Svean are not compared to any microphone signal. The Examiner has further failed to show how any masking would be useable in Ryan, where the signal at the input to the loudspeaker 20 is most likely the signal from an ambient microphone used by the hearing aid. Masking that signal would completely defeat the primary purpose of the hearing aid – to allow the user to hear sounds in the user's environment.

The Examiner's rejection of claim 20 should be overturned irrespective of what may be done with claim 1.

d. Claim 21.

Claim 21 covers "The earphone according to claim 3, wherein the frequency component is below 50 Hz." The Examiner states in support of this rejection that "Svean discloses the test signal being below 50 Hz."

The Examiners rejection of claim 21 should be overturned for all of the reasons stated regarding claim 1 and also because introducing the test signal generator of Svean would be inconsistent and at odds with the teaching of Ryan. As explained above, the entirety of Ryan

focuses on automatic, real-time determinations where use of an additional test signal generator would degrade or destroy the system's objectives, including that of continuously providing detected ambient sound to a user through the hearing aid.

The Examiner has failed to show why a test signal generator, such as that described in Svean, should be added to Ryan, when Ryan teaches away from doing so, and the Examiner has failed to show why any test signal generated in Svean would be useful in Ryan, when the test signals of Svean are not compared to any microphone signal. The Examiner's rejection of claim 21 should therefore be overturned irrespective of what may be done with claim 1.

e. Claim 28.

Claim 28 covers "The earphone according to claim 14, wherein the test signal is acoustically masked." The Examiner states in support of this rejection that "Svean discloses that the test signal may be acoustically masked."

The Examiners rejection of claim 28 should be overturned for all of the reasons stated regarding claim 14 and also because introducing the test signal generator of Svean would be inconsistent and at odds with the teaching of Ryan. As explained above, the entirety of Ryan focuses on automatic, real-time determinations where use of an additional test signal generator would degrade or destroy the system's objectives, including that of minimizing power consumption in a down state and continuously providing detected ambient sound to a user through the hearing aid. Further, masking makes no sense in context of Ryan where the input to loudspeaker 20 and output of microphone 30 are monitored for "low-frequency signal levels." Ryan at ¶¶[0025] and [0026].

The Examiner has failed to show why a test fit signal generator, such as that described in Svean, should be added to Ryan, when Ryan teaches away from doing so, and the Examiner has

failed to show why any test signal generated in Svean would be useful in Ryan, as the test signals of Svean are not compared to any microphone signal. The Examiner has further failed to show how any masking would be useable in Ryan, where the signal at the input to the loudspeaker 20 is most likely the signal from an ambient microphone used by the hearing aid. Masking that signal would completely defeat the primary purpose of the hearing aid – to allow the user to hear sounds in the user’s environment.

The Examiner’s rejection of claim 28 should be overturned irrespective of what may be done with claim 14.

f. Claim 29

Claim 29 covers “The earphone according to claim 16, wherein the frequency component is below 50 Hz.” The Examiner states in support of this rejection that “Svean discloses the test signal being below 50 Hz.”

The Examiners rejection of claim 29 should be overturned for all of the reasons stated regarding claim 14 and also because introducing the test signal generator of Svean would be inconsistent and at odds with the teaching of Ryan. As explained above, the entirety of Ryan focuses on automatic, real-time determinations where use of an additional test signal generator would degrade or destroy the system’s objectives, including that of continuously providing detected ambient sound to a user through the hearing aid.

The Examiner has failed to show why a test fit signal generator, such as that described in Svean, should be added to Ryan, when Ryan teaches away from doing so, and the Examiner has failed to show why any test signal generated in Svean would be useful in Ryan, when the test signals of Svean are not compared to any microphone signal. The Examiner’s rejection of claim 29 should therefore be overturned irrespective of what may be done with claim 14.

g. Claim 30.

Claim 30 covers, “The earphone according to claim 14, wherein the operations further comprise sending a test fit signal to the speaker when the test can be performed unobtrusively to the user and can provide an accurate test.” The Examiner states in support of this rejection that “Svean discloses that the test signal may be sent in an unobtrusive manner.”

The Examiners rejection of claim 30 should be overturned for all of the reasons stated regarding claim 14 and also because introducing the test signal generator of Svean would be inconsistent and at odds with the teaching of Ryan. As explained above, the entirety of Ryan focuses on automatic, real-time determinations where use of an additional test signal generator would degrade or destroy the system’s objectives, including that of continuously providing detected ambient sound to a user through the hearing aid.

The Examiner has failed to show why a test fit signal generator, such as that described in Svean, should be added to Ryan, when Ryan teaches away from doing so, and the Examiner has failed to show why any test signal generated in Svean would be useful in Ryan, when the test signals of Svean are not compared to any microphone signal. The Examiner’s rejection of claim 29 should therefore be overturned irrespective of what may be done with claim 14.

B. *Rejection of Claims 9-13 and 24-26.*

The Examiner rejected claims 9-13 and 24-26 under pre-AIA 35 U.S.C. §103(a) as being unpatentable over U.S. Pat. PGPUB 2004/0196992 A1 to Ryan (“Ryan”) in view of U.S. Pat. 6,567,524 B1 to Svean et al. (Svean”) and U.S. Pat. PGPUB 2005/0096899 A1 to Padhi et al. (“Phadi”), and U.S. PGPUB 2006/0188105 A1 to Baskerville *et al.* (“Baskerville”).

The Examiner erred in making these rejections by (1) reading structure into Ryan that is not there and would be inconsistent with the teaching of Ryan; (2) improperly combining Ryan with Svean and other references when the two references teach away from doing so; and (3) improperly employing hindsight in the obviousness analysis.

1. Independent Claim 9.

Claim 9 requires that the recited processor perform the functions of “sending a test fit signal to the speaker, where the speaker emits an audio test signal in response to the test fit signal” and “comparing the microphone signal to the test fit signal to determine eartip seal.” Neither of these limitations is disclosed in Ryan.

The cited Ryan, Svean, and Padhi references fail to teach or suggest the above-quoted limitations for the same reasons presented above with respect to claims 1 and 14. *See* Sections IIIA1a-f above. The Examiner’s further citation of Baskerville does not remedy the deficiencies in the Ryan, Svean, and Padhi references.

Baskerville does not address a hearing aid and does not compare a generated, electrical test fit signal to a signal generated by a microphone. Nor does Baskerville address a system where an audio signal is delivered to a speaker configured for generating sound within an ear canal. Rather, Baskerville provides as system and method for determining the efficacy of an in-ear hearing protector. *See, e.g.*, Baskerville at ¶¶[0001], [0009], [0011], and [0035]. To do this, Baskerville teaches deploying a microphone through an in-ear hearing protector to be located within an ear canal, deploying a microphone external to the ear canal, and generating a sound external to the protected ear canal that should be blocked or attenuated by the in-ear hearing protector. *Id.* at ¶¶[0035], [0036], and [0045].

Baskerville is not properly combinable with Ryan for several reasons. First, as noted above, Ryan teaches away from the generation, storage, and use of test fit signals. Indeed, the entire focus of Ryan is on automatically and in real-time determining whether a hearing instrument is inserted or removed by selecting and analyzing (1) designated low-frequency signal levels from whatever audio signal, likely a signal from an external microphone, exists at the input to the loudspeaker 20 and (2) designated low-frequency signal levels at the output of microphone 30. Ryan at ¶¶[0025] and [0026]. Use of a generated test signal would interfere with Ryan's processes, degrade the performance of the Ryan hearing aid, including by consuming power when "automatic low power consumption" is desired, and prove an annoyance to the user of that aid. Struck Dec., at ¶¶80 and 83. Further, Baskerville teaches away from any comparison of an electrical test signal generated by a processor to a microphone signal. Baskerville teaches that the signals of separate microphones disposed on opposite sides of an in-ear hearing protector should be compared, when one or more speakers in the external environment generate(s) an audio signal. Baskerville at ¶¶[0035], [0036], and [0045]. The structures and approaches of Ryan and Baskerville are, thus, fundamentally different. There is simply no basis, other than hindsight, for combining those references to achieve the invention defined by claim 9.

2. Dependent Claims 24-26.

Dependent claims 24-26 should be deemed patentable for reasons beyond those articulated above.

a. Claim 24.

Claim 24 covers, "The earphone according to claim 9, wherein the test signal is acoustically masked." The Examiner states in support of this rejection that "Svean discloses that the test signal may be acoustically masked."

The Examiners rejection of claim 24 should be overturned for all of the reasons stated regarding claim 9 and also because introducing the test signal generator of Svean would be inconsistent and at odds with the teaching of Ryan. As explained above, the entirety of Ryan focuses on automatic, real-time determinations where use of an additional test signal generator would degrade or destroy the system's objectives, including that of minimizing power consumption in a down state and continuously providing detected ambient sound to a user through the hearing aid. Further, masking makes no sense in context of Ryan where the input to loudspeaker 20 and output of microphone 30 are monitored for "low-frequency signal levels." Ryan at ¶¶[0025] and [0026].

The Examiner has failed to show why a test fit signal generator, such as that described in Svean, should be added to Ryan, when Ryan teaches away from doing so, and the Examiner has failed to show why any test signal generated in Svean would be useful in Ryan, as the test signals of Svean are not compared to any microphone signal. The Examiner has further failed to show how any masking would be useable in Ryan, where the signal at the input to the loudspeaker 20 is most likely the signal from an ambient microphone used by the hearing aid. Masking that signal would completely defeat the primary purpose of the hearing aid, namely to allow the user to hear sounds in the users environment.

The Examiner's rejection of claim 24 should be overturned irrespective of what may be done with claim 9.

b. Claim 25.

Claim 25 covers "The earphone according to claim 11, wherein the frequency component is below 50 Hz." The Examiner states in support of this rejection that "Svean discloses the test signal being below 50 Hz."

The Examiners rejection of claim 25 should be overturned for all of the reasons stated regarding claim 9 and also because introducing the test signal generator of Svean would be inconsistent and at odds with the teaching of Ryan. As explained above, the entirety of Ryan focuses on automatic, real-time determinations where use of an additional test signal generator would degrade or destroy the system's objectives, including that of minimizing power consumption in a down state and continuously providing detected ambient sound to a user through the hearing aid.

The Examiner has failed to show why a test fit signal generator, such as that described in Svean, should be added to Ryan, when Ryan teaches away from doing so, and the Examiner has failed to show why any test signal generated in Svean would be useful in Ryan, when the test signals of Svean are not compared to any microphone signal. The Examiner's rejection of claim 25 should therefore be overturned irrespective of what may be done with claim 9.

c. Claim 26.

Claim 26 covers, "The earphone according to claim 9, wherein the operations further comprise sending a test fit signal to the speaker when the test can be performed unobtrusively to the user and can provide an accurate test." The Examiner states in support of this rejection that "Svean discloses that the test signal may be sent in an unobtrusive manner."

The Examiner's rejection of claim 26 should be overturned for all of the reasons stated regarding claim 9 and also because introducing the test signal generator of Svean would be inconsistent and at odds with the teaching of Ryan. As explained above, the entirety of Ryan focuses on automatic, real-time determinations where use of an additional test signal generator would degrade or destroy the system's objectives, including that of minimizing power

consumption in a down state and continuously providing detected ambient sound to a user through the hearing aid.

The Examiner has failed to show why a test fit signal generator, such as that described in Svean, should be added to Ryan, when Ryan teaches away from doing so, and the Examiner has failed to show why any test signal generated in Svean would be useful in Ryan, when the test signals of Svean are not compared to any microphone signal. The Examiner's rejection of claim 26 should therefore be overturned irrespective of what may be done with claim 9.

C. *Rejection of Claims 4 and 17.*

The Examiner has rejected claims 4 and 17 under pre-AIA 35 U.S.C. §103(a) as being unpatentable over U.S. Pat. PGPUB 2004/0196992 A1 to Ryan ("Ryan") in view of U.S. Pat. 6,567,524 B1 to Svean et al. (Svean") and U.S. Pat. PGPUB 2005/0096899 A1 to Padhi et al. ("Phadi"), and further in view of U.S. PGPUB 2006/0188105 A1 to Baskerville *et al.* ("Baskerville").

Patent Owner submits that claims 4 and 17 are patentable for the same reasons that the claims from which they depend are patentable. *See* Analysis of Claims 1 and 14, above.

D. *Rejection of Claims 19, 23, and 27.*

The Examiner has rejected claims 19, 23, and 27 under pre-AIA 35 U.S.C. §103(a) as being unpatentable over U.S. Pat. PGPUB 2004/0196992 A1 to Ryan ("Ryan") in view of U.S. Pat. 6,567,524 B1 to Svean et al. (Svean") and U.S. Pat. PGPUB 2005/0096899 A1 to Padhi et al. ("Phadi"), and further in view of U.S. Pat. 6,879,692 B2 to Nielsen *et. al.* Nielsen).

Patent Owner submits that claims 19, 23, and 27 are patentable for the same reasons that the claims from which they depend are patentable. *See* Analysis of Claims 1, 9 and 14, above.

Patent Owner further submits that nothing within Nielsen suggests “comparing the microphone signal to the test fit signal to determine eartip seal” as required by the claims. The Examiner points to no such teaching. Indeed, Nielsen is directed to identifying potential defects within circuit paths of a hearing aid (Nielsen, Abstract, 1:20-53) and not to evaluating the fit of a hearing device within an ear canal, as described and claimed in the '836 Patent.

Finally, providing the 1 kHz signal of Nielsen to the input of loudspeaker 20 of Ryan would only work to defeat the functionality of Ryan and make use of the Ryan device less useful to persons with impaired hearing.

IX. CLAIMS APPENDIX

See attached.

X. CONCLUSION

In view of the foregoing, Patent Owner respectfully requests that the Examiner's determination to treat the "processor" limitations as means-plus-function terms under 35 U.S.C. §112 ¶6, be overturned, and that the Examiner's rejections of claims 1-30 also be overturned. Patent Owner further requests issuance of a Reexamination Certificate confirming claims 1-30 as patentable.

Respectfully submitted,

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