

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MED-EL ELEKTROMEDIZINISCHE GERÄTE GES.M.B.H.,
Petitioner,

v.

ADVANCED BIONICS AG,
Patent Owner.

IPR2020-01016 (Patent 8,155,746 B2)
IPR2021-00044 (Patent 8,155,746 B2)¹

Before SCOTT A. DANIELS, ERIC C. JESCHKE, and
RICHARD H. MARSCHALL, *Administrative Patent Judges*.

JESCHKE, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
35 U.S.C. § 318(a)

¹ Given the overlapping issues, we issue a combined Final Written Decision addressing the issues raised in both proceedings.

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I. BACKGROUND

Petitioner, MED-EL Elektromedizinische Geräte Ges.m.b.H., challenges claims 1–24 of U.S. Patent No. 8,155,746 B2 (Ex. 1001², “the ’746 patent”), which is assigned to Patent Owner, Advanced Bionics AG. We have jurisdiction under 35 U.S.C. § 6, and we issue this Final Written Decision under 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons below, we conclude that Petitioner has proven, by a preponderance of the evidence, the unpatentability of all of the challenged claims.

A. Procedural History

On May 29, 2020, Petitioner filed a Petition to institute an *inter partes* review of the challenged claims in IPR2020-01016 (the “First IPR”). First IPR, Paper 1 (“First Pet.”). Patent Owner filed a Preliminary Response. First IPR, Paper 6. With Board authorization (First IPR, Paper 8), Petitioner timely filed a Preliminary Reply to Patent Owner’s Preliminary Response (First IPR, Paper 9), and Patent Owner timely filed a Preliminary Sur-reply to Petitioner’s Preliminary Reply (First IPR, Paper 10). On December 8, 2020, we instituted trial as to the challenged claims in the First IPR. First IPR, Paper 13 (“First Decision on Institution” or “First Dec. Inst.”).

On October 7, 2020, Petitioner filed a Petition to institute an *inter partes* review of the challenged claims in IPR2021-00044 (the “Second IPR”). Second IPR, Paper 1 (“Second Pet.”). Patent Owner filed a Preliminary Response. Second IPR, Paper 7. With Board authorization

² If a citation to an exhibit or paper does not identify one of the two now-consolidated proceedings as its source, that exhibit or paper has the same identification number in both. Otherwise, we include in the citation one of the two now-consolidated proceedings.

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(Second IPR, Ex. 3001), Petitioner timely filed a Preliminary Reply to Patent Owner's Preliminary Response (Second IPR, Paper 8), and Patent Owner timely filed a Preliminary Sur-reply to Petitioner's Preliminary Reply (Second IPR, Paper 13). On April 6, 2021, we instituted trial as to the challenged claims in the Second IPR. Second IPR, Paper 14 ("Second Decision on Institution" or "Second Dec. Inst.").

On May 24, 2021, Petitioner filed in each proceeding an original motion to consolidate the two proceedings, each of which challenges claims 1–24 of the '746 patent. *See* First IPR, Paper 25; Second IPR, Paper 17. Over Patent Owner's oppositions (First IPR, Paper 26; Second IPR, Paper 18), we granted in part the motions to consolidate, maintaining the two proceedings as administratively separate proceedings. First IPR, Paper 30; Second IPR, Paper 23. In the motions to consolidate, Petitioner also requested a good-cause extension of the one-year statutory deadline for the final written decision in the First IPR, which was granted. First IPR, Papers 28 & 29.

During trial in the First IPR, Patent Owner filed a Corrected Response (First IPR, Paper 22 ("First PO Resp.")), Petitioner filed a Reply (First IPR, Paper 27 ("First Pet. Reply")), and Patent Owner filed a Sur-reply (First IPR, Paper 31 ("First PO Sur-reply")). Petitioner relies on the declaration testimony of Dr. Khalil Najafi, filed with the First Petition. *See* First IPR, Ex. 1002 ("First Najafi Decl."). Patent Owner relies on the declaration testimony of Dr. Darrin J. Young, filed with the First Patent Owner Response. *See* First IPR, Ex. 2013 ("First Young Decl.").

During trial in the Second IPR, Patent Owner filed a Response (Second IPR, Paper 24 ("Second PO Resp.")), Petitioner filed a Reply

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(Second IPR, Paper 27 (“Second Pet. Reply”)), and Patent Owner filed a Sur-reply (Second IPR, Paper 29 (“Second PO Sur-reply”). Petitioner relies on the declaration testimony of Dr. Khalil Najafi, filed with the Second Petition (Second IPR, Ex. 1002 (“Second Najafi Pet. Decl.”) and the Reply (Second IPR, Ex. 1060 (“Second Najafi Reply Decl.”). Patent Owner relies on the declaration testimony of Dr. Darrin J. Young, filed with the Second Patent Owner Response. *See* Second IPR, Ex. 2014 (“Second Young Decl.”).

A consolidated oral hearing in these proceedings was held on January 5, 2022, and a copy of the transcript of that argument was entered into the record of each proceeding. First IPR, Paper 40; Second IPR, Paper 38.

After the oral hearing, with Board authorization (Ex. 3003), Petitioner moved to fully consolidate these two proceedings. First IPR, Paper 38; Second IPR, Paper 35. Patent Owner opposed. First IPR, Paper 39; Second IPR, Paper 37. We address these renewed motions to consolidate below. *See* § III.

B. Real Parties in Interest

Petitioner identifies itself and MED-EL Corporation, USA as real parties in interest. First Pet. 2; Second Pet. 2. Patent Owner identifies itself as well as Advanced Bionics, LLC and Sonova AG as real parties in interest. First IPR, Paper 5 (Patent Owner’s Mandatory Notices) § I.A; Second IPR, Paper 5 (Patent Owner’s Mandatory Notices) at 2.

C. Related Proceedings

The parties both identify an active proceeding in the U.S. District Court for the District of Delaware involving the ’746 patent: *MED-EL Elektromedizinische Geräte Ges.m.b.H. v. Advanced Bionics, LLC*, No.

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1:18-cv-01530 (D. Del.), filed October 3, 2018. First Pet. 3; First IPR, Paper 5 at 2; Second Pet. 2–3; Second IPR, Paper 5 at 2. The Delaware Litigation also involves U.S. Patent No. 8,634,909 B2 (“the ’909 patent”), U.S. Patent No. RE46,057 E (“the ’057 patent”), U.S. Patent No. 6,761,681 B2 (“the ’681 patent”), U.S. Patent No. 8,155,747 B2 (“the ’747 patent”), and U.S. Patent No. 7,267,847 B2 (“the ’847 patent”). First IPR, Paper 5 at 2–3; Second IPR, Paper 5 at 2–3.

Patent Owner identifies other proceedings before the Office involving Patent Owner’s patents at issue in the Delaware Litigation. First IPR, Paper 5 at 2–3; Second IPR, Paper 5 at 2–3. Real party in interest Advanced Bionics, LLC filed petitions for *inter partes* review of (1) claims 1, 3, 5, 6, 10, 11, 14, 16, and 20 of the ’909 patent, in IPR2019-01469, and (2) claim 19 of the ’057 patent, in IPR2019-01572. *See Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte Ges.m.b.H.*, IPR2019-01469, Paper 1 (PTAB Aug. 5, 2019); *Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte Ges.m.b.H.*, IPR2019-01572, Paper 1 (PTAB Sept. 4, 2019). The Board denied institution in both of those proceedings. *See IPR2019-01469*, Paper 6 (PTAB Feb. 13, 2020); *IPR2019-01572*, Paper 11 (PTAB Mar. 19, 2020).

Petitioner also filed petitions for *inter partes* review of (1) claims 6–9, 11, and 12 of the ’681 patent, in IPR2020-00176, and (2) claims 1–8 of the ’747 patent, in IPR2020-00190. *See MED-EL Elektromedizinische Geräte Ges.m.b.H. v. Sonova AG*, IPR2020-00176, Paper 1 (PTAB Nov. 26, 2019); *MED-EL Elektromedizinische Geräte Ges.m.b.H. v. Advanced Bionics AG*, IPR2020-00190, Paper 1 (PTAB Nov. 27, 2019). The Board issued final written decisions in those proceedings. *See IPR2020-00176*, Paper 38

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(PTAB June 2, 2021); IPR2020-00190, Paper 45 (PTAB June 2, 2021).

Petitioner also filed a petition for *inter partes* review of claims 1, 2, 5, 7, 8, 10, 11, and 14 of the '847 patent, in IPR2021-00023. See *MED-EL Elektromedizinische Geräte Ges.m.b.H. v. Sonova AG*, IPR2021-00023, Paper 1 (PTAB Oct. 6, 2020). The Board instituted *inter partes* review in that proceeding.

D. The '746 Patent

The '746 patent “relates to hearing aid prosthesis devices, and, in a preferred embodiment, to a cochlear implant system having an external sound processor with a permanently integrated replenishable power source, e.g., a rechargeable battery.” Ex. 1001, 1:14–18. According to the '746 patent, prior cochlear implant systems used batteries that needed to be regularly removed from the sound processor for charging or replacement, leading to various problems. *Id.* at 1:22–48.

Figure 3 is reproduced below:

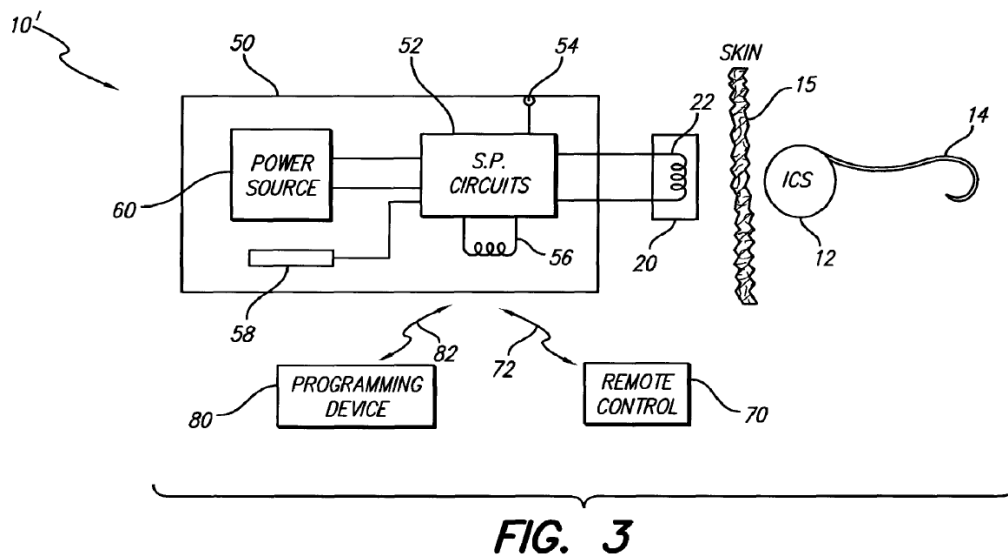


Figure 3 is “a block diagram of an externally-worn sound processor with [an] integral replenishable power source.” Ex. 1001, 3:25–26. Figure 3

shows sound processor 50, which includes “sound processing circuits 52 coupled to a suitable microphone 54, or other sound source, and a headpiece 20” as well as “replenishable power source 60 that is integral with, i.e., included within, the sound processor 50.” *Id.* at 4:58–62.³ Charging/communication coil 56 is “included as an integral part of the sound processor 50” and provides a means to receive a charging signal to charge power source 60 via an external source. *Id.* at 4:62–65, 5:7–10. In a preferred embodiment, replenishable power source 60 is a rechargeable lithium-ion battery. *Id.* at 4:66–67. The depicted system also includes “headpiece 20 connected to the sound processing circuit 52 through which the stimulation signal and the power signal are transferred by a coil 22 to an implantable cochlear stimulator 12.” *Id.* at 6:2–5.

Figure 5 is reproduced below:

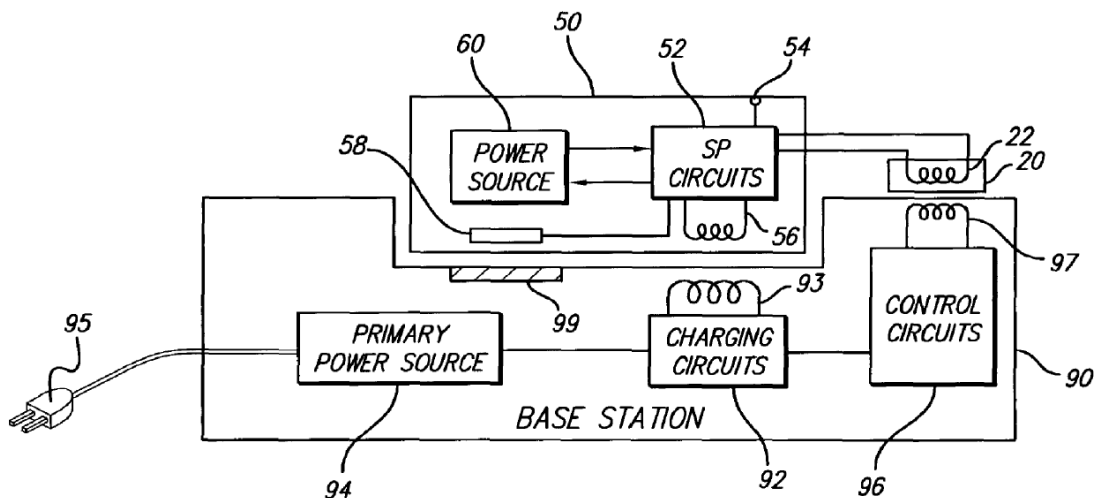


FIG. 5

Figure 5 “depicts the manner in which the integral power source of the sound processor may be recharged using a base station.” Ex. 1001, 3:31–33.

³ Throughout this Decision, we omit any bold emphasis of reference numerals in quotations from the ’746 patent and from prior art references.

Figure 5 shows charging circuit 92, which receives power from primary power source 94 and inductively transfers power through coil 93 in the base station to coil 56 in sound processor 50. *Id.* at 6:62–65.

Figure 6 is reproduced below:

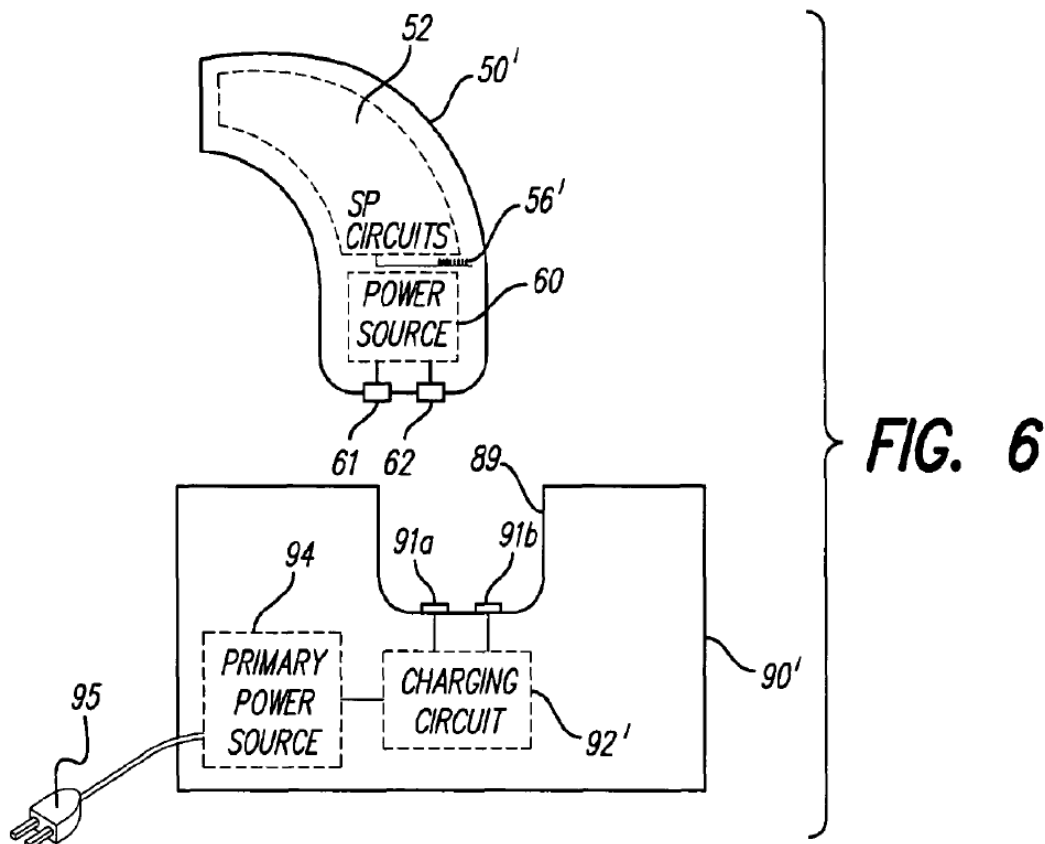


Figure 6 depicts “an alternative type of base station that may be used to recharge the power source within the sound processor.” Ex. 1001, 3:34–35. In this embodiment, base station 90' includes an opening 89 to receive sound processor 50'. *Id.* at 7:33–36. Once contacts 61/62 make adequate contact with terminals 91a/91b, charging circuit 92' controls the charging of power source 60. *Id.* at 7:41–49.

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E. Challenged Claims

Petitioner challenges claims 1–24, of which claims 1, 10, 18, and 24 are independent. Claims 2–9 depend from claim 1, claims 11–17 depend from claim 10, and claims 19–23 depend from claim 18. Independent claim 1 is reproduced below, with bracketed numerical designations added:

1. [1.1] A cochlear implant system, comprising:

an implantable cochlear stimulator;

[1.2] an external sound processor including [1.3] a closed case, [1.4] a sound processor circuit, [1.5] a rechargeable power source permanently and integrally housed within the closed case, [1.6] and at least one electrical contact electrically connected to the rechargeable power source and embedded within or carried on an exterior surface of the closed case such that the at least one electrical contact is exposed outside the closed case; and

[1.7] a coil operably connected to the sound processor circuit.

Ex. 1001, 8:21–31.⁴

F. Instituted Grounds of Unpatentability

We instituted *inter partes* review of the challenged claims based on the following grounds of unpatentability asserted by Petitioner:

⁴ We adopt Petitioner’s numerical designations for the elements of the challenged claims. *See* First Pet. 76–84 (showing numerical designations for the language in the challenged claims); Second Pet. 71–79 (same). We apply these designations below.

Claim(s) Challenged	35 U.S.C. §⁵	Reference(s)/Basis
1–24	103(a)	AAPA ⁶ , Petersen ⁷
10–17, 24	103(a)	Zilberman ⁸ , Saaski ⁹
10–17, 24	103(a)	AAPA, Zilberman, Saaski
1–4, 6–8, 10–15, 17–22, 24	103(a)	Crosby ¹⁰ , Petersen
5, 9, 16, 23	103(a)	Crosby, Petersen, Zilberman '022 ¹¹
10–15, 17	103(a)	Crosby, Petersen, Nagai ¹²
16	103(a)	Crosby, Petersen, Zilberman '022, Nagai

⁵ The Leahy-Smith America Invents Act (“AIA”) included revisions to 35 U.S.C. § 103 that became effective on March 16, 2013. Pub. L. No. 112-29, §§ 3(c), 3(n)(1), 125 Stat. 284, 287, 293 (2011). Because the application from which the ’746 patent issued was filed before March 16, 2013, we apply the pre-AIA version of this statute. We would reach the same outcome, however, under the AIA version of the statute.

⁶ Statements in the ’746 patent at column 1, lines 22–28; column 3, lines 21–24; and column 3, line 47 through column 4, line 55 (Ex. 1001, “AAPA”). Petitioner refers to these statements as “AAPA.” *See* Pet. 2.

⁷ International Publication No. WO 97/04619, published February 6, 1997 (Ex. 1017, “Petersen”).

⁸ US 2001/0056291 A1, published December 27, 2001 (Ex. 1018, “Zilberman”).

⁹ US 6,310,960 B1, issued October 30, 2001 (Ex. 1021, “Saaski”).

¹⁰ US 4,532,930, issued August 6, 1985 (Ex. 1008, “Crosby”).

¹¹ US 5,824,022, issued October 20, 1998 (Ex. 1014, “Zilberman ’022”).

¹² US 5,991,170, issued November 23, 1999 (Second IPR, Ex. 1039 (“Nagai”).

II. DISCUSSION

A. *The Level of Ordinary Skill in the Art*

The level of ordinary skill in the art is “a prism or lens” through which we view the prior art and the claimed invention. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001). 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. *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995). In determining the level of ordinary skill in the art, we may consider certain factors, including the “type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field.” *Id.* (internal quotation marks and citation omitted).

Petitioner contends that one of ordinary skill in the art at the time of the invention would have had

(a) at least a bachelor’s degree in electrical engineering, biomedical engineering, physics, or a related field, and (b) at least three years of experience in developing biomedical devices, with a working knowledge of (i) typical cochlear implant systems and (ii) power management of biomedical devices, including rechargeable batteries, charging through direct electrical contacts, and inductive charging.

First Pet. 23; Second Pet. 21. According to Petitioner, “[a] higher level of education would substitute for less work experience, and vice versa.” First Pet. 23; Second Pet. 21.

Patent Owner does not dispute clauses (a), (b), and (b)(i) of Petitioner’s definition or that a higher level of education may substitute for less work experience, or vice versa, but Patent Owner disputes clause (b)(ii) of Petitioner’s proposed definition, arguing that it reflects “improper

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hindsight” and “essentially presumes at the outset that [one of ordinary skill in the art] would have both recognized problems in the power management of cochlear implant systems and attempted to solve them using the [’746 patent] invention by incorporating ‘charging through direct electrical contacts, and inductive charging.’” First PO Resp. 5; Second PO Resp. 5. According to Patent Owner, with the proposed “hindsight-based” definition, Petitioner “largely ignore[s] that the Challenged Claims are directed to a cochlear implant system and attempt[s] to incorporate power management aspects of unrelated hearing aid devices into cochlear implant sound processors” using the phrase “power management of biomedical devices” in clause (b)(ii). First PO Resp. 4–5; Second PO Resp. 6.

As an initial matter, we agree with and adopt clauses (a), (b), and (b)(i) of Petitioner’s proposed definition of the level of ordinary skill in the art, which Patent Owner does not contest and which appear consistent with the record developed at trial, including the prior art. *See GPAC Inc.*, 57 F.3d at 1579; First Najafi Decl. ¶¶ 80–83, *cited at* First Pet. 22–23; Second Najafi Pet. Decl. ¶¶ 72–75, *cited at* Second Pet. 20–21.

We turn now to clause (b)(ii), at issue between the parties. We first address the proposed language “including rechargeable batteries, charging through direct electrical contacts, and inductive charging.” In both Decisions on Institution, we agreed with Patent Owner and did not include this language in the level of ordinary skill in the art as determined at that stage of the proceedings. First Dec. Inst. 9–10; Second Dec. Inst. 34–35. Specifically, we agreed with Patent Owner that “the specific identity of the subtopics listed by Petitioner as allegedly included in ‘power management of biomedical devices’ . . . is an issue more appropriately addressed in the

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context of the scope and content of the prior art, rather than the definition of one of ordinary skill in the art.” First Dec. Inst. 10; Second Dec. Inst. 34–35. In both Replies, Petitioner agrees with this approach. *See* First Pet. Reply 3; Second Pet. Reply 4. We do not include this language in the level of ordinary skill in the art.

We now address the remaining language in disputed clause (b)(ii): “power management of biomedical devices.” For the reasons below, we continue to include this portion of clause (b)(ii) in the level of ordinary skill in the art. The parties dispute whether it is proper to refer to the ’746 patent in the process of defining the level of ordinary skill in the art. Patent Owner takes the position that referring to the ’746 patent is improper “hindsight,” with Patent Owner asserting that Dr. Najafi “admitted” to arriving at his definition of the level of ordinary skill in the art based, at least in part, on the problem(s) stated in the ’746 patent. *See* First PO Resp. 5 (citing First IPR, Ex. 2014, 83:11–14, 82–83); Second PO Resp. 5–6 (citing Ex. 2015, 83:11–14, 82–85); *see also* First PO Sur-reply 2 (“Petitioner’s inclusion of ‘power management’ in its . . . definition presumes knowledge of [one of ordinary skill in the art] using improper hindsight because it uses ‘[t]he inventor’s own path’ to show obviousness.” (quoting *Otsuka Pharm. Co., Ltd. v. Sandoz, Inc.*, 678 F.3d 1280, 1296 (Fed. Cir. 2012))). Petitioner counters that “the definition of [one of ordinary skill in the art] is necessarily based on the patent and the field of the invention.” First Pet. Reply 2 (citing *Daiichi Sankyo Co. v. Apotex, Inc.*, 501 F.3d 1254, 1257 (Fed. Cir. 2007)); Second Pet. Reply 2 (same). We agree with Petitioner’s position on this issue.

It is not improper to use a challenged patent—including disclosures as to the alleged problem(s) solved—in determining the level of ordinary skill

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in the art to assess alleged obviousness of that same patent. For example, in the *Daiichi Sankyo* decision cited by Petitioner (First Pet. Reply 2; Second Pet. Reply 2), the Federal Circuit reversed the district court’s finding as to the level of ordinary skill in the art, and in support, expressly discussed the disclosures in the background and summary of the patent at issue as to the problem allegedly solved. *See Daiichi Sankyo Co.*, 501 F.3d at 1257 (“Further, the problem the invention of the ’741 patent was trying to solve was to create a topical antibiotic compound to treat ear infections (otopathy) that did not have damage to the ear as a side effect.” (discussing US 5,401,741 at 1:23–34)). In the Responses, Patent Owner cites no case law supporting its position that relying on disclosures *in the patent at issue* to determine the level of ordinary skill in the art amounts to “hindsight.” *See* First PO Resp. 4–6; Second PO Resp 4–6.

In the Sur-replies, Patent Owner does not address Petitioner’s reliance on the *Daiichi Sankyo* decision, and instead cites a different Federal Circuit decision to argue that “Petitioner’s inclusion of ‘power management’ in its . . . definition presumes knowledge of [one of ordinary skill in the art] using improper hindsight because it uses ‘[t]he inventor’s own path’ to show obviousness.” First PO Sur-reply 2 (quoting *Otsuka Pharm. Co. v. Sandoz, Inc.*, 678 F.3d 1280, 1296 (Fed. Cir. 2012)); Second PO Sur-reply 2 (phrasing this argument as “Petitioner’s injection of specific knowledge of various ‘power management’ techniques in its definition . . . employs improper hindsight because it uses ‘[t]he inventor’s own path’ to establish obviousness” (quoting *Otsuka Pharmaceutical* decision, however, dealt *not* with the level of ordinary skill in the art, but, rather, with whether

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there was a reason to modify the prior art as proposed. *See Otsuka Pharm. Co.*, 678 F.3d at 1296 (“The inventor’s own path itself never leads to a conclusion of obviousness; that is hindsight. What matters is the path that the person of ordinary skill in the art would have followed, as evidenced by the pertinent prior art. We therefore agree with the district court that the Defendants failed to provide clear and convincing evidence that the skilled artisan would have known how to modify OPC4392 to increase antipsychotic activity.” (citations omitted)).

Applying the relevant aspect of the *Daiichi Sankyo* decision here, we find (as argued by Petitioner) that certain disclosures in the ’746 patent support the language at issue in clause (b)(ii): “power management of biomedical devices.” For example, the background section of the ’746 patent explains that “what is needed is a sound processor for use with a cochlear implant system, or other hearing-aid system, that avoids or minimizes” problems with the power management systems in prior devices. Ex. 1001, 1:49–51, *cited at* First Najafi Decl. ¶ 80 & Second Najafi Pet. Decl. ¶ 72; *see also* First Pet. Reply 2 (discussing how the ’746 patent “is concerned with the power management of hearing aid prosthesis devices, in particular cochlear implant systems) (citing First Najafi Decl. ¶ 80)); Second Pet. Reply 2 (discussing the same (citing Second Najafi Pet. Decl. ¶ 72)). The ’746 patent also describes the Field of the Invention as relating to power management issues:

The present invention relates to hearing aid prosthesis devices, and, in a preferred embodiment, to a cochlear implant system having an external sound processor with a permanently integrated replenishable power source, e.g., a rechargeable battery.

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Ex. 1001, 1:14–18, *cited at* First Najafi Decl. ¶ 80 & Second Najafi Pet. Decl. ¶ 72; *see also* First Pet. Reply 2 (citing First Najafi Decl. ¶ 80); Second Pet. Reply 2 (citing Second Najafi Pet. Decl. ¶ 72). We view these disclosures as supporting the language “power management of biomedical devices”¹³ in clause (b)(ii) even though, as noted by Patent Owner, the claims are directed to cochlear implant systems. *See Hologic, Inc. v. Minerva Surgical, Inc.*, 764 Fed. App’x 873, 879 (Fed. Cir. 2019) (nonprecedential) (stating that “[s]ubstantial evidence supports the Board’s determination that a skilled artisan was someone who had ‘experience developing or implementing electrosurgical devices’ generally rather than uterine devices specifically” because, although “the claims are directed to uterine ablation, the patent specification speaks in terms of ‘body cavities,’ with the uterus comprising just one example of a body cavity”); First PO Resp. 5 (arguing that Petitioner’s definition “largely ignore[s] that the Challenged Claims are directed to a cochlear implant system”); Second PO Resp 6 (same).

Lastly, we turn to Patent Owner’s argument that one of ordinary skill in the art would not have knowledge of “power management of biomedical devices” because, instead, they would have “highly specialized and sophisticated” knowledge of other aspects—such as the “sound processing or the design of electrode arrays implanted in the patient’s cochlear.” First

¹³ Although Patent Owner does not expressly argue that “biomedical devices” in clause (b)(ii) should be “hearing aid prosthesis devices,” adopting that slightly narrower understanding of the level of ordinary skill in the art would not change the analysis below because there is no dispute that all the asserted prior art relates to hearing aid prosthesis devices. *See infra* § II.D.3.i.3.b.

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PO Sur-reply 3; Second PO Sur-reply 4. The record does not support Patent Owner's position. As an initial matter, the proposed level of ordinary skill requires only a "*working knowledge*" of "power management of biomedical devices." First Pet. 23 (emphasis added); Second Pet. 21 (same). Moreover, we agree with Petitioner that one of ordinary skill in the art would have had such a "*working knowledge*" of power management issues based on their educational and/or work experience as provided in agreed-upon clauses (a) and (b). *See* First Pet. Reply 2–3 (citing First Najafi Decl. ¶¶ 81, 42); Second Pet. Reply 3 (citing Second Najafi Pet. Decl. ¶¶ 73, 42). This understanding is supported by the cited paragraph of Dr. Najafi's testimony, which states that:

the types of problems encountered with cochlear implant system's power management, and the various solutions in the prior art . . . , are, in their nature, not specific to the field of cochlear implant systems, but *generally relate to common issues of the electrical engineering and biomedical engineering fields.*

First Najafi Decl. ¶ 81 (emphasis added), *cited at* First Pet. 22–23 & First Pet. Reply 2; Second Najafi Pet. Decl. ¶ 73, *cited at* Second Pet. 20–21 & Second Pet. Reply 3; *see also* First Pet. 22 ("The problems encountered with that power management relate to common issues of the electrical and biomedical engineering, such as types of power sources, charging mechanisms, and related design options."); Second Pet. 20 (same).

Dr. Young's testimony on the issue—which is not even cited by Patent Owner (*see* First PO Resp. 4–6; Second PO Resp. 4–6)—simply repeats Patent Owner's concern as to this language of clause (b)(ii). *Compare* First Young Decl. ¶ 29, *with* First PO Resp. 5 (both stating that this language "presumes at the outset that [one of ordinary skill in the art] would have both recognized problems in the power management of cochlear

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implant systems and attempted to solve them using the [’746 patent] invention”); *compare* Second Young Decl. ¶ 29, *with* Second PO Resp 5 (same). These statements do not adequately explain, however, why one of ordinary skill in the art would *not* have had a working knowledge of “power management of biomedical devices.”

For these reasons, we find that one of ordinary skill in the art at the time of the invention in the ’746 patent would have had: (a) at least a bachelor’s degree in electrical engineering, biomedical engineering, physics, or a related field, and (b) at least three years of experience in developing biomedical devices, with a working knowledge of (i) typical cochlear implant systems and (ii) power management of biomedical devices. This is the same level of ordinary skill adopted in the Decision on Institution. *See* First Dec. Inst. 10; Second Dec. Inst. 35.

B. Claim Construction

In *inter partes* reviews, the Board interprets claim language using the same claim construction standard that would be used in a civil action under 35 U.S.C. § 282(b), as described in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). *See* 37 C.F.R. § 42.100(b). Under that standard, we generally give claim terms their ordinary and customary meaning, as would be understood by a person of ordinary skill in the art at the time of the invention, in light of the language of the claims, the specification, and the prosecution history. *See Phillips*, 415 F.3d at 1313–14. Although extrinsic evidence, when available, may also be useful when construing claim terms under this standard, extrinsic evidence should be considered in the context of the intrinsic evidence. *See id.* at 1317–19.

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When requesting institution in these proceedings, Petitioner did not propose constructions for any claim terms, stating that “all claim terms recited in [the ’746 patent] should be given their plain and ordinary meaning.” First Pet. 23; Second Pet. 21. Patent Owner responded by discussing (1) the preambles of the challenged claims, (2) the phrase “a rechargeable power source [or battery] permanently and integrally housed within the closed case” as recited in each of the independent claims, and (3) the phrase “selectively receives” in claim 10. *See* First PO Resp. 6–13; First PO Sur-reply 3–11; Second PO Resp. 6–13; Second PO Sur-reply 5–13. In the Replies, Petitioner addressed Patent Owner’s discussion. *See* First Pet. Reply 3–9; Second Pet. Reply 4–10. We address each issue in turn below.

1. Preambles

Each of the independent claims begins by reciting “[a] cochlear implant system.” Ex. 1001, 8:21 (claim 1), 9:3 (claim 10), 10:1 (claim 18), 10:38 (claim 24). Patent Owner contends that these preambles are limiting. *See* First PO Resp. 5–6; First PO Sur-reply 3; Second PO Resp. 6–7; Second PO Sur-reply 5–6. We need not determine whether the preambles are limiting because Petitioner addresses the preambles as if they *were* limiting, and Patent Owner does not argue that the proposed modified devices fail to satisfy the preambles. *See, e.g.*, First Pet. 24, 30–32, 48, 67, 71; Second Pet. 22–23, 31–33; *see also Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (stating that “we need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy’”) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

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2. “*a rechargeable power source [or battery] permanently and integrally housed within the closed case*”

Each of the independent claims recites “an external sound processor including a closed case” and recites either “a rechargeable power source” (claims 1, 10, and 18) or a “rechargeable battery” (claim 24) that is “permanently and integrally housed within the closed case.” Ex. 1001, 8:23–26 (claim 1), 9:5–8 (claim 10), 10:3–6 (claim 18), 10:40–43 (claim 24).

In the Decision on Institution in the First IPR, we construed only the phrase “closed case” in this phrase as “*a case that does not currently permit passage or entry.*” First Dec. Inst. 15. In the analysis, we stated that (1) “[t]o the extent Patent Owner takes the position that a user is *permanently* unable to enter the ‘case’ based merely on the term ‘closed,’ we disagree” and that (2) “[a]lthough that temporal limitation *may* be present in the recitation that the ‘power source’ or ‘battery’ is ‘permanently and integrally housed within [a] closed case,’ we do not view the term ‘closed’ *alone* as including that temporal limitation.” *Id.* at 13.

In the Responses, Patent Owner proposes to construe (1) the phrase “closed case” as a “case that does not permit user passage or entry” and (2) the term “permanently” as “in such a manner that one would not expect it to be removable from the container absent destruction of the container.” First PO Resp. 7; Second PO Resp 7–8. According to Patent Owner, these constructions are supported by the claim language, the Specification, the prosecution history, and extrinsic evidence. *See* First PO Resp. 7–10; First PO Sur-reply 4–7; Second PO Resp. 7–10; Second PO Sur-reply 6–9. Petitioner responds that (1) the phrase “closed case” should be construed as a “case that does not *currently* permit user passage or entry” and that (2) the

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term “permanently” need not be construed, but if it is, it means “in such a manner that one would not expect it to be *removed in the normal course of use.*” First Pet. Reply 5 (with emphasis to show differences from Patent Owner’s positions); Second Pet. Reply 6–7 (same except without “user” in (1)). For the reasons below, the record more strongly supports Petitioner’s construction of “closed case” and Patent Owner’s proposed construction of “permanently.”

a. “closed case”

We first address the phrase “closed case.” Patent Owner states that the claim language supports its construction “because it contemplates not only a ‘closed case,’ but a rechargeable power source (or battery) ‘permanently and integrally housed’ within that closed case. A simple ‘case’ may be opened or closed, but a ‘closed case’ remains closed.” First PO Resp. 7 (citing First Young Decl. ¶ 72)); Second PO Resp. 8 (citing Second Young Decl. ¶ 66). Patent Owner argues that the Specification “supports this construction because it describes that . . . the case of the sound processor does not include ‘mechanical latches or doors.’” First PO Resp. 8 (citing Ex. 1001, 2:42–57; First Young Decl. ¶ 73); Second PO Resp. 8 (citing Ex. 1001, 2:42–57; Second Young Decl. ¶ 67). Patent Owner also asserts that the applicants argued that “closed case” means a case that “*does not permit passage or entry.*” First PO Resp. 8 (citing Ex. 1006 at 298–99); Second PO Resp. 8–9 (same).

For the reasons below, we maintain the preliminary construction at institution in the First IPR, which aligns with Petitioner’s proposed construction, and construe the phrase “closed case” as a “case that does not currently permit user passage or entry.” This is supported by the claim

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language itself, in combination with the discussion in the prosecution history of the dictionary definition of “closed.” *See* Ex. 1006 at 298 (providing to the examiner a definition of “closed” from the American Heritage Dictionary of the English Language, Fourth Edition (2009)); *see also* First IPR, Ex. 3002 (*The American Heritage Dictionary of the English Language* (2016) (via Credo Reference), <https://search.credoreference.com/content/entry/hmdictenglang/closed> (last visited January 10, 2022) (Definition 2 – “Blocked or barred to passage or entry: a closed port.”)).

We start with the language of the claims. *TQ Delta, LLC v. DISH Network LLC*, 929 F.3d 1350, 1357 (Fed. Cir. 2019). Patent Owner asserts incorrectly that a user is *permanently* unable to enter the “case” based merely on the term “closed.” *Cf.* First PO Resp. 7 (“A simple ‘case’ may be opened or closed, but a ‘closed case’ remains closed.”); Second PO Resp 8 (same). Like Patent Owner’s arguments, the supporting testimony of Dr. Young on this issue intermingles the phrase “closed case” with the requirement based on the separate term “permanently” recited elsewhere (and addressed below).¹⁴ *See* First Young Decl. ¶ 72 (“While a traditional case can be opened or closed, a ‘closed case’ remains closed.”); Second Young Decl. ¶ 66 (same). Supporting this understanding of “closed case”—and in line with the dictionary definition in the prosecution history—a door (or a “port” as in the dictionary’s example) may be “closed” at a given time,

¹⁴ As discussed below, however, the temporal limitation asserted by Patent Owner as to “closed case” is present in the recitation that the “power source” or “battery” is “*permanently* and integrally housed within the closed case.”

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but that does necessarily mean that the door (or port) will *never* again be opened (i.e., will remain permanently closed).

Although the portion of the prosecution history cited by Patent Owner provides a dictionary definition of the term “closed” for the phrase “closed case,” looking at the discussion overall, the applicants were addressing the meaning of the entire phrase “a rechargeable power source permanently and integrally housed within the closed case.” *See* Ex. 1006 at 298–99. Thus, any potential temporal limitation can not necessarily be attributed to the phrase “closed case” alone.

In addition, although the portion of the Specification identified by Patent Owner discusses the possibility of, for example, eliminating “mechanical latches or doors,”¹⁵ to the extent the claims include such a negative limitation, for the reasons stated above, we are not persuaded that the phrase “closed case” *alone* is the source of that requirement. Supporting this understanding, dependent claims 6 and 14 (depending from claims 1 and 10, respectively), as well as independent claim 24 each *expressly* recites that the “closed case” “does not include a battery removal door.” Ex. 1001, 8:60 (claim 6), 9:38 (claim 14), 10:40–41 (claim 24); *see Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 910 (Fed. Cir. 2004) (“[T]he presence of a dependent claim that adds a particular limitation raises a presumption that the limitation in question is not found in the independent claim.”); *Caterpillar Tractor Co. v. Berco, S.p.A.* 714 F.2d 1110, 1115–16 (Fed. Cir.

¹⁵ *E.g.*, Ex. 1001, 2:54–57 (“According to the present invention, the extra components needed to support a removable battery—mechanical latches or doors, connectors, etc.—may be eliminated”), *cited at* First PO Resp. 8 & Second PO Resp. 8.

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1983) (rejecting an argument that a structural relationship recited in two independent claims should limit another independent claim that did not recite the same relationship, stating: “Courts may not introduce into a claim limitations which are explicitly contained in other claims.”).

As to extrinsic evidence, contrary to Patent Owner’s argument, Dr. Najafi’s testimony does not support that “closed case” means “the user can’t get into the case to replace the battery.” First PO Resp. 8; Second PO Resp. 9. Instead, the cited statement by Dr. Najafi was provided after asking the meaning of the phrase “permanently and integrally housed.” *See* First IPR, Ex. 2014, 97:23–98:11, *cited at* First PO Resp. 8; Second IPR, Ex. 2015, 97:23–98:11, *cited at* Second PO Resp. 9. With these arguments, Patent Owner again improperly intermingles “closed case” with “permanently and integrally housed” in the claim language at issue. For these reasons, we construe “closed case” as *a case that does not currently permit passage or entry*. This is the same construction applied at institution in the First IPR. *See* First Dec. Inst. 15.

b. “permanently”

We turn now to the term “permanently” in the claim language at issue. For the reasons below, we agree with Patent Owner’s proposal and thus construe “permanently” as *in such a manner that one would not expect it to be removable from the container absent destruction of the container*. *See* First PO Resp. 7; Second PO Resp 8.¹⁶ Starting with the claim language (*TQ Delta*, 929 F.3d at 1357), in the context of the surrounding language, the

¹⁶ We use the term “container” instead of “case” from Patent Owner’s proposed construction in the Second IPR to align with the language in the prosecution history and with Patent Owner’s arguments in the First IPR.

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term “permanently” provides a temporal limitation that describes *how* the “power source” or “battery” is “housed” within the “closed case” (construed above). As argued by Patent Owner, this understanding is supported by the Specification, which “describes that the battery of the external sound processor need not be removed.” First PO Resp. 8 (citing Ex. 1001, 2:42–57; First Young Decl. ¶ 73)); Second PO Resp. 8 (citing Ex. 1001, 2:42–57; Second Young Decl. ¶ 67)). In addition, as argued by Patent Owner (First PO Resp. 8; Second PO Resp. 8–9), this understanding is strongly supported by the relevant discussion of the prosecution history, in which the applicants essentially defined the term “permanently” in the claim language here (or at least explained its plain and ordinary meaning) in the *exact same manner* proposed by Patent Owner now—“in such a manner that one would not expect it to be removable from the container absent destruction of the container.” *Compare* First PO Resp. 7, *with* Ex. 1006 at 298–99; *compare* Second PO Resp. 7–8, *with* Ex. 1006 at 298–99; *see Personalized Media Commc’ns, LLC v. Apple Inc.*, 952 F.3d 1336, 1340 (Fed. Cir. 2020) (“[A]n applicant’s repeated and consistent remarks during prosecution can define a claim term by demonstrating how the inventor understood the invention.”). This understanding also aligns with Dr. Najafi’s deposition testimony, which, as noted by Patent Owner, explains that “permanently” means that “the user cannot get into the case to open the case” and that the battery is “designed to essentially stay in there for the life . . . of this external system that contains the sound processor.” First IPR, Ex. 2014, 97:23–98:11, *cited at* First PO Resp. 8–9; Second IPR, Ex. 2015, 97:23–98:11, *cited at* Second PO Resp. 9.

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Petitioner seeks to limit the claim construction issues in these proceedings to “whether the ‘closed case’ is permanently or currently closed.” First Pet. Reply 3; Second Pet. Reply 4–5. Petitioner asserts that “[t]he intrinsic evidence does not suggest permanent closure” and notes that “the claim does not say ‘permanently closed case.’” First Pet. Reply 4; Second Pet. Reply 5. Although we agree with Petitioner’s construction of “closed case” *alone*, with this argument, Petitioner does not adequately address how the term “permanently”—in the context of “a rechargeable power source [battery] permanently and integrally housed within the closed case”—*further* limits the claim scope.

Petitioner also contends that any lexicographical definition provided in the prosecution history is not sufficiently clear as it allegedly “conflicts with the structure of claims 1/6, 10/14, and 24 . . . , and with the dictionary definitions applicants provided in the very same” history. First Pet. Reply 4–5; Second Pet. Reply 5–6. We disagree. As an initial matter, Petitioner is correct in that a “case” *need not* be permanently closed for a “power source” or “battery” to be “permanently . . . housed within the closed case.” *See* First Pet. Reply 4; Second Pet. Reply 5. To explain, we discuss at least two possibilities falling within the claim scope. As a first possibility, a “closed case” that *is* permanently closed would likely also satisfy the requirement that a “power source” or “battery” within that “closed case” is “permanently . . . housed within the closed case.” As a second possibility, if a “closed case” *is not* permanently closed—for example, the “case” has an openable door—some *other* structural feature (such as an inner container) would be needed to satisfy the requirement that the “power source” or “battery” is “permanently . . . housed within the closed case.”

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With that understanding of the claim scope in mind, we turn back to Petitioner’s claim differentiation arguments. Claims 6, 14, and 24 each add, in relevant part, the requirement that the “closed case” “does not include a battery removal door.” Ex. 1001, 8:60 (claim 6), 9:38 (claim 14), 10:40–41 (claim 24). Under the doctrine of claim differentiation, “the presence of a dependent claim that adds a particular limitation raises a presumption that the limitation in question is not found in the independent claim.” *Liebel-Flarsheim*, 358 F.3d at 910. With these arguments, Petitioner asserts that the added requirement in claims 6, 14, and 24 shows that parent claims 1 and 10 (from which claims 6 and 14 depend) include embodiments *with* battery removal doors. We agree. As discussed in the prior paragraph, however, a “case” that is not permanently closed—for example, the “case” has an openable battery removal door—would need some other structural feature to satisfy the requirement that the “power source” or “battery” is “permanently . . . housed within the closed case.” This possibility aligns with the permissive nature of the disclosure that “mechanical latches or doors” “may be eliminated.” Ex. 1001, 2:54–57, *quoted at* First Pet. Reply 4 & Second Pet. Reply 5. Notably, the comments on claim differentiation in the Decision on Institution in the First IPR (First Dec. Inst. 14) highlighted by Petitioner (First Pet. Reply 4) related to the meaning of “closed case,” not the requirement that the “power source” or “battery” is “permanently . . . housed within the closed case.”

We turn now to Petitioner’s proposed construction of “permanently”: “in such a manner that one would not expect it to be removed in the normal course of use.” First Pet. Reply 5; Second Pet. Reply 7. In support, Petitioner cites a single sentence from the ’746 patent, providing that “the

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cochlear implant user never has to remove or handle the battery directly.”

Ex. 1001, 2:8–11, *quoted at* First Pet. Reply 5 & Second Pet. Reply 7. We

note that Petitioner does not adequately explain how the single passage

quoted supports the particular phrasing proposed for the construction.

Moreover, Petitioner fails to adequately explain the scope of the phrase

“normal course of use” such that that definition could be applied to the prior

art. For these reasons, we construe “permanently” in the claim language at

issue, in line with Patent Owner’s proposal, as *in such a manner that one*

would not expect it to be removable from the container absent destruction of

the container.

3. “selectively receives”

Limitation 10.6 recites “a power coil operably coupled to the

rechargeable power source, that selectively receives power from an external

charging source and recharges the rechargeable power source when the

sound processor is in proximity to the external charging source.” Ex. 1001,

9:8–12. Patent Owner focuses on the language “selectively receives power

from an external charging source” and argues that language should be

construed as “can be enabled or disabled to receive power from an external

charging source.” First PO Resp. 10; First PO Resp. 10–13 (entire

argument); Second PO Resp. 11; Second PO Resp. 11–13 (entire argument).

Petitioner counters that “[t]he Board should construe the entire claim

limitation” and that “[t]he natural reading of the ‘selectively’ language in its

context refers to the characteristic of the power coil of receiving power and

recharging the power source only when the sound processor is in proximity

to the external charging source, but *not* to do so when it is not.” First Pet.

Reply 6; First Pet. Reply 6–9 (entire argument); Second Pet. Reply 7;

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Second Pet. Reply 7–10 (entire argument). For the reasons below, we construe limitation 10.6 generally in line with Petitioner’s proposed construction.

We first address the claim language. *See TQ Delta*, 929 F.3d at 1357. Patent Owner argues that limitation 10.6 “requires that the power coil at issue *both* ‘selectively receive[]’ power *and* ‘recharge[] the rechargeable power source when the sound processor is *in proximity to* the external charging source.” First PO Resp. 11; Second PO Resp. 11. According to Patent Owner, its “proposed construction gives meaning to both the ‘selectively receives’ and ‘proximity to’ limitations” and does not improperly render “selectively” superfluous. First PO Resp. 11–12; Second PO Resp. 11–12.

Under Patent Owner’s understanding, the two recited functions are separated as listed by Patent Owner in the argument: (1) “selectively receiv[ing] power from an external charging source” and (2) “recharg[ing] the rechargeable power source when the sound processor is in proximity to the external charging source” and, most importantly, the term “selectively” modifies *only* the first function.

We do not agree with Patent Owner’s understanding of the claim language at issue. Instead, we agree with Petitioner’s understanding that the recited condition (“when the sound processor is in proximity to the external charging source”) describes the nature of “selectively” and that *both* recited functions—(1) “receiv[ing] power from an external charging source” and (2) “recharg[ing] the rechargeable power source”—occur “selectively,” i.e., based on the recited condition. *See* First Pet. Reply 6 (“The natural reading of the ‘selectively’ language in its context refers to the characteristic of the

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power coil of receiving power and recharging the power source only when the sound processor is in proximity to the external charging source, but *not* to do so when it is not.”); Second Pet. Reply 6 (same).

This understanding of the claim language at issue does not render “selectively” superfluous as argued by Patent Owner (First PO Resp. 11–12; Second PO Resp. 11–12); instead, “selectively” simply describes the condition for the occurrence of *both* recited functions (separated by “and”) as opposed to *only* the first recited function. *See* First Pet. Reply 8 (“Contrary to Patent Owner’s assertion ([First PO] Resp., 11), the ‘selectively’ term is not superfluous, since it expresses that proximity is a requirement”); Second Pet. Reply 9 (“Contrary to Patent Owner’s assertion ([Second PO] Resp., 11), the ‘selectively’ term is not superfluous, since it expresses that proximity is a condition”).

Contrary to Patent Owner’s argument (First PO Resp. 11–12; Second PO Resp. 12), the cited deposition testimony by Dr. Najafi does not show that “selectively” is rendered superfluous merely based on Dr. Najafi’s general agreement with counsel’s phrasing that “selectively receives the recharge is *the same thing as* being in proximity to the power source.” First IPR, Ex. 2014, 104:7–10 (emphasis added), *quoted at* First PO Resp. 12; Second IPR, Ex. 2015, 104:7–10 (emphasis added), *quoted at* Second PO Resp. 12. Instead, as made clear by counsel’s own follow-up question, Dr. Najafi simply stated correctly that there is no “additional requirement” or condition—i.e., other than proximity—to the occurrence of the first stated function of “receiv[ing] power from an external charging source.” First IPR, Ex. 2014, 104:11–21, *cited at* First PO Resp. 12; Second IPR, Ex. 2015, 104:11–21, *cited at* Second PO Resp. 12.

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Patent Owner highlights a portion of the Specification, arguing that it “provides an example of a magnetic reed switch that can enable or disable the reception of a power based on when the processor is in the proximity of a corresponding magnet in the base station before the power coil in the processor can receive power.” First PO Resp. 12 (citing Ex. 1001, 6:62–7:6; First Young Decl. ¶ 77); Second PO Resp. 12–13 (citing Ex. 1001, 6:62–7:6; Second Young Decl. ¶ 71). The highlighted passage provides:

Also included in the base station 90 is a charging circuit 92 that receives power from the primary power source and inductively transfers such power through a coil 93 in the base station to the coil 56 in the sound processor 50. The circuits 52 in the sound processor 50 direct such received power to the power source 60 when the sound processor 50 is placed in close proximity to the base station. The sensor 58 included in the sound processor 50 senses when the Processor 50 is placed in close proximity to the base station. In one embodiment, the sensor 50 comprises a magnetic reed switch that is activated by a small permanent magnet 99 mounted in the base station 90.

Ex. 1001, 6:62–7:6, *cited at* First PO Resp. 12 & Second PO Resp 13.

Although this passage provides an example of a specific structure (a magnetic reed switch) being used to detect proximity of the relevant structures, we do not agree that the passage supports that “selectively” modifies *only* the first function of “receiv[ing] power from an external charging source.” *See, e.g.*, First PO Resp. 12 (arguing that “this limitation requires not merely a power coil that receives power but rather a power coil that receives power ‘*selectively*’ and that “[t]he specification confirms this”); Second PO Resp. 12 (same). Contrary to Patent Owner’s position, this passage does not refer to enabling or disabling *just* the reception of power *at all*. *See* First Pet. Reply 8 (arguing that Patent Owner’s construction “finds no support in the intrinsic evidence” because “[n]owhere is the ‘selectively’

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language tied to any ‘enablement’ or ‘disablement’ of the power coil”);

Second Pet. Reply 9 (same).

Instead, the passage supports Petitioner’s construction linking *both* recited functions—receiving power and recharging the power source—to the proximity condition. *See* Ex. 1001, 6:65–7:1 (“The circuits 52 in the sound processor 50 direct such received power to the power source 60 when the sound processor 50 is placed in close proximity to the base station.”)

Supporting this understanding, in the cited paragraphs of his declarations, Dr. Young discusses why “[s]elective reception of power by the means of a separate component, such as a reed switch, makes sense” from a technical perspective, but he does not adequately explain why the language in the ’746 patent would have been understood by one of ordinary skill in the art as disclosing that “selectively” modifies *only* the first function of “receiv[ing] power from an external charging source.” *See* First Young Decl. ¶ 77, *cited at* First PO Resp. 12–13; Second Young Decl. ¶ 71, *cited at* Second PO Resp. 12–13.

As noted by Petitioner, the *only* passage in the Specification using “selectively” in a relevant way refers to *both* recited functions—receiving power and recharging the power source—as occurring based on the proximity condition. In this passage, describing Figure 3, the Specification discloses how “replenishable power source 60 through which power from an external charging source is selectively received to recharge the replenishable power source 60 when the sound processor 50 is in proximity to the external charging source.” Ex. 1001, 6:10–14, *discussed at* First Pet. Reply 7 & Second Pet. Reply 8. We understand this passage as does Petitioner, as

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using “selectively” “in the context of proximity to permit inductive charging.” First Pet. Reply 7; Second Pet. Reply 8.

Patent Owner quotes this same passage, lining out “selectively” and argues that “Petitioner offers no explanation as to why the specification would use the word ‘selectively’ while *also* describing inductive charging if the two were the same.” First PO Sur-reply 10; Second PO Sur-reply 11–12. Petitioner *does*, however, address this issue, stating that “selectively” is located *before* the two recited functions to show that the recited condition (“when the sound processor is in proximity to the external charging source”)—which is located *after* the two recited functions—applies to *both* recited functions rather than merely the second function, which is closest to the recited condition. *See* First Pet. Reply 8 (“Furthermore, without the word ‘selectively,’ the phrase ‘when the sound processor is in proximity to the external charging source’ could be reasonably read, under the ‘last antecedent rule’ (*see Barnhart v. Thomas*, 540 U. S. 20, 26 (2003)), to refer to the recharging function only. Yet, proximity is a key technical requirement for the coil to inductively receive power in the first place.” (citing First Najafi Decl. ¶¶ 33–42)); Second Pet. Reply 9 (“Furthermore, without the word ‘selectively,’ the phrase ‘when the sound processor is in proximity to the external charging source’ could be reasonably read, under the ‘last antecedent rule,’ to only refer to the recharging function only. *See Barnhart v. Thomas*, 540 U.S. 20, 26 (2003). Yet, proximity is a key technical condition for the coil to inductively receive power in the first place.” (citing Second Najafi Pet. Decl. ¶¶ 33–42)). In other words, with its placement, “selectively” makes clear that the “proximity” condition applies to *both* recited functions. We agree with Petitioner’s position, which, as

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discussed above, aligns with the only passage in the Specification using “selectively” in a relevant way. *See* Ex. 1001, 6:10–14, *discussed at* First Pet. Reply 7 & Second Pet. Reply 8.

For these reasons, we construe limitation 10.6 as requiring that *both* recited functions—(1) “receiv[ing] power from an external charging source” and (2) “recharg[ing] the rechargeable power source”—occur “selectively,” i.e., based on the recited condition (“when the sound processor is in proximity to the external charging source”). Contrary to Patent Owner’s argument, the term “selectively” does not require a *separate* ability to enable or disable receiving power from an external charging source, as proposed by Patent Owner. *See* First PO Resp. 10–13; Second PO Resp 11–13. This understanding aligns with Petitioner’s proposed construction. *See* First Pet. Reply 7 (arguing that certain language in element 10.6 should be construed as “a power coil . . . that receives power from an external charging source and recharges the rechargeable power source only when the sound processor is in proximity to the external charging source, and not when the sound processor is not in proximity to the external charging source”); Second Pet. Reply 8–9 (same).

C. Asserted Obviousness of Claims 1–24 Based on AAPA and Petersen

Petitioner asserts that claims 1–24 of the ’746 patent are unpatentable under 35 U.S.C. § 103(a) based on AAPA and Petersen. First Pet. 4, 23–47; First Pet. Reply 11–21. Patent Owner provides arguments specifically addressing this ground. First PO Resp. 13–43; First PO Sur-reply 13–19. We first summarize aspects of AAPA and Petersen.

I. AAPA

As AAPA, Petitioner identifies (1) Figures 1 and 2 of the '746 patent (both labeled "Prior Art"), (2) column 1, lines 22–28, (3) column 3, lines 21–24, and (4) column 3, line 47 through column 4, line 55. *See* First Pet. 20.

Figure 1 of the '746 patent is reproduced below:

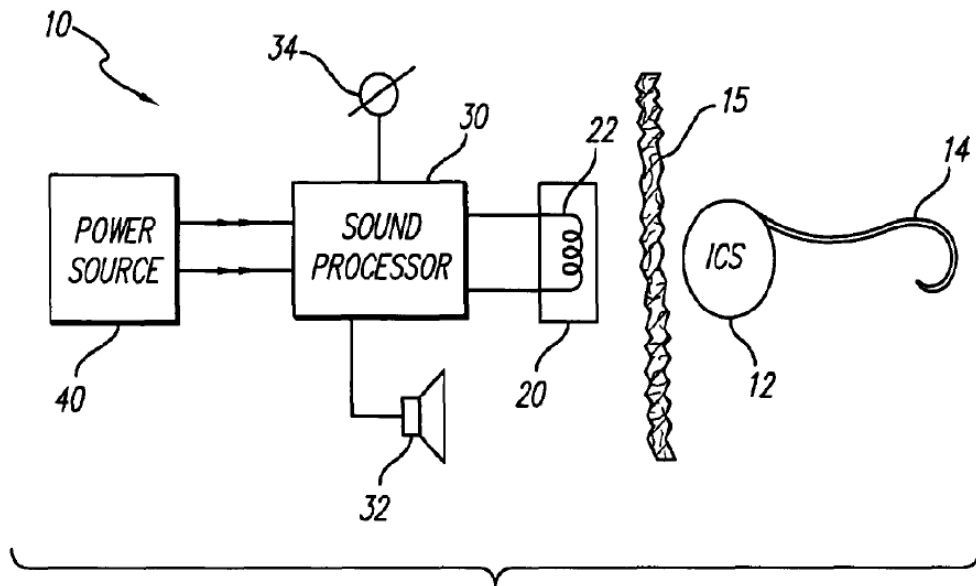


FIG. 1
PRIOR ART

Figure 1 depicts “a block diagram of a prior art cochlear implant system.” Ex. 1001, 3:21–22. Describing Figure 1, the '746 patent discloses that “system 10 includes an implantable cochlear stimulator (ICS) 12 to which an electrode array 14 is attached” and that external components of system 10 “include a headpiece 20, a sound processor 30 and a power source 40” as well as a “microphone 32 [that] is connected to the sound processor 30.” Ex. 1001, 3:48–50, 3:56–59. The '746 patent provides that “power source 40 typically comprises primary batteries that can be thrown away

when depleted and replaced with new batteries, or rechargeable batteries that can be recharged.” *Id.* at 3:64–67. The ’746 patent describes how sound signals received by microphone 32 are processed, applied to coil 22, and then received by ICS 12. *See id.* at 4:1–10.

Figure 2 is reproduced below:

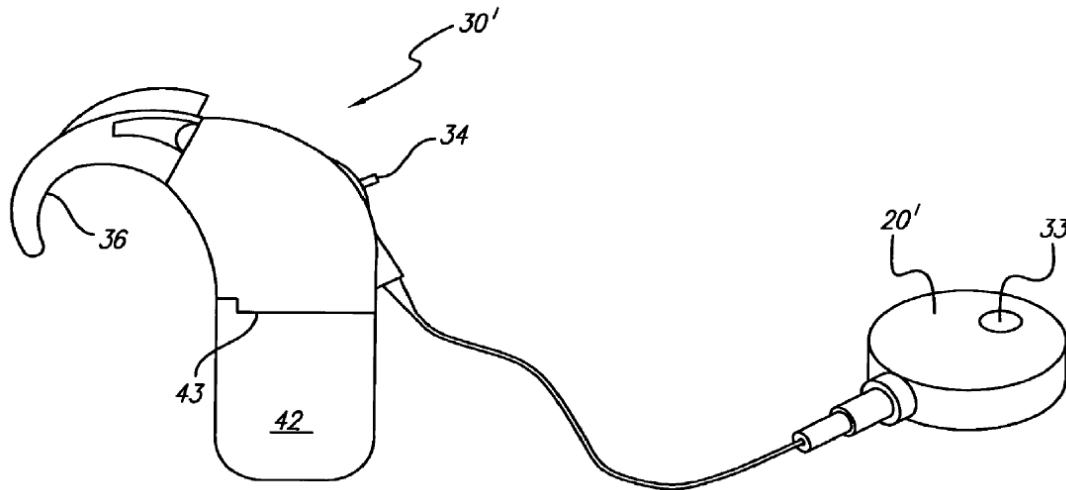


FIG. 2
PRIOR ART

Figure 2 depicts “a representative prior art behind-the-ear (BTE) sound processor [30'] with its associated headpiece [20].” Ex. 1001, 3:23–24, 4:28–29. Discussing Figure 2, the ’746 patent describes potential problems with battery module 42 and the related battery door (with boundary line 43 defining the beginning of the door). *See id.* at 4:37–55.

2. Petersen

Petersen discloses a hearing aid powered by a rechargeable battery. See Ex. 1017, 2:9–29. Figure 1 of Petersen is reproduced below:

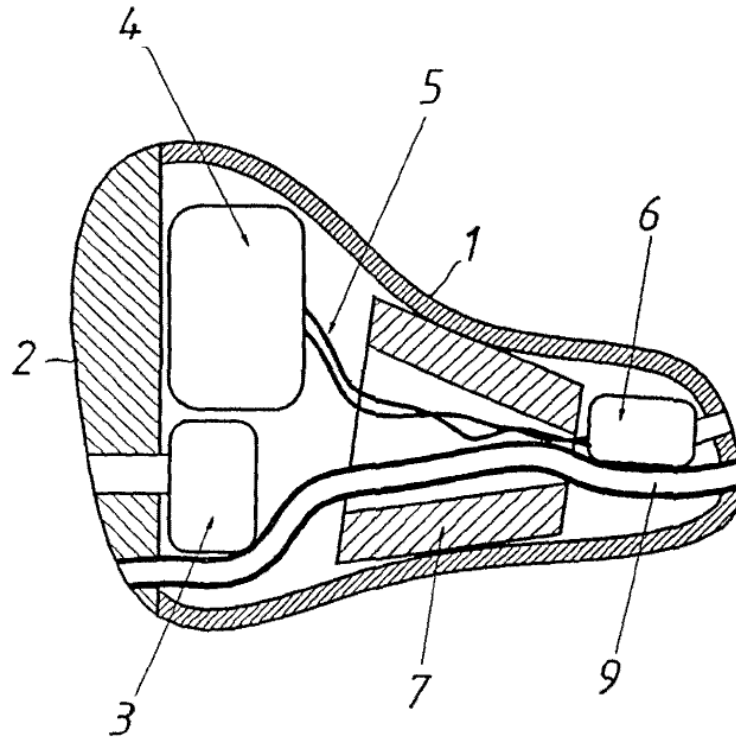


Fig. 1

Figure 1 depicts “an ‘in-the-ear’ hearing aid.” Ex. 1017, 3:11–12. More specifically, Figure 1 shows housing 1 for placement in the ear, cover 2, microphone 3, amplifier 4, leads 5, and sound-producing transducer 6. See *id.* at 3:30–4:9. The hearing aid in Figure 1 also includes battery 7, which Petersen discloses is not intended “to be replaced with short intervals, being as it is a rechargeable battery.” *Id.* at 4:29–31.

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3. Analysis

a. Petitioner's Reliance on AAPA

Petitioner contends that the proposed combination of AAPA and Petersen discloses each of the limitations of claims 1–24. First Pet. 4, 23–47; First Pet. Reply 11–21. On August 19, 2020, after the filing of the Petition, the Director of the United States Patent and Trademark Office issued a memorandum setting forth binding guidance on how the Board shall consider statements by a patent applicant in a patent specification regarding the prior art when those statements are relied on in support of a request for *inter partes* review. See Memorandum from Andrei Iancu to Members of the Patent Trial and Appeal Board (Aug. 18, 2020), https://www.uspto.gov/sites/default/files/documents/signed_aapa_guidance_memo.pdf (“AAPA Guidance”). Given the timing of the issuance of the AAPA Guidance, we *sua sponte* authorized Petitioner to file a Preliminary Reply in the First IPR addressing the AAPA Guidance, and authorized Patent Owner to file a Preliminary Sur-reply. See First IPR, Papers 8–10. In the Decision on Institution in the First IPR, we preliminarily determined that Petitioner improperly relied on AAPA as the “basis” of this ground, contrary to the interpretation of § 311(b) in the AAPA Guidance, but we invited the parties to further brief the issue.¹⁷ See First Dec. Inst. 41.

In the Response in the First IPR, Patent Owner highlights the statutory requirement that a petitioner in an *inter partes* review may challenge the

¹⁷ Section 311(b) provides: “A petitioner in an *inter partes* review may request to cancel as unpatentable 1 or more claims of a patent only on a ground that could be raised under section 102 or 103 and only on the basis of prior art consisting of patents or printed publications.”

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claims of a patent “only on the basis of prior art consisting of patents or printed publications.” 35 U.S.C. § 311(b), *quoted at* First PO Resp. 13. According to Patent Owner, the “purported admissions [in AAPA] are not ‘patents or printed publications’ on which an IPR may be properly based.” First PO Resp. 14. Patent Owner then quotes a portion of the AAPA Guidance, providing: “The generally understood meaning of ‘basis’ supports reading § 311(b) to require that at least one prior-art patent or printed publication form the ‘foundation or starting point’ of the IPR.” AAPA Guidance 6, *quoted at* First PO Resp. 14–15. Patent Owner asserts that “Petitioner does not rely on the so-called AAPA merely to supply information regarding the general knowledge of [one of ordinary skill in the art], but rather as a body of prior art that it treats as essentially a single primary reference that forms the ‘foundation or starting point’” for this asserted ground. First PO Resp. 15.

Petitioner responds that, even under the AAPA Guidance, Petitioner does not use AAPA as the “basis” because “the *substantive focus* or ‘basis’ of the [P]etition is the disclosure of the power management features in Petersen, Zilberman, and Saaski.” First Pet. Reply 9–10. Petitioner argues that, under the AAPA Guidance, Petitioner “can and did use AAPA to supply missing claim limitations generally known in the prior art.” *Id.* at 10 (citing AAPA Guidance 9).

We determine that Petitioner improperly relies on AAPA in the context of this asserted ground. The AAPA Guidance provides that AAPA in a challenged patent does not constitute “prior art consisting of patents or printed publications” and thus cannot properly be used as the “basis”—i.e., the “foundation or starting point”—of an obviousness ground. *See* AAPA

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Guidance 2 (providing that “statements of the applicant in the challenged patent do not qualify as ‘prior art consisting of patents or printed publications”), 4 (“A patent cannot be prior art to itself, and thus the patent challenged in the IPR cannot be said to be among the ‘patents’ of which the ‘prior art’ ‘consist[s].’ In other words, the challenged patent itself, or any statements therein, cannot be the ‘basis’ of an IPR.”), 6 (defining “basis” in § 311(b) as “foundation or starting point”), 9 (“Statements in the specification of the patent being challenged are not prior art patents or printed publications, and thus cannot form the basis of an IPR.”).

After the consolidated oral hearing, the Federal Circuit issued a decision in which the court held that AAPA in a challenged patent does not constitute “prior art consisting of patents or printed publications.” *See Qualcomm Inc. v. Apple Inc.*, 24 F.4th 1367, 1373 (Fed. Cir. 2022)¹⁸ (“The parties’ main argument on appeal focuses on whether AAPA constitutes ‘prior art consisting of patents or printed publications’ under § 311(b) such that it may form ‘the basis’ of a ground in *inter partes* review. We hold that it does not.”). This holding aligned with the AAPA Guidance on that issue. *See, e.g.*, AAPA Guidance 2 (providing that “statements of the applicant in the challenged patent do not qualify as ‘prior art consisting of patents or printed publications”). The Federal Circuit then remanded for the Board to determine whether the prior art or the AAPA in that proceeding had been applied as the “basis” of the obviousness ground at issue. *Qualcomm*, 24

¹⁸ Patent Owner notified the Board of this supplemental authority prior to issuance of this Decision. *See* First IPR, Ex. 3004. Neither party requested additional briefing in view of the holdings in the *Qualcomm* decision. *Id.*

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F.4th at 1377.¹⁹ We turn now to the same issue in the context of this asserted ground.

On the particular facts here, Petitioner used AAPA as the “basis—i.e., the “foundation or starting point”—of this asserted ground. For independent claim 1, Petitioner relies *solely* on AAPA for element 1.1 (“A cochlear implant system, comprising: an implantable cochlear stimulator”) and element 1.7 (“a coil operably connected to the sound processor circuit”). *See* First Pet. 24, 29–30.²⁰ For elements 1.2 (“an external sound processor”) and 1.4 (“a sound processor circuit”), Petitioner first lists disclosures in AAPA and then lists disclosures in Petersen. First Pet. 24–25, 28. And for elements 1.3 (“a closed case”), 1.5 (“a rechargeable power source permanently and integrally housed within the closed case”), and 1.6 (“at least one electrical contact . . .”), Petitioner relies solely on Petersen. First Pet. 25–29. Although relying solely on AAPA to address the preamble does not *necessarily* indicate AAPA is the “foundation or starting point,” on the facts here, Petitioner’s reliance on AAPA as to several structural and

¹⁹ The Federal Circuit also stated that “AAPA may not form the ‘basis’ of a ground in an *inter partes* review, and it is therefore impermissible for a petition to challenge a patent relying on *solely* AAPA without also relying on a prior art patent or printed publication.” *Qualcomm*, 24 F.4th at 1377 (emphasis added). In any event, we remain bound by the AAPA Guidance, which does not look to whether the challenge relies solely on AAPA and instead focuses on whether it amounts to the “foundation or starting point” of the challenge. AAPA Guidance 6.

²⁰ Petitioner also cites to other patents, but, according to Petitioner, those patents are also AAPA as they are allegedly incorporated by reference into AAPA. *See* First Pet. 24 & 30 (discussing “incorporated U.S. Patents”), 21 (discussing the additional patents and asserting that “[t]he subject matter of those patents is therefore part of the AAPA”).

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functional limitations for a cochlear implant system, and reliance on Peterson for only an additional electrical system, supports our determination that AAPA is the “basis” of this ground.

The determination that AAPA is the “foundation or starting point” of this ground is also supported by Petitioner’s framing of the proposed modification as

combin[ing] a cochlear implant system with typical cochlear implant features, as described in the AAPA, with the concept of a “permanently and integrally housed” battery that is recharged *in situ* through either direct electrical contacts on the device’s surface or inductive charging, as described in Petersen, and thereby arrive at the claimed invention.

First Pet. 44–45; *see also* First Pet. 47 (stating that one of ordinary skill in the art “would have been motivated and capable . . . of applying Petersen’s power management techniques to the known cochlear implant system described in the AAPA, and would have recognized and expected that they would improve the system of the AAPA by alleviating the problems of replaceable batteries”), 22 (stating that “Petitioner relies on the typical cochlear implant features described in the AAPA, combined with the power management features of Petersen”).

As to Petitioner’s assertion that the “basis” of this asserted ground is Petersen because that reference discloses the “power management features” at issue (First Pet. Reply 9–10), the AAPA Guidance defines “basis” as “foundation or starting point,” not as the alleged point of novelty. *See* AAPA Guidance 6.

We also do not agree with Petitioner’s assertion that the AAPA Guidance permits reliance on AAPA to supply missing claim limitations *in all situations*. *See* First Pet. Reply 10 (“Petitioner can and did use AAPA to

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supply missing claim limitations generally known in the prior art.” (citing AAPA Guidance 9)). For example, in the “Conclusion” section, the AAPA Guidance provides certain permissible uses for AAPA—including “to supply missing claim limitations that were generally known in the art prior to the invention”—but, in the same sentence, *expressly* limits the listed uses to *only* situations in which “the basis of the IPR is one or more prior art patents or printed publications.” AAPA Guidance 9; *see also id.* at 4 (“Statements in a challenged patent’s specification may be used, however, when they evidence the general knowledge possessed by someone of ordinary skill in the art. That evidence, *if used in conjunction with one or more prior art patents or printed publications forming ‘the basis’ of the proceeding under § 311*, can support an obviousness argument.” (emphasis added)).

We turn now to Petitioner’s argument that “AAPA can be used as a basis for an IPR petition” because “35 U.S.C. § 311(b) speaks of ‘prior art consisting of patents,’ not ‘prior art patents’” and “AAPA is ‘prior art.’” First Pet. Reply 9 (citing *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1560, 1570 (Fed. Cir. 1988); *In re Nomiya*, 509 F.2d 566, 571 (CCPA 1975)). According to Petitioner, “[t]hat prior art ‘consists of’ a patent, namely the patent at issue” and thus, AAPA “meets the statutory language” of section 311(b). *Id.* Petitioner’s proposed understanding of the statutory language is *directly* contradicted by the AAPA Guidance:

The rationale of some Board decisions for permitting use of admissions in IPRs — that an admission in the specification of the challenged patent satisfies § 311 (b) because it is “prior art” and found in a “patent” — is not consistent with the statute. The better reading of the statutory language — “prior art consisting of patents or printed publications” in § 311 (b) — is

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that any patent that is used as the “basis of” a request for inter partes review must be a *prior art* patent, not the challenged patent. A patent cannot be prior art to itself, and thus the patent challenged in the IPR cannot be said to be among the “patents” of which the “prior art” “consist[s].” In other words, the challenged patent itself, or any statements therein, cannot be the “basis” of an IPR.

AAPA Guidance 3–4 (internal citations and footnote omitted). For these reasons, we determine that Petitioner improperly relies on AAPA as the “basis” of this ground, contrary to the interpretation of § 311(b) in the AAPA Guidance.

b. Whether the Board Has Authority to Determine Patentability as to this Ground

Having determined that Petitioner improperly relies on AAPA as the “basis” of this ground, we turn now to whether the Board has the authority to address the merits and determine patentability in the context of this ground. Petitioner argues that, if the Board determined that Petitioner improperly relies on AAPA as the “basis” of this ground, “the Board lacks jurisdiction to consider the merits” of this ground such that we should “not reach a final decision” as to this ground. *See* First Pet. Reply 10 (citing *Samsung Elecs. Am., Inc. v. Prisia Eng’g Corp.*, 948 F.3d 1342, 1353, n.3 (Fed. Cir. 2020)).

In the Response in the First IPR, Patent Owner states that if Petitioner improperly relied on AAPA in the context of this ground, “the Board lacks statutory authority to decide” this ground. First PO Resp. 17. In the Sur-reply, Patent Owner changes course and disagrees with Petitioner’s position that the Board “lacks jurisdiction” to consider the merits of this ground (First Pet. Reply 10), stating that that position is “directly contrary to the Supreme Court’s mandate that, once IPR is instituted, the PTAB must issue a Final

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Written Decision on every ground raised in the petition.” First PO Sur-reply 11–12 (citing *SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1354 (2018)).

Under the Administrative Procedure Act, reviewing courts will set aside or hold unlawful agency action that is “in excess of statutory jurisdiction, authority, or limitations.” *See* Administrative Procedure Act, 5 U.S.C. § 706(2)(C) (2018). The relevant statutory provision here— 35 U.S.C. § 311(b)—provides two limits as to the scope of grounds that can be considered for *inter partes* reviews: (1) grounds “that could be raised under section 102 or 103”²¹ and (2) grounds “only on the basis of prior art consisting of patents or printed publications.” For the reasons discussed in the prior section, we determine that, on the particular facts here, this asserted ground falls outside of *the second* of these limits.

Although the decision in *Samsung Electronics* involved the Federal Circuit discussing how an indefiniteness challenge falls outside *the first* of these limits, we are persuaded by Petitioner’s argument that the Federal Circuit’s guidance still applies here. *See* First Pet. Reply 10. We are not persuaded by Patent Owner’s assertion that the *Samsung Electronics* decision is inapplicable because it dealt with an indefiniteness challenge. *See* First PO Sur-reply 12 (arguing that the *Samsung Electronic* decision “is inapplicable here—neither party, nor the Board, has raised indefiniteness”). Indeed, whether a challenge falls outside the scope of *the first* or *the second*

²¹ As an example of this limit as applied in *inter partes* review proceedings, in *Cuozzo Speed Technologies, LLC v. Lee*, the Supreme Court noted, in dicta, that the Patent Office cannot “act outside its statutory limits by, for example, canceling a patent claim for indefiniteness under § 112 in *inter partes* review” when section 311(b) does not provide for such a challenge. 579 U.S. 261, 275 (2016).

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limit, we lack the statutory authority to find claims unpatentable on the basis of AAPA as Petitioner has requested in the First Petition.

For this reason, based on relevant guidance from the Federal Circuit, we do not reach a decision on the merits as to whether Petitioner has established the unpatentability of claims 1–24 in the context of this ground, which is based on AAPA and Petersen. *See Samsung Elecs.*, 948 F.3d at 1353 (discussing how “the proper course for the Board to follow, if it cannot ascertain the scope of a claim with reasonable certainty for purposes of assessing patentability, is to decline to institute the IPR or, if the indefiniteness issue affects only certain claims, to conclude that it could not reach a decision on the merits with respect to whether petitioner had established the unpatentability of those claims under sections 102 or 103” and how “[i]t would not be proper for the Board to cancel claims on a ground that is unavailable in an IPR”).

We are not persuaded to take a different course based on Patent Owner’s argument based on the Supreme Court’s decision in *SAS Institute*. *See* First PO Sur-reply 11–12. Indeed, in a decision issuing after *Samsung Electronics*, the Federal Circuit expressly rejected a similar argument that *SAS Institute* requires a final decision as to all grounds, even those that fall outside our statutory authority for *inter partes* reviews (such as one asserting unpatentability based on indefiniteness). *See Intel Corp. v. Alacritech, Inc.*, 817 Fed. App’x 1014, 1019 (Fed. Cir. 2020) (“The Board cannot invalidate a patent as indefinite in an *inter partes* review proceeding. *See, e.g.*, 35 U.S.C. § 311(b) (limiting the scope of *inter partes* review to ‘ground[s] that could be raised under section 102 or 103.’). Section 318(a) requires that the Board issue a final written decision with respect to the patentability of all

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challenged claims. *See* 35 U.S.C. § 318(a). It does not grant the Board authority to act outside its statutory limits by holding a patent claim unpatentable as indefinite under § 112. *See Cuozzo Speed Techs., LLC v. Lee*, — U.S. —, 136 S. Ct. 2131, 2141–42, 195 L.Ed.2d 423 (2016). Nor does the Supreme Court’s decision in *SAS* grant the Board such authority.”). With that, the Federal Circuit held that “the Board properly determined that it lacked legal authority to hold the claims unpatentable as indefinite.” *Id.* Accordingly, and for the reasons above, on the facts here, we do not reach the merits as to whether Petitioner has established the unpatentability of claims 1–24 in the context of this ground, which is based on AAPA and Petersen.

D. Asserted Obviousness of Claims 10–17 and 24 Based on Zilberman and Saaski

Petitioner asserts that claims 10–17 and 24 of the ’746 patent are unpatentable under 35 U.S.C. § 103(a) based on Zilberman and Saaski. First Pet. 4, 47–70; First Pet. Reply 21–26. Patent Owner provides arguments specifically addressing this ground. First PO Resp. 43–56; First PO Sur-reply 19–24. We first summarize aspects of Zilberman and Saaski and then address the contentions of the parties.

1. Zilberman

Zilberman discloses “a system for enhancing hearing comprised of both a middle ear implant and a cochlear implant.” Ex. 1018 ¶ 6.

Figures 1 and 2 of Zilberman are reproduced below:

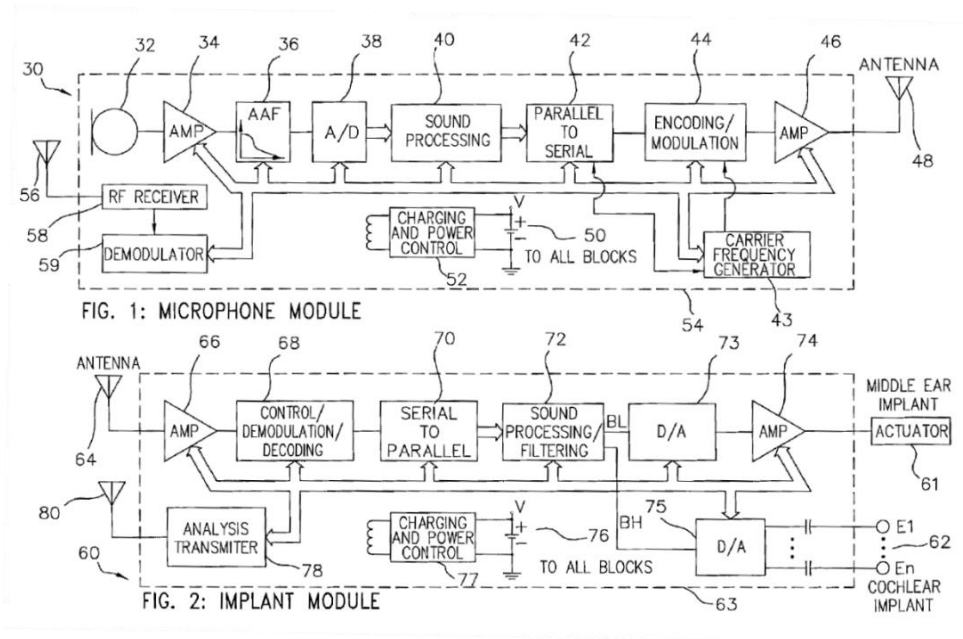


Figure 1 is “a block diagram of an exemplary microphone module” and Figure 2 is “a block diagram . . . depicting a system including both middle ear and cochlea implants.” Ex. 1018 ¶¶ 9–10. We begin with Figure 2, which shows implant module 60 for driving actuator 61 implanted in a patient’s middle ear and also shows an array of electrodes 62 implanted in a patient’s cochlea. *Id.* ¶ 14. The middle ear implant and cochlear implant handle different frequency ranges. *Id.* Implant module 60 also includes receive antenna 64 for communicating with antenna 48 of microphone module 30 (shown in Figure 1).

Figure 1, in turn, shows microphone module 30, which includes microphone 32 as well as signal processing components to produce a radio frequency signal transmitted to antenna 48 (and received by antenna 64 shown in Figure 2). Ex. 1018 ¶ 11. Microphone module 30 is powered by battery 50, which is preferably rechargeable and may be charged “by charging and power control circuit 52 from, for example, energy extracted

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Ex. 1021, 6:41–43. Specifically, hearing aid system 8*b* includes inductively rechargeable hearing aid 10*b* and inductive charger 12*b*. *Id.* at 14:19–27; *see also id.* at 4:2–22 (further discussing inductive charging). Saaski discloses that the external surface of hearing aid 10*b* does not need any electrical contacts for inductive charger 12*b* to recharge rechargeable battery 24*b*. *Id.* at 14:35–39.

3. Analysis

a. Independent Claim 10

Petitioner contends that the proposed combination of Zilberman and Saaski discloses each of the limitations of independent claim 10. First Pet. 48–59. To support its arguments, Petitioner identifies certain passages in the cited references and explains the significance of each passage with respect to the corresponding claim limitation. *Id.* Petitioner also articulates reasons to combine the relied-upon aspects of Zilberman and Saaski. First Pet. 69–70. We address in turn below the subject matter of each limitation in claim 10 and then Petitioner’s identified reasons to combine Zilberman and Saaski.

(1) Element 10.1

In element 10.1, claim 10 recites “A cochlear implant system, comprising: an implantable cochlear stimulator.” Ex. 1001, 9:3–4. Petitioner quotes a passage from Zilberman providing that “[t]he present invention is directed to a system for enhancing hearing comprised of both a middle ear implant and a cochlear implant.” Ex. 1018 ¶ 6, *quoted at* First Pet. 48. As to the “implantable cochlear stimulator,” Petitioner identifies implant module 60 in Zilberman, as shown in, for example, Figure 2. *See* First Pet. 48 (citing Ex. 1018 ¶ 14, Fig. 2; First Najafi Decl. ¶¶ 157–158).

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Patent Owner does not present arguments for this claim language. We take no position on whether the language “[a] cochlear implant system” is limiting. Even if it is, we find, based on the complete record, that Petitioner has demonstrated by a preponderance of the evidence that Zilberman discloses this element.

(2) Elements 10.2, 10.3, and 10.5

Taken together, elements 10.2, 10.3, and 10.5 require an “external sound processor” that includes a rechargeable power source that is “permanently and integrally housed within [a] closed case.”²² Ex. 1001, 9:5–8. For the requirement from element 10.2 for an “external sound processor,” Petitioner highlights Zilberman’s disclosure that “**microphone module 30** [is] intended to be either implanted in a patient’s body or worn **externally**.” First Pet. 48 (quoting, with emphasis added, Ex. 1018 ¶ 11). According to Petitioner, “microphone module 30, which turns sound signals into electrical stimulation signals . . . , meets the ‘sound processor’ limitation.” First Pet. 49 (citing First Najafi Decl. ¶¶ 159–160). Petitioner also highlights Saaski’s disclosure of a “**signal processor**.” *Id.* (citing Ex. 1021, 7:57–60).

For the requirement from element 10.3 for a “closed case” included in the “external sound processor,” Petitioner discusses aspects of both Zilberman and Saaski. *See* First Pet. 49–51 (citing First Najafi Decl. ¶¶ 161–163). As to Zilberman, Petitioner highlights the disclosure that “[a]ll of the elements of F[igure] 1 are preferably contained in a **housing 54 which is hermetically sealed** and suitable for implanting in a patient’s body near to

²² For brevity, we will refer to these requirements, together, as the “Composite Requirements.”

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the middle ear and inner ear.” First Pet. 49 (quoting, with emphasis added, Ex. 1018 ¶ 11). According to Petitioner, “hermetically sealed housings that are suitable for implanting in a patient’s body, are air tight and closed, without any doors or openings that are removable, so they can protect the components inside against damage by external elements such as moisture or biological fluids.” First Pet. 50. As to Saaski, Petitioner states that “‘shell’ 14 and 14b of Saaski is depicted in Figs. 1 and 5 as closed.” First Pet. 50; *see* First Pet. 49 (citing Ex. 1021, 7:48–65). According to Petitioner, “[b]y further describing the use of a rechargeable battery that is recharged *in situ* by inductive charging . . . and can last for a period of up to five years, the description in Saaski, too, makes clear that the ‘shell’ is closed and has no battery removal door.” First Pet. 50–51; *see* First Pet. 50 (citing Ex. 1021, 14:19–39, 26:1–26:3).

For the requirement in limitation 10.5 for a rechargeable power source “permanently and integrally housed within the closed case,” Petitioner again discusses aspects of both Zilberman and Saaski. *See* First Pet. 51–53 (citing First Najafi Decl. ¶¶ 167–169). As to Zilberman, Petitioner states that “Zilberman’s microphone module 30 is powered by a rechargeable battery 50.” First Pet. 52; *see* First Pet. 51 (citing Ex. 1018 ¶ 11). Petitioner contends that “[b]attery 50 and its charging and power control circuit 52 are all hermetically sealed in housing 54” and that, “[b]ecause it is hermetically sealed and it is suitable for implanting in a patient’s body, housing 54 is closed and does not have any doors, and ‘permanently and integrally’ houses the ‘rechargeable power source.’” First Pet. 52. As to Saaski, Petitioner states, “Saaski describes the use of a rechargeable battery that is recharged *in situ* by inductive charging, can last for a period of up to five years, and is

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placed in a closed ‘shell’” and, thus, Saaski “makes clear that the battery is not replaceable by the user in the normal course of using the device, but is permanently and integrally housed within the ‘shell.’” First Pet. 52–53; *see* First Pet. 52 (citing Ex. 1021, 1:12–13, 4:2–19, 4:23–6:19, 11:30–34, 18:49–33:22, Figs. 1, 5, 10–22).

Patent Owner argues that the proposed combination fails to satisfy the requirement for an “external sound processor” with a rechargeable power source that is “permanently and integrally housed within [a] closed case”—i.e., the Composite Requirements. First PO Resp. 43–50; First PO Sur-reply 19–22. We first address Petitioner’s reliance on Zilberman and then the reliance, in the alternative, on Saaski.

Patent Owner argues that Petitioner “misapprehends Zilberman’s disclosure” in relied-upon paragraph 11. First PO Resp. 44. According to Patent Owner, “Zilberman describes an implantable microphone module and mentions in passing an alternative, external embodiment of the microphone module,” but Petitioner “conflates these two embodiments and assumes without support that features of the former are included in the latter.” *Id.* (citing Ex. 1018 ¶ 11; First Young Decl. ¶ 116). At issue here are three sentences in paragraph 11 of Zilberman:

Attention is now directed to FIG. 1 which illustrates an exemplary microphone module 30 intended to be either implanted in a patient’s body or worn externally.

...

All of the elements of FIG. 1 are preferably contained in a housing 54 which is hermetically sealed and suitable for implanting in a patient’s body near to the middle ear and inner ear. Alternatively, the housing 54 can be worn externally, as on a patient’s belt or behind the patient’s ear.

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Ex. 1018 ¶ 11. The parties disagree as to the proper interpretation of these sentences. Patent Owner views the first sentence as introducing *two different embodiments* of microphone module 30—an external embodiment and an implanted embodiment—with the penultimate sentence addressing *solely* the implanted embodiment and the last sentence addressing *solely* the external embodiment. *See* First PO Resp. 44–47; *see, e.g., id.* at 44–45 (“In the Petition, Petitioner points to the fact that Zilberman’s implantable embodiment is ‘hermetically sealed’ as teaching a battery that is ‘permanently and integrally housed within the closed case.’” Pet. 49–52. But this disclosure relates to the *implantable* embodiment, which does not contain an ‘*external*’ sound processor as required by the Challenged Claims.” (citing Young Decl. ¶117)). Thus, according to Patent Owner, Petitioner improperly relies on different aspects of these alleged two embodiments to address the Composite Requirements—i.e., Petitioner relies on the *external* embodiment for limitation 10.2 but relies on the “hermetically sealed” description of the *implanted* embodiment for limitations 10.3 and 10.5. *See* First PO Resp. 44–47. In contrast, Petitioner views the three sentences from paragraph 11 of Zilberman as disclosing only one “hermetically sealed” microphone, which is “suitable for implanting” but, *in the alternative*, “can be worn externally.” *See* First Pet. 48–53.

For the reasons below, and because the complete record more strongly supports Petitioner’s view of Zilberman, we find that Petitioner has demonstrated by a preponderance of the evidence that Zilberman discloses these elements. Specifically, for the reasons discussed below, the record supports Petitioner’s view that Zilberman does not disclose *two different embodiments* of microphone module 30, but rather discloses *one* microphone

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module, which is hermetically sealed and can *either* be implanted or worn externally. *See* First Pet. Reply 21 (“Contrary to Patent Owner’s assertion, Zilberman does not describe two structurally different embodiments, but rather one and the same device (the microphone module) that can be either implanted or worn externally.”).

First, Zilberman does not refer to different “embodiments” of the microphone module in the relied-upon discussion or elsewhere. *See, e.g.,* Ex. 1018 ¶ 11. As noted by Petitioner, this understanding of a *single* disclosed microphone module—with two possible use locations—is supported by the first sentence of paragraph 11, which introduces “*an* exemplary microphone module 30 intended to be either implanted in a patient’s body or worn externally.” Ex. 1018 ¶ 11, *quoted at* First Pet. Reply 21.

Second, the last two sentences of paragraph 11 also support the above understanding of the microphone module. As argued by Petitioner, the penultimate sentence expressly describes “*a* housing 54” as “hermetically sealed” and then the last sentence refers back to “*the* housing 54”—i.e., the *same* housing previously described—as able to “be worn externally.” Ex. 1018 ¶ 11 (emphasis added), *quoted at* First Pet. Reply 22. Moreover, the last two sentences make clear that the “[a]lternative[.]” aspects of the disclosure relate solely to the two possible use locations in that (1) the penultimate sentence refers to housing 54 as “suitable for implanting” (rather than, e.g., “implanted”) and (2) the last sentence refers only to the location not to the feature of “hermetically sealed.” Dr. Young’s statements on these disclosures in Zilberman track Patent Owner’s Response in the First IPR and do not further elaborate on why one of ordinary skill in the art

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would hold the stated views. *Compare* First Young Decl. ¶¶ 114–117, with First PO Resp. 43–45.

Supporting the view that an externally worn, hermetically sealed microphone module with an internal rechargeable battery in Zilberman, as discussed above, satisfies the Composite Requirements, Dr. Najafi states that

Hermetically sealed housings that are suitable for implanting in a patient's body, are housings that are air tight and closed, without any doors or openings that are removable, so they can protect the components inside their hermetically sealed closed environment against damage by external elements such as moisture or biological fluids. Zilberman's housing is therefore closed and has no battery removal door.

First Najafi Decl. ¶ 162, *cited at* First Pet. 51. In addition, Dr. Najafi states that “[b]attery 50 and its charging and power control circuit 52 are all hermetically sealed in housing 54” and that, “[b]ecause it is hermetically sealed and it is suitable for implanting in a patient's body, Zilberman's hermetically sealed housing 54 is closed and does not have any doors, and ‘permanently and integrally’ houses the ‘rechargeable power source.’” First Najafi Decl. ¶ 168, *cited at* First Pet. 53. With this understanding of the disclosed externally worn, hermetically sealed microphone module, we find that Zilberman satisfies the Composite Requirements under the interpretations discussed above.

Patent Owner does not argue that Petitioner's asserted understanding of the microphone module in Zilberman fails to satisfy the interpretations of the claim language at issue. Instead, Patent Owner's arguments focus on what Zilberman discloses. As one additional argument, Patent Owner asserts that Zilberman does not actually disclose an externally worn, hermetically sealed microphone module because hermetically sealing that

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component “would be unnecessary and cumbersome in an external device, particularly because there are downsides to hermetically sealing include an increased difficulty in replacing or repairing components.” First PO Resp. 45 (citing First Young Decl. ¶¶ 119–120; First IPR, Ex. 2014, 132:5–14); *see also id.* at 46–47 (asserting that one of ordinary skill in the art would have wanted access to the components of an external microphone module). According to Patent Owner, “[w]ithout the necessity of hermetically sealing for implantation, the external embodiment would lose functionality without any corresponding benefit.” *Id.* at 45–46 (citing First Young Decl. ¶ 120).

Although Patent Owner raises certain technical reasons why the microphone module in Zilberman *need not* be hermetically sealed if that component was worn externally, the issue here is how one of ordinary skill in the art would have understood the disclosures actually in Zilberman. *See* First Pet. Reply 22 (arguing that “whether Patent Owner and its expert agree or disagree with Zilberman’s technical approach is beside the point; what matters is what Zilberman actually describes”). For the reasons above, we agree with Petitioner as to how one of ordinary skill in the art would have understood the relevant passages in Zilberman. Again, Dr. Young’s statements on these issues track Patent Owner’s Response in the First IPR and do not further elaborate on why the alleged technical issues show error in the understanding of the disclosures in Zilberman. *Compare* First Young Decl. ¶¶ 119–123, *with* First PO Resp. 45–47.

On this issue, Patent Owner asserts that U.S. Patent No. 5,824,022 (Ex. 1014, “Zilberman ’022”) “reflects the common understanding in the art that external cochlear implant sound processors ‘are powered using **replaceable** batteries,’ which require passage or entry into the interior of the

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case to replace.” First PO Resp. 46 (citing Ex. 1014, 9:36–39, claims 10 & 21; First Young Decl. ¶ 120). In other words, Patent Owner relies on Zilberman ’022 as showing that an externally worn microphone module *would not* be hermetically sealed. Even assuming that Zilberman ’022 discloses an external sound processor with replaceable batteries, we do not find that disclosure to show a “common understanding” across the industry or even across Mr. Zilberman’s other patent disclosures, including the Zilberman reference in this asserted ground. Again, the issue here is how one of ordinary skill in the art would have understood the disclosures in Zilberman. Also undermining this alleged “common understanding” in the industry is the fact that, in its infringement contentions in the Delaware Litigation, Patent Owner identified, an external—*yet hermetically sealed*—sound processor allegedly produced by Petitioner as satisfying the claim language at issue. *See* First Pet. Reply 22–23 (citing First IPR, Ex. 1044 at 4).

We turn now to Petitioner’s alternative reliance on Saaski for these elements. Patent Owner argues that Petitioner has not adequately supported why the “shell” in Saaski is “closed” and that Petitioner conflates the requirements for an “integrally housed” battery with one that is “permanently . . . housed” in a “closed case.” *See* First PO Resp. 48–49. We understand Petitioner to rely on Saaski’s disclosures of a rechargeable battery potentially lasting up to five years as somehow indicating that the “shell” is “closed” and that the battery is “integrally housed.” *See, e.g.*, First Pet. 50–51 (“By further describing the use of a rechargeable battery that is recharged *in situ* by inductive charging . . . and can last for a period of up to

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five years, the description in Saaski, too, makes clear that the ‘shell’ is closed and has no battery removal door.”), 52–53.

In the Decision on Institution in the First IPR, we stated that “it is unclear whether Petitioner relies on an inherency theory, an implicit disclosure theory, or another theory” and that, “[t]o the extent Petitioner relies on inherency, at th[at] stage, we agree with Patent Owner that the logic of Petitioner’s theory is difficult to fully discern.” First Dec. Inst. 52 (footnotes omitted). We also stated that, “[t]o the extent Petitioner continues to rely on Saaski for the Composite Requirements, Petitioner should explain why the record supports its position.” *Id.* In the Reply in the First IPR, Petitioner clarifies that Saaski is relied upon in the alternative, but does not fully respond to the instructions to explain its position as to the requirements in these elements. *See* First Pet. Reply 23–24. For these reasons, we find, based on the complete record, that Petitioner has *not* demonstrated by a preponderance of the evidence that Saaski discloses these elements. As discussed above, however, we find, based on the complete record, that Petitioner has demonstrated by a preponderance of the evidence that Zilberman discloses these elements.

(3) Element 10.4

In element 10.4, claim 10 recites “a sound processor circuit” of the external sound processor. Ex. 1001, 9:5–6. Petitioner identifies two alternative disclosures, one in Zilberman and one in Saaski. First Pet. 51. As to Zilberman, Petitioner identifies sound processing circuit 40 in microphone module 30. *Id.* (citing Ex. 1014 ¶ 11). As to Saaski, Petitioner highlights a disclosure that “hearing aid 10 may also comprise . . . a **signal processor, an audio amplifier, related electrical circuitry**, and a

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loudspeaker” *Id.* (quoting, with emphasis added, Ex. 1021, 7:57–60).

Patent Owner does not present arguments for this limitation. We find, based on the complete record, that Petitioner has demonstrated by a preponderance of the evidence that both Zilberman and Saaski separately disclose this element.

(4) Element 10.6

In element 10.6, claim 10 recites “a power coil operably coupled to the rechargeable power source, that selectively receives power from an external charging source and recharges the rechargeable power source when the sound processor is in proximity to the external charging source.”

Ex. 1001, 9:8–13. For this element, Petitioner relies on aspects of Zilberman and, in the alternative, Saaski. *See* First Pet. 53–56.

Petitioner first identifies charging and power control circuit 52 in Zilberman as the recited “power coil” and highlights the disclosure that the rechargeable battery “**can be charged by charging and power control circuit 52** from, for example, **energy extracted from an alternating magnetic field provided by an external source** (not shown).” First Pet. 53 (quoting, with emphasis added, Ex. 1018 ¶ 11). According to Petitioner, the last emphasized passage “specifically refers to inductive charging that is selectively enabled by coupling of the magnetic fields between two coils, and requires that the power coil be in proximity to the external source, so that it can receive sufficient power from the external source’s coil that generates the alternating magnetic field.” *Id.* at 55–56 (citing First Najafi Decl. ¶¶ 170–173; *Atlas Powder Co. v. Ireco Inc.*, 190 F.3d 1342, 1347 (Fed. Cir. 1999) (discussing inherency)). Petitioner also identifies receiving inductor 140 in Saaski as a “power coil” and highlights disclosures regarding

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inductive charging circuitry. *See* First Pet. 53–55 (citing Ex. 1021, 4:2–22, 14:46–15:17, 15:37–43). According to Petitioner, Saaski “describes inductive charging of the battery, and refers to inductor 140 in inductive receiving circuit 138,” which “is in the hearing aid.” First Pet. 56 (citing First Najafi Decl. ¶¶ 170–173).

Patent Owner argues, that under its claim construction of “selectively receives” (*see supra* § II.B.3), “the plain language of the claims requires not just a power coil that receives power but a power coil that can be enabled or disabled to receive power from an external charging source.” First PO Resp. 50. According to Patent Owner, “[t]he proposed combination of Zilberman and Saaski does not disclose or teach a power coil that ‘selectively’ receives power under the proper construction of the term.” *Id.* (citing First Young Decl. ¶ 129). For the reasons above, we do not agree with Patent Owner’s construction of element 10.6, and, instead, we construe this language as requiring that *both* recited functions—(1) “receiv[ing] power from an external charging source” and (2) “recharg[ing] the rechargeable power source”—occur “selectively,” i.e., based on the recited condition (“when the sound processor is in proximity to the external charging source”).

We now apply this understanding of the limitation at issue. As an initial matter, we continue to view Petitioner as relying, at least in part, on inherency as to inductive charging. *See* First Pet. 55–56 (citing *Atlas Powder*, 190 F.3d at 1347); *see also* First Dec. Inst. 55–56 (discussing inherency). Specifically, we understand Petitioner to take the position that, although the references do not *expressly* discuss the “proximity” of the relied-upon components, *all* inductive charging systems are “*selectively enabled* by coupling of the magnetic fields between two coils, and *require*[]

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that the power coil be in proximity to the external source, so that it can receive sufficient power from the external source’s coil that generates the alternating magnetic field.” First Pet. 55–56 (emphasis added) (citing First Najafi Decl. ¶¶ 170–173; *Atlas Powder*, 190 F.3d at 1347 (discussing inherency)). This position is supported by the relied-upon testimony of Dr. Najafi, who explains that (1) “magnetic coupling between two coils in proximity of each other causes a voltage/current to be ‘induced’ in the power coil . . . when the external source transmitter coil generates an ‘alternating magnetic field’” and that (2) “[t]he closer the receiver and transmitter coils get to each other, the stronger the magnetic interaction becomes, and the more power can be received by the receiver coil.” First Najafi Decl. ¶ 171, *cited at* First Pet. 55–56.

Further, we note that Patent Owner acknowledges that Zilberman and Saaski each disclose inductive charging, but Patent Owner relies on its claim construction arguments that element 10.6 requires *more than just* inductive charging. *See, e.g.*, First PO Resp. 50–51 (stating that the cited portion of Zilberman and Saaski “at most describe the use of some form of inductive charging in a hearing aid” (citing First Young Decl. ¶ 129)); *see* First Pet. Reply 24 (“Patent Owner’s argument that Zilberman and Saaski each fail to teach the ‘power coil . . .’ limitation is entirely premised upon its flawed claim construction. Under the correct construction, it is uncontested that both Zilberman and Saaski disclose the “power coil . . .” limitation.” (citations omitted)). Under the proper construction of element 10.6 (including “selectively receives”), we determine that the inductive charging inherently disclosed in both Zilberman and Saaski satisfies the claim language. Thus, based on the complete record, we find that Petitioner has

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demonstrated by a preponderance of the evidence that both Zilberman and Saaski separately disclose this element.

(5) Element 10.7

In element 10.7, claim 10 recites “a coil operably connected to the sound processor circuit.” Ex. 1001, 9:14. For this element, Petitioner relies on aspects of Zilberman and, in the alternative, Saaski. *See* First Pet. 56–59. Petitioner identifies two alternatives as to Zilberman. First, Petitioner identifies antenna 48, which is shown in Figure 1. *See* First Pet. 56–59 (citing Ex. 1018 ¶ 11; First Najafi Decl. ¶¶ 174–184). Second, Petitioner identifies the alleged “coil” shown on the left side of element 52 in Figure 1. *See* First Pet. 56, 59 (citing First Najafi Decl. ¶¶ 174–184).

Petitioner also identifies two alternatives as to Saaski. First, Petitioner identifies inductor 76, which is shown, for example, in Figure 7 of Saaski. *See* First Pet. 57 (citing Ex. 1021, 17:41–52; First Najafi Decl. ¶¶ 174–184). Second, Petitioner identifies secondary coil 140, which is shown, for example, in Figure 6. *See* First Pet. 56 (citing Ex. 1021, 15:16–17), 59 (citing First Najafi Decl. ¶¶ 174–184).

Patent Owner does not present arguments for this limitation. We find, based on the complete record, that at least antenna 48 in Zilberman satisfies this element. As additional support for its position, Petitioner states that “*antenna 48* is operably connected to the sound processor through the transmitter circuit 44 and amplifier 46” and that, “[a]t the low frequencies where externally-powered implantable biomedical systems have to operate in order to reduce absorption of electromagnetic fields by tissue (well below 100MHz), coils are used as antennae for power and data transfer to, and reception by, implants,” as shown by other prior art. First Pet. 57–58 (listing

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various prior art references' disclosures as to "coils"). According to Petitioner, antenna 48 is therefore inherently a "coil." First Pet. 58 (citing *Atlas Powder*, 190 F.3d at 1347).

Petitioner also states that "[e]ven if inherency [is] not found, however, it would at least be obvious for [one of ordinary skill in the art] to implement Zilberman's antennae as coils, because for [one of ordinary skill in the art], it was common knowledge that coils are used as antennae for cochlear implant systems, as shown by the numerous exemplary prior art references cited above." First Pet. 58.

Under either of these options, we find, based on the complete record, that antenna 48 in Zilberman, either inherently or as modified, satisfies this element. This finding is supported by the testimony of Dr. Najafi. *See* First Najafi Decl. ¶¶ 174–181, *cited at* First Pet. 59. Accordingly, based on the complete record, Petitioner has demonstrated by a preponderance of the evidence that at least Zilberman discloses this element.

(6) The Combination of Zilberman and Saaski

(a) Summary of the Proposed Combination

As to the combination of Zilberman and Saaski, Petitioner takes the position that Zilberman discloses element 10.6, but states that "if this disclosure [in Zilberman] was not explicit enough, [one of ordinary skill in the art] would look to Saaski for further guidance on the details of implementing inductive charging, since Saaski also describes inductive charging of an external hearing prosthesis." First Pet. 69. According to Petitioner, one of ordinary skill in the art "would expect that the components and mechanism of inductive charging, as described in Saaski, could be successfully implemented in the system of Zilberman, since both are in the

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field of hearing aid prosthesis devices and describe the use of inductive charging for such devices – Saaski merely provides more details.” *Id.* (citing First Najafi Decl. ¶¶ 220–221).

*(b) Arguments Addressing the Articulated
Reasons to Combine Zilberman and
Saaski and Objective Indicia*

Patent Owner provides four arguments as to why Petitioner has failed to demonstrate that one of ordinary skill in the art would have combined Zilberman and Saaski or had a reasonable expectation of success. *See* First PO Resp. 52–56. First, Patent Owner relies on prior arguments as to why Zilberman and Saaski allegedly do not satisfy the subject matter of certain elements of claim 10, with Patent Owner arguing that “Petitioner’s alleged motivation to combine does not remedy these deficiencies.” First PO Resp. 52. For the reasons discussed above, we find, based on the complete record developed at trial, that the combination of Zilberman and Saaski satisfies all of the subject matter of the elements of claim 10.

Second, Patent Owner contends that “Petitioner’s alleged motivation to combine fails to explain why [one of ordinary skill in the art] would have looked to or applied Saaski’s teaching regarding an *external* hearing aid to implement the battery and charging features of Zilberman’s *implantable* microphone module.” First PO Resp. 53 (citing First Young Decl. ¶ 133). Patent Owner adds that, “[t]o the extent Zilberman discloses an alternative embodiment of an external microphone module, Zilberman does not disclose that the battery of this embodiment is hermetically sealed with the other components or otherwise permanently and integrally housed in a closed case.” *Id.* (citing Ex. 1018 ¶ 11; First Young Decl. ¶ 134).

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As noted by Petitioner, with these arguments, Patent Owner essentially repackages its contention that Zilberman does not disclose an *externally worn*, hermetically sealed microphone module, as discussed above as to elements 10.2, 10.3, and 10.5. *See* First Pet. Reply 25 (“With respect to the motivation to combine, Patent Owner mostly repeats previous arguments, repeatedly contesting what cannot be denied, that Zilberman discloses a hermetically sealed, external sound processor.”). For the reasons above, the record more strongly supports Petitioner’s understanding of the relevant disclosures in Zilberman. Further, Dr. Young’s statements on these issues track Patent Owner’s Response in the First IPR and do not further elaborate on the issues relevant to the analysis here. *Compare* First Young Decl. ¶¶ 133–134, *with* First PO Resp. 52–54.

Third, Patent Owner argues that “history and Petitioner’s own public statements provide objective evidence that contradicts Petitioner’s hindsight-inspired reasoning regarding what [one of ordinary skill in the art] purportedly would have understood or done in November 2002.” First PO Resp. 55 (citing First Young Decl. ¶ 136). For example, Patent Owner highlights scientific literature from 2015 allegedly showing

that those in the art were still trying to develop a solution to the problems that Petitioner asserts would have purportedly motivated [one of ordinary skill in the art] in November 2002, including the need to replace the battery of cochlear implant sound processors on a regular basis, and were looking instead at ways of reducing the power consumption of the sound processor. First PO Resp. 55 (citing First IPR, Ex. 2011 at 69; First Young Decl. ¶ 136). In addition, Patent Owner states that “Petitioner itself introduced a cochlear implant sound processor called the RONDO 2 that incorporated” the invention in the ’746 patent “in 2018—sixteen years after the [’746]

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patent’s effective filing date—and characterized it as ‘the first and only [cochlear implant] audio processor with an integrated wirelessly rechargeable battery, which eliminates the hassles of changing batteries.’” *Id.* (citing First IPR, Ex. 2005; First IPR, Ex. 2006; First IPR, Ex. 2007; First Young Decl. ¶ 136). According to Patent Owner, Petitioner “touts” the invention in the ’746 patent “as embodied in the RONDO 2 as ‘revolutionary’ and ‘innovative.’” *Id.* at 55–56 (citing First IPR, Ex. 2005; First IPR, Ex. 2007; First Young Decl. ¶ 136).

With this argument, Patent Owner seeks to provide objective evidence that undermines the stated reasons to combine Zilberman and Saaski. *See, e.g.*, First PO Resp. 55 (arguing that “history and Petitioner’s own public statements provide *objective evidence* that contradicts Petitioner’s hindsight-inspired reasoning regarding what [one of ordinary skill in the art] purportedly would have understood or done in November 2002” (emphasis added)); *see also* *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1328 (Fed. Cir. 2016) (“The objective indicia of non-obviousness play an important role as a guard against the statutorily proscribed hindsight reasoning in the obviousness analysis.”); *In re Cree, Inc.*, 818 F.3d 694, 702 n.3 (Fed. Cir. 2016) (viewing an “impermissible hindsight” argument as “essentially a repackaging of the argument that there was insufficient evidence of a motivation to combine the references”).

“In order to accord substantial weight to secondary considerations in an obviousness analysis, the evidence of secondary considerations must have a nexus to the claims, i.e., there must be a legally and factually sufficient connection between the evidence and the patented invention.” *Fox Factory, Inc. v. SRAM, LLC*, 944 F.3d 1366, 1373 (Fed. Cir. 2019), *cert. denied*, 141

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S. Ct. 373 (2020). As stated in *Fox Factory*, “[t]he patentee bears the burden of showing that a nexus exists.” 944 F.3d at 1373 (quoting *WMS Gaming Inc. v. Int’l Game Tech.*, 184 F.3d 1339, 1359 (Fed. Cir. 1999)).

Here, Patent Owner states—but does not adequately establish *with evidence*—that the RONDO 2 product “embodie[s]” the invention in the ’746 patent in a way providing the necessary nexus. First PO Resp. 55; First Pet. Reply 20 (arguing as to similar assertions for the prior asserted ground, that “Patent Owner provides no nexus analysis whatsoever” and that “[t]here is no comparison between the RONDO 2 device and the claim scope”), 26 (relying on the prior nexus arguments). For example, Patent Owner does not show how RONDO 2 practices the limitations of even one of the challenged claims. Similarly, Patent Owner fails to adequately show nexus for the discussion in Exhibit 2011 as to, for example, long-felt but unsolved need because Patent Owner has not shown how that reference indicates that the limitations of even one of the challenged claims are practiced. *See* First PO Resp. 55; First Pet. Reply 20, 26. Dr. Young’s cited testimony does not remedy these deficiencies. *See* First Young Decl. ¶¶ 136–137, *cited at* First PO Resp. 55–56. Accordingly, without any nexus, we find Patent Owner’s arguments unconvincing.

Fourth, in the Sur-reply, Patent Owner seeks to rely on arguments made as to the asserted ground of AAPA and Petersen that one of ordinary skill in the art would not “have a motivation to combine [the] disparate hearing aid and cochlear implant prior art and a reasonable expectation of success in doing so.” First PO Sur-reply 22 (citing *id.* at 16–19). In the Response, in the context of this asserted ground, Patent Owner made this argument only as to claim 24. *See* First PO Resp. 54 (addressing claim 24

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and asserting that “[e]ven if relying on Zilberman’s external embodiment of the microphone module, Petitioner does not explain why [one of ordinary skill in the art] would have sought to modify, or had any reasonable expectation of success in modifying, Zilberman’s cochlear implant device based on features of Saaski’s *hearing aid*”). To the extent Patent Owner did timely make that argument as to claim 10 in the context of this asserted ground, we are not persuaded by that argument for the same reasons discussed below as to claim 24. *See* § II.D.3.i.3.b.

For the reasons above, we determine, in light of the complete record, that Petitioner has shown by a preponderance of the evidence that one of ordinary skill in the art at the time of the invention would have had reason to modify Zilberman based on Saaski, as proposed, and that the articulated reasoning is supported by rational underpinnings.

(7) Conclusion as to Claim 10

For the reasons above, we determine, based on the complete record, that Petitioner has demonstrated by a preponderance of the evidence that claim 10 would have been obvious based on Zilberman and Saaski.

b. Claim 11

Claim 11 recites “A cochlear implant system as claimed in claim 10, wherein the implantable cochlear stimulator receives power signals; the sound processor circuit generates a power signal; and the coil transfers the power signal from the sound processor circuit to the implantable cochlear stimulator.” Ex. 1001, 9:14–20.

Petitioner identifies disclosures in Zilberman that relate to “generation of a modulated RF carrier, which in addition to data includes power since all RF carriers contain energy/power.” First Pet. 60. According to Petitioner,

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“[t]his RF carrier signal is transmitted through antenna 48, which is the coil of limitation 10.7, to the implant module 60.” *Id.* (discussing Ex. 1018 ¶¶ 11, 13, 15). Petitioner states that “[t]he generation and transfer of this modulated RF carrier signal to the implant . . . necessarily describes the generation and transfer of a power signal, as described in claim 11.” First Pet. 60–61 (citing First Najafi Decl. ¶¶ 186–187)).

We find, based on the complete record, that Petitioner has demonstrated by a preponderance of the evidence that Zilberman discloses the additional elements of claim 11. Patent Owner does not present arguments for this claim. Based on the complete record, we determine that Petitioner has demonstrated by a preponderance of the evidence that claim 11 would have been obvious based on Zilberman and Saaski.

c. Claim 12

Claim 12 recites “A cochlear implant system as claimed in claim 10, further comprising: a headpiece that carries the coil and a microphone.” Ex. 1001, 9:21–23. Petitioner states that “Zilberman describes that its module 30 can be worn ‘behind the patient’s ear.’ That is placement on the head, and module 30 of Zilberman therefore constitutes a headpiece.” First Pet. 61 (quoting Ex. 1018 ¶ 11; citing First Najafi Decl. ¶¶ 189–190). Petitioner identifies microphone 32 as the “microphone” and antenna 48 as the “coil.” *Id.* (citing Ex. 1018 ¶ 11).

We find, based on the complete record, that Petitioner has demonstrated by a preponderance of the evidence that Zilberman discloses the additional elements of claim 12. Patent Owner does not present arguments for this claim. Based on the complete record, we determine that

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Petitioner has demonstrated by a preponderance of the evidence that claim 12 would have been obvious based on Zilberman and Saaski.

d. Claim 13

Claim 13 recites “A cochlear implant system as claimed in claim 10, wherein the external sound processor includes a microphone that receives sound signals and converts them into electrical signals; the sound processor circuit receives the electrical signals from the microphone and converts them into a stimulation signal; and the coil transfers the stimulation signal from the sound processor circuit to the implantable cochlear stimulator.”

Ex. 1001, 9:24–33.

Petitioner identifies disclosures in Zilberman that relate to processes performed by microphone 32 and sound processing circuit 40. First Pet. 62 (citing Ex. 1018 ¶ 13, claim 5). In addition, Petitioner highlights disclosures in Zilberman as to how antenna 48 (the identified “coil”) and receive antenna 64 communicate. *Id.* (citing Ex. 1018 ¶ 15). Petitioner states that “[t]he signal produced by the sound processing circuit ‘to best mitigate the particular hearing impairment of the patient’ is a stimulation signal which, after transfer to the implant module, is used to drive the electrode array implanted in the patient’s cochlea.” *Id.* (quoting Ex. 1018 ¶ 13; First Najafi Decl. ¶¶ 192–193).

We find, based on the complete record, that Petitioner has demonstrated by a preponderance of the evidence that Zilberman discloses the additional elements of claim 13. Patent Owner does not present arguments for this claim. Based on the complete record, we determine that Petitioner has demonstrated by a preponderance of the evidence that claim 13 would have been obvious based on Zilberman and Saaski.

e. Claim 14

Claim 14 recites “A cochlear implant system as claimed in claim 10, wherein the rechargeable power source comprises a rechargeable battery; and the closed case does not include a battery removal door.” Ex. 1001, 9:34–38. For this claim, Petitioner refers to the discussions of elements 10.3 and 10.5. First Pet. 63. Petitioner states, “[a]s explained in the context of limitation 10.3., neither Zilberman’s housing 54 nor Saaski’s shell 14/14b has a battery removal door.” *Id.* (citing First Najafi Decl. ¶¶ 196–197).

We find, based on the complete record, that Petitioner has demonstrated by a preponderance of the evidence that both Zilberman and Saaski separately disclose the additional elements of claim 14. Patent Owner does not present arguments for this claim. Based on the complete record, we determine that Petitioner has demonstrated by a preponderance of the evidence that claim 14 would have been obvious based on Zilberman and Saaski.

f. Claim 15

Claim 15 recites “A cochlear implant system as claimed in claim 10, wherein the implantable cochlear stimulator includes an electrode array that applies electrical stimulation to tissue and nerves within the cochlea.” Ex. 1001, 9:39–42. Petitioner identifies disclosures in Zilberman that relate to array of electrodes 62 within implant module 60 (in Figure 2). First Pet. 63–64 (citing Ex. 1018 ¶¶ 4, 14, claims 1 & 7). Petitioner states that “[t]he purpose of the electrode array in a cochlear implant system is to stimulate tissue and nerves in the cochlea; that is also the case in Zilberman.” First Pet. 64 (citing First Najafi Decl. ¶¶ 199–200).

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We find, based on the complete record, that Petitioner has demonstrated by a preponderance of the evidence that Zilberman discloses the additional elements of claim 15. Patent Owner does not present arguments for this claim. Based on the complete record, we determine that Petitioner has demonstrated by a preponderance of the evidence that claim 15 would have been obvious based on Zilberman and Saaski.

g. Claim 16

Claim 16 recites “A cochlear implant system as claimed in claim 10, wherein the coil is housed within the closed case.” Ex. 1001, 9:43–44. For this additional limitation, Petitioner relies on aspects of Zilberman and, in the alternative, Saaski. *See* First Pet. 64–66.

As to Zilberman, Petitioner identifies disclosures showing that antenna 48 and charging coil 52 (identified as to the “power coil” in element 10.6) are within housing 54. *See* First Pet. 65–66 (citing Ex. 1018 ¶ 11, Fig. 1; First Najafi Decl. ¶¶ 202–206). Similarly, as to Saaski, Petitioner identifies disclosures showing that inductor coil 76 and receiving inductor 140 (identified as to the “power coil” in element 10.6) are within the hearing aid. *See* First Pet. 65–66 (citing Ex. 1021, 15:29–36, Figs. 1, 5, 23, 23b).

Patent Owner does not present arguments for this limitation. We find, based on the complete record, that at least antenna 48 in Zilberman satisfies this element. As noted by Petitioner, the text in Zilberman describing Figure 1 indicates that antenna 48 is physically located within housing 54. *See* First Pet. 66; *see also* First Pet. 65 (“FIG. 1 . . . illustrates an exemplary microphone module 30 The output of the transmitter circuit 44 is coupled through amplifier 46 to the **antenna 48**. . . . **All of the elements of FIG. 1 are preferably contained in a housing 54 which is hermetically**

sealed” (quoting, with emphasis added, Ex. 1018 ¶ 11)). Based on the complete record, we determine that Petitioner has demonstrated by a preponderance of the evidence that claim 16 would have been obvious based on Zilberman and Saaski.

h. Claim 17

Claim 17 recites “A cochlear implant system as claimed in claim 10, wherein the implantable cochlear stimulator includes a cochlear stimulator coil and an electrode array.” Ex. 1001, 9:45–47. As to the recited “electrode array,” Petitioner identifies array of electrodes 62 within implant module 60 in Zilberman, as discussed in the context of claim 15. *See* First Pet. 66–67 (“*See* 15.2 for the ‘electrode array.’”). As to the recited “cochlear stimulator coil,” Petitioner relies on receiving antenna 64 (shown in Figure 2) in Zilberman or, in the alternative, charging circuit 77 in Zilberman. *See* First Pet. 66–67 (citing Ex. 1018 ¶ 15, Fig. 2).

Patent Owner does not present arguments for this claim. As an initial matter, we find, based on the complete record, that array of electrodes 62 in Zilberman satisfies the requirement for an “electrode array,” for the same reasons discussed above as to claim 15. In addition, we find, based on the complete record, that at least antenna 64 in Zilberman satisfies the requirement for a “cochlear stimulator coil.” As additional support for its position, Petitioner states, “[a]s discussed in the context of [element] 10.7, receive antenna 64 is inherently a coil; and even if inherency was not found, it would at least be obvious for [one of ordinary skill in the art] to implement receive antenna 64 as a coil.” First Pet. 67.

For the same reasons discussed as to antenna 48 in the context of element 10.7 above, under either option stated by Petitioner, we find, based

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on the complete record, that receiving antenna 64 in Zilberman, either inherently or as modified, satisfies this additional requirement. This finding is supported by the testimony of Dr. Najafi. *See* First Najafi Decl. ¶¶ 208–211, *cited at* First Pet. 67. Based on the complete record, we determine that Petitioner has demonstrated by a preponderance of the evidence that claim 17 would have been obvious based on Zilberman and Saaski.

i. Independent Claim 24

Petitioner contends that the proposed combination of Zilberman and Saaski discloses each of the limitations of independent claim 24. First Pet. 67–70. To support its arguments, Petitioner identifies certain passages in the cited references and explains the significance of each passage with respect to the corresponding claim limitation. *Id.* Petitioner also articulates reasons to combine the relied-upon aspects of Zilberman and Saaski. *Id.* at 69–70. We address in turn below the subject matter of each limitation in claim 24 and then Petitioner’s identified reasons to combine Zilberman and Saaski.

(1) Elements 24.1 through 24.6

For elements 24.1 through 24.6, Petitioner refers to the discussions for elements 10.1, 10.2, 14.3, 10.4, 10.5, and 10.7, respectively. Patent Owner does not present separate arguments for these elements. For the same reasons discussed above as to the parallel elements, we find, based on the complete record, that Petitioner has demonstrated by a preponderance of the evidence that the asserted prior art of Zilberman and Saaski, as applied, satisfies each of elements 24.1 through 24.6.

(2) Element 24.7

In element 24.7, claim 24 recites “a base station that charges the rechargeable battery.” Ex. 1001, 10:46. For this element, Petitioner relies on disclosures in Saaski as to an “inductive charger” that charges a rechargeable battery in Saaski’s hearing aid. *See* First Pet. 68–69 (citing Ex. 1021, 4:2–22, 8:34–65, 9:59–10:2, 15:22–28, 15:44–52, Fig. 5). Petitioner adds that, in Figure 5, “Saaski depicts and describes in detail a ‘base station’ for charging the integrated rechargeable battery.” First Pet. 69 (citing First Najafi Decl. ¶¶ 218–219).

Patent Owner does not present arguments for this limitation. We find, based on the complete record, that Petitioner has demonstrated by a preponderance of the evidence that Saaski discloses this element.

(3) The Combination of Zilberman and Saaski

(a) Summary of the Proposed Combination

Petitioner relies on the same reasons to combine Zilberman and Saaski as discussed above. First Pet. 69–70. As to claim 24, Petitioner adds that

the need for daily battery-recharging would have motivated [one of ordinary skill in the art] to make the process of replenishing power for the sound processor simple and user-friendly . . . and to that end, would have combined the charging station described in Saaski with the system of Zilberman to arrive at the invention of claim 24 – and would have expected that combination to work.

First Pet. 70 (citing First Najafi Decl. ¶ 222; *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007)). According to Petitioner, “[t]he combination of Zilberman with the charging station of Saaski was . . . nothing more than the combination of known elements according to known methods to yield predictable results.” *Id.* (citing First Najafi Decl. ¶ 223; *KSR*, 550 U.S. at 416).

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*(b) Patent Owner’s Arguments Addressing
the Articulated Reasons to Combine
Zilberman and Saaski*

For claim 24, Patent Owner relies on many of the same arguments addressing claim 10, discussed above. *See* First PO Resp. 52–56. For the same reasons discussed above, those arguments do not identify a deficiency in Petitioner’s articulated reasoning as to claim 24 in the context of this asserted ground.

Patent Owner also provides three additional arguments as to claim 24. *See* First PO Resp. 54 (addressing claim 24 specifically). First, Patent Owner argues that “Petitioner exclusively relies on Zilberman’s *implantable*, ‘hermetically sealed’ embodiment of the microphone module, in which case a charging station as described in Saaski would make no sense and would serve no purpose.” *Id.* (citing First Young Decl. ¶ 135).

As noted by Petitioner, with this argument, Patent Owner essentially repackages its contention that Zilberman does not disclose an externally worn, hermetically sealed microphone module, as discussed above as to elements 10.2, 10.3, and 10.5 and relied upon as to claim 24. *See* First Pet. Reply 25 (“With respect to the motivation to combine, Patent Owner mostly repeats previous arguments, repeatedly contesting what cannot be denied, that Zilberman discloses a hermetically sealed, external sound processor.”). For the reasons above, the record more strongly supports Petitioner’s understanding of the relevant disclosures in Zilberman. Further, Dr. Young’s statements on this issue tracks Patent Owner’s Response and do not further elaborate on the issues in any way relevant to the analysis here. *Compare* First Young Decl. ¶ 135, *with* First PO Resp. 54.

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Second, Patent Owner asserts that, “[e]ven if relying on Zilberman’s external embodiment of the microphone module, Petitioner does not explain why [one of ordinary skill in the art] would have sought to modify, or had any reasonable expectation of success in modifying, Zilberman’s cochlear implant device based on features of Saaski’s *hearing aid*.” First PO Resp. 54 (citing First Young Decl. ¶ 135). According to Patent Owner, one of ordinary skill in the art would have viewed hearing aids and cochlear implants as “fundamentally different, both structurally and functionally, and would not have sought to make the proposed combination.” *Id.* (citing First PO Resp. 29–34). In an argument incorporated by reference into this discussion, Patent Owner argues that one of ordinary skill in the art “would not have applied hearing features to a cochlear implant system” because “cochlear implants and hearing aid devices have much different power dissipation resulting in disparate battery charging requirements,” which result in “different charging requirements result in different design considerations for, *inter alia*, supply voltage, component size, component compliance, component volume, device breakdown tolerance, heat dissipation, and package size.” *Id.* at 33–34 (citing First Young Decl. ¶ 101).²³

Petitioner responds by also incorporating argument relating to the asserted ground of AAPA and Petersen, stating that “cochlear implant systems and hearing aids are closely related technologies.” First Pet. Reply 25 (incorporating *id.* at 15–21). We first address whether both Zilberman

²³ The two other arguments as to motivation to combine in the incorporated section dealt specifically the motivation to combine AAPA and Petersen, which we do not address. *See* First PO Resp. 29–33.

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and Saaski are analogous art to the '746 patent. *See* First PO Sur-reply 23 (“Petitioner also wrongly alleges that Patent Owner does not contest that Zilberman and Saaski are analogous prior art.”). “Two separate tests define the scope of analogous prior art: (1) whether the art is from the same field of endeavor, regardless of the problem addressed and, (2) if the reference is not within the field of the inventor’s endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved.” *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004), *quoted in Donner Tech., LLC v. Pro Stage Gear, LLC*, 979 F.3d 1353, 1359 (Fed. Cir. 2020) (applying the tests in an appeal from an *inter partes* review).

As argued by Petitioner, the '746 patent expressly describes the field of the invention as relating to “hearing aid prosthesis devices, and, in a preferred embodiment, to a cochlear implant system” Ex. 1001, 1:14–18; *see also id.* at 1:49–51 (“It is thus apparent that what is needed is a sound processor for use with a cochlear implant system, or other hearing-aid system, that avoids or minimizes the above-problems.”). We agree with Petitioner’s assertion, supported by the testimony of Dr. Najafi, that Zilberman falls within the same field of endeavor as the '746 patent. *See* First Pet. 15 (“Zilberman pertains to ‘the same field of endeavor’ as [the '746 patent], cochlear implant systems. It is thus analogous prior art.” (citing First Najafi Decl. ¶ 64)).

We turn now to Saaski. Petitioner states that “Saaski relates to hearing aid prosthesis devices, and is thus in ‘the same field of endeavor’” as the '746 patent. First Pet. 19 (citing First Najafi Decl. ¶¶ 72–73). In support, Petitioner provides evidence that hearing aids, as disclosed in Saaski, fall within the scope of “hearing aid prosthesis devices” as that

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phrase is used in the '746 patent. *See* First Pet. Reply 15 (citing Ex. 1029, code (57); First IPR, Ex. 1041, 1:17–20; First IPR, Ex. 1042, code (57)).

Because we find this evidence persuasive and uncontested by Patent Owner, we find that Saaski is within the same field of endeavor as the '746 patent.

In the alternative, Petitioner states that Saaski is also “‘reasonably pertinent to the particular problem’ with which the inventors of [the '746 patent] were involved, since [Saaski] expressly addresses problems of replacing batteries of an external hearing aid component, and suggests solutions.” First Pet. 19 (citing First Najafi Decl. ¶ 73); Pet. 18 (citing Ex. 1021, 1:7–10, 1:63–2:35 (both discussing solutions). Whether a reference is reasonably pertinent “rests on the extent to which the reference of interest and the claimed invention relate to a similar problem or purpose.” *Donner Tech.*, 979 F.3d at 1359. We agree with Petitioner that the '746 patent relates to similar problems as highlighted in Saaski. *See* Ex. 1001, 1:22–51 (discussing problems with batteries in hearing devices and stating that “what is needed is a sound processor for use with a cochlear implant system, or other hearing-aid system, that avoids or minimizes the above-problems”). Thus, we find that Saaski is also reasonable pertinent to the particular problem with which the '746 patent is involved.

We turn now to Patent Owner’s argument that “cochlear implants and hearing aid devices have much different power dissipation resulting in disparate battery charging requirements,” which result in “different charging requirements result in different design considerations for” various technical reasons. First PO Resp. 33–34. Although there may be *some* differences as to certain technical aspects between Zilberman and Saaski, for the reasons discussed above, those references are both analogous art to the '746 patent

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and thus, “a person of ordinary skill would reasonably have consulted . . . and applied their teachings in seeking a solution to the problem that the inventor was attempting to solve.” *Heidelberger Druckmaschinen AG v. Hantscho Comm. Prod., Inc.*, 21 F.3d 1068, 1071 (Fed. Cir. 1994).

To the extent Patent Owner contends that the technical issues raised would have undermined the motivation for one of ordinary skill in the art to incorporate the relied-upon aspects of Saaski, Patent Owner has not provided adequate evidence or technical reasoning on that issue. *See* First PO Resp. 33–34. Dr. Young’s testimony tracks Patent Owner’s Response in the First IPR and does not further elaborate on the issues. *Compare* First Young Decl. ¶¶ 100–101, *with* First PO Resp. 33–34. Further, the record supports Petitioner’s position that even though the charging techniques for a hearing aid “may have to be adapted to cochlear implant systems, *e.g.*, with respect to ‘supply voltage’ or ‘component volume,’” that does not necessarily undermine the motivation to use such techniques. First Pet. Reply 17 (providing similar argument in the context of the asserted ground of AAPA and Petersen). For example, Dr. Najafi testifies that “[w]hat specific . . . parameters you change in that inductive power transfer approach might be different from application to application,” “[b]ut the underlying technology is the same.” First IPR, Ex. 2014, 81:15–18, *cited at* First Pet. Reply 17.

Third, Patent Owner states that “Zilberman contains no statements that its charging system is flawed or needs improvement at all.” First PO Resp. 54 (citing First Young Decl. ¶ 135; First IPR, Ex. 2014, 161:13–21). This argument does not identify a deficiency in the stated reason to combine

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Zilberman and Saaski as to claim 24. Indeed, an obviousness analysis “need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *KSR*, 550 U.S. at 418; *see id.* at 419 (“The obviousness analysis cannot be confined by a formalistic conception of the words teaching, suggestion, and motivation, or by overemphasis on the importance of published articles and the explicit content of issued patents.”). For the reasons above, we determine, in light of the complete record, that Petitioner has shown by a preponderance of the evidence that one of ordinary skill in the art at the time of the invention would have had reason to modify Zilberman based on Saaski, as proposed, and that the articulated reasoning is supported by rational underpinnings.

(4) Conclusion as to Claim 24

For the reasons above, we determine, based on the complete record, that Petitioner has demonstrated by a preponderance of the evidence that claim 24 would have been obvious based on Zilberman and Saaski.

E. Asserted Obviousness of Claims 10–17 and 24 Based on AAPA, Zilberman, and Saaski

Petitioner asserts that claims 10–17 and 24 of the ’746 patent are unpatentable under 35 U.S.C. § 103(a) based on AAPA, Zilberman, and Saaski. First Pet. 4, 71–74; First Pet. Reply 26. Because the ground based on Zilberman and Saaski is dispositive as to the same claims challenged based on the ground of AAPA, Zilberman, and Saaski, we need not reach the ground of AAPA, Zilberman, and Saaski. *See SAS*, 138 S. Ct. at 1359 (holding that a petitioner “is entitled to a final written decision addressing all of the claims it has challenged”); *Boston Sci. Scimed, Inc. v. Cook Grp. Inc.*, 809 F. App’x 984, 990 (Fed. Cir. 2020) (nonprecedential) (stating that the

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“Board need not address issues that are not necessary to the resolution of the proceeding,” such as “alternative arguments with respect to claims [the Board] found unpatentable on other grounds”); *SK Hynix Inc. v. Netlist, Inc.*, IPR2017-00692, Paper 25 at 40 (PTAB July 5, 2018) (determining all challenged claims to be unpatentable and not addressing additional grounds).

F. Asserted Obviousness of Claims 1–4, 6–8, 10–15, 17–22, and 24 Based on Crosby and Petersen

Petitioner asserts that claims 1–4, 6–8, 10–15, 17–22, and 24 of the ’746 patent are unpatentable under 35 U.S.C. § 103(a) based on Crosby and Petersen. Second Pet. 4, 21–50; Second Pet. Reply 10–22. Patent Owner provides arguments specifically addressing this ground. Second PO Resp. 13–33; Second PO Sur-reply 13–19. We first summarize aspects of Crosby and Petersen and then address the parties’ contentions.

1. Crosby

In this asserted ground, Petitioner relies on Crosby in addition to Petersen (summarized above (*see* § II.C.2)). Crosby discloses a cochlear implant system. Ex. 1008, code (57), 8:18–19.

Figure 2 of Crosby is reproduced below:

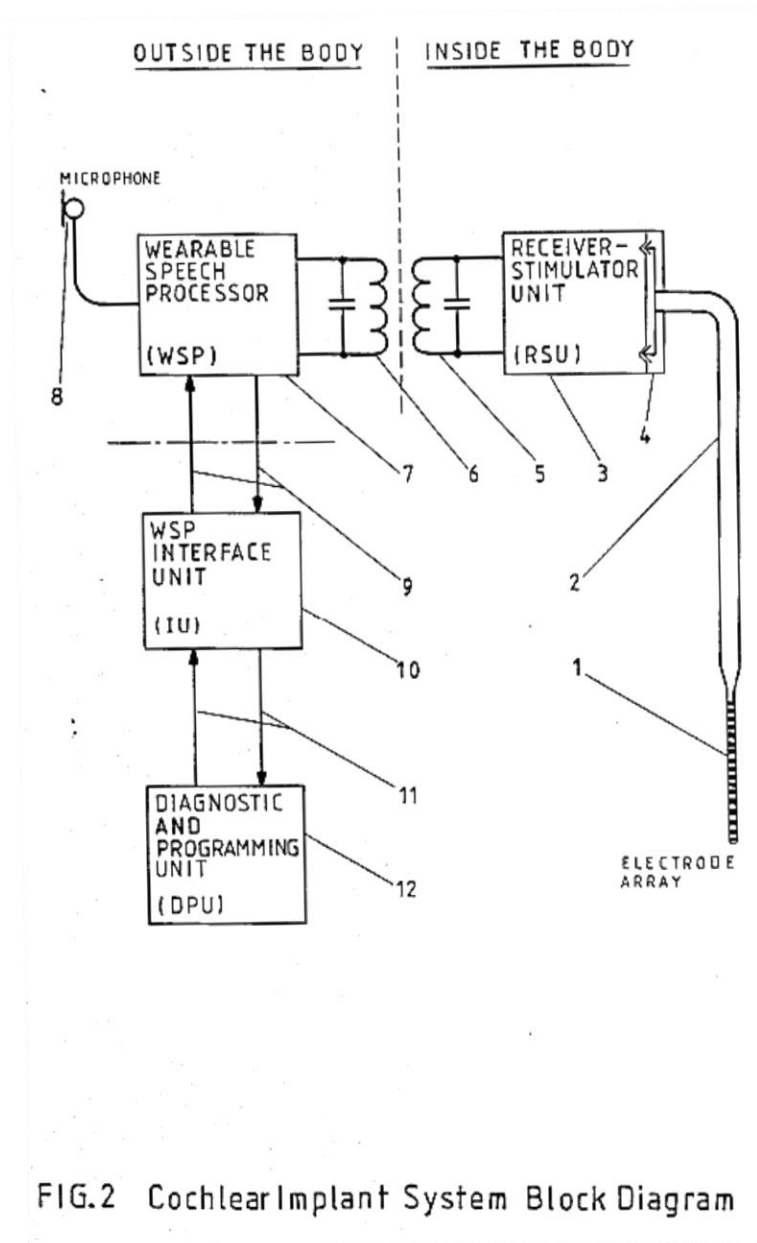


FIG.2 Cochlear Implant System Block Diagram

Figure 2 depicts “a block diagram of the overall cochlear implant system” of Crosby. Ex. 1008, 7:37–38. In particular, the right side of Figure 2 shows electrode array 1, cable 2, Receiver-Stimulator Unit 3 (connected to cable 2 via connector 4), and tuned receiving coil 5 located inside the body. See *id.* at 8:20–54. The left side of Figure 2 shows, among

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other structures, inductive link 6, external Wearable Speech Processor 7, and microphone 8. *See id.* at 8:55–62. Crosby discloses that “[t]he function of the Wearable Speech Processor is to accept an incoming acoustic signal from a microphone, and after suitable processing, send the appropriate stimulation frames to the implanted Receiver Stimulator Unit in the patient.” *Id.* at 25:62–66.

2. Analysis

a. Independent Claim 1

Petitioner contends that the proposed combination of Crosby and Petersen discloses each of the limitations of independent claim 1. Second Pet. 21–31. To support its arguments, Petitioner identifies certain passages in the cited references and explains the significance of each passage with respect to the corresponding claim limitation. *Id.* Petitioner also articulates reasons to combine the relied-upon aspects of Crosby and Petersen. Second Pet. 44–50. We address in turn below the subject matter of each limitation in claim 1 and then Petitioner’s identified reasons to combine Crosby and Petersen.

(1) Element 1.1

In element 1.1, claim 1 recites “[a] cochlear implant system, comprising: an implantable cochlear stimulator.” Ex. 1001, 8:21–22. Petitioner quotes passages from Crosby providing that “[t]he cochlear implant system of this invention shown in FIG. 2 comprises several components,” including Receiver-Stimulator Unit 3, which “provides electrical stimulating pulses to the electrode.” Ex. 1008, 8:18–19, 8:49–50; Second Pet. 22. Petitioner states that “Crosby describes a cochlear implant system, and its ‘Receiver-Stimulator Unit’ and electrode array correspond to

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[the '746 patent's] 'implantable cochlear stimulator.'" Second Pet. 23 (citing Second Najafi Pet. Decl. ¶¶ 79–80).

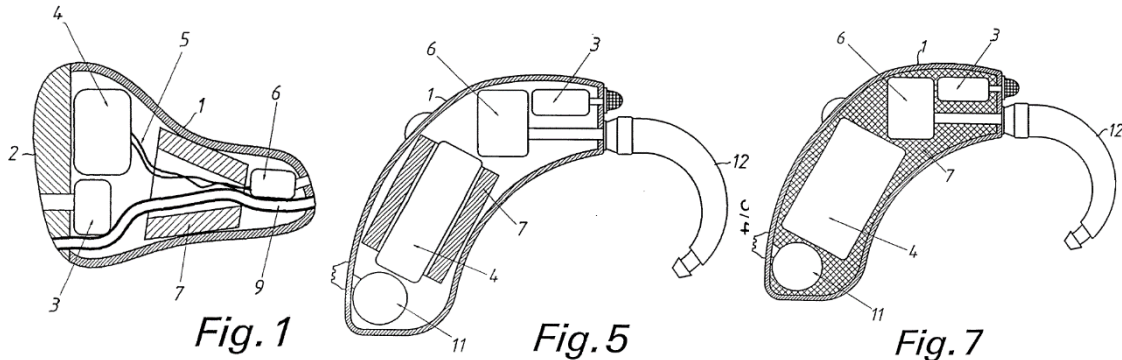
Patent Owner does not present arguments for this claim language. We take no position on whether the language “[a] cochlear implant system” is limiting. Even if it is, we find, based on the complete record, that Petitioner has demonstrated by a preponderance of the evidence that Crosby discloses this element.

(2) Elements 1.2, 1.3, and 1.5

Taken together, elements 1.2, 1.3, and 1.5 require an “external sound processor” that includes a rechargeable power source that is “permanently and integrally housed within [a] closed case”—i.e., the Composite Requirements. Ex. 1001, 8:23–25. For the “external sound processor” in element 1.2, Petitioner identifies Wearable Speech Processor 7 in Crosby, highlighting the disclosure that the “[t]he power, and data on which electrode to stimulate, and with what intensity, is transmitted across the skin using an inductive link 6 operating at radio frequencies, from an **external Wearable Speech Processor (WSP) 7.**” Second Pet. 23 (quoting, with emphasis added, Ex. 1008, 8:55–62) (citing Ex. 1008, 25:62–66; Second Najafi Pet. Decl. ¶¶ 82–83). Petitioner also highlights Petersen’s disclosure of signal processing unit 4. *Id.* (citing Ex. 1017, 9:9–12).

For the requirement from element 10.3 for a “closed case” included in the “external sound processor,” Petitioner discusses three embodiments of housing 1 in Petersen, and also discusses modifying the housing(s) in Petersen. *See* Second Pet. 24–27 (citing Second Najafi Pet. Decl. ¶¶ 85–87).

First, Petitioner highlights disclosures as to the embodiments of the housing shown in Figures 1, 5, and 7, which are reproduced below:



Ex. 1007, Figs. 1, 5, 7; *see also* Second Pet. 24–25 (citing Ex. 1017, 3:30–4:2 (discussing Figure 1), 6:6–10 (discussing Figure 5), 6:21–26 (discussing Figure 7)). Figure 1 “shows a first exemplary embodiment of an ‘in-the-ear’ hearing aid”; Figure 5 “shows a first exemplary embodiment of a ‘behind-the-ear’ hearing aid”; Figure 7 (and Figure 8) “show a second exemplary embodiment of a ‘behind-the ear’ hearing aid and battery used therein, respectively.” Ex. 1017, 3:11–12, 3:18–19, 3:22–25.

Petitioner states that “Petersen describes and depicts a housing that is ‘closed’ by a cover (in-ear, Fig. 1), a housing enclosing the entire device (behind-ear, Fig. 5), or a housing in which the battery fits in or constitutes the side wall (Fig. 7–8)” and that, “[i]n each case, the figures and corresponding descriptions show that there is no battery door or other mechanical latch, but that the housing is closed.” Second Pet. 26 (discussing Second Najafi Pet. Decl. ¶¶ 85–86). Second, and in the alternative to reliance on the disclosures of Petersen, Petitioner also relies on modifying Petersen to provide a “closed case.” Second Pet. 26–27.

Rounding out the summary of Petitioner’s positions, for the requirement in element 10.5 for a rechargeable power source “permanently

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and integrally housed within the closed case,” Petitioner states that “Petersen’s battery is rechargeable and permanently placed in the housing, which is underscored by its connection to the amplifier by soldered leads.” Second Pet. 29 (citing Second Najafi Pet. Decl. ¶¶ 91–92). Petitioner also highlights two disclosures in Petersen. First, Petitioner highlights disclosures discussing how, in the Figure 1 embodiment, “battery 7 cannot [be] readily exchanged” and that it is not “intended that the battery 7 is to be replaced with short intervals, being as it is a rechargeable battery.” Ex. 1017, 4:26–31, *quoted at* Second Pet. 29. Second, Petitioner quotes a passage disclosing that, “[s]ince the **battery 7 is intended to be placed more or less permanently in the housing 1**, the usual contact means necessary in the case of replaceable batteries are not required, because the battery 7 can be **connected to the amplifier 4 through e.g. simple soldered leads.**” Second Pet. 29 (quoting, with emphasis added, Ex. 1017, 5:8–12).

Patent Owner argues that the proposed combination fails to satisfy the requirement for an “external sound processor” with a rechargeable power source that is “permanently and integrally housed within [a] closed case”—i.e., the Composite Requirements. Second PO Resp. 13–17; Second PO Sur-reply 13–15. As an initial matter, Patent Owner does not address or assert error in Petitioner’s reliance on Wearable Speech Processor 7 in Crosby as the recited “external sound processor.” *See* Second PO Resp. 13–17; Second PO Sur-reply 13–15. For the reasons stated by Petitioner (Second Pet. 23), we find, based on the complete record, that Petitioner has demonstrated by a preponderance of the evidence that Crosby discloses element 1.2. We turn now to elements 1.3 and 1.5, first addressing Petitioner’s reliance on the

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three embodiments of housing 1 in Petersen, and then addressing Petitioner’s alternative reliance on modifying the housing(s) in Petersen.

As the first of the three highlighted embodiments, we discuss Figure 1 of Petersen. For the reasons below, we determine that the Figure 1 embodiment depicts a “closed case” but that the rechargeable power source is not “permanently . . . housed within the closed case.” Patent Owner argues that Petersen describes cover 2 as “separate from the housing,” indicating that the housing does not satisfy Patent Owner’s proposed construction of “closed.” *See* Second PO Resp. 14 (asserting that “nothing in Petersen states or implies that the housing does not permit passage or entry into the interior of the housing”). Dr. Young’s declaration testimony also only applies Patent Owner’s proposed construction of “closed case.” *See* Second Young Decl. ¶ 78, *cited at* Second PO Resp. 14.

As discussed above, however (*see* § II.B.2.a), we do not construe “closed case” in line with Patent Owner’s proposed construction, and, instead, construe that phrase as “a case that does not currently permit passage or entry.” As argued by Petitioner, the embodiment in Figure 1 shows a “closed case”—i.e., housing 1—in that housing 1 does not *currently* permit passage or entry based on the configuration of cover 2. *See* Second Pet. Reply 12 (arguing that “the Figure 1-embodiment would still meet the correct construction of ‘closed case,’ since it does not currently permit passage or entry” in that “Petersen says, after all, that the housing is ‘closed by a cover 2’” (quoting Ex. 1017, 4:1–2)).

The Figure 1 embodiment of Petersen does not, however, satisfy the requirement that the rechargeable power source (or battery) is “permanently . . . housed within the closed case.” As discussed above (*see*

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§ II.B.2.b), we construe “permanently” as “in such a manner that one would not expect it to be removable from the container absent destruction of the container.” Although Petersen does, as noted by Petitioner (Second Pet. 29) disclose that battery 7 in this embodiment “cannot be readily exchanged” and that “battery 7 is intended to be placed more or less permanently in the housing 1” with, for example, soldered leads between battery 7 and amplifier 4, the preponderance of the evidence does not support that this configuration meets the particular construction of “permanently” above. Specifically, we are not persuaded that removal of battery 7 from housing 1 would require “destruction” of housing 1 itself. Indeed, the express disclosure as to Figure 1 indicates that battery 7 *can* be exchanged, even if not “readily.” See Ex. 1017, 4:26–29. After removing cover 2, battery 7 could be removed by removing the soldered leads and then amplifier 4. Petitioner has not adequately explained why this process requires destruction of housing 1.

As to the second of the three highlighted embodiments, we discuss Figure 5 of Petersen. For the reasons below, we determine that this embodiment includes a rechargeable power source that is “permanently and integrally housed within [a] closed case.” As noted by Petitioner, Petersen describes this embodiment as one in which “housing 1 in a manner known per se is shaped as a curved box *with generally flat sides*, the latter in Figure 5 *facing towards and away from the viewer*, respectively.” Ex. 1017, 6:7–10 (emphasis added), *quoted at* Second Pet. Reply 10. Dr. Najafi’s testimony supports the view that the Figure 5 embodiment in Petersen includes “a housing consisting of one piece and enclosing the entire device.” Second Pet. Reply 10–11 (citing Second Najafi Pet. Decl. ¶ 86 (stating that the Figure 5 embodiment includes “a housing consisting of one piece and

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enclosing the entire device”)); Second Pet. 26 (stating that the Figure 5 embodiment includes “a housing enclosing the entire device”).

As to the “closed case,” Patent Owner asserts that Petersen does not “disclose[] that Petersen’s cover does not permit passage or entry into the interior of the housing.” Second PO Resp. 14 (citing Second Young Decl. ¶ 79). Similarly, Dr. Young takes the position that this embodiment does not include a “closed case” because Petersen does not disclose that a user *cannot* open housing 1. *See, e.g.*, Second IPR, Ex. 1055, 79:7–10 (“And my position is that that flat face, at least Petersen doesn’t talk about that flat face cannot be removed or there is no door or cover implemented as part of the flat face that can be removed.”), 80:15–22 (cited at Second Pet. Reply 11)).

As an initial matter, Patent Owner addresses its proposed construction rather than the construction for “closed case” identified above: “a case that does not currently permit passage or entry.” Moreover, Patent Owner has not identified *any* disclosure indicating that cover 2—present in the Figure 1 embodiment—is present in the Figure 5 embodiment. Indeed, cover 2 is depicted in the Figure 3 embodiment, but *not* shown in either the Figure 5 or the Figure 7 embodiments. Further, even if cover 2 were included in the Figure 5 embodiment, a “case” with a cover could be “closed” if the configuration does not *currently* permit passage or entry (as in the Figure 1 embodiment). For the reasons relied on by Petitioner (as discussed above), we view Petersen, in the Figure 5 embodiment, as disclosing a one-piece housing that encloses the entire device and does not include a cover 2. We determine that the one-piece housing in the Figure 5 embodiment is a “closed case” under the proper construction. *See* Second Najafi Pet. Decl. ¶ 86 (stating that, in this embodiment, the disclosures “show that there is no

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battery door or other mechanical latch, but that the housing is closed”), *cited at* Second Pet. 26.

With this understanding of the Figure 5 embodiment in Petersen, we determine that this embodiment includes a rechargeable power source (or battery) that is “permanently and integrally housed within the closed case.” More specifically, we determine that, to remove battery 7 in the Figure 5 embodiment, one would have to destroy one-piece housing 1 to get to battery 7 within.

We will not infer from Petersen’s *silence* as to entry into the housing in the Figure 5 embodiment (discussed above) that entry is possible absent destruction of the housing. Patent Owner argues that “those in the art have sought to permit passage or entry into the interior of the housing of a cochlear implant sound processor for a variety of reasons, including allowing the user to replace other components of the sound processor (which can be expensive to entirely replace), or to remove dirt and debris that may have collected from wearing the device.” Second PO Resp. 15–16 (citing Second Young Decl. ¶ 82). Dr. Young largely repeats Patent Owner’s position. *See* Second Young Decl. ¶ 82. Although the technical issues raised by Patent Owner do show reasons why one of ordinary skill in the art might have *modified* the Figure 5 embodiment to permit removal of rechargeable battery 7 *without* destroying housing 1, for the reasons above, the actual disclosures in Petersen support an opposite understanding. And as noted by Petitioner, Patent Owner does not address the disclosures in Petersen relied on as to element 1.5. *See* Second Pet. Reply 13–14 (citing Ex. 1017, 4:26–31, 5:8–12; Second Najafi Pet. Decl. ¶¶ 91–92).

As the third of the three highlighted embodiments, we discuss Figures 7 and 8 of Petersen. For the reasons below, we determine that at least one version of this embodiment includes a rechargeable power source that is “permanently and integrally housed within [a] closed case.” We first discuss the proper understanding of Figures 7 and 8 and Petitioner’s reliance on the relevant disclosures.

In general, we agree with Petitioner’s understanding of the embodiment in Figures 7 and 8 as one in which “the battery fits in or constitutes the side wall.” Second Pet. 26. Specifically, one passage highlighted by Petitioner indicates that battery 7 is either cut to fit the sidewall facing away from the viewer *or* “fully or partly constitutes” the same sidewall:

Figure 7 shows yet another example of a hearing aid of the “behind-the-ear” type, in which the battery 7 is plate-shaped and cut into shape so as to fit quite accurately the side wall in the housing 1 facing away from the viewer, or even fully or partly constitutes this side wall.

Ex. 1017, 6:21–26, *quoted at* Second Pet. 25; Second Pet. Reply 11.

In the sentence *after* this passage, Petersen discusses the sidewall facing the viewer, disclosing that “a *further battery* (not shown) can be placed close to or constitute a greater or lesser part of the wall (not shown) in the housing 1 facing towards the viewer.” Ex. 1017, 6:26–29 (emphasis added). As an initial matter, Petitioner does not appear to rely on this “further battery” in the Petition. *See, e.g.*, Second Pet. 25 (citing Ex. 1017, 6:21–26). In addition, with this second disclosure (including the phrase “not shown”), we understand Figure 8 to depict battery 7 in a version of the Figure 7 embodiment in which battery 7 is “cut into shape so as to fit quite accurately the side wall in the housing 1 facing away from the viewer.” *See*

Ex. 1017, 6:21–26. We do not understand Petitioner to rely on that version, however; instead, Petitioner relies on, and the findings below address, a version of the Figure 7 embodiment with no “further battery” in the sidewall facing the viewer and in which battery 7 “fully . . . constitutes” the sidewall facing away from the viewer.

We understand the sidewall facing *away* from the viewer in the relied-upon version of the Figure 7 embodiment as one in which battery 7 is integrated into the sidewall and acts as the sidewall. In addition, we understand the sidewall facing *towards* the viewer in the relied-upon version of the Figure 7 embodiment as a sidewall with no battery but that is integrated with housing 1. In support, we note that Figure 5 and Figure 7 are both described as “behind-the-ear” type hearing aids, in which “housing 1 in a manner known per se is shaped as a curved box with generally flat sides, the latter in Figure 5 facing towards and away from the viewer, respectively.” Ex. 1017, 6:6–10, 6:21–22 (“Figure 7 shows yet another *example* of a hearing aid of the ‘behind-the-ear’ type” (emphasis added)).

With this understanding of the version of the Figure 7 embodiment as relied on by Petitioner, we look to the claim language at issue. As to the “closed case,” Patent Owner asserts that—with respect to Figures 7 and 8 (as well as Figure 5, discussed above)—Petersen does not “disclose[] that Petersen’s cover does not permit passage or entry into the interior of the housing.” Second PO Resp. 14 (citing Second Young Decl. ¶ 79). Similarly, Dr. Young takes the position that the Figure 7 embodiment does not include a “closed case” because Petersen does not disclose that a user *cannot* open housing 1. *See, e.g.*, Second IPR, Ex. 1055, 79:7–10 (“And my

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position is that that flat face, at least Petersen doesn't talk about that flat face cannot be removed or there is no door or cover implemented as part of the flat face that can be removed.”), 80:15–22 (cited at Second Pet. Reply 11)).

As an initial matter, as with the Figure 5 embodiment, Patent Owner addresses its proposed construction rather than the construction of “closed case” identified above: “a case that does not currently permit passage or entry.” In addition, Patent Owner has not identified *any* disclosure indicating that cover 2—present in the Figure 1 embodiment—is also present in the Figure 7 embodiment. Indeed, cover 2 is depicted in the Figure 3 embodiment, but *not* shown in either the Figure 5 or the Figure 7 embodiments. Further, even if cover 2 were included in the Figure 7 embodiment, a “case” with a cover could be “closed” if the configuration does not *currently* permit passage or entry (as in the Figure 1 embodiment). For the reasons relied on by Petitioner (as discussed above), we view Petersen, in one version of the Figure 7 embodiment, as disclosing a housing 1 in which (1) battery 7 is integrated into and acts as the side wall facing *away* from the viewer and (2) the sidewall facing *towards* the viewer has no battery and is integrated with housing 1. We determine that that version of housing 1 in the Figure 7 embodiment is a “closed case” under the proper construction because it does not *currently* permit passage or entry. *See* Second Najafi Pet. Decl. ¶ 86 (stating that, in this embodiment, the disclosures “show that there is no battery door or other mechanical latch, but that the housing is closed”), *cited at* Second Pet. 26.

We also determine that this version of the Figure 7 embodiment in Petersen includes a rechargeable power source that is “permanently and integrally housed within the closed case.” More specifically, we determine

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that, to remove battery 7 in this version of the Figure 7 embodiment, one would have to destroy one-piece housing 1 because battery 7 “fully . . . constitutes” the sidewall facing away from the viewer.

We will not infer from Petersen’s *silence* as to entry into the housing in the Figure 7 embodiment (discussed above) that entry is possible absent destruction of the housing. Patent Owner argues that “those in the art have sought to permit passage or entry into the interior of the housing of a cochlear implant sound processor for a variety of reasons, including allowing the user to replace other components of the sound processor (which can be expensive to entirely replace), or to remove dirt and debris that may have collected from wearing the device.” Second PO Resp. 15–16 (citing Second Young Decl. ¶ 82). Dr. Young largely repeats Patent Owner’s position. *See* Second Young Decl. ¶ 82. Although the technical issues raised by Patent Owner do show reasons why one of ordinary skill in the art might have *modified* the relevant version of the Figure 7 embodiment to permit removal of the rechargeable battery 7 *without* destroying housing 1, for the reasons above, the actual disclosures in Petersen support an opposite understanding. And as noted by Petitioner, Patent Owner does not address the disclosures in Petersen relied on as to element 1.5. *See* Second Pet. Reply 13–14 (citing Ex. 1017, 4:26–31, 5:8–12; Second Najafi Pet. Decl. ¶¶ 91–92).

We turn now to Petitioner’s alternative reliance on modifying the housing(s) of Petersen to address the subject matter of element 1.3 (“a closed case”). Petitioner asserts that “even if Petersen’s disclosure w[ere] not deemed explicit enough, it would at least have been obvious to [one of ordinary skill in the art] to implement the housing in Petersen as a closed

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case without [a] battery door” in that “[i]t would have been common sense to [one of ordinary skill in the art] that if the battery is permanently integrated and recharged *in situ*, there is no need for a battery door, and the device can be reduced in size.” Second Pet. 26. In support, Petitioner relies on passages from U.S. Patent No. 5,610,494 to Grosfilley (Ex. 1029), which relates to hearing aids, with Petitioner stating that one of ordinary skill in the art “would have recognized that th[e alleged] rationale [in Grosfilley] equally applies to the sound processor of a cochlear implant system.” Second Pet. 26–27 (citing Ex. 1029, 1:52–2:5, 2:15–18, 3:36–43; Second Najafi Pet. Decl. ¶ 87). Petitioner also states that Zilberman ’022 “recognized the design goal to make the sound processor of a cochlear implant system smaller, providing motivation to remove battery doors.” Second Pet. 27 (citing Ex. 1014, 2:14–18). Because we determine that Petersen discloses elements 1.2, 1.3, and 1.5, we need not reach this alternative position. For the reasons below, however, if we were to reach this alternative position, we determine that Petitioner’s reason to modify the housing of Peterson is *not* supported by rational underpinnings.

Patent Owner argues that neither Grosfilley nor Zilberman ’022 discloses making a housing “closed” to reduce its size. *See* Second PO Resp. 16 (citing Second Young Decl. ¶ 84). We agree with Patent Owner and do not agree with Petitioner’s Reply argument that the cited references “provided motivation to close the case.” Second Pet. Reply 13 (citing Second Najafi Pet. Decl. ¶ 87). As an initial matter, the record does not support that one of ordinary skill in the art would have modified, for example, the Figure 1 embodiment of Petersen by integrating cover 2 into housing 1 in a manner so as *to reduce the size* of the overall device.

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Although Zilberman '022 generally discusses the need for “an external speech processor and corresponding headpiece that is small” (Ex. 1014, 2:14–16), that reference does not link the small size to removal of battery doors. *See* Second PO Resp. 16 (arguing that nothing in Zilberman '022 “discloses or suggests the use of a closed case to achieve th[e] goal” of reduced size (citing Second Young Decl. ¶ 84)). And the cited portions of Grosfilley do not mention the size of the device *at all*. *See id.* (arguing that Grosfilley “says nothing about making the housing of a device ‘closed’ to reduce its size” (citing Second Young Decl. ¶ 84)).

We do not see Petitioner’s motivation statement, however, as *requiring* reduction in size of the overall device as a reason to remove the battery door. For example, in a passage from Grosfilley quoted in the Petition, that reference highlights *other* benefits of not having a battery door: that it is “no longer necessary to manipulate the prosthesis, to open it in order to remove the storage battery, or to provide an unattractive flap on one of the walls of the body thereof.” Ex. 1029, 2:2–5, *cited at* Second Pet. 27. We do not view these alleged benefits, however, as relevant in the context of the proposed modification of Petersen. The first two alleged benefits relate to Grosfilley’s use of rechargeable batteries rather than the disposable batteries in the prior art. *See, e.g.*, Ex. 1029, 1:20–24 (discussing how the prior art “battery has to be changed every three to fifteen days”), 1:65–2:5 (discussing benefits of recharging the storage battery). There is no dispute, however, that Petersen *already* includes a rechargeable battery. *See* Second Pet. 29 (citing Ex. 1017, 4:26–31).

As to the third alleged benefit from Grosfilley of not having a battery door, the record does not adequately show that removing “an unattractive

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flap on one of the walls of the body”—as disclosed in Grosfilley—is comparable to, for example, integrating cover 2 in the Figure 1 embodiment of Petersen with housing 1. In contrast to the alleged improvement to the “visual appearance” of the outward face of the device in Grosfilley, the record does not support a similar benefit from the removal of the seam between cover 2 and housing 1 in the Figure 1 embodiment of Petersen. *Compare* Ex. 1029, 1:34–38 (“Moreover, the opening flap already mentioned is situated on that face of the body of the prosthesis which can be seen from the outside when said prosthesis is placed in the ear, which state of affairs is prejudicial to the visual appearance of the prosthesis.”), *with* Ex. 1017, Fig. 1. Dr. Najafi’s testimony on these issues essentially repeats Petitioner’s arguments and does not further explain the alleged motivation. *Compare* Second Pet. 26–27, *with* Second Najafi Pet. Decl. ¶ 87.

For the reasons above, we find, based on the complete record, that Petitioner has demonstrated by a preponderance of the evidence that Petersen, in the disclosures related to Figures 5 and 7 discussed above, discloses elements 1.2, 1.3, and 1.5, and has *not* demonstrated by a preponderance of the evidence that Petersen, in the disclosures related to Figure 1 discussed above, discloses element 1.5 We also determine, based on the complete record, that Petitioner has *not* demonstrated by a preponderance of the evidence that one of ordinary skill in the art would have modified Petersen in the manner proposed as to element 1.3.

(3) *Element 1.4*

In element 1.4, claim 1 recites “a sound processor circuit” of the external sound processor. Ex. 1001, 8:23–24. Petitioner identifies two alternative disclosures, one in Crosby and one in Petersen. Second Pet. 27–

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29. First, Petitioner states that “Crosby’s Wearable Speech Processor, the circuitry and functions of which Crosby describes and depicts in detail, corresponds to” the recited “sound processor circuit.” Second Pet. 28; *see also* Second Pet. 27–28 (citing Ex. 1008, 26:6–35, 28:28–31, 30:65–69, Figs. 17–19; Second Najafi Pet. Decl. ¶¶ 88–89). Second, Petitioner states that Petersen “describes a signal processing unit, which [one of ordinary skill in the art] would understand to consist of circuitry.” Second Pet. 28 (citing Ex. 1017, 9:9–12; Second Najafi Pet. Decl. ¶¶ 88–89).

Patent Owner does not present arguments for this limitation. We find, based on the complete record, that Petitioner has demonstrated by a preponderance of the evidence that both Crosby and Petersen separately disclose this element.

(4) Element 1.6

In element 1.6, claim 1 recites “at least one electrical contact electrically connected to the rechargeable power source and embedded within or carried on an exterior surface of the closed case such that the at least one electrical contact is exposed outside the closed case.” Ex. 1001, 8:26–30. Petitioner states that “Petersen describes recharging of the battery by way of electrical contacts on the outside (and thus ‘exposed outside’) of the housing or its cover” and cites two passages in Petersen in support. Second Pet. 29–30 (citing Second Najafi Pet. Decl. ¶¶ 93–94; Ex. 1017, 5:14–29, 6:34–7:3). Patent Owner does not present arguments for this limitation. We find, based on the complete record, that Petitioner has demonstrated by a preponderance of the evidence that Petersen discloses this element.

(5) Element 1.7

In element 1.7, claim 1 recites “a coil operably connected to the sound processor circuit.” Ex. 1001, 8:31. Petitioner states that, “[b]y way of cable 16^[24], Crosby’s coil 24 is ‘operably connected’ to Speech Processor 29 (the sound processor circuit)” and cites passages in Crosby in support. Second Pet. 30 (citing Ex. 1008, 9:22–25, 43:12–14, Fig. 2 (element 6), Fig. 3 (element 24), Fig. 21 (element 207)); Second Najafi Pet. Decl. ¶¶ 95–96). Patent Owner does not present arguments for this limitation. We find, based on the complete record, that Petitioner has demonstrated by a preponderance of the evidence that Crosby discloses this element.

(6) The Combination of Crosby and Petersen

(a) Summary of the Proposed Combination

As to the combination of Crosby and Petersen, Petitioner takes the position that one of ordinary skill in the art would have modified Crosby with the relied-upon aspects of Petersen (as to elements 1.3, 1.5, and 1.6). *See* Second Pet. 44–50 (citing Second Najafi Pet. Decl. ¶¶ 151–165). First, Petitioner states,

the prior art provided ample motivation and suggestion that would have led [one of ordinary skill in the art] to combine the typical features of Crosby’s cochlear implant system with Petersen’s concept of a “permanently and integrally housed” battery that is recharged *in situ* through either direct electrical contacts on the device’s surface or inductive charging, thereby arriving at the claimed invention.

²⁴ Although the description of Figure 3 in Crosby refers to “coaxial cable 16,” the Figure uses reference numeral 26. *See* Ex. 1008, 9:22–25, Fig. 3.

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Second Pet. 47; *see also* Second Pet. 44–47 (section beginning with “[t]he prior art disclosed the same solutions to the same problems associated with replacing batteries in external hearing aid components as described in” the ’746 patent”). Petitioner highlights certain disclosures in Petersen and states that one of ordinary skill in the art “would have recognized that the replacement problem described in Petersen equally applies to cochlear implant sound processors, as disclosed in Crosby, since those are similar to hearing aids in purpose, size, usage frequency (daily), and user demographics (many elderly users)” and states that “Petersen therefore provides motivation to use its concepts in the cochlear implant sound processor of Crosby.” Second Pet. 44–45 (citing Second Najafi Pet. Decl. ¶¶ 148, 153).

Petitioner adds that “Saaski describes the concept of a permanently integrated battery, to be recharged by inductive charging, and using a charging station, as alleviating” certain problems with disposable batteries. Second Pet. 45 (citing Ex. 1021, 1:7–13, 1:63–2:36, 4:2–22, 8:34–65, 9:59–10:2, 11:30–34, 14:46–15:17, 15:22–52, 25:60–26:3, Figs. 5, 6; Second Najafi Pet. Decl. ¶ 154). Thus, according to Petitioner, Saaski “provides additional motivation to use Petersen’s permanently integrated rechargeable battery concept in the cochlear implant sound processor of Crosby.” Second Pet. 46 (citing Second Najafi Pet. Decl. ¶ 156).

Petitioner further states that one of ordinary skill in the art would have known how to implement those combinations and would have expected them to work, since charging a power source through direct electrical contacts or inductive charging are part of the basic skill set of an electrical engineer, and nothing in the speech processor of a cochlear implant system makes these charging methods unsuitable for the specific application.

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Second Pet. 47 (citing Second Najafi Pet. Decl. ¶¶ 159–160; *KSR*, 550 U.S. at 418).

Second, Petitioner states that one of ordinary skill in the art “would also have recognized that the operation of the typical cochlear implant features . . . is not dependent on which power management mechanism is chosen for the sound processor; as long as the sound processor *has* power – be it from replaceable batteries or *in situ* rechargeable batteries”

Second Pet. 47–48 (citing Second Najafi Pet. Decl. ¶ 161). Thus, according to Petitioner, Petersen’s battery, closed housing, and related charging station would not change their functions when combined with the cochlear implant features of Crosby. Second Pet. 48 (citing Second Najafi Pet. Decl. ¶ 162).

Third, Petitioner states that one of ordinary skill in the art “would have been familiar with the techniques of charging integrated batteries through direct electrical contacts or inductive charging.” Second Pet. 48. Petitioner adds that “Crosby describes a typical cochlear implant system using replaceable batteries and Petersen describes an improved hearing aid device that employs the well-known techniques of charging through direct electrical contacts or inductive charging.” Second Pet. 49 (citing Ex. 1008, 9:34–35, 27:13–18, 46:65–67; Ex. 1004 at 68; Second Najafi Pet. Decl. ¶ 53). Thus, according to Petitioner, one of ordinary skill in the art “would have been motivated and capable of applying Petersen’s power management techniques to the known cochlear implant system described in Crosby, and would have recognized and expected that they would improve the system of Crosby by alleviating the problems of replaceable batteries.” Second Pet. 49 (internal citation omitted).

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*(b) Patent Owner’s Arguments Addressing
the Articulated Reasons to Combine
Crosby and Petersen and Objective
Indicia*

Patent Owner presents several arguments as to why one of ordinary skill in the art allegedly would not have modified Crosby based on Petersen or had a reasonable expectation of success. *See* Second PO Resp. 20–33; Second PO Sur-reply 16–19. First, Patent Owner asserts as insufficient Petitioner’s discussion of how the alleged fact that “batteries in a typical cochlear implant speech processor needed to be replaced on a daily basis” would have led one of ordinary skill in the art to use “*in situ* recharging, and a charging station for reliably and easily applying the charging mechanism.” Second Pet. 46, *quoted at* Second PO Resp. 22. According to Patent Owner, “this at most suggests that [one of ordinary skill in the art] might have been motivated to use *rechargeable* batteries that patients could reuse rather than having to replace.” Second PO Resp. 22.

This argument does not show a deficiency in the stated reasons to modify Crosby based on Petersen. Petitioner’s reliance on Exhibit 1024 (authored by Niparko) (*see* Second Pet. 46) is *in the alternative* to other support for why issues with batteries in hearing aids (as also discussed with respect to Petersen and Saaski) would also apply to cochlear implant systems. *See* Second Pet. 44–46. Further, contrary to Patent Owner’s argument, Petitioner *does* explain why one of ordinary skill in the art would have been motivated to use “*in situ* recharging” (*see* Second PO Resp. 22) in that, as explained by Petitioner and summarized above, Petersen and Saaski expressly describe the benefits of those systems. *See* Second Pet. 44–46.

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Second, Patent Owner asserts as insufficient Petitioner’s discussion of how the prior art allegedly “recognized the design goal to make the speech processor smaller, so that it is less inconvenient and less unsightly for daily use, which provided motivation to remove battery doors and similar mechanical components necessary for replaceable batteries.” Second Pet. 47, *discussed at* Second PO Resp. 22–23. As discussed above (*see* § II.F.2.a.2), we do not view the record as supporting that one of ordinary skill in the art would have understood removing battery doors as leading to smaller devices. As also discussed above, however, we view Petersen as disclosing the relevant aspects of elements 1.3 and 1.5 without having to remove any battery doors. Thus, we do not view this aspect of Petitioner’s motivation discussion as necessary to support the modification of Crosby based on Petersen.

Third, as to Petitioner’s reliance on Petersen and Saaski (which relate to hearing aids) as providing a motivation to modify Crosby based on Petersen (*see, e.g.*, Second Pet. 44–46), Patent Owner argues that Petitioner “essentially assumes without support that [one of ordinary skill in the art] would have applied features of cochlear implant processors to hearing aids with a reasonable expectation of success.” Second PO Resp. 24 (citing Second Young Decl. ¶ 95). According to Patent Owner, “cochlear implants and hearing aid devices have much different power dissipation resulting in disparate battery charging requirements,” which result in “different design considerations for, *inter alia*, supply voltage, component size, component compliance, component volume, device breakdown tolerance, heat dissipation, and package size.” *Id.* (citing Second Young Decl. ¶ 96).

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Petitioner responds by arguing that “cochlear implant systems and hearing aids are closely related technologies” and that one of ordinary skill in the art “would have recognized that the battery replacement problems described in Petersen and Saaski equally apply to cochlear implant sound processors, providing motivation to use Petersen[’s] . . . battery charging concepts.” Second Pet. Reply 16 (citing Second Najafi Pet. Decl. ¶¶ 151–156).

We first address whether Crosby and Petersen are analogous art to the ’746 patent. *See* Second PO Sur-reply 17 (“Petitioner wrongly states that Patent Owner does not contest that Petersen is analogous prior art.”). As noted by Petitioner (Second Pet. Reply 15), the ’746 patent expressly describes its field of the invention as relating to “hearing aid prosthesis devices, and, in a preferred embodiment, to a cochlear implant system” Ex. 1001, 1:14–18; *see also id.* at 1:49–51 (“It is thus apparent that what is needed is a sound processor for use with a cochlear implant system, or other hearing-aid system, that avoids or minimizes the above-problems.”). We agree with Petitioner’s assertion, which is supported by the testimony of Dr. Najafi, that Crosby falls within the same field of endeavor as the ’746 patent. *See* Second Pet. 17 (“Crosby is from the same field of endeavor as [the ’746 patent], namely cochlear implant systems, and therefore qualifies as prior art for purposes of obviousness.” (citing Second Najafi Pet. Decl. ¶ 65)).

We turn now to Petersen. Petitioner states that Petersen relates to hearing aid prosthesis devices, and is thus in the same field of endeavor as the ’746 patent. Second Pet. 15 (citing Second Najafi Pet. Decl. ¶ 62). In support, Petitioner provides evidence that hearing aids, as disclosed in Petersen, fall within the scope of “hearing aid prosthesis devices” as that

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phrase is used in the '746 patent. *See* Second Pet. Reply 15 (citing Ex. 1029, code (57); Ex. 1057, 1:17–20; Second IPR, Ex. 1058, code (57); Second IPR, Ex. 2016, 38:23–39:6). Because we find this evidence persuasive and uncontested by Patent Owner, we find that Petersen is within the same field of endeavor as the '746 patent.

In the alternative, Petitioner states that Petersen is also “‘reasonably pertinent to the particular problem’ with which the [inventors of the '746 patent] were involved, since [Petersen] expressly addresses problems of replacing batteries of an external hearing aid component, and suggests solutions.” Second Pet. 15 (citing Second Najafi Pet. Decl. ¶ 72); Second Pet. 14–15 (citing Ex. 1017, 5:14–29, 6:34–7:7 (both discussing solutions)). Whether a reference is reasonably pertinent “rests on the extent to which the reference of interest and the claimed invention relate to a similar problem or purpose.” *Donner Tech.*, 979 F.3d at 1359. We agree with Petitioner that the '746 patent relates to similar problems as highlighted in Petersen. *See* Ex. 1001, 1:22–51 (discussing problems with batteries in hearing devices and stating that “what is needed is a sound processor for use with a cochlear implant system, or other hearing-aid system, that avoids or minimizes the above-problems”). Thus, we find that Petersen is also reasonable pertinent to the particular problem with which the '746 patent is involved.

We turn now to Patent Owner’s argument that “cochlear implants and hearing aid devices have much different power dissipation resulting in disparate battery charging requirements,” which result in “different design considerations” for certain technical reasons. Second PO Resp. 24. Although there may be *some* differences as to certain technical aspects between Crosby and Petersen, for the reasons discussed above, those

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references are both analogous art to the '746 patent and thus, “a person of ordinary skill would reasonably have consulted . . . and applied their teachings in seeking a solution to the problem that the inventor was attempting to solve.” *Heidelberger*, 21 F.3d at 1071.

To the extent Patent Owner contends that the technical issues raised would have undermined the motivation for one of ordinary skill in the art to incorporate the relied-upon aspects of Petersen, Patent Owner has not provided adequate evidence or technical reasoning on that issue. *See* Second PO Resp. 24. Dr. Young’s testimony tracks Patent Owner’s Response in the Second IPR and does not further elaborate on the issues. *Compare* Second Young Decl. ¶¶ 95–96, *with* Second PO Resp. 24. Instead, the record supports Petitioner’s position that “[t]he mere fact that Petersen’s techniques [related to charging a hearing aid] may have to be adapted to cochlear implant systems, *e.g.*, with respect to ‘supply voltage’ or ‘component volume,’ does not undermine [one of ordinary skill in the art’s] motivation and capability to use Petersen’s techniques.” Second Pet. Reply 17–18; *see also id.* at 17 (“In other words, while factors such as ‘supply voltage,’ ‘component size,’ ‘package size,’ or ‘heat dissipation’ are certainly to be considered and addressed in implementing the suggested combinations, [one of ordinary skill in the art] would have been well capable of doing so, as explained in detail by Dr. Najafi, [Second Najafi Reply Decl.] ¶¶ 3–17.” (citing Second Najafi Pet. Decl. ¶ 160; Second IPR, Ex. 2015, 79:11–81:18; Second IPR, Ex. 2016, 40:12–24)). For example, Dr. Najafi testifies that “[w]hat specific . . . parameters you change in that inductive power transfer approach might be different from application to application,” “[b]ut the underlying technology is the same.” Second IPR, Ex. 2015, 81:15–18, *cited*

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at Second Pet. Reply 17; *see also* Second Najafi Reply Decl. ¶ 4 (stating that, “in my opinion, a person of ordinary skill in the art . . . would have been well capable of considering, and appropriately addressing, the various design considerations listed by Dr. Young when implementing the mentioned combinations”).

Third, after repetitive arguments as to the level of ordinary skill in the art and why one of ordinary skill in the art allegedly would not have looked to hearing aid prior art to address issues in a cochlear implant (*see* Second PO Resp. 25–31), Patent Owner argues that “objective historical evidence . . . shows that those in the art did not attempt to develop a cochlear implant sound processor” as claimed in the ’746 patent “until long after the [’746] patent’s November 2002 effective filing date.” Second PO Resp. 31. For example, Patent Owner highlights scientific literature from 2015 allegedly showing

that those in the art were still trying to develop a solution to the problems that Petitioner asserts would have purportedly motivated [one of ordinary skill in the art] in November 2002, including the need to replace the battery of cochlear implant sound processors on a regular basis, and were looking instead at ways of reducing the power consumption of the sound processor.

Second PO Resp. 31–32 (citing Second IPR, Ex. 2013 at 69; Second Young Decl. ¶ 105). In addition, Patent Owner states that “Petitioner itself introduced a cochlear implant sound processor called the RONDO 2 that included” the invention in the ’746 patent “*sixteen years after* the [’746] patent’s effective filing date” and Petitioner called “the RONDO 2 ‘the *first and only* [cochlear implant] audio processor with an *integrated wirelessly rechargeable battery*, which eliminates the hassles of changing batteries.’” *Id.* at 32 (citing Second IPR, Ex. 2007; Second IPR, Ex. 2008; Second

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Young Decl. ¶ 106). According to Patent Owner, Petitioner “touts” the invention in the ’746 patent, “as embodied in the RONDO 2,” as “‘*revolutionary*’ and ‘*innovative*’ wireless charging.” *Id.* (citing Second IPR, Ex. 2007; Second IPR, Ex. 2009).

With this argument, Patent Owner seeks to provide objective evidence that undermines the stated reasons to combine Crosby and Petersen. *See, e.g.,* Second PO Resp. 33 (“These circumstances, including Petitioner’s own public statements, confirm that those in the art were not motivated to make in November 2002 (and in fact did not make for well more than a decade later) the combination that Petitioner now proposes is obvious based on hindsight.” (citing Second Young Decl. ¶ 107)); *see also* *WBIP*, 829 F.3d at 1328 (“The objective indicia of non-obviousness play an important role as a guard against the statutorily proscribed hindsight reasoning in the obviousness analysis.”); *In re Cree*, 818 F.3d at 702 n.3 (viewing an “impermissible hindsight” argument as “essentially a repackaging of the argument that there was insufficient evidence of a motivation to combine the references”).

Here, Patent Owner states—but does not adequately establish *with evidence*—that the RONDO 2 product “included the claimed features” in an effort to provide the necessary nexus. Second PO Resp. 32; Second Pet. Reply 21 (arguing that “Patent Owner provides no nexus analysis whatsoever” and that “[t]here is no comparison between the RONDO 2 device and the claim scope”). For example, Patent Owner does not how RONDO 2 practices the limitations of even one of the challenged claims. Similarly, Patent Owner fails to adequately show nexus for the discussion in Exhibit 2013 as to, for example, long-felt but unsolved need because Patent

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Owner has not shown how that reference indicates that the limitations of even one of the challenged claims are practiced. *See* Second PO Resp. 31–32; Second Pet. Reply 21. Dr. Young’s cited testimony does not remedy these deficiencies. *See* Second Young Decl. ¶¶ 105–107, *cited at* Second PO Resp. 31–33. Accordingly, without any nexus, we find Patent Owner’s arguments unconvincing.

For the reasons above, we determine, in light of the complete record, that Petitioner has shown by a preponderance of the evidence that one of ordinary skill in the art at the time of the invention would have had reason to modify Crosby based on Petersen, as proposed, that the articulated reasoning is supported by rational underpinning, and that there would have been a reasonable expectation of success in the proposed modification.

(7) Conclusion as to Claim 1

For the reasons above, we determine, based on the complete record, that Petitioner has demonstrated by a preponderance of the evidence that claim 1 would have been obvious based on Crosby and Petersen.

b. Independent Claim 10

Petitioner contends that the proposed combination of Crosby and Petersen discloses each of the limitations of independent claim 10. Second Pet. 31–32. To support its arguments, Petitioner identifies certain passages in the cited references and explains the significance of each passage with respect to the corresponding claim limitation. *Id.* Petitioner relies on the same articulated reasons to combine the relied-upon aspects of Crosby and Petersen as discussed above as to claim 1. Second Pet. 44–50. We address in turn below the subject matter of each limitation in claim 10 and then Petitioner’s identified reasons to combine Crosby and Petersen.

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(1) Elements 10.1 through 10.5 and 10.7

For elements 10.1 through 10.5 and 10.7, Petitioner refers to the discussions for elements 1.1 through 1.5 and 1.7, respectively. Second Pet. 31. Patent Owner does not present separate arguments for these elements. For the same reasons discussed above as to the parallel elements, we find, based on the complete record, that Petitioner has demonstrated by a preponderance of the evidence that the asserted prior art of Crosby and Petersen, as applied, satisfies each of elements 10.1 through 10.5 and 10.7.

(2) Element 10.6

In element 10.6, claim 10 recites “a power coil operably coupled to the rechargeable power source, that selectively receives power from an external charging source and recharges the rechargeable power source when the sound processor is in proximity to the external charging source.” Ex. 1001, 9:8–13. For this, Petitioner relies on Petersen. *See* Second Pet. 31–32.

Petitioner states that “Petersen describes inductive charging of its rechargeable battery.” Second Pet. 31. According to Petitioner

The description of the transfer of electrical energy by means of an alternating electromagnetic field, which is intercepted by a coil in the hearing aid, refers to inductive charging that is selectively enabled by coupling of the magnetic fields between two coils; it requires that the coil be in proximity to the external source so that it can receive sufficient power from the external source’s coil that generates the alternating magnetic field.

Second Pet. 31–32 (citing Second Najafi Pet. Decl. ¶¶ 33–42, 103–104, 182–183; *Atlas Powder*, 190 F.3d at 1347). Petitioner also quotes from a passage in Petersen providing: “[I]t is also possible to **transfer electrical energy** for charging the battery by means of an **alternating electromagnetic field**

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produced by the **charging device** and intercepted in the hearing aid by a **coil** with an associated rectifier.” Second Pet. 31 (quoting, with emphasis added, Ex. 1017, 7:4–7).

Patent Owner argues that under its proposed construction of “selectively receives” (*see* II.B.3), “the plain language of the claims . . . requires not merely a power coil that receives power when a power source is in proximity to the coil, but rather a power coil that can be enabled or disabled to receive power.” Second PO Resp. 17. According to Patent Owner, “[t]he proposed combination of Crosby and Petersen does not disclose or teach any such selective power reception.” *Id.* (citing Second Young Decl. ¶ 86).

For the reasons above, we do not agree with Patent Owner’s construction of element 10.6, and, instead, we construe the relevant language as requiring that *both* recited functions—(1) “receiv[ing] power from an external charging source” and (2) “recharg[ing] the rechargeable power source”—occur “selectively,” i.e., based on the recited condition (“when the sound processor is in proximity to the external charging source”).

We now apply this construction to the prior art. As an initial matter, we view Petitioner as relying, at least in part, on inherency as to inductive charging. *See* Second Pet. 31–32 (citing *Atlas Powder*, 190 F.3d at 1347). Specifically, we understand Petitioner to take the position that, although Petersen does not *expressly* discuss the “proximity” of the relied-upon components, *all* inductive charging systems are “*selectively enabled* by coupling of the magnetic fields between two coils; it *requires that the coil be in proximity to the external source* so that it can receive sufficient power from the external source’s coil that generates the alternating magnetic field.”

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Second Pet. 31–32 (emphasis added) (citing Second Najafi Pet. Decl. ¶¶ 33–42, 103–104, 182–183; *Atlas Powder*, 190 F.3d at 1347). This position is supported by the relied-upon testimony of Dr. Najafi, who explains that (1) “magnetic coupling between two coils in proximity of each other causes a voltage/current to be ‘induced’ in the power coil . . . when the external source transmitter coil generates an alternating magnetic field” and that (2) “[t]he closer the coils get, the more power can be received by the receiver coil.” Second Najafi Pet. Decl. ¶ 104, *cited at* Second Pet. 31–32.

Further, we note that Patent Owner does not contest that Petersen discloses inductive charging; rather Patent Owner relies on its claim construction arguments that element 10.6 requires *more than just* inductive charging. *See, e.g.*, Second PO Resp. 19 (arguing that “Petitioner does not identify any basis to suggest that Petersen, even to the extent it refers to some form of inductive charging, necessarily discloses a power coil that ‘selectively’ receives power” and that “inductive charging does not necessarily involve a power coil that ‘selectively’ receives power” (citing Second Young Decl. ¶ 89)); *see* Second Pet. Reply 14 (“Patent Owner’s argument that Petersen fails to teach the ‘power coil . . .’ limitation is entirely premised upon its flawed claim construction. Under the correct construction, it is uncontested that Petersen discloses the “power coil . . .” limitation. (citations omitted)).

Under the proper construction of element 10.6 (including “selectively receives”), we determine that the inductive charging inherently disclosed in Petersen satisfies the claim language. Thus, based on the complete record, we find that Petitioner has demonstrated by a preponderance of the evidence that Petersen discloses this element.

(3) The Combination of Crosby and Petersen

As to the combination of Crosby and Petersen in the context of this independent claim, Petitioner relies on the same discussion summarized above as to why one of ordinary skill in the art would have modified Crosby with the relied-upon aspects of Petersen. *See* II.F.2.a.6.a. Patent Owner relies on the same arguments as to motivation to combine and reasonable expectation of success across all four independent claims addressed in this asserted ground. *See* Second PO Resp. 20–33; Second PO Sur-reply 16–19.

For the same reasons discussed above (*see* II.F.2.a.6.b), we determine, in light of the complete record, that Petitioner has shown by a preponderance of the evidence that one of ordinary skill in the art at the time of the invention would have had reason to modify Crosby based on Petersen, as proposed, that the articulated reasoning is supported by rational underpinning, and that there would have been a reasonable expectation of success in the proposed modification.

(4) Conclusion as to Claim 10

For the reasons above, we determine, based on the complete record, that Petitioner has demonstrated by a preponderance of the evidence that claim 10 would have been obvious based on Crosby and Petersen.

c. Independent Claim 18

Petitioner contends that the proposed combination of Crosby and Petersen discloses each of the limitations of independent claim 18. Second Pet. 32–33. To support its arguments, Petitioner identifies certain passages in the cited references and explains the significance of each passage with respect to the corresponding claim limitation. *Id.* Petitioner relies on the same articulated reasons to combine the relied-upon aspects of Crosby and

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Petersen as discussed above as to claim 1. Second Pet. 44–50. We address in turn below the subject matter of each limitation in claim 18 and then Petitioner’s identified reasons to combine Crosby and Petersen.

(1) Elements 18.1 through 18.7

For elements 18.1 through 18.7, Petitioner refers to the discussions for elements 1.1 through 1.5, 1.7, and 1.6, respectively. Second Pet. 32. Patent Owner does not present separate arguments for these elements. For the same reasons discussed above as to the parallel elements, we find, based on the complete record, that Petitioner has demonstrated by a preponderance of the evidence that the asserted prior art of Crosby and Petersen, as applied, satisfies each of elements 18.1 through 18.7.

(2) Element 18.8

In element 18.8, claim 18 recites “a base station that charges the rechargeable power source.” Ex. 1001, 10:11. Petitioner states that “Petersen describes a charging device, a ‘base station’ in [the ’746 patent’s] diction, that charges the rechargeable battery, either through a direct electrical connection or through inductive charging.” Second Pet. 33 (citing Second Najafi Pet. Decl. ¶¶ 113–114). In support, Petitioner cites disclosures in Petersen related to the charging device. Second Pet. 32 (citing Ex. 1017, 5:14–29, 6:34–7:7).

Patent Owner does not present arguments for this limitation. We find, based on the complete record, that Petitioner has demonstrated by a preponderance of the evidence that Petersen discloses this element.

(3) The Combination of Crosby and Petersen

As to the combination of Crosby and Petersen in the context of this independent claim, Petitioner relies on the same discussion summarized

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above as to why one of ordinary skill in the art would have modified Crosby with the relied-upon aspects of Petersen. *See* II.F.2.a.6.a. Patent Owner relies on the same arguments as motivation to combine and reasonable expectation of success across all four independent claims addressed in this asserted ground. *See* Second PO Resp. 20–33; Second PO Sur-reply 16–19.

For the same reasons discussed above (*see* II.F.2.a.6.b), we determine, in light of the complete record, that Petitioner has shown by a preponderance of the evidence that one of ordinary skill in the art at the time of the invention would have had reason to modify Crosby based on Petersen, as proposed, that the articulated reasoning is supported by rational underpinning, and that there would have been a reasonable expectation of success in the proposed modification.

(4) Conclusion as to Claim 18

For the reasons above, we determine, based on the complete record, that Petitioner has demonstrated by a preponderance of the evidence that claim 18 would have been obvious based on Crosby and Petersen.

d. Independent Claim 24

Petitioner contends that the proposed combination of Crosby and Petersen discloses each of the limitations of independent claim 24. Second Pet. 33. To support its arguments, Petitioner identifies certain passages in the cited references and explains the significance of each passage with respect to the corresponding claim limitation. *Id.* Petitioner relies on the same articulated reasons to combine the relied-upon aspects of Crosby and Petersen as discussed above as to claim 1. Second Pet. 44–50. We address in turn below the subject matter of each limitation in claim 24 and then Petitioner’s identified reasons to combine Crosby and Petersen.

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(1) Elements 24.1, 24.2, and 24.4 through 24.7

For elements 24.1, 24.2, and 24.4 through 24.7, Petitioner refers to the discussions for elements 1.1, 1.2, 1.4, 1.5, 1.7, and 18.8, respectively.

Second Pet. 33. Patent Owner does not present separate arguments for these elements. For the same reasons discussed above as to the parallel elements, we find, based on the complete record, that Petitioner has demonstrated by a preponderance of the evidence that the asserted prior art of Crosby and Petersen, as applied, satisfies each of elements 24.1, 24.2, and 24.4 through 24.7.

(2) Element 24.3

In element 24.3, claim 24 recites “a closed case that does not include a battery removal door.” Ex. 1001, 10:40–41. Petitioner states, “[a]s explained in the context of [element] 1.3, the housing described in Petersen does not have a battery removal door.” Second Pet. 33 (citing Second Najafi Pet. Decl. ¶ 117). Patent Owner does not present separate arguments for this limitation (aside from those presented for element 1.3 above). For the same reasons discussed as to element 1.3 above, we find, based on the complete record, that Petitioner has demonstrated by a preponderance of the evidence that Petersen discloses this element.

(3) The Combination of Crosby and Petersen

As to the combination of Crosby and Petersen in the context of this independent claim, Petitioner relies on the same discussion summarized above as to why one of ordinary skill in the art would have modified Crosby with the relied-upon aspects of Petersen. *See* II.F.2.a.6.a. Patent Owner relies on the same arguments as motivation to combine and reasonable

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expectation of success across all four independent claims addressed in this asserted ground. *See* Second PO Resp. 20–33; Second PO Sur-reply 16–19.

For the same reasons discussed above (*see* II.F.2.a.6.b), we determine, in light of the complete record, that Petitioner has shown by a preponderance of the evidence that one of ordinary skill in the art at the time of the invention would have had reason to modify Crosby based on Petersen, as proposed, that the articulated reasoning is supported by rational underpinning, and that there would have been a reasonable expectation of success in the proposed modification.

(4) Conclusion as to Claim 24

For the reasons above, we determine, based on the complete record, that Petitioner has demonstrated by a preponderance of the evidence that claim 24 would have been obvious based on Crosby and Petersen.

e. Claims 2, 11, and 19

Claims 2, 11, and 19 depend from claims 1, 10, and 18, respectively, with each adding “wherein the implantable cochlear stimulator receives power signals; the sound processor circuit generates a power signal; and the coil transfers the power signal from the sound processor circuit to the implantable cochlear stimulator.” Ex. 1001, 8:32–38, 9:14–20, 10:12–18.

Petitioner states that “Crosby describes the very power transfer mechanism, from the Speech Processor through the coil to the implanted stimulator,” as recited in these dependent claims. Second Pet. 34–35 (citing Second Najafi Pet. Decl. ¶¶ 124–125; Ex. 1004 at 63–64). In support, Petitioner cites several disclosures in Crosby related to generation, transfer, and reception of power signals. Second Pet. 34 (citing Ex. 1008, 1:51–55, 8:55–58, 13:39–44, 16:45–47, 31:18–22, Figs. 2 & 8).

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We find, based on the complete record, that Petitioner has demonstrated by a preponderance of the evidence that Crosby discloses the additional elements of claims 2, 11, and 19. Patent Owner does not present arguments for these claims. Based on the complete record, we determine that Petitioner has demonstrated by a preponderance of the evidence that claims 2, 11, and 19 would have been obvious based on Crosby and Petersen.

f. Claims 3, 12, and 20

Claims 3, 12, and 20 depend from claims 1, 10, and 18, respectively, with each adding that the “implant system” “further compris[es]: a headpiece that carries the coil and a microphone.” Ex. 1001, 8:39–41, 9:21–23, 10:19–21. Petitioner states that “Crosby describes a headpiece (a ‘fixture’) carrying both coil 24 and microphone 33.” Second Pet. 36 (citing Second Najafi Pet. Decl. ¶¶ 128–129). In support, Petitioner cites disclosures in Crosby related to coil 24 and microphone 33. *Id.* (citing Ex. 1008, 9:22–32, Fig. 3 (element 24)).

We find, based on the complete record, that Petitioner has demonstrated by a preponderance of the evidence that Crosby discloses the additional elements of claims 3, 12, and 20. Patent Owner does not present arguments for these claims. Based on the complete record, we determine that Petitioner has demonstrated by a preponderance of the evidence that claims 3, 12, and 20 would have been obvious based on Crosby and Petersen.

g. Claims 4, 13, and 21

Claims 4, 13, and 21 depend from claims 1, 10, and 18, respectively, with each adding “wherein the external sound processor includes a

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microphone that receives sound signals and converts them into electrical signals; the sound processor circuit receives the electrical signals from the microphone and converts them into a stimulation signal; and the coil transfers the stimulation signal from the sound processor circuit to the implantable cochlear stimulator.” Ex. 1001, 8:42–51, 9:24–33, 10:22–31.

Petitioner states that “Crosby describes the creation and transfer of stimulation signals,” as recited in these claims. Second Pet. 38 (citing Second Najafi Pet. Decl. ¶¶ 132–133). According to Petitioner, although “Crosby does not expressly say so, a ‘microphone’ inherently converts sound signals into electrical signals.” *Id.* (citing Second Najafi Pet. Decl. ¶¶ 132–133). Petitioner states, “[t]hat is why the ‘front end’ of the Wearable Speech Processor, i.e., where the signals from the microphone come in, can use a ‘preamplifier,’ which requires incoming electrical signals.” *Id.* (citing Second Najafi Pet. Decl. ¶¶ 134; Ex. 1014, 1:23–26). In support, Petitioner cites disclosures in Crosby related to microphone 8 and Wearable Speech Processor 7. Second Pet. 36–38 (citing Ex. 1008, 8:55–62, 9:29–32, 13:37–44, 16:45–47, 26:6–35, 27:2–7, 28:38–40, Fig. 3 (element 33), Fig. 18).

We find, based on the complete record, that Petitioner has demonstrated by a preponderance of the evidence that Crosby discloses the additional elements of claims 4, 13, and 21. Patent Owner does not present arguments for these claims. Based on the complete record, we determine that Petitioner has demonstrated by a preponderance of the evidence that claims 4, 13, and 21 would have been obvious based on Crosby and Petersen.

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h. Claims 6 and 14

Claims 6 and 14 depend from claims 1 and 10, respectively, with each adding “wherein the rechargeable power source comprises a rechargeable battery; and the closed case does not include a battery removal door.”

Ex. 1001, 8:56–60, 9:34–38. For these claims, Petitioner refers to the discussion of element 24.3. Second Pet. 39.

We find, based on the complete record, that Petitioner has demonstrated by a preponderance of the evidence that Petersen discloses the additional elements of claims 6 and 14. Patent Owner does not present arguments for these claims. Based on the complete record, we determine that Petitioner has demonstrated by a preponderance of the evidence that claims 6 and 14 would have been obvious based on Crosby and Petersen.

i. Claims 7, 15, and 22

Claims 7, 15, and 22 depend from claims 1, 10, and 18, respectively, with each adding “wherein the implantable cochlear stimulator includes an electrode array that applies electrical stimulation to tissue and nerves within the cochlea.” Ex. 1001, 8:61–64, 9:39–42, 10:32–35. Petitioner states that “Crosby’s Receiver--Stimulator Unit, the ‘implantable cochlear stimulator’ of [element] 1.1, includes ‘electrode array’ 1/20/52 that applies electrical stimulation to tissue and fibers of the auditory nerve within the cochlea.” Second Pet. 41 (citing Second Najafi Pet. Decl. ¶¶ 140–141). In support, Petitioner cites disclosures in Crosby related to the electrode arrays. Second Pet. 40–41 (citing Ex. 1008, 2:52–58, 8:20–50, 9:11–14, 14:43–46, Fig. 2 (element 1), Fig. 3 (element 20), Fig. 5 (element 52)).

We find, based on the complete record, that Petitioner has demonstrated by a preponderance of the evidence that Crosby discloses the

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additional elements of claims 7, 15, and 22. Patent Owner does not present arguments for these claims. Based on the complete record, we determine that Petitioner has demonstrated by a preponderance of the evidence that claims 7, 15, and 22 would have been obvious based on Crosby and Petersen.

j. Claim 8

Claim 8 recites “A cochlear implant system as claimed in claim 7, wherein the electrode array comprises a plurality of electrode contacts.” Ex. 1001, 8:65–67. Petitioner states that “Crosby’s electrode array has 22 electrodes.” Second Pet. 42 (citing Second Najafi Pet. Decl. ¶¶ 144–145). In support, Petitioner cites disclosures in Crosby related to the electrode arrays. Second Pet. 41–42 (citing Ex. 1008, 8:20–50, 14:43–46, Fig. 5 (element 52)).

We find, based on the complete record, that Petitioner has demonstrated by a preponderance of the evidence that Crosby discloses the additional elements of claim 8. Patent Owner does not present arguments for this claim. Based on the complete record, we determine that Petitioner has demonstrated by a preponderance of the evidence that claim 8 would have been obvious based on Crosby and Petersen.

k. Claim 17

Claim 17 recites “A cochlear implant system as claimed in claim 10, wherein the implantable cochlear stimulator includes a cochlear stimulator coil and an electrode array.” Ex. 1001, 9:45–47. Petitioner states that, “[a]side from the electrode array discussed above, Crosby’s Receiver--Stimulator Unit, the ‘implantable cochlear stimulator’ of [element] 1.1, also includes the recited stimulator coil 5/23/41.” Second Pet. 43 (citing Second

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Najafi Pet. Decl. ¶ 148). In support, Petitioner cites disclosures in Crosby related to Receiver-Stimulator Unit 3, receiving coil 5, and the disclosed electrode arrays. Second Pet. 42–43 (citing Ex. 1008, 8:20–50, 9:11–21, 13:37–57, Fig. 2 (elements 1 and 5), Fig. 2 (elements 20 and 23), Fig. 5 (element 41)).

We find, based on the complete record, that Petitioner has demonstrated by a preponderance of the evidence that Crosby discloses the additional elements of claim 17. Patent Owner does not present arguments for this claim. Based on the complete record, we determine that Petitioner has demonstrated by a preponderance of the evidence that claim 17 would have been obvious based on Crosby and Petersen.

G. Asserted Obviousness of Claims 5, 9, 16, and 23 Based on Crosby, Petersen, and Zilberman '022

Petitioner asserts that claims 5, 9, 16, and 23 of the '746 patent are unpatentable under 35 U.S.C. § 103(a) based on Crosby, Petersen, and Zilberman '022. Second Pet. 4, 50–59; Second Pet. Reply 22–25. Patent Owner provides arguments specifically addressing this ground. Second PO Resp. 33–35; Second PO Sur-reply 19–20. We first summarize aspects of Zilberman '022 and then address the parties' contentions.

1. Zilberman '022

In this asserted ground, Petitioner relies on Zilberman '022, in addition to Crosby (summarized above (*see* § II.F.1)) and Petersen (summarized above (*see* § II.C.2)). Zilberman '022 discloses a cochlear

stimulation system that includes a remote control unit. Ex. 1014, code (57), 1:9–14, 2:22–33.

Figure 4 of Zilberman '022 is reproduced below:

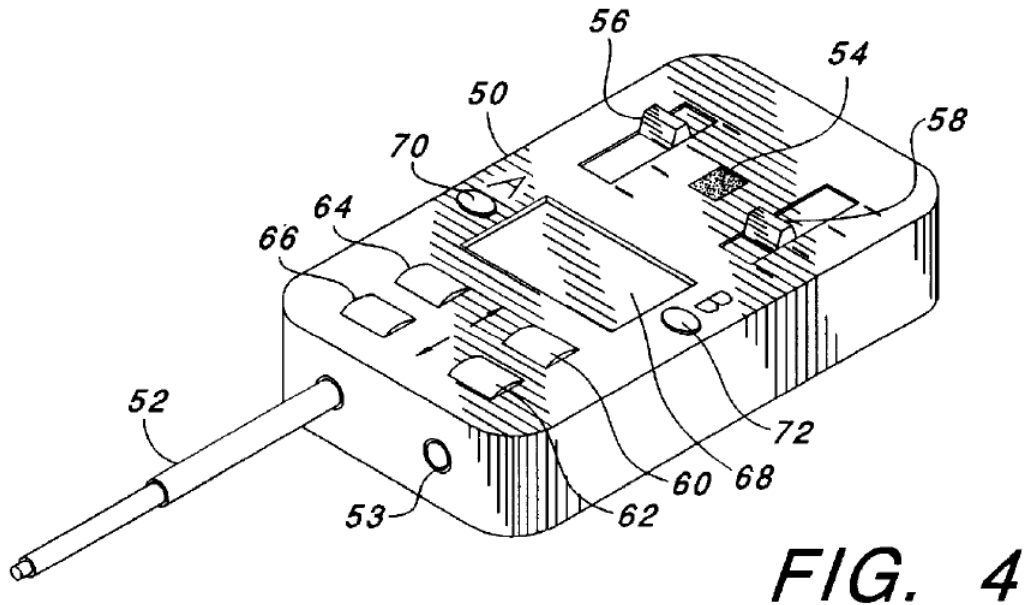


Figure 4 is a “perspective view of one embodiment of a remote control unit (RCU)” of the system in Zilberman '022. Ex. 1014, 4:37–39. Zilberman '022 discloses that

the user controls the sounds he or she “hears” with the [implantable cochlear stimulator] through the RCU, which RCU (when turned ON) is electronically coupled to the BTE [(behind-the-ear)] processor through an FM link. Through the RCU, the user may control, e.g., the operating mode, volume, sensitivity, and microphone location of the BTE speech processor.

Ex. 1014, 2:36–42.

Figure 5 is reproduced below:

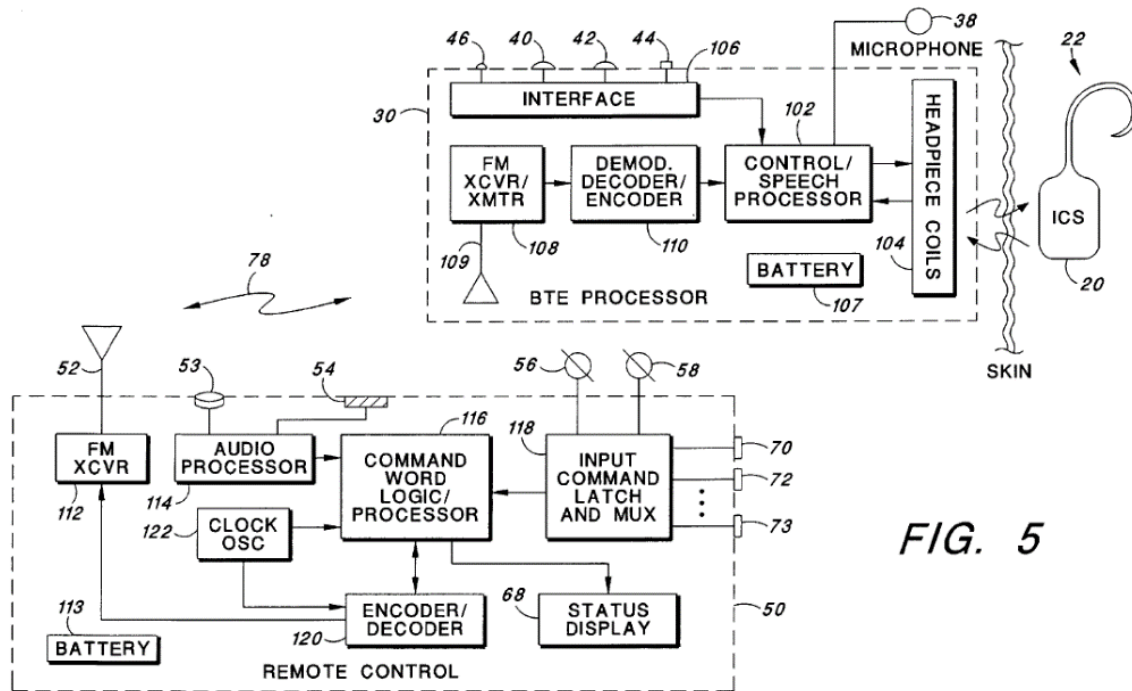


FIG. 5

Figure 5 depicts an “electrical block diagram of the cochlear stimulation system” disclosed in Zilberman ’022, including, in the bottom left portion, a block diagram of the remote control unit. Ex. 1014, 4:40–41. Zilberman ’022 discloses various types of wireless telecommunication links between RCU 50 and BTE speech processor 30 shown in Figure 5, such as FM, AM, infrared, and optical. *See id.* at 7:7–14.

2. Analysis

a. Claim 5

Petitioner contends that the proposed combination of Crosby, Petersen, and Zilberman ’022 discloses the added limitation of claim 5. Second Pet. 50–54. To support its arguments, Petitioner identifies certain passages in the cited references and explains the significance of each passage with respect to the corresponding claim limitation. *Id.* Petitioner also articulates reasons to combine the relied-upon aspects of Crosby,

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Petersen, and Zilberman '022. Second Pet. 52–54. We address in turn below the subject matter of claim 5 and then Petitioner's identified reasons to combine Crosby, Petersen, and Zilberman '022.

(1) Subject Matter of Claim 5

Claim 5 depends from claim 1, adding “a remote control unit that electromagnetically communicates with the external sound processor.” Ex. 1001, 8:52–55. Petitioner states that “Zilberman '022 describes a remote control unit that communicates over an FM- or other RF-based link, i.e., electromagnetically, with the sound processor.” Second Pet. 52 (citing Second Najafi Pet. Decl. ¶¶ 169–170). In support, Petitioner cites disclosures in Zilberman '022 related to the remote control unit. *See* Second Pet. 50–52 (citing Ex. 1014, 2:27–28, 2:36–42, 3:66–4:5, 5:37–6:22, 7:7–14, 7:33–44, 7:57–8:3, Figs. 4 & 5 (element 50)).

Patent Owner does not present arguments for the subject matter of this claim, and instead relies on the arguments as to claim 1, addressed above. *See* Second PO Resp. 33. We find, based on the complete record, that Petitioner has demonstrated by a preponderance of the evidence that Zilberman '022 discloses the subject matter of claim 5.

(2) The Combination of Crosby, Petersen, and Zilberman '022

(a) Summary of the Proposed Combination

Petitioner takes the position that one of ordinary skill in the art would have further modified Crosby, as already modified by Peterson as discussed above, based on Zilberman '022 to arrive at the subject matter of claim 5. *See* Second Pet. 52–54 (citing Second Najafi Pet. Decl. ¶¶ 172–174). Petitioner discusses how Crosby “describes controlling the operation of the speech processor by use of a ‘Diagnostic and Programming Unit’ [(element

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12 in Figure 2)] and ‘Interface Unit’ [(element 10 in Figure 2)], which are connected to the speech processor via cables” 11 and 9, respectively.

Second Pet. 52 (citing Ex. 1008, 9:5–9, 12:23–13:6, 27:8–11, 43:50–47:4).

According to Petitioner, one of ordinary skill in the art

would have understood that the function of controlling the speech processor could be accomplished by the remote control of Zilberman ’022 instead of, or in addition to, cable-connected devices or knobs or buttons, and would have been well capable to adapt the electronics in Crosby’s sound processor to process Zilberman ’022’s remote control’s commands, since the concept of adjusting an electronic device by remote control had, by 2002, long been well known (e.g., from television sets).

Second Pet. 53 (citing Second Najafi Pet. Decl. ¶ 173). Petitioner adds that one of ordinary skill in the art “would have therefore had a reasonable expectation of success when combining Crosby with the remote control of Zilberman ’022, both of which would continue to perform the same functions” in that “the sound processor’s parameters are merely adjusted by way of remote control instead of, or in addition to, cable-connected devices or knobs or buttons, and [one of ordinary skill in the art] would have predicted this result.” *Id.*

*(b) Patent Owner’s Arguments Addressing
the Articulated Reasons to Combine
Crosby, Petersen, and Zilberman ’022*

Patent Owner presents three arguments as to why one of ordinary skill in the art allegedly would not have been motivated to further modify Crosby as modified by Peterson based on Zilberman ’022 to arrive at the subject matter of claim 5 with a reasonable expectation of success. *See* Second PO Resp. 34–35; Second PO Sur-reply 19–20.

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First, Patent Owner relies on the arguments as to the reasons to modify Crosby based on Petersen discussed in the context of the prior asserted ground. *See* Second PO Resp. 34 (citing Second Young Decl. ¶ 110). For the reasons discussed above (*see* II.F.2.a.6.b), we determine, in light of the complete record, that Petitioner has shown by a preponderance of the evidence that one of ordinary skill in the art at the time of the invention would have had reason to modify Crosby based on Petersen, as proposed, that the articulated reasoning is supported by rational underpinning, and that there would have been a reasonable expectation of success in the proposed modification.

Second, Patent Owner argues that Petitioner did not provide “objective evidence” to support the position that one of ordinary skill in the art would have had a reasonable expectation of success in the proposed modification. *See* Second PO Resp. 34–35. According to Patent Owner, Petitioner does not “explain how such a combination could be successfully achieved beyond making the blanket assertion that it could and citing only to its expert’s declaration, which does little more than simply parrot the language of the Petition.” Second PO Resp. 34 (citing Second Pet. 52–53 (citing Second Najafi Pet. Decl. ¶ 172)). Patent Owner argues that “successfully combining these elements requires more than simply adding extra components to the device” because, “[a]s Dr. Young explains, [one of ordinary skill in the art] would need to carefully consider system design tradeoffs,” including alleged technical issues that would arise. *Id.* at 34–35 (citing Second Young Decl. ¶ 112).

This argument does not identify a deficiency in the Petitioner’s position as to claim 5. As an initial matter, as noted by Petitioner (Second

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Pet. Reply 23), “Zilberman ’022 itself provides detailed descriptions as to the implementation of the remote control.” Second Pet. Reply 23 (citing Ex. 1014, 2:36–50, 5:36–6:21, 6:57–7:14, 7:30–8:10, 9:52–10:40, Figs. 4–5); *see also* Second Pet. 50–52 (citing Ex. 1014, 2:36–42, 5:37–6:22, 7:7–14, 7:33–44, 7:57–8:3, Figs. 4 & 5 (element 50)). Further, as argued by Petitioner, the declaration testimony of Dr. Najafi adequately explains why, although “factors such as ‘additional power dissipation’ or ‘frequency pulling’”—raised in the Patent Owner Response and by Dr. Young (*see* Second PO Resp. 34–35; Second Young Decl. ¶ 112)—“are certainly to be considered and addressed in implementing the suggested combination, [one of ordinary skill in the art] would have been well capable of doing so.” Second Pet. Reply 23 (citing Second Najafi Reply Decl. ¶¶ 18–25; Second Najafi Pet. Decl. ¶ 173; Second IPR, Ex. 2016, 66:21–69:9). For example, Dr. Najafi addresses each of the listed factors (Second Najafi Reply Decl. ¶¶ 20–24) before concluding that

In sum, it would have been a matter of routine engineering work to take the factors Dr. Young brought up into consideration, and appropriately address them, in adding the remote control feature of Zilberman ’022 to the Crosby/Petersen-combination, and when setting out to implement the combination, [one of ordinary skill in the art] would have expected to succeed.

Second Najafi Reply Decl. ¶ 25.

In addition, as noted by Petitioner, when asked whether one of ordinary skill in the art would have been capable of making the design choices to account for the listed factors, Dr. Young acknowledged that one of ordinary skill in the art would have been able to “come up with a working design.” Second IPR, Ex. 1056, 55:17–56:2, *cited at* Second Pet. Reply 23; *see also Medichem, S.A. v. Rolabo, S.L.*, 437 F.3d 1157, 1165 (Fed. Cir.

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2006) (stating that “a given course of action often has simultaneous advantages and disadvantages, and this does not necessarily obviate motivation to combine”). In the Sur-reply in the Second IPR, Patent Owner cites testimony of Dr. Young *prior to* that cited by Petitioner, and asserts that, in the prior testimony, Dr. Young “actually emphasized that Zilberman ’022 does not provide the requisite disclosure to make the combination proposed by Petitioner.” Second PO Sur-reply 20 (citing Second IPR, Ex. 1056, 53:12–55:6). We disagree with Patent Owner’s characterization of Dr. Young’s testimony, which does not mention Zilberman ’022 at all. *See* Second IPR, Ex. 1056, 53:12–55:6.

Third, Patent Owner argues, for the first time in the Sur-reply, that “Petitioner still has not addressed why [one of ordinary skill in the art] would have been motivated to combine Zilberman ’022 with Petersen and Crosby.” Second PO Sur-reply 19. Although the relevant section heading in the Response provides that one of ordinary skill in the art “**would not have been motivated to make the proposed combination or had any reasonable expectation of success,**” the arguments in that section address the reasonable expectation of success rather than the motivation to further modify Crosby/Petersen with Zilberman ’022. *See* Second PO Resp. 34–35. Even if Patent Owner’s argument is considered timely, for the reasons below, it does not identify a deficiency in Petitioner’s position.

As a motivation to further modify Crosby/Petersen with Zilberman ’022, we understand Petitioner to rely on the benefit of maintaining “the function of controlling the speech processor” in Crosby even after removing the “cable-connected devices or knobs or buttons”—e.g., Interface Unit 10 and Diagnostic and Programming 12 previously mentioned by Petitioner—

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and replacing those components with the remote of Zilberman '022. *See* Second Pet. 53 (discussing how one of ordinary skill in the art “would have understood that the function of controlling the speech processor could be accomplished by the remote control of Zilberman '022 *instead of*, or in addition to, *cable-connected devices or knobs or buttons*” (emphasis added)), 52 (“Crosby (filed in 1983) describes controlling the operation of the speech processor by use of a ‘Diagnostic and Programming Unit’ and ‘Interface Unit,’ which are connected to the speech processor via cables.”). In other words, Petitioner relies on the *absence* of cables and the resulting benefit of less cumbersome operation. We view this reasoning as supported by rational underpinnings.

For the reasons above, we determine, in light of the complete record, that Petitioner has shown by a preponderance of the evidence that one of ordinary skill in the art at the time of the invention would have had reason to further modify Crosby, as already modified by Peterson, based on Zilberman '022, as proposed as to claim 5, that the articulated reasoning is supported by rational underpinning, and that there would have been a reasonable expectation of success in the proposed modification.

(3) Conclusion as to Claim 5

For the reasons above, we determine, based on the complete record, that Petitioner has demonstrated by a preponderance of the evidence that claim 5 would have been obvious based on Crosby, Petersen, and Zilberman '022.

b. Claims 9, 16, and 23

Petitioner contends that the proposed combination of Crosby, Petersen, and Zilberman '022 discloses the added limitation of claims 9, 16,

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and 23. Second Pet. 54–59. To support its arguments, Petitioner identifies certain passages in the cited references and explains the significance of each passage with respect to the corresponding claim limitation. *Id.* Petitioner also articulates reasons to combine the relied-upon aspects of Crosby, Petersen, and Zilberman '022. Second Pet. 57–59. We address in turn below the subject matter of claims 9, 16, and 23 and then Petitioner's identified reasons to combine Crosby, Petersen, and Zilberman '022.

(1) Subject Matter of Claims 9, 16, and 23

Claims 9, 16, and 23 depend from claims 1, 10, and 18, respectively, with each adding “wherein the coil is housed within the closed case.”

Ex. 1001, 9:1–2, 9:43–44, 10:36–37. Petitioner highlights a disclosure in Zilberman '022 as to prior art cochlear implant systems (shown in Figure 1):

The cable 16, which must connect the processor 12 with the headpiece 14, is particularly a source of irritation and self-consciousness for the user. What is needed, therefore, is an external speech processor and corresponding headpiece that is small, unobtrusive, lightweight, and which eliminates the need for the troublesome interconnecting cable 16 between the speech processor and the headpiece.

Ex. 1014, 2:11–18, *quoted at* Second Pet. 58. According to Petitioner, Zilberman '022 then “describes that the headpiece, which houses a transmitter coil, and the sound processor are combined into a ‘integral unit,’” such that Zilberman '022 teaches “to place the transmitter coil in the same unit as the sound processor.” Second Pet. 58. In support, Petitioner cites disclosures in Zilberman '022 related to “coils” that couple the speech processor to the implanted cochlear stimulator. *See* Second Pet. 55–56 (citing Ex. 1014, 2:25–27, 3:55–60, 5:10–21, 7:15–17, 10:42–51, Fig. 5 (element 104)).

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Patent Owner does not present arguments for these claims, and instead relies on the arguments as to claim 1, addressed above. *See* Second PO Resp. 33. We find, based on the complete record, that Petitioner has demonstrated by a preponderance of the evidence that Zilberman '022 discloses the subject matter of claims 9, 16, and 23.

*(2) The Combination of Crosby, Petersen, and
Zilberman '022*

(a) Summary of the Proposed Combination

As to claims 9, 16, and 23, Petitioner states that “[t]he motivation of making the speech processor and headpiece small, lightweight, and without a connecting cable, and the teaching of an ‘integral unit’ for the sound processor and headpiece” discussed in the prior section “would have led [one of ordinary skill in the art] to combine the speech processor and headpiece of Crosby into one unit, so that all of the components of the speech processor and the headpiece, including transmitter coil, would be in one case.” Second Pet. 58–59. According to Petitioner, “[d]oing so would have been well within [one of ordinary skill in the art’s] creative skills, and the [person of ordinary skill in the art] would have had a reasonable expectation of success, since the modification merely involves changing the number and shape of the device’s cases (one instead of two cases) and adjusting the arrangement of the components.” Second Pet. 59 (citing Second Najafi Pet. Decl. ¶ 181); *KSR*, 550 U.S. at 418.

*(b) Patent Owner’s Arguments Addressing
the Articulated Reasons to Combine
Crosby, Petersen, and Zilberman '022*

In the only argument as to this motivation statement, Patent Owner relies on the arguments as to the reasons to modify Crosby based on Petersen

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discussed in the context of the prior asserted ground. *See* Second PO Resp. 34 (citing Second Young Decl. ¶ 110). For the reasons discussed above (*see* II.F.2.a.6.b), we determine, in light of the complete record, that Petitioner has shown by a preponderance of the evidence that one of ordinary skill in the art at the time of the invention would have had reason to modify Crosby based on Petersen, as proposed, that the articulated reasoning is supported by rational underpinning, and that there would have been a reasonable expectation of success in the proposed modification.

We determine, in light of the complete record, that Petitioner has shown by a preponderance of the evidence that one of ordinary skill in the art at the time of the invention would have had reason to further modify Crosby as modified by Peterson based on Zilberman '022, as proposed as to claims 9, 16, and 23, that the articulated reasoning is supported by rational underpinning, and that there would have been a reasonable expectation of success in the proposed modification.

(3) Conclusion as to Claims 9, 16, and 23

For the reasons above, we determine, based on the complete record, that Petitioner has demonstrated by a preponderance of the evidence that claims 9, 16, and 23 would have been obvious based on Crosby, Petersen, and Zilberman '022.

H. Additional Asserted Grounds of Obviousness

Petitioner contends that some of the challenged claims are rendered obvious, in the alternative, by the combinations of (1) Crosby, Petersen, and Nagai (claims 10–15 and 17) and (2) Crosby, Petersen, Nagai, and Zilberman '022 (claim 16). *See* Second Pet. 59–66; Second Pet. Reply 25–26.

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Because the pair of grounds based on Crosby and Petersen and Crosby, Petersen, and Zilberman '022 are dispositive as to all of the challenged claims, we need not reach the additional asserted grounds. *See SAS Inst.*, 138 S. Ct. at 1359 (holding that a petitioner “is entitled to a final written decision addressing all of the claims it has challenged”); *Boston Sci. Scimed, Inc. v. Cook Grp. Inc.*, 809 F. App’x 984, 990 (Fed. Cir. 2020) (nonprecedential) (stating that the “Board need not address issues that are not necessary to the resolution of the proceeding,” such as “alternative arguments with respect to claims [the Board] found unpatentable on other grounds”); *SK Hynix Inc. v. Netlist, Inc.*, IPR2017-00692, Paper 25 at 40 (PTAB July 5, 2018) (determining all challenged claims to be unpatentable and not addressing additional grounds).

III. PENDING RENEWED MOTIONS TO CONSOLIDATE

As discussed above, Petitioner moved to fully consolidate these two proceedings to promote efficiency with the issuance of a single final written decision and to avoid estoppel under 35 U.S.C. § 315(e)(1). First IPR, Paper 38; Second IPR, Paper 35 (collectively, the “Renewed Motions to Consolidate”). Patent Owner opposed. First IPR, Paper 39; Second IPR, Paper 37. Given the overlapping issues in these proceedings, we issue this combined Final Written Decision addressing the issues raised in both proceedings. We grant Petitioner’s Renewed Motions to Consolidate to the extent that we issue a single Final Written Decision.

IV. CONCLUSION

Upon consideration of the briefing and the evidence of record, we determine (1) that Petitioner has proven by a preponderance of the evidence

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that claims 10–17 and 24 would have been obvious to one of ordinary skill in the art based on Zilberman and Saaski, (2) that Petitioner has proven by a preponderance of the evidence that claims 1–4, 6–8, 10–15, 17–22, and 24 would have been obvious to one of ordinary skill in the art based on Crosby and Petersen, and (3) that Petitioner has proven by a preponderance of the evidence that claims 5, 9, 16, and 23 would have been obvious to one of ordinary skill in the art based on Crosby, Petersen, and Zilberman '022.²⁵ We do not reach the additional grounds presented.

V. ORDER

For the reasons above, it is:

ORDERED that Petitioner has proven by a preponderance of the evidence that claims 1–24 are unpatentable;

FURTHER ORDERED that, pursuant to 35 U.S.C. § 318(b), upon expiration of the time for appeal of this Decision or the termination of any such appeal, a certificate shall issue canceling claims 1–24;

FURTHER ORDERED that Petitioner's Renewed Motions to Consolidate IPR2020-01016 and IPR2021-00044 are *granted* to the extent that we issue a single Final Written Decision; and

²⁵ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding, 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. *See* 37 C.F.R. §§ 42.8(a)(3), (b)(2).

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FURTHER ORDERED that, because this is a Final Written Decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

In summary:

Claim(s)	35 U.S.C. §	Reference(s)/ Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1–24	103(a)	AAPA, Petersen ²⁶		
10–17, 24	103(a)	Zilberman, Saaski	10–17, 24	
10–17, 24	103(a)	AAPA, Zilberman, Saaski		
1–4, 6–8, 10–15, 17–22, 24	103(a)	Crosby, Petersen	1–4, 6–8, 10– 15, 17–22, 24	
5, 9, 16, 23	103(a)	Crosby, Petersen, Zilberman '022	5, 9, 16, 23	
10–15, 17	103(a)	Crosby, Petersen, Nagai		
16	103(a)	Crosby, Petersen, Zilberman '022, Nagai		
Overall Outcome			1–24	

²⁶ As explained above, we do not reach (1) the ground based on AAPA and Petersen, (2) the ground based on AAPA, Zilberman, and Saaski, or (3) either asserted ground involving Nagai. *See* § II.C.3.b; § II.E; § II.H.

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FOR PETITIONER:

Brian P. Murphy

Robert E. Colletti

Georg C. Reitboeck (*pro hac vice*)

Roman Khasidov

HAUG PARTNERS LLP

bmurphy@haugpartners.com

rcolletti@haugpartners.com

medelipr@haugpartners.com

FOR PATENT OWNER:

Marcus E. Sernel

Hari Santhanam

Daniel R. Shearer

KIRKLAND & ELLIS LLP

marc.sernel@kirkland.com

hari.santhanam@kirkland.com

daniel.shearer@kirkland.com