

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD, and SAMSUNG ELECTRONICS
AMERICA, INC.,
Petitioner,

v.

STATON TECHIYA, LLC,
Patent Owner.

IPR2022-00324
Patent 8,254,591 B2

Before NATHAN A. ENGELS, SCOTT B. HOWARD, and
RUSSELL E. CASS, *Administrative Patent Judges*.

CASS, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

A. Background

Samsung Electronics Co., Ltd, and Samsung Electronics America, Inc. (“Petitioner”) filed a Petition requesting an *inter partes* review of claims 1–7, 9, 11–16 (the “challenged claims”) of U.S. Patent No. 8,254,591 B2 (Ex. 1001, “the ’591 patent”). Paper 3, 1 (“Pet.”). Patent Owner filed a Preliminary Response. Paper 8 (“Prelim. Resp.”). With our permission, Petitioner filed a Preliminary Reply (Paper 9 (“Reply”)) and Patent Owner filed a Preliminary Sur Reply (Paper 10 (“Sur-reply”)). Again with our permission, Petitioner and Patent Owner each filed a supplemental brief discussing the Director’s recently issued interim guidance concerning discretionary denials based on parallel district court proceedings. Paper 11 (“Pet. Supp. Br.”); Paper 12 (“PO Supp. Br.”).

An *inter partes* review may not be instituted unless it is determined that “the information presented in the petition filed under section 311 and any response filed under section 313 shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314 (2018); *see also* 37 C.F.R. § 42.4(a) (2021) (“The Board institutes the trial on behalf of the Director.”). The reasonable likelihood standard is “a higher standard than mere notice pleading,” but “lower than the ‘preponderance’ standard to prevail in a final written decision.” *Hulu, LLC v. Sound View Innovations, LLC*, IPR2018-01039, Paper 29 at 13 (PTAB Dec. 20, 2019) (precedential).

For the reasons provided below and based on the record before us, we determine that Petitioner has demonstrated a reasonable likelihood that it would prevail in showing the unpatentability of at least one of the challenged claims. Patent Owner has not persuaded us that we should

exercise our discretion to deny institution of trial. Accordingly, we institute an *inter partes* review on all grounds set forth in the Petition.

B. Real Parties in Interest

Petitioner states that the real parties in interest are Samsung Electronics Co., Ltd, and Samsung Electronics America, Inc. Pet. 1, 72. Patent Owner states that Staton Techiya, LLC and Synergy IP Corporation are the real parties in interest. Paper 5, 1.

C. Related Proceedings

Petitioner states that the '591 patent was asserted in *Staton Techiya, LLC v. Samsung Electronics Co., Ltd.*, No. 2:21-cv-00413 (E.D. Tex.), which was filed on November 5, 2021 (“the District Court Litigation”). Pet. 72; Paper 5, 1.

D. The '591 Patent (Ex. 1001)

The '591 patent is directed to “the detecting and recording of acoustic events as measured by an earpiece.” Ex. 1001, 1:16–17. The Background of the '591 patent specification explains that, “[i]n industrial environments where noise is frequently present, workers can be subject to loud excessive noises over long periods of time” and, “[a]lthough earplugs help suppress the noise and mitigate the physiological and psychological effects of the noise on the workers, there are few accurate indications of the noise exposure to which the workers are subjected.” *Id.* at 1:28–34. Therefore, according to the '591 patent, a need exists “for assessing sound exposure levels in various environmental settings.” *Id.* at 1:35–36.

In order to address this perceived need, the '591 patent discloses “a method and device for audio recording” using an earpiece. Ex. 1001, 1:40–

41. A pictorial diagram of an embodiment of the earpiece is provided in Figure 1, reproduced below.

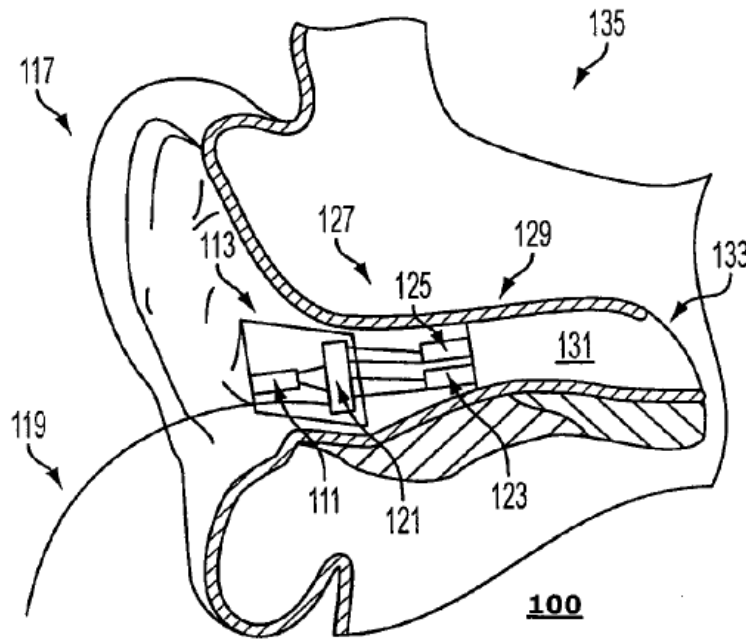


FIG. 1

Figure 1 of the '591 patent shows an embodiment of an earpiece of the invention. Ex. 1001, Fig. 1, 4:22–57.

As shown in Figure 1, earpiece 100 includes Ambient Sound Microphone (ASM) 111 to capture ambient sound, Ear Canal Receiver (ECR) 125 to deliver audio to ear canal 131, and Ear Canal Microphone (ECM) 123 to assess a sound exposure level within ear canal 131. Ex. 1001, 4:24–28. Earpiece 100 can partially or fully occlude ear canal 131 to provide various degrees of acoustic isolation. *Id.* at 4:28–30. The assembly is designed to be inserted into the user's ear canal 131 and form an acoustic seal with the walls 129 of the ear canal at a location 127 between the entrance 117 to the ear canal and ear drum 133. *Id.* at 4:30–34. Earpiece 100 also includes a processor 121 “that undertakes audio signal processing

and provides a transceiver for audio via the wired or wireless communication path 119.” *Id.* at 4:53–57.

A block diagram of an embodiment of the earpiece is provided in Figure 2, reproduced below.

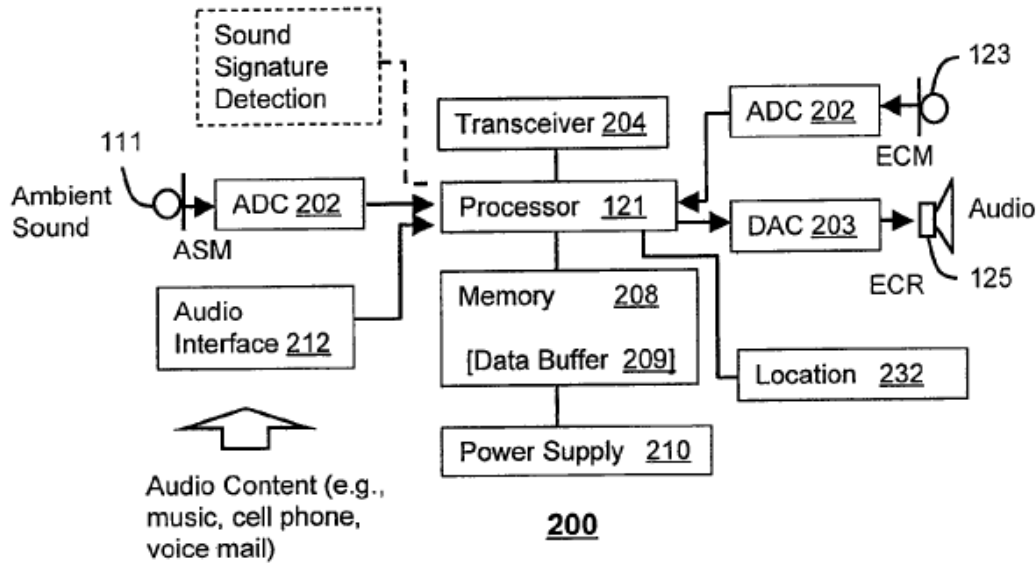


FIG. 2

Figure 2 shows a block diagram of the earpiece in accordance with an embodiment of the '591 patent. Ex. 1001, 3:28–29, Fig. 2.

As shown in Figure 2, the earpiece 100 includes Ambient Sound Microphone (ASM) 111, Ear Canal Receiver (ECR) 125, and Ear Canal Microphone (ECM) 123. Ex. 1001, 4:24–27. ASM 111 “capture[s] ambient sound,” ECR 125 “deliver[s] audio to an ear canal 131,” and ECM 123 “assess[es] a sound exposure level within the ear canal 131.” *Id.* The “assembly is designed to be inserted into the user’s ear canal 131” and also “to form an acoustic seal with the walls 129 of the ear canal.” *Id.* at 4:30–32. Also, “earpiece 100 can be an in the ear earpiece, behind the ear earpiece, receiver in the ear, open-fit device, or any other suitable earpiece type.” *Id.* at 4:18–20.

The earpiece also includes processor 121 that can receive and transmit signals to ASM 111, ECR 125, and ECM 123. Ex. 1001, 4:53–55. It also includes memory 208, which can “include a data buffer 209 to temporarily capture the ambient sound and the internal sound as a history, and a storage memory to save from the data buffer the recent portion of history in a compressed data format responsive to a directive by the processor.” *Id.* at 5:6–11. Data buffer 209 “can be a circular buffer that temporarily stores audio sound at a current time point to a previous time point.” *Id.* at 5:11–15. The earpiece further includes audio interface 212, which “receive[s] audio content, for example from a media player or cell phone, and deliver[s] the audio content to the processor 121.” *Id.* at 5:18–21. In response to detecting events, processor 121 can “save the history in the data buffer 209 to the longer term storage memory 208.” *Id.* at 5:21–24. Processor 121 “by way of the ECM 123 can also actively monitor the internal sound exposure level inside the ear canal 131 and adjust the audio to within a safe and subjectively optimized listening level range.” *Id.* at 5:24–27.

E. Illustrative Claims

Of challenged claims 1–7, 9, 11–16, claims 1, 11 and 14 are independent. For purposes of the issues raised at this stage of the proceeding, claim 1 is illustrative and is reproduced below.

1. [preamble] A headset, comprising:
 - [a][i] a left ear piece including: a left Ambient Sound Microphone (LASM) configured to capture first ambient sound, and
 - [a][ii] a left earpiece including: . . . a left Ear Canal Microphone (LECM) configured to capture first internal sound in a left ear canal;

- [b] a right earpiece including: a right Ambient Sound Microphone (RASM) configured to capture second ambient sound, and a right Ear Canal Microphone (RECM) configured to capture second internal sound in a right ear canal;
- [c] a memory configured to record at least one of the first ambient sound or the second ambient sound and at least one of the first internal sound or the second internal sound, and
- [e][i] a processor operatively coupled to the left earpiece, the right earpiece and the memory,
- [e][ii] the processor configured to save a recent portion of the at least one of the first ambient sound or the second ambient sound and the at least one of the first internal sound or the second internal sound responsive to an event.

Ex. 1001, 13:5–25 (bracketed paragraph identifiers added).

F. Applied References

Petitioner relies upon the following references:

Le et al., US 2003/0161097 A1, published Aug. 28, 2003 (Ex. 1005, “Le”);

Kvaløy, US 6,728,385 B2, issued Apr. 27, 2004 (Ex. 1006, “Kvaløy”);

Johnson, US 6,163,338, issued Dec. 19, 2000 (Ex. 1008, “Johnson”);

Fiedler, US 6,804,638 B2, issued Oct. 12, 2004 (Ex. 1009, “Fiedler”);

Mayer, US 2004/0042103 A1, published Mar. 4, 2004 (Ex. 1010, “Mayer”)

Rast, US 2001/0046304 A1, published Nov. 29, 2001 (Ex. 1011, “Rast”).

Pet. iv, 6. Petitioner submits the Declaration of Dr. Les Atlas, Ph.D. (Ex. 1002). Patent Owner submits the Declaration of Daniel P. Anagnos (Ex. 2001).

G. Asserted Grounds of Unpatentability

Petitioner challenges the patentability of claims 1–7, 9, and 11–16 of the '591 patent based on the following grounds:

Claim(s) Challenged	35 U.S.C. §	References/Basis
1, 2, 6, 7, 9, 14–16	103(a) ¹	Le, Kvaløy
4–5	103(a)	Le, Kvaløy, Fiedler
3, 11–13	103(a)	Le, Kvaløy, Johnson
11–13	103(a)	Le, Kvaløy, Johnson, Rast
14–16	103(a)	Le, Kvaløy, Mayer

II. DISCUSSION

A. Discretion Under 35 U.S.C. § 314(a) Based on Related District Court Proceeding

Patent Owner asserts that institution should be denied under 35 U.S.C. § 314(a), in deference to the District Court Litigation, which Patent Owner asserts would be a more efficient and fair forum for resolving the parties' disputes. *See* Prelim. Resp. 48–57; Sur-reply; PO Supp. Br. Petitioner disagrees. *See* Pet. 70; Reply; Pet. Supp. Br.

Under 35 U.S.C. § 314(a), the Director has discretion to deny institution of review. *See SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1356 (2018) (“[Section] 314(a) invests the Director with discretion on the question whether to institute review.” (emphasis omitted)); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2140 (2016) (“[T]he agency’s decision to deny

¹ The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (“AIA”), included revisions to 35 U.S.C. § 103 that became effective after the filing of the application that led to the '591 patent. Therefore, we apply the pre-AIA version of 35 U.S.C. § 103.

a petition is a matter committed to the Patent Office’s discretion.”); *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1367 (Fed. Cir. 2016) (“[T]he PTO is permitted, but never compelled, to institute an IPR proceeding.”).

One instance when the Board considers exercising this discretion is when there is an early trial date in related litigation as part of assessing all relevant circumstances, including the merits, to balance considerations such as system efficiency, fairness, and patent quality. *See Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020) (precedential) (“*Fintiv Order*”); *NHK Spring Co. v. Intri-Plex Technologies, Inc.*, IPR2018-00752, Paper 8 at 19–20 (PTAB Sept. 12, 2018) (precedential). The Board evaluates six factors when making this assessment. *See Fintiv Order*, at 5–6. Further, “the Board takes a holistic view of whether efficiency and integrity of the system are best served by denying or instituting review.” *Id.* at 6.

On June 21, 2022, the Director issued an Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings With Parallel District Court Litigation (“Interim *Fintiv* Guidance”).² The Interim *Fintiv* Guidance provides “several clarifications” to “the PTAB’s current application of *Fintiv* to discretionary denial where there is parallel litigation” in response to comments received from stakeholders in response to a Request for Comments (RFC). Interim *Fintiv* Guidance 2.

² The Interim *Fintiv* Guidance is available at https://www.uspto.gov/sites/default/files/documents/interim_proc_discretionary_denials_aia_parallel_district_court_litigation_memo_20220621_.pdf.

We consider each of the *Fintiv* factors in light of the Interim *Fintiv* Guidance. We then weigh the factors together and decide, in this case, not to exercise our discretion to deny institution based on the status of the co-pending District Court Litigation.

1. Factor 1: whether a stay exists or is likely to be granted if a proceeding is instituted

Patent Owner argues factor 1 is neutral, because the District Court Litigation has not been stayed, and it is unknown whether the Court will grant a motion to stay if we institute review. *See* Prelim. Resp. 50. Petitioner agrees “there is no evidence that the court will or will not grant a stay if trial is instituted,” so this factor is neutral. Pet. 70; Reply 1.

We conclude that this factor is neutral, as the parties have agreed. *See Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 15 at 12 (PTAB May 13, 2020) (informative) (“*Fintiv* DI”).

2. Factor 2: proximity of the court’s trial date to the Board’s projected statutory deadline

In relation to *Fintiv* factor 2, we find that the district court has set a date for jury selection in the District Court Litigation of June 26, 2023. *See* Prelim. Resp. 50–51 (citing Ex. 2003, 1, 5). The statutory deadline for a final written decision in this proceeding will be approximately two to three weeks after June 26, 2023.

The Interim *Fintiv* Guidance states that “[s]takeholders correctly noted that scheduled trial dates are unreliable and often change,” and thus “[a] court’s scheduled trial date . . . is not by itself a good indicator of whether the district court trial will occur before the statutory deadline for a final written decision.” Interim *Fintiv* Guidance 8. “Accordingly,” the Guidance states,

when analyzing the proximity of the court’s trial date under factor two of *Fintiv*, when other relevant factors weigh against exercising discretion to deny institution or are neutral, the proximity to trial should not alone outweigh all of those other factors. *See In re Genentech, Inc.*, 566 F.3d 1338, 1347 (Fed Cir. 2009). Parties may present evidence regarding the most recent statistics on median time-to-trial for civil actions in the district court in which the parallel litigation resides for the PTAB’s consideration. Where the parties rely on time-to-trial statistics, the PTAB will also consider additional supporting factors such as the number of cases before the judge in the parallel litigation and the speed and availability of other case dispositions. *See id; In re Google LLC*, No. 2021-178, 2021 WL 5292267 at *3 (Fed. Cir. 2021).

Id. at 8–9 (footnote omitted). The Guidance states that “the most recent statistics on median time-to-trial for civil actions” in district court are available at: <https://www.uscourts.gov/statistics/table/na/federal-court-management-statistics/2022/03/31-1>. *Id.* at 9 n.12.

Petitioner argues that the “most recent statistics on median time-to-trial for civil actions” in the Eastern District of Texas is 24.2 months, referring to the average for the year ending March 31, 2022. Pet. Supp. Br. 2 (citing Ex. 1034). Petitioner asserts that the earliest complaint in this case was filed on November 5, 2021, and therefore the expected trial date according to the most recent time-to-trial statistics “would be in approximately November 2023, well after the Board’s FWD deadline in this case (no later than July 13, 2023).” *Id.* Thus, according to Petitioner, factor two weighs against exercising discretion to deny institution. *Id.* at 2–3.

Patent Owner suggests that we do not need to consider median time-to-trial statistics because “the scheduled trial date will not be changed absent good cause.” PO Supp. Br. 1 (citing Ex. 2003, 1, 5). Patent Owner also argues that, if time-to-trial statistics are considered, we should look to the

average “[o]ver the preceding six years,” which is “approximately 19.7 months.” *Id.* (citing Ex. 2004). Accordingly, Patent Owner contends, “the period between the filing of the complaint (November 5, 2021[]) and the scheduled trial date of June 26, 2023 is 19 months and 21 days,” which “nearly perfectly aligns with the historical median.” *Id.* at 1–2. Patent Owner argues that we should not look to the time-to-trial for the year ending March 31, 2022 because it “is slightly longer than the preceding five years” due to “measures taken in response to the COVID-19 pandemic.” *Id.* at 2. Finally, Patent Owner asserts that we should consider the fact that “the parallel litigation may be disposed via summary judgment.” *Id.*

In weighing factor two, we follow the Interim *Fintiv* Guidance, which directs us to consider “the most recent statistics on median time-to-trial for civil actions in the district court in which the parallel litigation resides,” which is 24.2 months. Interim *Fintiv* Guidance 8–9. Applying this time period, the expected trial date would be in November 2023, which is several months later than the July 2023 due date for our final written decision in this case. We do not agree with Patent Owner that the median time-to-trial statistics are not relevant here because the parties can only move the trial date upon a showing of “good cause.” *See* PO Supp. Br. 1 (citing Ex. 2003, 1, 5). We also do not agree that the speculative possibility that the district court might grant summary judgment weighs in favor of exercising discretion to deny institution, particularly because Patent Owner has not provided any reason why summary judgment is likely in this case. *See id.* at 2.

Consequently, we find that this factor weighs against exercising discretion to deny institution.

3. *Factor 3: investment in the parallel proceeding by the court and parties*

Patent Owner argues that *Fintiv* factor 3 weighs in favor of denial, based on “significant investments” by the parties in the District Court Litigation to date. Prelim. Resp. 51–52. Patent Owner asserts that it has served infringement contentions as well as initial and additional disclosures, and produced at least some documents. *Id.* (citing Ex. 2003, 4–5). Patent Owner asserts that by the time the Board must issue an institution decision, Petitioner will have served invalidity contentions and subject matter eligibility contentions, as well as initial and additional disclosures. *Id.*

Petitioner argues that “there has been very little investment in” the District Court Litigation. Pet. 70. According to Petitioner, the litigation “remain[s] at an early stage” and “[n]o substantive orders from the district court are expected to issue prior to institution (Markman hearing not scheduled until January 2023).” Reply 2 (citing Ex. 2003). Petitioner further asserts that it was “extraordinarily diligent in filing this Petition forty-five days after the district court complaint was filed and over two months before PO even served infringement contentions.” *Id.* In Petitioner’s view, this consideration weighs “heavily against” exercising discretion to deny institution. *Id.*

“[I]f, at the time of the institution decision, the district court has issued substantive orders related to the patent at issue in the petition, this fact favors denial. Likewise, district court claim construction orders may indicate that the court and parties have invested sufficient time in the parallel proceeding to favor denial.” *Fintiv* Order, at 9–10. A petitioner’s diligence or delay in filing a petition may also be relevant in evaluating this factor. *Id.* at 11–12.

We determine that this factor weighs against exercising discretion to deny institution. The Court has not yet considered, much less issued, any substantive rulings concerning the scope of the '591 patent, potential invalidity of the '591 patent, or potential infringement of the '591 patent. It also appears that the discovery process remains in its early stages. Thus, while the parties have invested to some extent in the District Court Litigation, we disagree with Patent Owner's assertion that this investment has been significant. Although initial contentions have been exchanged and some documents have been produced, the *Markman* hearing will not occur until January 2023, the fact discovery cutoff is not until January 2023, and the expert discovery cutoff is not until March 2023. *See* Ex. 2003, 3. Thus, much further work remains in the District Court Litigation not only in general, but also specifically concerning invalidity.

Our evaluation of *Fintiv* factor 3 also takes into account how promptly Petitioner filed its Petition. *See, e.g., Fintiv* Order, at 11 ("If the evidence shows that the petitioner filed the petition expeditiously, *such as promptly after becoming aware of the claims being asserted*, this fact has weighed against exercising the authority to deny institution" (emphasis added)). Petitioner acted reasonably promptly in this regard, given the overall circumstances presented in this case. Petitioner filed the present Petition less than two months after Patent Owner filed the Complaint initiating the District Court Litigation, which shows reasonable diligence that weighs against discretionary denial.

With these considerations in mind, we conclude that *Fintiv* factor 3 weighs against exercising discretion to deny institution in the overall circumstances presented here.

4. *Factor 4: overlap between issues raised in the petition and in the parallel proceeding*

With respect to factor 4, Petitioner argues that “it is unknown how much overlap there will be between the issues raised” here and in the District Court Litigation, because Patent Owner’s Amended Complaint identified only claims 11 and 16 of the ’591 patent as allegedly being infringed. Pet. 70 (citing Ex. 1029 ¶ 65). Petitioner also asserts that “there is a minimal risk of the Board redoing the work of another tribunal given the parallel litigation is at such an early stage.” *Id.* (citing *Fintiv* Order, 13–14).

In the Preliminary Response, Patent Owner argues that this factor weighs in favor of denial because “there is significant overlap between the issues in the Petition and those before the District Court,” based on what Petitioner “reasonably can be expected to” contend in the latter forum. Prelim. Resp. 52. Patent Owner also relies on Petitioner’s failure to stipulate otherwise. *See id.* at 52–54. Patent Owner moreover contends that it would be unfair to permit Petitioner to take inconsistent claim construction positions in the District Court Litigation and in the present proceeding, as Petitioner has allegedly suggested it will do. *See id.* at 54 (citing Pet. 17 n.3).

In the Reply, Petitioner provides a stipulation “that, if IPR is instituted, [Petitioner] will not pursue any of the same invalidity grounds in the [District Court Litigation].” Reply 3 (citing Ex. 1031). Petitioner asserts that “[t]his stipulation is similar to that in *Sand Revolution*,” thereby weighing against denial of institution by minimizing the extent of overlap between the two proceedings. *Id.* (citing *Acuity Brands Lighting, Inc. v. Ultravision Technologies, LLC*, IPR2020-01638, Paper 8 at 12–13 (PTAB May 6, 2021)).

Petitioner also asserts that, if we issue a final written decision before trial in district court, “estoppel under 35 U.S.C. § 315(e)(2) would apply to eliminate overlap between the proceedings.” Reply 3. Petitioner contends that any overlap will be minimized further because Patent Owner has asserted 14 patents against Petitioner in the District Court Litigation, and “[i]t is almost certain that” the court will not permit Patent Owner to include all challenged claims at trial. *Id.* at 4. Finally, Petitioner asserts that it has not advanced inconsistent claim construction positions in the two forums, and the Petition’s “statement reserving [Petitioner’s] ability to address unknown disputes in parallel litigation should have no effect on the weighing of this factor.” *Id.* at 4–5.

Patent Owner responds that a *Sand Revolution* type of stipulation is “less helpful” in avoiding overlap and the potential for conflicting determinations than other, more broadly worded stipulations. Prelim. Resp. 53 (citing *Sand Revolution*, Paper 24 at 12 & n.5); Sur-reply 3–4 (also citing *Samsung Elecs. Co., Ltd. v. Clear Imaging Research, LLC*, IPR2020-01551, Paper 12 (PTAB Feb. 17, 2021) and *Google LLC v. AGIS Software Development LLC*, IPR2020-00871, Paper 16 (PTAB Nov. 25, 2020)). Patent Owner further asserts that any reduction of patent claims to be tried in the District Court will not reduce overlap meaningfully, because the independent claims of the ’591 patent recite many of the same features. Sur-reply 4–5 (citing Ex. 1001, claims 1, 11, 14). Patent Owner also maintains that Petitioner is poised to take inconsistent claim construction positions in the two forums. *Id.* at 5.

Under *Fintiv* factor 4, “if the petition includes the same or substantially the same claims, grounds, arguments, and evidence as

presented in the parallel proceeding, this fact has favored denial.” *Fintiv* Order, at 12. This factor addresses “concerns of inefficiency and the possibility of conflicting decisions” when the same issues and arguments are concurrently addressed in two different forums. *Id.*; *see also Sand Revolution*, Paper 24 at 11. Such concerns are mitigated when a petitioner agrees not to pursue in the parallel proceeding the grounds it is pursuing in its petition. *See Sand Revolution*, Paper 24 at 11. The breadth of such a stipulation affects the weight it is given in the discretionary denial analysis. *Id.* at 12 n.5. For example, in *Sand Revolution*, the Board found that “this factor weighs marginally in favor of not exercising discretion to deny institution” when the petitioner had stipulated not to pursue in district court the same grounds presented in its petition. *Id.* at 11–12; *see also Google LLC v. Ikorongo Tech. LLC*, IPR2021-00204, Paper 13 at 10–12 (PTAB June 7, 2021) (finding this factor weighed marginally in favor of not exercising discretion to deny institution based on petitioner’s stipulation not to pursue in the parallel district court case “the specific grounds identified in this Petition”). But in *Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12 (PTAB Dec. 1, 2020) (precedential), the Board explained “this factor weighs strongly in favor of not exercising discretion to deny institution” when the petitioner stipulated not to pursue in the parallel district court case “any ground raised or that could have been reasonably raised” in the IPR. *Id.* at 18–19.

The narrowness of Petitioner’s stipulation here diminishes the weight that the stipulation carries, relative to the stipulation proffered in *Sotera*. Still, consistent with the approach taken in *Sand Revolution* and *Ikorongo*, which addressed similarly narrow stipulations, we find the stipulation causes

this factor to weigh against discretionary denial. *Sand Revolution*, at 11; *Ikorongo*, at 10–12. Further, we find that the estoppel that will likely follow from a final written decision in this proceeding pursuant to 35 U.S.C. § 315(e)(2), prior to the District Court trial, will further help to reduce the overlap between the two forums by estopping Petitioner from pursuing “any ground that the petitioner . . . reasonably could have raised during” this proceeding.

Finally, the possibility of both tribunals needing to construe the same claims of the ’591 patent is not a persuasive reason to deny institution in this case. As Petitioner points out, Patent Owner has not identified any inconsistent positions actually being taken, so this is merely a speculative possibility at this time. More generally, Patent Owner is free to point out to the Board and to the Court any allegedly inconsistent positions being taken by Petitioner in the two forums, and Petitioner is free to do likewise with regard to Patent Owner’s positions.

Thus, for the foregoing reasons, we conclude *Fintiv* factor 4 weighs against discretionary denial given the overall circumstances presented here.

5. *Factor 5: whether the petitioner and the defendant in the parallel proceeding are the same party*

Patent Owner argues that *Fintiv* factor 5 weighs in favor of denial because the same two Samsung entities are both the named Petitioner here and the named defendants in the District Court Litigation. *See* Prelim. Resp. 54–55.

Petitioner agrees that the parties are the same, but nonetheless contends that “when the Board’s deadline for [a Final Written Decision] precedes the district court trial date and the parties are the same in both proceedings, *Fintiv* factor 5 typically weighs against exercising discretion to

deny institution.” Pet. Supp. Br. 3 (citing *Hanwha Solutions Corp. v. REC Solar Pte. Ltd.*, IPR2021-00989, Paper 12 at 17 (PTAB Dec. 13, 2021); *Carrier Fire & Security Americas Corp. v. Sentrilock, LLC*, IPR2021-00665, Paper 12 at 13–14 (PTAB Sept. 16, 2021)).

We find that the parties in this proceeding are the same as in the District Court Litigation. *See* Prelim. Resp. 54–55. This factor weighs against discretionary denial, because in this case our statutory deadline falls before the Court’s expected trial date based on the most recent median time-to-trial statistics. We agree with the conclusion in prior decisions that “this factor favors denial if trial precedes the Board’s Final Written Decision and favors institution if the opposite is true,” “due to the 35 U.S.C. 315(e)(2) estoppel provision.” *Huawei Techs. Co., Ltd. v. WSOU Invs., LLC*, IPR2021-00225, Paper 11 at 13–14 (PTAB June 14, 2021); *see also Google LLC v. Parus Holdings, Inc.*, IPR2020-00846, Paper 9 at 20–21 (PTAB Oct. 21, 2020) (“Petitioner is the defendant in the parallel proceeding. This fact could weigh either in favor of, or against, exercising discretion to deny institution, depending on which tribunal was likely to address the challenged patent first.”).

6. *Factor 6: other circumstances that impact the Board’s exercise of discretion, including the merits*

Patent Owner argues that *Fintiv* factor 6 weighs in favor of denial, because “[t]he merits of the Petition are weak.” Prelim. Resp. 55. Patent Owner also asserts denial of institution would lead to an efficient resolution of the parties’ disputes in the single District Court Litigation, versus going forward in this and other IPR proceedings challenging the patentability of different patents asserted in the District Court Litigation. *See id.* at 55–56. Patent Owner additionally asserts that, even if some of the Petition’s

grounds meet the standard for institution, we should nonetheless deny institution in the interests of efficient Office administration, because we would then not need to review the non-meritorious grounds in the Petition. *See id.* at 57–58.

Petitioner argues that the Petition “presents a strong showing of” unpatentability, and Patent Owner’s other arguments addressing *Fintiv* Factor 6 “should not change the weighing” to be in favor of denying institution. Reply 5.

The merits of the petition’s challenges are part of the “balanced assessment of all the relevant circumstances” the Board undertakes in the *Fintiv* discretionary denial analysis. *Fintiv* Order, at 14–16. Unsurprisingly, the parties take different views on the merits of the Petition. As discussed below, we determine that Petitioner has shown a reasonable likelihood of unpatentability of at least independent claim 1. Beyond that, we need not precisely define Petitioner’s ultimate likelihood of success as to any one ground or any one claim at this time in order to decide whether to exercise our discretion to deny institution. Our detailed discussion of the merits is set forth below. For purposes of applying the *Fintiv* analytical framework to the facts of this case, we have taken that discussion into consideration here.

7. Conclusion

We take “a holistic view of whether efficiency and integrity of the system are best served by denying or instituting review.” *Fintiv* Order, at 6. We are not persuaded that the interests of efficiency and integrity of the system would be best served by invoking 35 U.S.C. § 314(a) to deny institution of a potentially meritorious Petition. Based on the record before us, we determine the facts of this case do not warrant discretionary denial.

B. Claim Construction

A claim “shall be construed using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. § 282(b).” 37 C.F.R. § 42.100(b).

Petitioner argues that the “preambles of the challenged claims are non-limiting.” Pet. 16. In support, Petitioner first asserts that “the body of the independent claims 1, 11, and 14 do not rely on the preambles for antecedent basis.” *Id.* Petitioner also argues that the ’591 patent specification “confirms that the alleged invention is not defined by, for example, all of the recited components fitting within a structure conventionally known as a ‘headset’ or an ‘earpiece,’” and instead “explains that ‘[t]he earpiece 100 can further represent a single operational device or a family of devices configured in a master-slave arrangement, for example, a mobile device and an earpiece.” *Id.* (citing Ex. 1001, 5:52–57) (alteration in original). “In addition,” Petitioner contends, “the specification repeatedly asserts that the form factor for the alleged invention is not important.” *Id.* (citing Ex. 1001, 5:65–67 (“The method 250 can be implemented in a single earpiece, a pair of earpieces, headphones, or other suitable headset audio delivery device.”), 8:19–21, 8:57–60).

Petitioner further argues that “the specification takes for granted that the various structures claimed can fit within an ‘earpiece’ or a ‘headset,’ so the focus of the alleged invention is not, for example, on alleged technical improvements that drove the miniaturization making it possible to fit the processing circuitry and memory within an earpiece or headset.” Pet. 17. “Finally,” Petitioner argues, “during prosecution the examiner did not give the preambles patentable weight . . . and the applicant did not dispute this position in its response.” *Id.* (citing Ex. 1004, 69–72, 131).

Petitioner acknowledges that dependent claims 2, 3, 8, and 16 “rely on the preamble for antecedent basis,” but argues that this “is not dispositive” because “the dependent claims are merely referring to the structure of the positive limitations in the body of the claim as a whole.” Pet. 16 (citing *Catalina Mktg. Int’l, Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002)).

At this stage of the proceeding, Patent Owner does not specifically dispute Petitioner’s argument that the preambles of the challenged claims are non-limiting, but rather argues that no claim terms need construction and all claim terms should be construed in accordance with their ordinary and customary meaning. Prelim. Resp. 15.

In general, “a preamble limits the invention if it recites essential structure or steps, or if it is necessary to give life, meaning, and vitality to the claim.” *Arctic Cat Inc. v. GEP Power Prod., Inc.*, 919 F.3d 1320, 1327 (Fed. Cir. 2019). On the other hand, “a preamble is not limiting where a patentee defines a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention.” *Id.* at 1328 (internal quotations omitted). For example, in *Arctic Cat*, the Federal Circuit held that a preamble reciting a “personal recreation vehicle” was not limiting because it “merely identifies an intended use” and does not “impose[] any structural requirement on the claimed module beyond what is required by the bodies of the claims.” *Id.* Additionally, there was no “reliance on the preamble during prosecution to distinguish the claimed invention from the prior art.” *Id.*

Based on the present record, Petitioner has sufficiently shown that the preambles of independent claims 1, 11, and 14 are non-limiting. The

preamble of claim 1 recites a “headset,” but the “headset” is not referenced in the body of that claim, which appears to recite a structurally complete invention. Similarly, the preambles of claims 11 and 14 recite an “earpiece,” but the body of those claims do not reference the “earpiece” and appear to recite a structurally complete invention. Additionally, the Examiner determined during prosecution that the terms “a headset” and “earpiece” recited in precursors to the independent claims “ha[ve] not been given patentable weight” because “the claim following the preamble is a self-contained description of the structure not depending for completeness upon the introductory clause,” and the applicant did not dispute this determination. Ex. 1004, 69, 131. Thus, the preamble terms “headset” and “earpiece” appear to be more akin to the intended use of a structurally complete invention recited in the body of the claim than an “essential element” of the claimed invention that should be given patentable weight.

However, we question whether Petitioner has sufficiently shown that the preambles of dependent claims 2, 3, and 16 are non-limiting. Each of these claims refers to the preamble in the body of the claim. For example, claim 2, states that the “event” of claim 1 “is a touching of the *headset*,” claim 3 states that the processor “triggers the event responsive to detecting an abrupt movement of the *headset*, or a change in location of the *headset*.” Similarly, claim 16 states that the “event” of claim 15 “is a touching of the *earpiece*” or “an abrupt movement of the *earpiece*.” In *Arctic Cat*, the Federal Circuit distinguished the non-limiting structural language in the preamble from a situation where preamble language “suppl[ies] ‘antecedent basis’ for terms in the body,” and identified this factor as one of “[t]he rules we have articulated about what preamble language reciting structure *is*

limiting.” *Arctic Cat*, 191 F.3d at 1329. The parties may further address the issue of whether the preambles of the challenged claims are limiting during the trial.

Other than the preambles, the parties do not propose constructions for any other claim terms. Pet. 17; Prelim. Resp. 15. We determine that it is not necessary to provide an express interpretation of any other claim terms at this stage of the proceeding. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017); *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (“[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.”).

C. Principles of Law

A claim is unpatentable under 35 U.S.C. § 103 if “the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) where in evidence, objective evidence of non-obviousness.³ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). When evaluating a combination of teachings, we must also “determine whether there was an apparent reason to combine the known elements in the

³ At this stage of the proceeding, Patent Owner has not presented objective evidence of non-obviousness.

fashion claimed by the patent at issue.” *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)). Whether a combination of prior art elements would have produced a predictable result weighs in the ultimate determination of obviousness. *Id.* at 416–417.

In an *inter partes* review, the petitioner must show with particularity why each challenged claim is unpatentable. *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016); 37 C.F.R. § 42.104(b) (2020). The burden of persuasion never shifts to Patent Owner. *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

We analyze the challenges presented in the Petition in accordance with the above-stated principles.

D. Level of Ordinary Skill in the Art

Petitioner contends that a person of ordinary skill in the art at the time of the alleged invention would have had “a bachelor’s degree in electrical engineering, computer science, or a similar field and two years of experience in the design of digital audio systems and associated signal processing such as voice or speech processing and/or acoustic pattern recognition.” Pet. 15 (citing Ex. 1002 ¶¶ 18–20). Petitioner further states that a person of ordinary skill in the art “could have also obtained similar knowledge and experience through other means.” *Id.* Patent Owner “applies the level of ordinary skill in the art that Petitioners propose.” Prelim. Resp. 15.

For purposes of this Decision, we adopt Petitioner’s assessment of the level of ordinary skill in the art.

E. Ground 1⁴: Asserted Obviousness of Claims 1, 2, 6, 7, and 9 Based on Le in view of Kvaløy

Petitioner contends that claims 1, 2, 6, 7, and 9 would have been obvious over Le in view of Kvaløy. Pet. 24–37. Patent Owner disagrees, arguing that Petitioner has failed to establish that the claims would have been obvious. Prelim. Resp. 15–29.

1. Overview of Le (Ex. 1005)

Le discloses a wearable computer system that records audio signals from the user’s surroundings, such as the user’s conversations with other people. Ex. 1005, code (57), ¶ 12. Figures 1A and 1C are reproduced below:

⁴ Here, and elsewhere in the Decision, the identification of the grounds using designations such as “Ground 1” refers to the designation of the grounds as presented in the Petition.

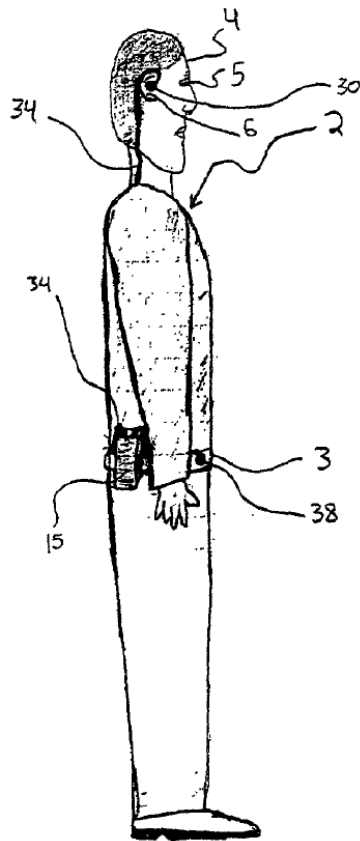


FIG. 1A

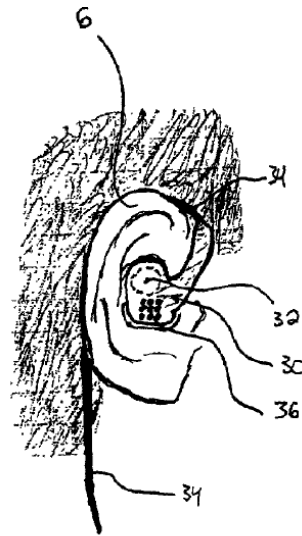


FIG. 1C

Figures 1A and 1C are illustrations of the system and earpiece of Le. Ex. 1005 ¶¶ 15, 17, Figs. 1A, 1C.

Figure 1A depicts a profile view of user 2 wearing a hands-free, voice-operated computer system 10, and Figure 1C is a closer view of the portion of the system worn on the user's ear 6. Ex. 1005 ¶¶ 15, 17, 20, 22. The system includes computer unit 15 connected to personal microphone 36 and environmental microphone 38. *Id.* ¶¶ 20, 24. Computer unit 15 and environmental microphone 38 are both attached to the user's belt 3, and personal microphone 36 is housed in earpiece 30 on the user's ear 6. *Id.* ¶ 20.

Computer unit 15 includes “a continuously scrolling audio buffer to store audio information received by” microphone 38, and “continuously

records ambient audio, and saves it for some predetermined period of time, such as 30 seconds or one minute.” Ex. 1005 ¶ 28. “This allows the user to store audio clips just before, or after, the user issues a predetermined voice command” to store the clips. *Id.* ¶¶ 28, 37. The buffer may be “a part of memory 18” within computer unit 15 (*see id.* ¶ 28, Fig. 2), and the audio clips selected for more permanent storage may also be saved into memory 18 (*id.* ¶ 37). Computer unit 15 includes data port 28 to upload saved audio data to a remote computer (not shown). *Id.* at Fig. 2, ¶¶ 21, 30.

“In another implementation, a cellular telephone is used and worn on a belt clip or kept in the user’s pocket” and “[t]his cellular telephone may be integrated with the wearable computer unit (which may be a PDA, for example) to provide communications between the user and a remote user, or a remote computer.” Ex. 1005 ¶ 9; *see also id.* ¶ 42 (contemplating “using the housing of a cellular phone to enclose the computer unit 15”); *id.* ¶¶ 41–42 (disclosing that computer unit 15 may use data port 28 to receive audio messages via the cellular telephone).

According to Le, computer system 10 “is more natural in appearance” than prior wearable computer systems, “and facilitates natural interactions with the system and the user’s surroundings.” Ex. 1005 ¶¶ 3, 5. Thus, the components of system 10 “blend in with the natural appearance of the user 2” to be “minimally obtrusive to the movements and actions of the user 2.” *Id.* ¶ 31. For example, “having an earpiece in one’s ear is becoming a normal appearance . . . with cellular telephones . . . to converse on the telephone in a hands-free manner.” *Id.* ¶ 33.

2. Overview of Kvaløy (Ex. 1006)

Kvaløy is directed to “a voice detection and discrimination apparatus in a hearing protection arrangement.” Ex. 1006, 1:16–18. The apparatus “is intended for use in noisy environments,” such as those near heavy operating machinery, loud vehicle traffic, or crowds of people. *Id.* at 1:30–39. An embodiment of Kvaløy’s apparatus included in an earplug is shown in Figure 1, reproduced below.

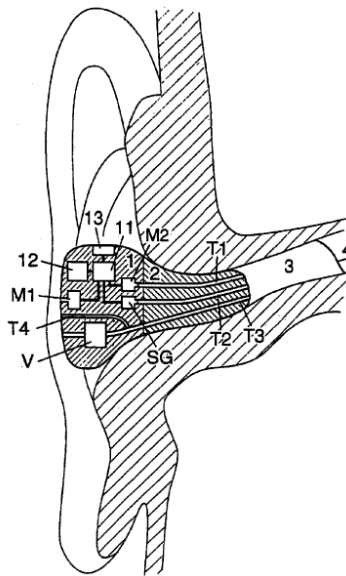


Fig. 1

Figure 1 shows an example of Kvaløy’s voice detection and discrimination apparatus. Ex. 1006, Fig. 1, 3:38–39.

As shown in Figure 1, Kvaløy’s voice detection and discrimination apparatus includes two electroacoustic transducer elements M1 and M2. Ex. 1006, 3:41–43. The sound inlet of M1 is connected to the outside of the earplug and picks up external sounds, while M2 is connected to the inner portion of the meatus 3 by means of an acoustic transmission channel T1. *Id.* at 3:52–57. The apparatus also includes sound generator SG that “is

open into the inner portion of the meatus 3 by means of an acoustic transmission channel T2 between the sound generator SG and the inward facing portion of sealing section 2.” *Id.* at 3:62–66. Additionally, the apparatus includes a “sealing part” that is “made of a resilient, slowly re-expanding shape retaining polymer foam like PVC, PUR, or other materials suitable for earplugs.” *Id.* at 4:21–26.

A block diagram of the main functional units of the electronic circuitry of Kvaløy’s apparatus is shown in Figure 2, reproduced below.

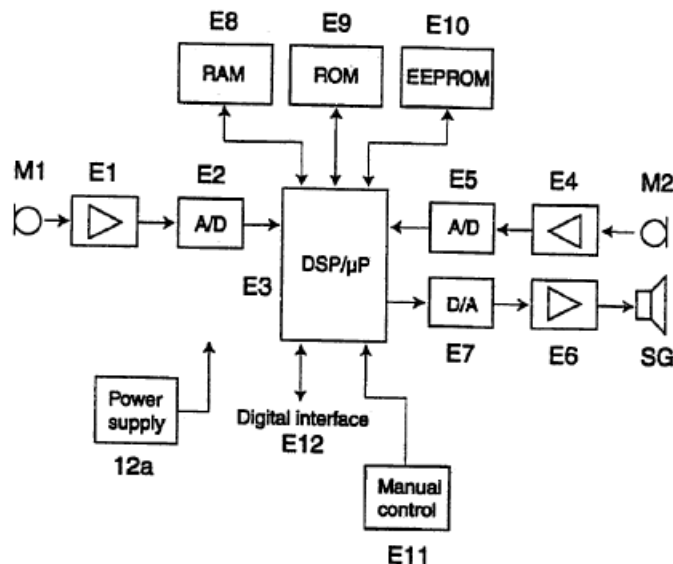


Fig. 2

Figure 2 shows a block diagram of the main functional units of the electronic circuitry of Kvaløy’s apparatus. Ex. 1006, Fig. 2, 5:1–3.

As shown in Figure 2, Kvaløy’s apparatus includes “signal processing unit E3,” “storage means which may be RAM (Random access memory) E8, ROM (read only memory) E9, or EEPROM (electrically erasable programmable read only memory) E10, or combinations of those.” Ex. 1006, 5:10–11, 5:50–57. The apparatus also includes “bi-directional digital interface E12,” which may use “[t]he Bluetooth standard” for wireless

communication and can allow the “two ear terminals 1,2” to be “used in a binaural mode.” *Id.* at 5:66–6:18. Signal processor E3 may generate an output signal for sound generator SG based on “signals received by the electronic circuitry 11 via the communication with other electrical units” or “signals detected by the electroacoustic transducer elements M1, M2.” *Id.* at 6:21–24. Signal processing unit E3 can also include “signal analysis means for detecting the presence of speech components, such as words, in the signal from the inner electroacoustic transducer element M2.” *Id.* at 9:29–36; *see id.* at 6:36–41.

3. Motivation to Combine Le and Kvaløy

Relying on the testimony of Dr. Atlas, Petitioner argues that one of ordinary skill “would have been motivated to combine the teachings of Le and Kvaløy, and would have had a reasonable expectation of success in doing so.” Pet. 18 (citing Ex. 1002 ¶ 93). According to Petitioner, Le emphasizes the desire for the system to be unobtrusive and blend in with the user’s appearance, and discloses that computer unit 15 can be implemented as a cellular telephone with wireless connections for microphones 36 and 38. *Id.* (citing Ex. 1005 ¶¶ 5, 9, 31, 33, 42). Petitioner also contends that Le is “concerned with properly recognizing voice commands that initiate recording in noisy environments.” *Id.* (citing Ex. 1005 ¶¶ 23–24). In view of these disclosures, Petitioner argues, one of ordinary skill would have been motivated to look for ways to implement Le’s system with a wireless connection to the microphones 36 and 38 and an ability to input audio commands in noisy environments, while making the system more unobtrusive. *Id.* at 18–19 (citing Ex. 1002 ¶ 99).

Petitioner argues that this motivation would have led one of ordinary skill to Kvaløy. Pet. 19 (citing Ex. 1002 ¶ 99). According to Petitioner, one of ordinary skill “would have recognized that Kvaløy’s ear terminal was compatible with and even advanced Le’s disclosed objectives and be as good or superior to Le’s earpiece 30” for the following reasons:

1. Kvaløy’s ear terminal is analogous to Le’s earpiece 30 because both are configured to exchange audio signals with other devices. *Id.* at 20 (citing Ex. 1002 ¶ 103).
2. Kvaløy’s ear terminal would be less obtrusive and better blend in with the user’s natural appearance than Le’s wired earpiece 30. *Id.* (citing Ex. 1002 ¶ 104).
3. Kvaløy’s microphone M2 would provide an equivalent or superior voice signal to Le’s personal microphone 36 for Le’s natural voice commands to computer unit 15 because it is less susceptible to noise. *Id.* (citing Ex. 1002 ¶ 105).
4. Kvaløy’s outer microphone for picking up ambient sound so that the user can speak with other people would be as effective as Le’s belt-worn environmental microphone 38 without the obtrusiveness of having to carry around a separate microphone or wear it on a belt. *Id.* at 20–21 (citing Ex. 1002 ¶ 106).
5. Le’s recording of ambient sound for later recall would have been an obvious use for Kvaløy’s ear terminal microphones. *Id.* at 21 (citing Ex. 1002 ¶ 107).

Accordingly, in Petitioner’s combined Le-Kvaløy system, “Kvaløy’s ear terminal would replace Le’s earpiece and Le’s environmental microphone such that Kvaløy’s outer microphone would replace Le’s environmental microphone, and Kvaløy’s inner microphone would be used to pick up the user’s speech instead of the personal microphone.” Pet. 21–22 (citing Ex. 1002 ¶ 109). Petitioner asserts that “wireless headsets for mobile devices were common in the 2007 timeframe,” and one of ordinary skill “would have been able to adapt Le’s computer unit 15 to wirelessly

communicate with Kvaløy's ear terminal, as Le itself suggests.” *Id.* at 22 (citing Ex. 1002 ¶¶ 110–111).

Petitioner argues that its proposed combination “would have been predictable and would not have affected Le’s or Kvaløy’s design principles.” Pet. 22 (citing Ex. 1002 ¶¶ 112–115). For example, according to Petitioner, configuring Kvaløy’s ear terminal circuit to continually pass the signal from the outer microphone (which replaces Le’s environmental microphone in the combination) to Le’s computer unit through the digital interface would have required only the exercise of ordinary skill. *Id.* (citing Ex. 1002 ¶ 112). Indeed, Petitioner asserts, Kvaløy already discloses that the digital interface is bi-directional and used for transmitting digitized audio signals to and from the ear terminal (citing Ex. 1006, 5:66–6:18), so configuring Kvaløy’s ear terminal to pass the signals from the inner microphone to the remote device would not have required a significant redesign of Kvaløy’s ear terminal. *Id.* (citing Ex. 1002 ¶¶ 113–114). Accordingly, Petitioner argues, the combination of Le and Kvaløy “would have amounted to no more than the substitution of one known element (Kvaløy’s ear terminal) for another (Le’s earpiece and environmental microphone) to obtain predictable results (Le’s computer unit with a wireless earpiece and microphones).” *Id.* at 23 (citing Ex. 1002 ¶ 116).

Patent Owner disagrees that it would have been obvious to combine Le and Kvaløy as Petitioner proposes, for several reasons. Prelim. Resp. 15–20. First, Patent Owner argues that Le and Kvaløy serve different purposes because “Le records the ambient environment with the belt mounted environmental microphone 38” while Kvaløy “seeks to remove the ambient environment as noise.” *Id.* at 16 (citing Ex. 1005, Fig. 1B, ¶ 20).

According to Patent Owner, “Kvaløy’s outer microphone does not record ambient sound,” but instead detects ambient sound “to determine the presence of a voice signal” in order to control the operation of the ear terminal. *Id.* at 16–17 (citing Ex. 1006, 4:50–55, 6:16–16, 6:36–41, claim 19, claim 46, claim 57). Thus, Patent Owner contends, “Kvaløy does not disclose outputting the detected sound (ambient sound or the actual voice) through output means 13.” *Id.* at 17. According to Patent Owner, Petitioner’s assertion that “Kvaløy discloses a bi-directional digital interface ‘used for transmitting digitized audio signals to and from the ear terminal’” is erroneous because “Kvaløy’s inner and outer microphones are solely used to detect the presence of voice and are not used to record any sound signals.” *Id.* (citing Ex. 2001 ¶ 77).

Second, Patent Owner argues that “Kvaløy’s inner microphone is incongruent with Le’s system because Le does not suggest accommodation for an ear canal microphone.” Prelim. Resp. 17. At best, according to Petitioner, Le “discloses a microphone located on the outside of the earpiece dedicated to receiving voice signals from the user.” *Id.* (citing Ex. 1005 ¶¶ 7–8, Fig. 1C).

Third, Patent Owner argues that “there is no motivation to combine Kvaløy’s inner microphone (or any ear canal microphone) with Le” because Le “uses a single dedicated microphone with noise reduction to recognize a user’s voice, not the difference of two microphone signal strengths as in Kvaløy.” Prelim. Resp. 17 (citing Ex. 1005 ¶ 23). According to Petitioner, “a system using Le’s voice recognition system and an inner microphone would need reduction to the lower frequencies to enhance voice intelligibility using the inner microphone” because the inner microphone

“would measure an enhanced lower frequency when a user is speaking, and any noise reduction using ambient sound would not be able to compensate.” *Id.* at 18 (citing Ex. 2001 ¶¶ 81–82).

Fourth, Patent Owner argues that Kvaløy’s circuitry would not operate in Le because Kvaløy “is designed for communication in a noisy environment by removing the effects of ambient sound to enable user speech detection” while Le “is a computer system designed to constantly record sounds in the acoustic environment.” Prelim. Resp. 18. Patent Owner asserts that Petitioner “do[es] not address what modifications are required” to make this combination work as proposed. *Id.* at 19.

Fifth, Patent Owner argues that “Kvaløy likely does not preserve or maintain any ambient sound” and that “Kvaløy’s noise reduction would result in elimination of sounds Le intends to preserve.” Prelim. Resp. 19 (citing Ex. 2001 ¶ 90). Thus, Patent Owner contends, “the resulting combination would hinder Le’s purposes.” *Id.*

Sixth, Patent Owner argues that Kvaløy would not further Le’s goal of making the system less obtrusive. Prelim. Resp. 19 (citing Pet. 20). Patent Owner asserts that “[i]t appears from Fig. 1 of Kvaløy that its earpiece protrudes from the ear concha and would be just as apparent and obtrusive to observers as the earpiece found in Le.” *Id.*

Based on the present record, and for purpose of institution, Petitioner has set forth sufficient explanation and evidence to support a motivation to combine Le and Kvaløy as proposed. We agree with Petitioner that Le expresses the desire for the system to blend in with the natural appearance of the user and be unobtrusive to the user and to people with whom the user interacts. Pet. 18 (citing Ex. 1005 ¶¶ 5 (the invention provides a wearable

system “that is more natural in appearance and facilitates natural interactions with the system and the user’s surroundings”), 31 (“[t]he user interface devices of the wearable computer system . . . blend in with the natural appearance of the user” and are “also minimally obtrusive to the movements and actions of the user”), 33 (describing “[a]dditional measures” that “may be taken to make the wearable computer system 10 even more unobtrusive for the user and people who interact with the user”).

We also agree with Petitioner that Le teaches implementing the computer unit 15 as a cellular telephone and using a wireless connection for microphones 36 and 38. Pet. 18 (citing Ex. 1005 ¶¶ 9 (“[i]n another implementation, a cellular telephone is used” in the wearable computer unit “to provide communications between the user and a remote user, or a remote computer”), 42 (personal microphone 36, earpiece speaker 32, and environmental microphone 38 “may be connected to the computer unit 15 using a conventional wireless connection,” and the invention may “us[e] the housing of a cellular phone to enclose the computer unit 15”). We further agree that Le is concerned with properly recognizing voice commands that initiate recording in noisy environments. *Id.* (citing Ex. 1005 ¶¶ 23–24).

In light of these disclosures, we determine at this stage that Petitioner has set forth sufficient evidence and reasoning to support a motivation to modify Le’s system to use a hearing instrument like that disclosed in Kvaløy. This evidence includes the testimony of Dr. Atlas that one of ordinary skill would have appreciated that Kvaløy’s ear terminal is analogous to Le’s earpiece, and that using an earpiece like that of Kvaløy would have advanced Le’s objective of providing a wireless earpiece with reduced visibility and obtrusiveness. Ex. 1002 ¶¶ 103–104. We also note

Dr. Atlas's testimony that one of ordinary skill would have recognized that Kvaløy's ear terminal would provide a better voice signal than Le's personal microphone for voice commands because it is less susceptible to noise. *Id.* ¶ 105. Additionally, Dr. Atlas testifies that one of ordinary skill would have appreciated that Kvaløy's outer microphone, which is designed to pick up ambient sound, would have provided the same or superior function as Le's belt-worn environmental microphone without its obtrusiveness. *Id.* ¶ 106. Finally, Dr. Atlas testifies the idea of recording ambient sound and sound from an ear canal microphone for later recall, as disclosed by Le, was well known and would have been an obvious use for Kvaløy's ear terminal and ear canal microphones. *Id.* ¶ 107. Thus, Petitioner has introduced sufficient evidence for purposes of institution that combining Le and Kvaløy as proposed would have amounted to no more than substitution of one known element (Kvaløy's ear terminal) for another (Le's earpiece and environmental microphone) to obtain predictable results (Le's computer unit with a wireless earpiece and microphones). *Id.* ¶ 116.

At this stage of the proceeding, and based on the present record, Patent Owner's arguments do not defeat Petitioner's showing of a reasonable likelihood that one of ordinary skill would have been motivated to make the proposed combination of Le and Kvaløy. First, Patent Owner's argument that Le records the ambient environment while Kvaløy seeks to remove the ambient environment as noise does not appear to fairly address Petitioner's argument. *See* Prelim. Resp. 16. Petitioner relies on Le for recording the ambient environment, and only relies on Kvaløy to teach an improved earpiece that would have been less obtrusive. *See* Pet. 18–19. The fact that Kvaløy includes some differences in functionality as compared

to Le does not negate Petitioner's showing that one of ordinary skill would have found Kvaløy's earpiece to be useful in Le's system for recording ambient noise. Thus, the fact that Kvaløy itself does not teach recording the ambient environment, at least on this record, does not defeat Petitioner's proposed combination.

With regard to Patent Owner's second and third arguments (Prelim. Resp. 17–18), Petitioner has introduced sufficient evidence at this stage that Kvaløy's ear canal microphone can be combined with Le's recording system. Petitioner introduces testimony from Dr. Atlas that “a person having ordinary skill would have recognized that Kvaløy's inner microphone would provide an equivalent or superior voice signal to Le's personal microphone 36 for Le's natural voice commands because it is less susceptible to noise.” Ex. 1002 ¶ 105. Dr. Atlas also testifies that Kvaløy incorporates by reference U.S. 09/653,869 to Svean (the “'869App”), which states that the signal from the inner microphone M2 is “of high quality and well [s]uited for voice control and speech recognition.” *Id.* ¶¶ 70–71, 105; (citing Ex. 1007, 17:32–34; Ex. 1006, 1:6–12). The '869App further states that the signal from M2 “is processed by means of analogue or digital electronics . . . to make it highly natural and intelligible, either for the user himself or his communication partners.” Ex. 1007, 17:28–31. This provides evidence that one of ordinary skill would have understood how to compensate for the enhanced lower frequencies measured by an ear canal microphone, such as the one in Kvaløy.

With regard to Patent Owner's fourth argument that Kvaløy's circuitry would not operate in Le due to the differences in purpose and design (Prelim. Resp. 18), Petitioner's combination does not combine all of

the functions and purposes of both devices into a single system, but rather replaces Le's earpiece and environmental microphone with Kvaløy's ear terminal. Pet. 21–22; Ex. 1002 ¶ 109. Petitioner also introduces evidence from Dr. Atlas that one of ordinary skill would have been able to adapt Le's computer unit 15 to wirelessly communicate with Kvaløy's ear terminal, and configure Kvaløy's ear terminal circuit to pass the signal from the outer microphone continually to Le's computer unit through the digital interface. Ex. 1002 ¶¶ 110–114.

With regard to Patent Owner's fifth argument that Kvaløy likely does not preserve or maintain any ambient sound (Prelim. Resp. 19), Petitioner's combination does not rely on Kvaløy for the preservation and recording of ambient sound. Rather, Petitioner relies on Le for that disclosure, and relies on Kvaløy for its ear terminal with outer and inner microphones. Pet. 18–22; Ex. 1002 ¶¶ 99–109.

Finally, we do not agree with Patent Owner's sixth argument that one of ordinary skill would not have been motivated by appearance to make the proposed combination because Kvaløy's Figure 1 shows that its earpiece protrudes from the ear concha in an obtrusive manner. Prelim. Resp. 19. Petitioner argues that the Le-Kvaløy earpiece would be less obtrusive than Le's system because it would be wireless rather than wired and that the ambient microphone would be on an earpiece rather than worn on a belt. Pet. 18–20; Ex. 1002 ¶¶ 99, 104. Thus, even if Kvaløy's earpiece does protrude from the ear to some degree, that would not appear to defeat Petitioner's proposed motivation.

For the reasons set forth above, Petitioner has set forth sufficient evidence to establish a reasonable likelihood that one of ordinary skill would

have been motivated to combine Le and Kvaløy as proposed based on the present record.

4. Analysis of Independent Claim 1

a) 1[preamble]: “A headset, comprising:”

Referring to its claim construction argument, Petitioner argues that the preamble of claim 1 is non-limiting. Pet. 24. Other than its arguments discussed above in Section II.E.3 with respect to motivation to combine Le and Kvaløy, Patent Owner does not present argument directed to the preamble. Prelim. Resp. 15–26. As discussed above, Petitioner has sufficiently shown that the preamble of claim 1 is non-limiting based on the present record.

Petitioner also argues that even if the preamble were to limit claim 1, one of ordinary skill would have considered it obvious to incorporate Le’s features, as discussed in the limitations below, in Kvaløy’s ear terminal. Pet. 68–70 (citing Ex. 1002 ¶¶ 348–355). According to Petitioner, one of ordinary skill would have been motivated to do so because: (1) there was a market demand to carry fewer components, and it would have been feasible in February 2007 to incorporate all of the claimed structural components in an ear terminal; (2) the ear terminals could be used with different cell phones regardless of the hardware and software components of the cell phone; (3) using memory on board the ear terminal would have reduced latency related to the recognition of voice commands; (4) the modification would reduce power consumption in communication with the remote device because it would not require the earpiece’s transceiver to be used as frequently; and (5) Kvaløy’s ear terminal already included a processor and memory and thus was suitable for incorporating the functionality associated

with Le’s processor and memory. *Id.* at 68–70 (citing Ex. 1002 ¶¶ 350–354).

Other than the arguments previously discussed in Section II.E.3 above, Patent Owner does not appear to present separate arguments that the preamble would not have been obvious based on the Le-Kvaløy combination. *See* Prelim. Resp.

At this stage of the proceeding, and based on the present record, we determine that Petitioner has made a sufficient showing that, even if the preamble is limiting, it would have been obvious over the Le-Kvaløy combination.

b) 1[a][i]: “a left earpiece including: a left Ambient Sound Microphone (LASM) configured to capture first ambient sound;”

Petitioner argues that Le in combination with Kvaløy discloses or suggests this limitation. Pet. 24 (citing Ex. 1002 ¶¶ 119–121). For example, Petitioner asserts, “Kvaløy discloses an ear terminal with an outer microphone that ‘picks up ambient sound,’” and one of ordinary skill “would have understood Kvaløy’s ear terminal is for the left or the right ear.” *Id.* (citing Ex. 1006, 5:3–4; Ex. 1002 ¶ 120). Accordingly, Petitioner contends, one of ordinary skill “would have understood the Le-Kvaløy system discloses or suggests an ear terminal, for example, for the left ear (‘a left earpiece’) including an outer microphone to pickup ambient sound (‘a left Ambient Sound Microphone (LASM) configured to capture first ambient sound’).” *Id.* (citing Ex. 1002 ¶ 121).

Other than its arguments discussed above in Section II.E.3 with respect to motivation to combine Le and Kvaløy, Patent Owner does not present argument directed to this limitation. Prelim. Resp. 15–26.

We determine that, on the record before us, Petitioner’s cited evidence sufficiently supports its contentions regarding this limitation.

c) 1[a][ii]: “a left Ear Canal Microphone (LECM) configured to capture first internal sound in a left ear canal;”

Petitioner argues that Le in combination with Kvaløy discloses or suggests this limitation. Pet. 24 (citing Ex. 1002 ¶¶ 122–126). For example, Petitioner asserts, “Kvaløy discloses an ear terminal with an inner microphone that ‘picks up the sound in the meatus 3,’” and one of ordinary skill “would have understood Kvaløy’s ear terminal is for the left or the right ear” and that “the sound in the meatus 3 is ‘internal sound.’” *Id.* (citing Ex. 1006, 5:12–13; Ex. 1002 ¶¶ 124–125). Accordingly, Petitioner contends, one of ordinary skill “would have understood the Le-Kvaløy system discloses or suggests an ear terminal, for example for the left ear (‘a left earpiece’) including an inner microphone to pickup sound in the meatus (‘a left Ear Canal Microphone (LECM) configured to capture first internal sound in a left ear canal’).” *Id.* at 25 (citing Ex. 1002 ¶ 126).

Other than its arguments discussed above in Section II.E.3 with respect to motivation to combine Le and Kvaløy, Patent Owner does not present argument directed to this limitation. Prelim. Resp. 15–26.

We determine that, on the record before us, Petitioner’s cited evidence sufficiently supports its contentions regarding this limitation.

d) 1[b]: “a right earpiece including: a right Ambient Sound Microphone (RASM) configured to capture second ambient sound and a right Ear Canal Microphone (RECM) configured to capture second internal sound in a right ear canal;”

Petitioner argues that Le in combination with Kvaløy discloses or suggests this limitation. Pet. 25 (citing Ex. 1002 ¶¶ 127–131). For example,

Petitioner asserts, “Kvaløy discloses using ‘two ear terminals 1,2’ for a ‘binaural mode.’” *Id.* (citing Ex. 1006, 6:11–12). Petitioner also argues that the ’869App (incorporated by reference in Kvaløy) “further discloses using two ear terminals, both with two microphones, and that are ‘generally symmetrical’ and ‘otherwise identical for both ears.’” *Id.* (citing Ex. 1007, 25:2–6). Thus, according to Petitioner, one of ordinary skill “would have understood Kvaløy to disclose or suggest using a second ear terminal identical to the first ‘ear terminal 1,2’ in the opposite ear for a binaural mode of operation.” *Id.* (citing Ex. 1002 ¶ 130). “At a minimum,” Petitioner asserts, one of ordinary skill “would have considered it obvious to configure Kvaløy’s second ear terminal with the identical configuration of the first ear terminal because it would have provided additional flexibility to the user,” for example, by allowing the user to choose whether to use one or two earpieces or to choose which earpiece to use for which ear. *Id.* at 25–26 (citing Ex. 1002 ¶ 130).

Patent Owner argues that the Le-Kvaløy combination does not disclose left and right earpieces configured to capture ambient and internal sounds. Prelim. Resp. 21–22. Patent Owner asserts that Kvaløy “teaches that the microphones and circuitry used for voice detection are only located in one of the earpieces and not both.” *Id.* at 21 (citing Ex. 1006, 5:44–49). According to Patent Owner, although Kvaløy discloses that “another ear terminal receives incoming communications,” that ear terminal “does not contain the microphone and circuitry used for voice activated control.” *Id.* Thus, Patent Owner contends, “Kvaløy does not disclose two ear terminals that are both configured to capture ambient and internal sounds.” *Id.* (citing Ex. 2001 ¶ 101).

Patent Owner also argues that the proposed Le-Kvaløy combination would not include left and right Ambient Sound Microphones configured to capture ambient sounds. Prelim. Resp. 22–23. Patent Owner asserts that “Kvaløy’s disclosure of ‘pick[ing] up ambient sound’ is not analogous to claim 1’s limitation of capturing ambient sound,” because “Kvaløy’s outer microphone is only used in combination with the inner microphone to detect the presence of voice and is not used to capture that voice.” *Id.* at 22 (citing Ex. 2001 ¶ 106) (alteration in original). In other words, according to Patent Owner, the proposed combination “would detect the presence of a voice but would not capture either the voice or any ambient sound present.” *Id.* at 22–23. “Rather than capturing ambient sounds,” Patent Owner contends, “the Kvaløy system operates to filter out ambient sounds so that they do not interfere with detection of a voice command.” *Id.* at 23 (citing Ex. 2001 ¶ 108).

Based on the present record, Petitioner has made a sufficient showing as to this limitation for purposes of institution. Kvaløy discloses that “two ear terminals 1,2” may be “used in a binaural mode,” and the incorporated by reference ’869App also discloses “two active hearing protective communications earplugs,” each “containing two microphones, an outer microphone M1 and an inner microphone M2” such that “[t]he right and left earplugs are generally symmetrical, otherwise identical for both ears.” Ex. 1006, 6:11–12; Ex. 1007, 25:1–6. Additionally, Petitioner introduces testimony from Dr. Atlas that, based on these disclosure, one of ordinary skill would have understood Kvaløy to suggest (or at least make obvious) the use of identical first and second ear terminals each with its own ambient and ear canal microphones. Ex. 1002 ¶ 130.

As for Patent Owner's reliance on column 5, lines 44–49 of Kvaløy, which appears to suggest that the second earpiece need not have an ear canal microphone, it appears to us that this disclosure only describes one embodiment of Kvaløy's device. We do not understand this embodiment to negate the earlier disclosure in Kvaløy that two ear terminals may be used in a “binaural mode,” or the disclosure in the incorporated '869App of two earplugs each including an inner and outer microphone.

We also determine that Petitioner has made a sufficient showing that the Le-Kvaløy combination would include left and right Ambient Sound Microphones configured to capture ambient sound. Patent Owner appears to construe “capturing” a sound to exclude “pick[ing] up” a sound to detect the presence of voice. However, Patent Owner does not explain how it is interpreting the term “capture” or provide a claim construction analysis for this term. Based on the present record, we understand “captur[ing] a sound” to include picking up a sound to detect the presence of voice, as Kvaløy discloses. The parties may further address this issue during the trial.

Consequently, based on the present record, Petitioner has sufficiently shown that the prior art teaches this limitation at this stage of the proceeding.

- e) 1[c] a memory configured to record at least one of the first ambient sound or the second ambient sound and at least one of the first internal sound or the second internal sound, and*

Petitioner argues that Le in combination with Kvaløy discloses or suggests this limitation. Pet. 26 (citing Ex. 1002 ¶¶ 132–141). Petitioner asserts that “Le discloses or suggests a continuously scrolling audio buffer that is part of memory 18” as well as “storing a recording of [a] conversation,” and that “[t]he personal microphone 36 and the environmental microphone 38 may be used, in combination, to input audio

signals to the computer unit 15.” *Id.* (citing Ex. 1005 ¶¶ 10, 24, 28, 35, 37) (alterations in original).

According to Petitioner, one of ordinary skill “would have understood the Le-Kvaløy system to disclose or suggest that the scrolling buffer records ambient sound and internal sound.” Pet. 27 (citing Ex. 1002 ¶¶ 137–139). Petitioner further asserts that one of ordinary skill would have implemented the combination such that the Kvaløy’s inner microphone would record the portion of the conversation containing the user’s speech and Kvaløy’s outer microphone would record the portion of the conversation from the person to whom the user was speaking. *Id.* at 27–28 (citing Ex. 1002 ¶ 137). Relying on Dr. Atlas, Petitioner contends that one of ordinary skill “would have considered it obvious to use the signal from the inner microphone for the user’s speech signal because it is less susceptible to noise and would therefore provide a clearer representation of the user’s voice.” *Id.* at 28 (citing Ex. 1002 ¶ 138). “Thus,” Petitioner contends, one of ordinary skill “would have understood the Le-Kvaløy system to disclose or suggest that when continuously storing an audio recording of a conversation in the scrolling buffer, the system records the signal from an outer microphone in the left and/or right ear *and* the signal from the inner microphone in the left and/or right ear.” *Id.* (citing Ex. 1002 ¶ 139).

Other than its arguments discussed above in Section II.E.3 with respect to motivation to combine Le and Kvaløy, Patent Owner does not present argument directed to this limitation. Prelim. Resp. 15–26.

We determine that, on the record before us, Petitioner’s cited evidence sufficiently supports its contentions regarding this limitation.

f) 1[e][i] a processor operatively coupled to the left earpiece, the right earpiece and the memory,

Petitioner argues that Le in combination with Kvaløy discloses or suggests this limitation. Pet. 29 (citing Ex. 1002 ¶¶ 142–156). Petitioner asserts that “Le discloses a processor 16 that is connected to an earpiece 30 and the scrolling buffer, which Le discloses is part of memory 18 (in one implementation).” *Id.* (citing Ex. 1005 ¶¶ 27–28, Fig. 2). According to Petitioner, one of ordinary skill “would have understood FIG. 2 to illustrate by arrows showing signal paths that the processor is operatively coupled to the memory (including the buffer) and the earpiece.” *Id.* (citing Ex. 1002 ¶¶ 146–148). Petitioner further argues that Le discloses that the computer unit 15 (which includes processor 16) sends audio signals to the speaker in the earpiece, and that the personal microphone in the earpiece sends signals to the computer unit 15. *Id.* (citing Ex. 1005 ¶¶ 7, 24, 27)

Other than its arguments discussed above in Section II.E.3 with respect to motivation to combine Le and Kvaløy, Patent Owner does not present argument directed to this limitation. Prelim. Resp. 15–26.

We determine that, on the record before us, Petitioner’s cited evidence sufficiently supports its contentions regarding this limitation.

g) 1[e][ii] the processor configured to save a recent portion of the at least one of the first ambient sound or the second ambient sound and the at least one of the first internal sound or the second internal sound responsive to an event.

Petitioner argues that Le in combination with Kvaløy discloses or suggests this limitation. Pet. 31 (citing Ex. 1002 ¶¶ 157–161). Petitioner references its argument directed to limitation 1[c] above that the proposed combination discloses or suggests “continuously storing, in a scrolling buffer, an audio recording of a conversation, including an audio signal from

an outer microphone from the left and/or right earpiece and an audio signal from an inner microphone in the left and/or right earpiece.” *Id.* Petitioner argues that Le further discloses that user voice commands are used to trigger storage of audio content previously recorded in the continuously scrolling buffer into memory 18 for later recall. *Id.* (citing Ex. 1005 ¶ 10, 28, 37, 38).

Patent Owner argues that the proposed combination does not teach this limitation because “Le discloses storing audio recordings from the environmental microphone 38 (now Kvaløy’s outer microphone), but not from the personal microphone 36 (now Kvaløy’s inner microphone).” Prelim. Resp. 24.

Based on the present record, Petitioner has made a sufficient evidentiary showing as to this limitation for purposes of institution. Petitioner introduces testimony from Dr. Atlas that one of ordinary skill “would have considered it obvious to implement Le’s teachings in the proposed combination to record conversations in a manner that recorded the user’s speech from Kvaløy’s inner microphone” and “recorded the voice of the person to whom the user was speaking using Kvaløy’s outer microphone.” Ex. 1002 ¶ 137. Dr. Atlas testifies that one of ordinary skill “would have understood that Kvaløy’s inner microphone would provide a good signal to use for the portion of the conversation attributable to the user’s speech because it would be less susceptible to noise and thus provide a clearer representation of the user’s voice than the outer microphone.” *Id.* ¶ 138 (citing Ex. 1007, 17:28–34). Thus, Dr. Atlas explains, one of ordinary skill “looking to implement the Le-Kvaløy system to achieve Le’s stated objective of recording an audio clip of a conversation would have been motivated to use the signal from the inner microphone to record the user’s

voice and the signal from the outer microphone, which picks up external sounds/ambient sound, to record the voice of the person to whom the user was speaking.” *Id.* Patent Owner does not specifically address this testimony in its argument concerning this limitation.

Consequently, based on the present record, Petitioner has sufficiently shown that the prior art teaches this limitation at this stage of the proceeding.

h) Summary for Claim 1

For the foregoing reasons, Petitioner’s cited evidence and reasoning demonstrates a reasonable likelihood that Petitioner would prevail in its contentions regarding claim 1.

5. Dependent Claims 2 and 6–7

Petitioner contends that claims 2 and 6–7 are unpatentable over Le in view of Kvaløy. Pet. 32–35. Patent Owner relies on its arguments concerning claim 1 for these dependent claims. *See* Prelim. Resp. 26. Based on the evidence of record, we determine that Petitioner has demonstrated a reasonable likelihood that claims 2 and 6–7 are unpatentable over the prior art.

6. Dependent Claim 9

- a) “The headset of claim 1, wherein the processor binaurally records the first ambient sound, the second ambient sound, the first internal sound and the second internal sound from the left earpiece and the right earpiece, respectively.”*

Petitioner argues that Le in combination with Kvaløy discloses or suggests this claim. Pet. 35 (citing Ex. 1002 ¶¶ 178–191). Petitioner asserts that “Kvaløy discloses that its invention is applicable to ‘recording equipment,’ . . . and further discloses using two ear terminals for ‘binaural mode’ . . . and exchanging audio signals to and from other devices.” *Id.* at

35–36 (citing Ex. 1006 1:28, 6:11–14). According to Petitioner, one of ordinary skill “would have understood Kvaløy to disclose or suggest using earpieces in a binaural mode when exchanging data with recording equipment,” and further understood Kvaløy to disclose or suggest “binaurally recording audio signals from the inner and outer microphones of the ear terminals.” *Id.* at 36 (citing Ex. 1002 ¶ 181).

At a minimum, Petitioner asserts, one of ordinary skill “would have been motivated to modify the Le-Kvaløy system to binaurally record audio signals from the inner and outer microphones of the ear terminals” in order to achieve the advantages of binaural recording, such as “better realism on playback.” Pet. 36 (citing Ex. 1002 ¶¶ 182–187).

Referencing its earlier argument concerning motivation to combine Le and Kvaløy, Patent Owner argues that “Kvaløy does not disclose outer or inner microphones configured to record ambient sound” or “binaural recording using two, or left and right, microphones.” Prelim. Resp. 28. Patent Owner also references its earlier argument concerning limitation 1[b] that Kvaløy teaches that the microphones and circuitry used for voice detection are located in only one of the earpieces, and not both. *Id.* at 28–29.

We determine that, on the record before us, Petitioner’s cited evidence sufficiently supports its contentions regarding this limitation. At this stage of the proceeding, we do not agree with Patent Owner’s arguments for the reasons explained in Sections II.E.3 and II.E.4(e), above.

F. Ground 2: Asserted Obviousness of Claims 4 and 5 Based on Le in view of Kvaløy and Fiedler

Petitioner contends that claims 4 and 5 would have been obvious over Le in view of Kvaløy and Fiedler. Pet. 37–43. Patent Owner disagrees,

arguing that the combination would not have rendered claims 4 and 5 obvious. Prelim. Resp. 29–35.

1. Overview of Fiedler (Ex. 1009)

Fiedler is directed to “event-activated recording.” Ex. 1009, code (57). Fiedler states that its system “enables users effectively to record words that have already been spoken, or events that have already taken place, prior to the time that a user decides to record them.” *Id.* at 2:35–44. According to Fiedler, this is achieved by “recording events on a finite extent of recording medium in a continuous logical loop” and “playing back and/or permanently preserving (capturing) portions of the recorded data as selected by the user.” *Id.* at 2:38–44. Fiedler further discloses that “[c]ompression algorithms may be employed concurrently with recording the sound . . . and/or on captured data in permanent storage, in order to maximize both the capture interval and the total recording time capacity of the device.” *Id.* at 7:42–46, 7:47–51.

2. Analysis of Dependent Claim 4

- a) 4[a]: “[t]he headset of claim 1, wherein the memory comprises: a data buffer to temporarily capture the at least one of the first ambient sound or the second ambient sound and the at least one of the first internal sound or the second internal sound; and”

Petitioner argues that Le in combination with Kvaløy discloses or suggests this limitation. Pet. 37 (citing Ex. 1002 ¶¶ 192–195). Petitioner asserts that, as described above with respect to limitation 1[c], the Le-Kvaløy combination discloses or suggests storing an audio recording of a conversation in a scrolling buffer, including audio signals from an outer microphone from the left and/or right earpiece and an audio signal from an inner microphone in the left and/or right earpiece. *Id.* According to Petitioner, Le also “discloses discarding the recorded audio after a period of

time ‘if the user has not issued a predetermined command to store the information for later retrieval.’” *Id.* (citing Ex. 1005 ¶ 28).

Patent Owner appears to rely on similar arguments for this limitation of claim 4 as those it made for claim 1. Prelim. Resp. 29–32.

We determine that, on the record before us, Petitioner’s cited evidence sufficiently supports its contentions regarding this limitation.

b) 4[b]: “a storage memory to save from the data buffer the recent portion of the at least one of the first ambient sound or the second ambient sound and the at least one of the first internal sound or the second internal sound in a compressed data format responsive to a directive by the processor.”

Petitioner argues that Le in combination with Kvaløy and Fiedler discloses or suggests this limitation. Pet. 38 (citing Ex. 1002 ¶¶ 196–207). Referring to its arguments for claim 1, Petitioner asserts that, one of ordinary skill would have understood Le to disclose or suggest that memory 18 is a non-volatile memory, and that the processor triggers storage of an audio recording of a conversation in the scrolling buffer 18 for later recall in response to receipt of a voice command. *Id.*

Petitioner argues that one of ordinary skill “would have been motivated to further modify the Le-Kvaløy system to apply Fiedler’s teachings related to the use of compression algorithms and would have had a reasonable expectation of success in doing so.” Pet. 39 (citing Ex. 1002 ¶¶ 203–207). Petitioner asserts that “Fiedler discloses that compression algorithms are used ‘to maximize both the capture interval and the total recording time capacity of the device,’” and one of ordinary skill “would have recognized Fiedler’s compression algorithms could be used in the same way in the Le-Kvaløy system to compress audio signals received prior to

storing those signals in Le’s memory.” *Id.* (citing Ex. 1009, 7:42–46; Ex. 1002 ¶ 204).

Patent Owner argues that the proposed Le-Kvaløy-Fiedler combination is undefined, and that none of the references disclose storing data from at least two microphones in storage memory. Prelim. Resp. 29–33.

Based on the present record, Petitioner has made a sufficient showing as to this limitation. As discussed above, we determine that Petitioner has made a sufficient showing at this stage that one of ordinary skill would have been motivated to combine Le and Kvaløy as proposed, and that the proposed combination would store a conversation in the memory, including sound from the inner and outer microphones. *See* §§ II.E.3, II.E.4(e), II.E.4(g), *supra*. We also agree with Petitioner that one of ordinary skill would have been motivated to store the sound in the memory using a compression algorithm, as taught by Fiedler, in order to increase the capture interval and recording capacity of the device. Pet. 39; Ex. 1002 ¶ 204.

3. *Dependent Claim 5*

Petitioner contends that claim 5 is unpatentable over Le in view of Kvaløy and Fiedler. Pet. 40–43. Patent Owner relies on its arguments concerning claim 4 for claim 5. *See* Prelim. Resp. 33. Based on the evidence of record, we determine that Petitioner has demonstrated a reasonable likelihood that claims 5 is unpatentable over the prior art.

G. Ground 3A: Asserted Obviousness of Claims 3 and 11–13 Based on Le in view of Kvaløy and Johnson

Petitioner contends that claims 3 and 11–13 would have been obvious over Le in view of Kvaløy and Johnson. Pet. 35–43. Patent Owner

disagrees, arguing that combination would not render claims 3 and 11–13 obvious. Prelim. Resp. 35–43.

1. Overview of Johnson (Ex. 1008)

Johnson relates to the “capture and recording of unpredictable realtime events.” Ex. 1008, 1:10–11. More specifically, Johnson describes a “device that record[s] actual sound or video footage of the few seconds just before and/or after an unexpected event, such as a collision.” *Id.* at 2:9–13. The “recording device may be advantageously triggered by the event itself, and create an audio recording of some desired window of time surrounding the event.” *Id.* at 2:37–39. Johnson explains that, in a preferred embodiment, “accelerometers are used in the apparatus which is installed in a motor vehicle such that a collision involving the vehicle is the triggering event.” *Id.* at 3:25–27. “The output of the accelerometer” is “input into [a] comparator and when it exceeds the value of the adjustable voltage source, a digital trigger is sent to the microprocessor to indicate a collision.” *Id.* at 6:29–33. The device “uses a small circular buffer or memory,” and “once an accident is detected by the accelerometer, multiple frames of data immediately before and immediately after the accident are recorded.” *Id.* at 6:42–46.

2. Analysis of Dependent Claim 3

- a) “[t]he headset of claim 1, wherein the processor triggers the event responsive to detecting an abrupt movement of the headset, or a change in location of the headset.*

Petitioner argues that Le in combination with Kvaløy and Johnson discloses or suggests this limitation. Pet. 43 (citing Ex. 1002 ¶¶ 223–239). Petitioner asserts that one of ordinary skill would have understood that Johnson’s teachings are applicable to Le because both “disclose or suggest

storing audio data detected by a microphone in a circular buffer until a triggering event occurs, at which time the contents of the buffer from before the event are saved for later recall.” *Id.* at 44 (citing Ex. 1008, 2:9–12, 2:33–47, 8:23–29; Ex. 1005 ¶¶ 10, 28, 37–38).

According to Petitioner, one of ordinary skill “would have understood that Johnson’s teachings would improve Le’s system because there are times, such as in emergencies like a car accident that a user of the Le-Kvaløy system would predictably encounter, when the user may not have the ability to trigger the recording by voice command (e.g., because they are unconscious).” Pet. 44 (citing Ex. 1002 ¶ 234). Thus, Petitioner asserts, it would have been obvious “to have a mechanism to automatically record audio clips based on, for example, abrupt motion indicative of a car accident.” *Id.* at 44–45 (citing Ex. 1002 ¶ 234). Petitioner also contends that one of ordinary skill would have been motivated to implement Johnson’s teachings “such that the triggering event was an abrupt movement of *the headset*” because “the user’s headset would experience the same or similar shock or abrupt movement that a vehicle would in the event of an accident.” *Id.* at 45 (citing Ex. 1002 ¶ 235).

Patent Owner argues that “Johnson discloses a camera with an accelerometer for installation in a vehicle” which “provides acceleration measurements on the order of vehicle collisions.” Prelim. Resp. 36 (citing Ex. 1008, 3:25–27, 6:18–21, Figs. 1, 2). Patent Owner asserts that Petitioner “fail[s] to explain how an accelerometer used in a vehicle would be properly configured to detect an abrupt movement or a change in location of a headset.” *Id.* “Indeed,” according to Patent Owner, “the accelerations used for a headset, such as for an abrupt movement (e.g., tapping the earpiece) are

lower than in a vehicle collision,” and the “force measurements would be below the threshold of the Johnson system” because “[f]orces on a car in the event of an accident would be much higher than forces associated with headset movement.” *Id.* at 36–37 (citing Ex. 2001 ¶ 164). Moreover, Patent Owner argues, “detection of movement of a headset typically requires use of a 3-axis or three independent accelerometers (X, Y and Z axes) with low noise and high dynamic range.” *Id.* at 37 (citing Ex. 2001 ¶ 169). Thus, Patent Owner contends, “Johnson does not teach or suggest measuring and processing the small complex accelerations associated with headset movements during normal operation.” *Id.*

Based on the present record, we question whether Petitioner has made a sufficient showing as to claim 3. Johnson does not appear to disclose the use of an accelerometer or other device for detecting movement of a headset, but rather discloses the use of an accelerometer in a vehicle for detecting collisions. Ex. 1008, 3:25–27, 6:18–21, Fig. 2. Based on the present record it is unclear how one of ordinary skill would adapt Johnson’s car accelerometer for use in the headset of the Le-Kvaløy combination, which would appear to involve complexities that Petitioner does not discuss in detail. The parties may further address this issue during the trial.

3. Analysis of Independent Claim 11

For independent claim 11, Petitioner relies on the arguments it made for claim 1 with the exception of claim 11’s requirement that the “event” in response to which the processor saves a portion of at least one of the captured ambient sound and the captured internal sound “is a detected sound signature within the ambient sound.” Pet. 46–52.

Petitioner argues that one of ordinary skill “would have considered it obvious to further modify the Le-Kvaløy system to trigger storage of audio clips based on sound signatures within the ambient sound in view of Johnson.” Pet. 50 (citing Ex. 1002 ¶¶ 258–266). Petitioner asserts that Johnson teaches that events that are difficult to record in real time include, for example, “a robbery or other crime event, a sudden comment or statement of someone nearby, a gunshot, an explosion, low flying aircraft, an excessively loud automobile, and so forth.” *Id.* (citing Ex. 1008, 1:22–28). Petitioner contends that one of ordinary skill would have understood Johnson to teach recording in response to one of these types of events, and that these events all involve “specific sound signatures within the ambient environment.” *Id.* at 50–51 (citing Ex. 1002 ¶ 262). According to Petitioner, one of ordinary skill would have been motivated to combine Johnson’s teaching that it would be advantageous to trigger recording based on the event itself, and that this would be particularly advantage in situations where the user may not have the ability to issue a voice command. *Id.* at 51–52 (citing Ex. 1002 ¶ 264).

Patent Owner relies on its arguments above concerning claims 1, 4, and 9 for claim 11. Prelim. Resp. 41–42.

We determine that, on the record before us, Petitioner’s cited evidence sufficiently supports its contentions regarding claim 11.

4. *Analysis of Dependent Claim 12*

- a) *“The earpiece of claim 11, wherein the processor monitors the ambient sound for a Sound Pressure Level (SPL) change event, and in response to detecting the SPL, change event commits saves [sic] a portion of the ambient sound to the memory.”*

Petitioner argues that Le in combination with Kvaløy and Johnson discloses or suggests claim 12. Pet. 52 (citing Ex. 1002 ¶¶ 267–272). Petitioner asserts that “Johnson teaches triggering recording in response to a ‘sudden loud noise,’” and one of ordinary skill “would have understood that Johnson’s description of a ‘sudden loud noise’ corresponds to a sudden, relatively high sound pressure level (SPL) as received by a microphone.” *Id.* at 53 (citing Ex. 1008, 3:28–30, 10:32; Ex. 1002 ¶ 270). According to Petitioner, one of ordinary skill would also “have understood that to detect a ‘sudden loud noise,’ the system would necessarily need to compare the sound pressure level at a point in time to a prior point in time or a threshold level so as to detect a change in SPL.” *Id.* (citing Ex. 1002 ¶ 270). Thus, Petitioner argues, one of ordinary skill “would have understood Johnson to disclose or suggest that a sudden loud noise, i.e., a change in SPL as detected by a microphone, triggers saving of an audio clip.” *Id.*

Patent Owner argues that “Johnson is directed at a design that uses a loud noise indicative of a collision involving a vehicle to trigger recording,” and that the SPL associated with such a “loud noise” from a collision “would be significantly higher than any SPL that a headphone or earpiece detects.” Prelim. Resp. 42 (citing Ex. 1008, 3:28–30, claim 16; Ex. 2001 ¶ 191). “Thus,” according to Patent Owner, “the proposed Le-Kvaløy-Johnson combination using Johnson’s disclosed SPL thresholds would not detect the SPL change event of claim 12.” *Id.* at 42–43 (citing Ex. 2001 ¶ 192).

Based on the present record, Petitioner has made a sufficient showing at this stage of the proceeding. On the present record, we do not agree with Patent Owner's argument that Johnson's "loud noise" from a collision would be "significantly higher than any SPL that a headphone or earpiece detects." *See* Prelim. Resp. 42; Ex. 2001 ¶ 191. Johnson does not specify a particular noise level that would be generated by a collision, and it would appear that a variety of noise levels (and SPLs) could be generated by different types of collisions. Additionally, Patent Owner does not explain in any detail why earpieces like the one in Kvaløy would not be able to detect the presence of higher level SPLs generated by collisions.

5. Analysis of Dependent Claim 13

Petitioner contends that claim 13 is unpatentable over Le in view of Kvaløy and Johnson. Pet. 54. Patent Owner relies on its arguments concerning claims 11 and 12 for claim 13. *See* Prelim. Resp. 35–43. Based on the evidence of record, we determine that Petitioner has demonstrated a reasonable likelihood that claims 13 is unpatentable over the prior art.

H. Ground 3B: Asserted Obviousness of Claims 11–13 Based on Le in view of Kvaløy, Johnson, and Rast

Petitioner contends that claims 11–13 would have been obvious over Le in view of Kvaløy, Johnson, and Rast. Pet. 54–56. Patent Owner relies on its arguments for previously discussed grounds for Ground 3B. Prelim. Resp. 44. Based on the evidence of record, we determine that Petitioner has demonstrated a reasonable likelihood that claims 11–13 are unpatentable over the prior art.

I. Ground 4A/4B: Asserted Obviousness of Claims 14–16 Based on Le in view of Kvaløy and Mayer (4A) or Le in view of Kvaløy (4B)

Petitioner contends that claims 14–16 would have been obvious over Le in view of Kvaløy and Mayer (Ground 4A) or Le in view of Kvaløy (Ground 4B). Pet. 56–68. The arguments presented in these grounds are similar in many respects to the arguments presented for earlier grounds based on Le and Kvaløy with a couple of exceptions, which will be discussed further below.

First, in Ground 4A, Petitioner adds Mayer to the Le-Kvaløy combination in the event that the Board does not “construe[] limitation 14[e][ii] disjunctively (i.e., so that it merely requires a process store one of the captured ambient sound, the captured internal sound, *or* the delivered audio content in response to an event).” Pet. 64. In the event of such an interpretation, Petitioner relies on Mayer to store both phone conversations and sounds in the environment. *Id.* at 60–62. Patent Owner does not appear to take a position at this stage on whether limitation 14[e][ii] should be construed disjunctively. *See* Prelim. Resp. 45–48.

Limitation 14[e][ii] recites that “the processor is configured to save a portion of *at least one* of the captured ambient sound, the captured internal sound, and the delivered audio content in response to an event.” Because the claim language uses the phrase “at least one,” we interpret this language disjunctively to require that the processor need only be configured to save one of the recited items, i.e., the captured ambient sound, the captured internal sound, or the delivered audio content in response to an event. As a result, we determine that Petitioner has made a sufficient showing that limitation 14[e][ii] is met by showing that the Le-Kvaløy combination

teaches recording audio from either the inner microphone or the outer microphone. Pet. 64–65.

Second, Petitioner argues that the Le-Kvaløy combination teaches limitation 14[c], which recites “an Ear Canal Receiver (ECR) configured to deliver audio content to the ear canal.” Pet. 57–58. For this limitation, Petitioner points to Kvaløy’s disclosure “that the ear terminal includes a sound generator SG that outputs to the user’s ear an ‘incoming communication signal.’” *Id.* at 57 (citing Ex. 1006, 3:41–43, 5:25–32, 6:19–31). According to Petitioner, one of ordinary skill “would have understood that Kvaløy’s disclosure of an ‘incoming communication signal’ encompasses an incoming communication signal from a cellular phone at least because Kvaløy discloses that its invention is applicable to ‘communication systems like radio transceivers, intercom systems, recording equipment, etc.’,” and “a cell phone is a ‘communication system’ with a ‘radio transceiver.’” *Id.* (citing Ex. 1006, 1:26–29).

Patent Owner argues that Kvaløy’s embodiment that uses “sound generator SG” requires “a blocking mechanism to address interference.” Prelim. Resp. 45. According to Patent Owner, this blocking mechanism will operate “[w]hen the incoming communication signal is introduced in the same terminal as is used for voice activated control,” and “will prohibit or block the detection of the incoming communication signal as if it were the users own voice, during the periods of time when the incoming communication signal is active.” *Id.* (citing Ex. 1006, 5:33–36, 5:38–42). Patent Owner argues that Petitioner is silent “on (1) whether the Le-Kvaløy combination would implement Kvaløy’s blocking function, (2) if so, where and how the blocking function would interface with Le’s components, or

(3) if not, what alternative function the Le-Kvaløy combination would implement to address the same problem.” *Id.* at 46.

Based on the present record, Petitioner has made a sufficient showing that the Le-Kvaløy combination teaches limitation 14[c] for purposes of institution. Patent Owner does not appear to argue that one of ordinary skill would have been discouraged from using Kvaløy’s blocking function in the proposed combination or that there would have been a problem in doing so. *See* Prelim. Resp. 45–46. Therefore, we determine that the record includes sufficient evidence that one of ordinary skill would have been motivated to include Kvaløy’s sound generator and microphones, along with its blocking function, in the proposed Le-Kvaløy combination, at least at this stage of the proceeding.

Patent Owner does not separately argue dependent claims 15–16, and we find that Petitioner has made a sufficient showing that these claims would have been obvious over the Le- Kvaløy combination at this stage of the proceeding. Pet. 66–68; Prelim. Resp. 45–48.

III. CONCLUSION

After considering the evidence and arguments presented in the current record, we determine that Petitioner has demonstrated a reasonable likelihood of success in proving that at least one of the challenged claims of the ’591 patent is unpatentable. Patent Owner has not persuaded us to exercise our discretion to deny institution of trial. We therefore institute trial on all challenged claims and grounds raised in the Petition.

At this stage of the proceeding, we have not made a final determination as to the patentability of any challenged claim or as to the construction of any claim term. Any final determination will be based on

the record developed during trial. We place Patent Owner on express notice that any argument not asserted in a timely-filed Response to the Petition, or in another manner permitted during trial, shall be deemed forfeited, even if that argument was presented in the Preliminary Response.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review of claims 1–7, 9, and 11–16 of the '591 patent is instituted with respect to all grounds set forth in the Petition; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4(b), *inter partes* review of the '591 patent shall commence on the entry date of this Order, and notice is hereby given of the institution of a trial.

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