

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SOTERA WIRELESS, INC.,
Petitioner,

v.

MASIMO CORPORATION,
Patent Owner.

IPR2020-00954
Patent 9,788,735 B2

Before JOSIAH C. COCKS, JENNIFER MEYER CHAGNON, and
ROBERT L. KINDER, *Administrative Patent Judges*.

KINDER, *Administrative Patent Judge*.

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

I. INTRODUCTION

A. *Background and Summary*

Sotera Wireless, Inc. (“Petitioner”)¹ filed a Petition requesting *inter partes* review of U.S. Patent No. 9,788,735 B2 (“the ’735 patent,” Ex. 1001). Paper 1 (“Pet.”). The Petition challenges the patentability of claims 1–20 of the ’735 patent. Masimo Corporation (“Patent Owner”) filed a Preliminary Response to the Petition. Paper 7 (“Prelim. Resp.”). Pursuant to our authorization, Petitioner filed a reply to Patent Owner’s Preliminary Response (Paper 11, “Reply”) to address the discretionary factors set forth in *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020) (precedential) (“*Fintiv* Order”), to which Patent Owner filed a sur-reply (Paper 12, “Sur-reply”).

We have authority to determine whether to institute *inter partes* review. *See* 35 U.S.C. § 314(b); 37 C.F.R. § 42.4(a). An *inter partes* review may not be instituted “unless the Director determines . . . 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(a). Having considered the arguments and evidence presented by Petitioner and Patent Owner, we determine, for the reasons set forth below, that Petitioner has demonstrated a reasonable likelihood that at least one challenged claim in the petition is unpatentable based on at least one of the grounds presented. As discussed below, we institute an *inter partes* review of all of the challenged claims on all grounds set forth in the Petition.

¹ Petitioner identifies Hon Hai Precision Industry Co., Ltd. as a real parties-in-interest “because Hon Hai agrees to be bound by the estoppel provisions of 35 U.S.C. § 315(e).” Pet. 1.

The following findings of fact and conclusions of law are not final, but are made for the sole purpose of determining whether Petitioner meets the threshold for initiating review. Any final decision shall be based on the full trial record, including any response timely filed by Patent Owner. Any arguments not raised by Patent Owner in a timely-filed response shall be deemed waived, even if they were presented in the Preliminary Response.

B. Related Proceedings

Petitioner identifies *Masimo Corp. v. Sotera Wireless, Inc.*, Case No. 3:19-cv-01100-BAS-NLS (S.D. Cal.), served on June 13, 2019, as a related proceeding involving the '735 patent. Pet. 2; Ex. 1029; Ex. 1030. Petitioner also identifies IPR2020-00912, involving the same parties and U.S. Patent No. 10,213,108, which is a parent to the '735 patent. Pet. 2.

C. The '735 Patent

The '735 patent is directed to a “Body Worn Mobile Medical Patient Monitor.” Ex. 1001, code (54). The '735 patent claims priority through a series of continuation applications to Provisional Application No. 60/367,428, filed on March 25, 2002. *Id.* at codes (63), (60). The invention relates to “[a] body worn mobile medical monitoring device configured to minimize cable wiring from a sensor by placement of one or more sensor communication ports.” *Id.* at code (57). Structurally, the “device includes a housing securable on a lower arm of a patient, a display, and a sensor communication port positioned on a side of the housing.” *Id.* The body worn medical monitoring device may have other input or output ports that download software or provide a wired connection to other measurement instruments. *Id.* at 5:56–61.

The Specification describes a drawback to “[c]onventional physiological measurement systems,” as requiring a “patient cable connection between sensor and monitor.” *Id.* at 2:22–24. The Specification also describes the problems related with “disconnection of monitoring equipment and a corresponding loss of measurements,” when needing to move patients. *Id.* at 2:25–28. A goal of the ’735 patent was to allow patient mobility by providing wireless communication links between sensors and monitors. *Id.* at 2:28–38; Fig. 3. The invention also sought “to provide a communications adapter that is plug-compatible both with existing sensors and monitors and that implements a wireless link replacement for the patient cable.” *Id.*

As depicted in Figure 4A below, sensor module 400 is plug-compatible with convention sensor 310. *Id.* at 4:58–59. Wrist-mounted module 410 has module connector 414 with auxiliary cable 420 running therefrom to mate with sensor connector 318. *Id.* at Fig. 4A, 5:27–61.

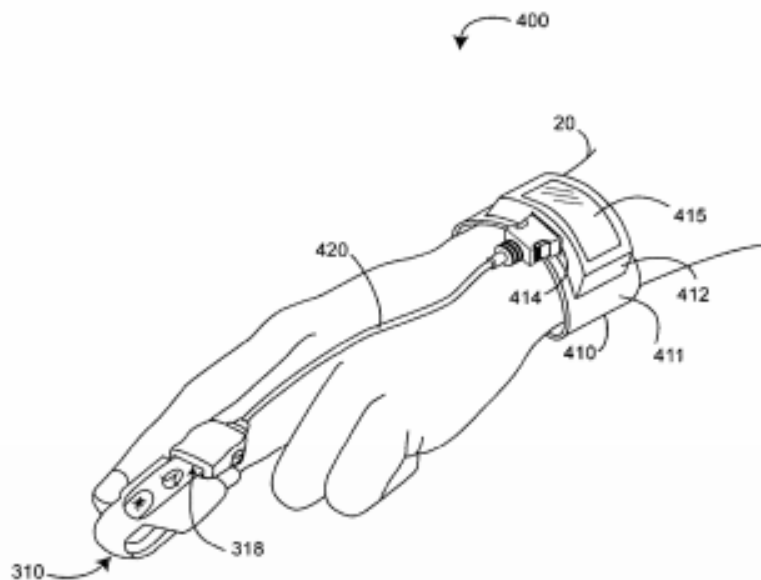


FIG. 4A

Figure 4A illustrates an embodiment of the “communications adapter sensor module.” *Id.* at 4:5–6. Wrist-mounted module 410 may have display 415 that shows sensor measurements, module status, and other visual indicators, such as monitor status. *Id.* at 5:39–42.

The Specification explains that in certain embodiments wrist-mounted module 410 may have other input or output ports that download software, configure the module, or provide a wired connection to other measurement instruments or computing devices. *Id.* at 5:54–61. In such embodiments, the wearable device can communicate with multiple sensors, and a multiple parameter sensor module with sensor interfaces and signal processors may be used as depicted in Figure 13. *Id.* at 11:56–66.

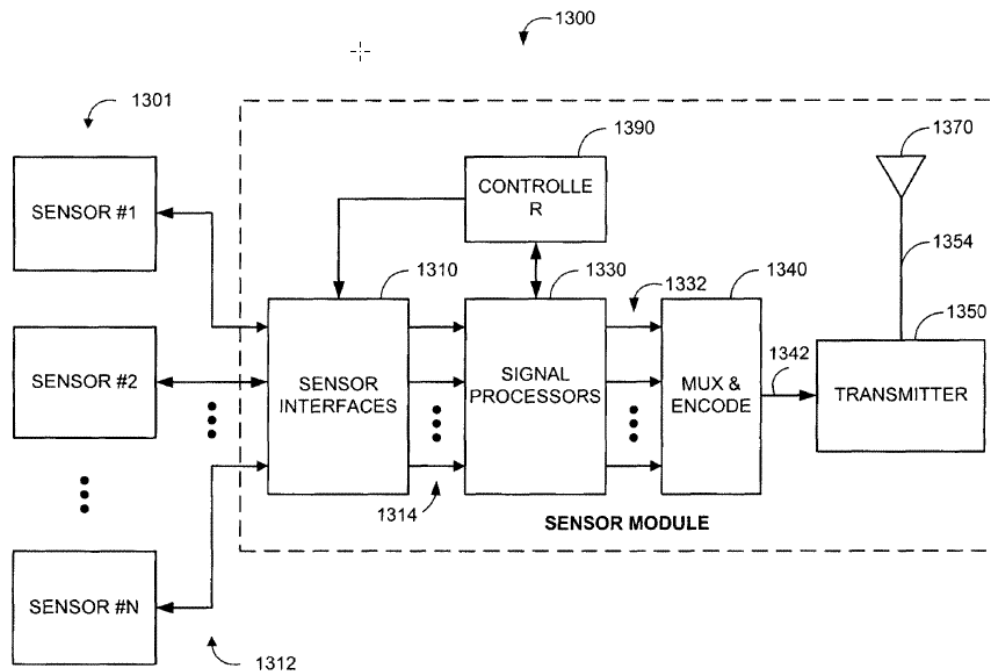


FIG. 13

Figure 13 depicts a functional block diagram of a sensor module configured for multiple sensors. *Id.* at 4:24–25. The Specification also notes that sensor signal conditioning may be performed in the analog domain or digital domain or both. *Id.* at 6:61–65.

D. Illustrative Claim

Claim 1, reproduced below in chart form with Petitioner's added designations to identify each limitation, is illustrative of the claims at issue:

Designation	Claim Language
Claim1 (Preamble) 1(a)	A body worn mobile medical monitoring device configured to minimize cable wiring from a sensor by placement of one or more sensor communication ports, the mobile medical monitoring device comprising:
Limitation 1(b)	a housing configured to be secured on a lower arm of a patient being monitored via a strap extending around the lower arm of the patient;
1(c)	a display positioned on a face of the housing, opposite the strap, so as to be visible to a user;
1(d)	a first sensor communication port positioned on a side of the housing and configured to face a hand of the lower arm of the patient when the mobile medical monitoring device is mounted to the lower arm of the patient, wherein: the side of the housing faces the hand of the lower arm of the patient when the mobile medical monitoring device is mounted to the lower arm of the patient,
1(e)	the first sensor communication port is configured to provide wired communication with a pulse oximetry sensor attached to a digit of the hand of the patient,
1(f)	the wired communication with the pulse oximetry sensor provided at least partly in the analog domain, and
1(g)	the first sensor communication port is positioned on the side of the housing such that a path from the first sensor communication port on the side of the housing to the digit of the patient is substantially perpendicular to the side of the housing and shorter than any other path from any other side of the housing to the digit of the patient;

Designation	Claim Language
1(h)	a plurality of additional sensor communications ports positioned on the housing and configured to provide wired communication with a plurality of additional physiological sensors at least partly in the digital domain; and
1(i)	one or more processors and a transmitter configured to:
1(j)	display, on the display, physiological measurements derived from the pulse oximetry sensor and the plurality of additional physiological sensors; and
1(k)	wirelessly transmit information indicative of the physiological measurements to a remote computing device.

Ex. 1001, 13:14–56.

Independent claim 13 (also challenged) is similar in scope to claim 1, but also requires the “a battery configured to provide power to the medical monitoring device” as well as “a case configured to house the battery.” *Id.* at 14:38–15:9. Independent claim 20 has unique limitations not found in claim 1, such as “the front side of the housing comprises a single user interface and a bezel,” and “a rechargeable battery.” *Id.* at 15:59–18:18.

E. Evidence

Petitioner relies on the following references:

Reference	Exhibit
U.S. Patent No. 6,840,904, filed on Oct. 11, 2001 and issued Jan. 11, 2005 (“Goldberg”)	1005
PCT Publication No. WO 00/42911, published on July 27, 2000 (“Kiani”)	1006
EP0880936A2, filed on Oct.30, 1997 and published on Dec. 2, 1998 (“Akai”)	1007
U.S. Patent No. 5,919,141, filed on Sept. 13, 1996 and issued on July 6, 1999 (“Money”)	1008
PCT Publication No. WO 99/13698 filed on Aug. 28, 1998 and published Mar. 18, 1999 (“Estep”)	1009
U.S. Patent No. 4,425,921, filed on Sept. 11, 1981 and issued on Jan. 17, 1984 (“Fujisaki”)	1016

Petitioner also relies on the Declaration of George E. Yanulis (Ex. 1003) in support of its arguments.

F. Asserted Grounds of Unpatentability

Petitioner asserts that the challenged claims of the ’735 patent are unpatentable based on the following grounds (Pet. 6–7):

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1, 2, 7–9	103(a)	Goldberg, Kiani, Money
3–6, 13–19	103(a)	Goldberg, Kiani, Money, Fujisaki
10–12	103(a)	Goldberg, Kiani, Money, Estep
20	103(a)	Goldberg, Kiani, Money, Fujisaki, Estep
1, 2, 7–9	103(a)	Money, Akai, Kiani.

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
3–6, 13–19	103(a)	Money, Akai, Kiani, Fujisaki
10–12	103(a)	Money, Akai, Kiani, Estep
20	103(a)	Money, Akai, Kiani, Fujisaki, Estep

II. ANALYSIS

A petition must show how the challenged claims are unpatentable under the statutory grounds it identifies. 37 C.F.R. § 42.104(b)(4). Petitioner must show “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(a).

A. Discretion Under 35 U.S.C. § 314(a)

Patent Owner, relying on our precedential decisions in *NHK*² and the *Fintiv* Order, contends that we should exercise our discretion under 35 U.S.C. § 314(a) to deny institution based on the status of the parallel district court litigation. *See* Prelim Resp. 15–21.

1. Legal Standards

Under 35 U.S.C. § 314(a), the Director has discretion to deny institution of an *inter partes* review. *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2140 (2016) (“[T]he agency’s decision to deny a petition is a matter committed to the Patent Office’s discretion.”); *SAS Inst. Inc. v.*

² *NHK Spring Co., Ltd. v. Intrix-Plex Techs., Inc.*, IPR2018-00752, Paper 8 (PTAB Sept. 12, 2018) (precedential).

Iancu, 138 S. Ct. 1348, 1356 (2018) (“*SAS*”) (“[Section] 314(a) invests the Director with discretion on the question whether to institute review.” (emphasis omitted)); *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.”).

In determining whether to exercise discretion to deny institution under 35 U.S.C. § 314(a), the Board considers an early trial date in related litigation as part of an assessment of all relevant circumstances of the case, including the merits, in an effort to balance considerations such as system efficiency, fairness, and patent quality. *Fintiv* Order 5–6; *see also NHK*, Paper 8 at 19–20 (denying institution relying, in part, on § 314(a) because the parallel district court proceeding was scheduled to finish before the Board reached a final decision).

When considering an early trial date in related litigation, the Board evaluates the following factors (“*Fintiv* factors”):

1. whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted;
2. proximity of the court’s trial date to the Board’s projected statutory deadline for a final written decision;
3. investment in the parallel proceeding by the court and the parties;
4. overlap between issues raised in the petition and in the parallel proceeding;
5. whether the petitioner and the defendant in the parallel proceeding are the same party; and
6. other circumstances that impact the Board’s exercise of discretion, including the merits.

Fintiv Order 5–6. In evaluating these factors, “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.

2. *Factual Background*

The progress of the related district court litigation is pertinent to discretion under 35 U.S.C. § 314(a). We summarize the progress as follows.

On June 12, 2019, Patent Owner filed a Complaint (Ex. 1029) against Petitioner in the U.S. District Court for the Southern District of California. Petitioner has filed a Motion to Stay the District Court proceedings (Ex. 1036) and Patent Owner opposed (Ex. 2001). According to the parties, the District Court has not yet ruled on the Motion. *See* Prelim. Resp. 16; Reply 2–3. The District Court has vacated all *Markman* deadlines, including the previously scheduled November 3, 2020, *Markman* hearing, pending its decision on Petitioner’s Motion to Stay. *See* Ex. 1037.

Patent Owner served its infringement contentions on January 24, 2020. Ex. 2002, 1–2; *see* Prelim. Resp. 18–19. Petitioner served its invalidity contentions on March 20, 2020. Ex. 2004; *see* Prelim. Resp. 18–19.

On May 18, 2020, Petitioner filed the Petition in this proceeding. *See* Paper 1.

Per the court’s Scheduling Order, which was modified on October 6, 2020, fact discovery closes on February 12, 2021, and expert discovery closes on May 7, 2021. Ex. 2009, 3. The Scheduling Order also includes a trial date of November 30, 2021. *Id.* at 4.

Petitioner filed a stipulation in the District Court. Ex. 1038. The stipulation states that if the Board institutes *inter partes* review, Petitioner “will not pursue in [the District Court] the specific grounds [asserted in the

inter partes review], or on any other ground . . . that was raised or could have been reasonably raised in an IPR (i.e., any ground that could be raised under §§ 102 or 103 on the basis of prior art patent or printed publications).” *Id.* at 6–7.

3. *Analysis of the Fintiv Factors*

With this background, we consider each of the factors set forth in the *Fintiv* Order. We then weigh the factors and take a holistic view of whether efficiency and integrity of the patent system are best served by denying or instituting review.

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

Petitioner has filed a Motion to Stay, but the District Court has not yet ruled on the motion. Prelim. Resp. 16; Reply 2–3. Patent Owner contends that a “stay is unlikely.” Prelim. Resp. 16. In particular, Patent Owner contends that many courts, including the Southern District of California, find that direct competition between the parties in the relevant market evidences significant prejudice and weighs against a stay. *Id.* Petitioner notes, however, that in the order vacating all *Markman* deadlines, the “[District] Court noted that any rescheduled *Markman* date may not be necessary, depending on how the [District] Court rules on the motion to stay.” Reply 3 (citing Ex. 1037).

Because the District Court has not ruled on the pending motion to stay, we determine that this factor does not weigh for or against denying institution in this case. *See Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 15 at 12 (PTAB May 13, 2020) (informative) (“*Fintiv* DI”); *Sand Revolution*

II, LLC v. Cont'l Intermodal Group – Trucking LLC, IPR2019-01393, Paper 24 at 7 (PTAB June 16, 2020) (informative) (“*Sand Revolution*”).

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

As noted above, trial in the parallel proceeding currently is set to begin on November 30, 2021. Ex. 2009, 4. Patent Owner contends that this trial date means there is little opportunity for efficiency or simplification with IPR proceedings because the final written decision date will still come during or after trial. Sur-reply 2–3. Petitioner contends, on the other hand, that because the final written decision will issue close to the scheduled trial date, and all *Markman* deadlines have been indefinitely vacated, this factor strongly weighs in favor of instituting *inter partes* review. Reply 3–4. Petitioner also notes that the District Court “has already amended its case management order twice—including extending the trial date two months.” *Id.* at 3.

“If the court’s trial date is earlier than the projected statutory deadline, the Board generally has weighed this fact in favor of exercising authority to deny institution under *NHK*.” *Fintiv* Order 9. On the other hand, “[i]f the court’s trial date is at or around the same time as the projected statutory deadline or even significantly after the projected statutory deadline, the decision whether to institute will likely implicate other factors discussed herein, such as the resources that have been invested in the parallel proceeding.” *Id.*

Here, the trial is scheduled to begin around the same time as our deadline to reach a final decision. Thus, we find that this factor does not weigh for or against denying institution in this case.

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

Patent Owner contends that “the parties and [District] Court have already invested substantial resources litigating the issues before the court—including patent validity.” Prelim. Resp. 19. As noted above, the parties have already served their respective infringement contentions and initial invalidity contentions. However, as Petitioner points out, all *Markman* deadlines have been vacated, including the *Markman* hearing. Reply 4. Moreover, much other work remains in the parallel proceeding as it relates to invalidity: fact discovery is ongoing, expert reports are not yet due, and substantive motion practice is yet to come. *Id.* Thus, although the parties and the District Court have invested some effort in the parallel proceeding to date, further effort remains to be expended in this case before trial. The facts here are similar to those in both recent Board informative decisions. *See Sand Revolution* 11; *Fintiv* DI 14; *see also Fintiv* Order 10 (“If, at the time of the institution decision, the district court has not issued orders related to the patent at issue in the petition, this fact weighs against exercising discretion to deny institution under *NHK*.”).

The *Fintiv* Order also recognizes that “notwithstanding that a defendant has one year to file a petition, it may impose unfair costs to a patent owner if the petitioner, faced with the prospect of a looming trial date, waits until the district court trial has progressed significantly before filing a petition at the Office.” *Fintiv* Order 11. The Order instructs the parties to explain facts relevant to the Petition’s timing. *Id.*; *see also id.* at 11–12 (considering timing of the Petition as part of the third *Fintiv* factor). Patent Owner notes that Petitioner waited until just before the statutory deadline to file its Petition, arguing that the Petition includes substantially the same

arguments presented in its March 20, 2020 invalidity contentions. Prelim. Resp. 18–20. Petitioner, on the other hand, contends that it “was not dilatory in filing this petition.” Reply 5. Petitioner explains that the parties spent six months after the complaint was filed “engaged in settlement discussions.” *Id.* Further, Petitioner notes that its initial invalidity contentions were filed on March 20, 2020, which was “concurrent with the nationwide shift to ‘work from home’ and the closing of counsels’ public offices.” *Id.* Petitioner contends that, thereafter, it “diligently worked to draft IPR petitions challenging [nine] patents and 183 claims,” including the present Petition. *Id.* Patent Owner responds that “[n]ormal settlement discussions . . . cannot excuse” the delay and reiterates its contention that Petitioner “waited until just before the statutory deadline to file its Petition.” Sur-reply 3.

Petitioner filed its Petition approximately two months after serving its initial invalidity contentions, and approximately three weeks before the statutory deadline. Based on the facts present here, we find that Petitioner’s explanation for the timing of the Petition is reasonable, notwithstanding the closeness to the statutory deadline, particularly in view of the large number of patents and claims challenged in this and Petitioner’s other related petitions for *inter partes* review, as well as the increased difficulty in preparing the Petitions due to concurrent office closures. *See* Reply 5; *supra* Section I.B (identifying related *inter partes* review proceedings).

Due to the relatively limited investment in the parallel proceeding to date and the fact that the timing of the Petition was reasonable, we find that this factor weighs in favor of not exercising discretion to deny institution under 35 U.S.C. § 314(a).

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

Patent Owner contends that Petitioner relies upon the same two primary references and substantially the same invalidity arguments, under the same claim construction standard, as in the District Court. Prelim. Resp. 19; Ex. 2004 (Invalidity Contentions).

Petitioner notes that the Petition seeks review of all claims of the '735 patent, not merely those at issue in the parallel proceeding. Reply 6; *see also* Ex. 2004, 1 (claim 20 appears to be at issue in the parallel proceeding). Further, as noted above, Petitioner has filed in the District Court “a stipulation that, if IPR is instituted, they will not pursue in the District Court Litigation any ground raised or that could have been reasonably raised in an IPR.” *Id.*; Ex. 1038. Petitioner contends that, because of this stipulation, there will be no overlap of invalidity issues between the parallel district court proceeding and this *inter partes* review. Reply 6.

Patent Owner contends that the stipulation is “unclear” as to whether Petitioner reserves the right to proceed based on other references cited in the invalidity contentions. Sur-reply 4. We disagree with Patent Owner’s contention here. The portion of the stipulation quoted by Patent Owner, states in full that the “stipulation is not intended, and should [not] be construed, to limit [Petitioner’s] ability to assert invalidity of the asserted claims . . . on any other ground (*i.e., invalidity under §§ 101, 112*).” Ex. 1038, 7 (emphasis added). Petitioner’s stipulation also unequivocally states, however, that it “will not pursue in this case the specific grounds . . . [in] the instituted *inter parties* [sic] review petition, *or on any other ground . . . that was raised or could have been reasonably raised in an IPR (i.e., any*

ground that could be raised under §§ 102 or 103 on the basis of prior art patents or printed publications).’’ Id. at 6–7 (emphasis added).

Petitioner’s stipulation here mitigates any concerns of duplicative efforts between the district court and the Board, as well as concerns of potentially conflicting decisions. *See Sand Revolution* 12. Importantly, Petitioner broadly stipulates to not pursue *any ground* raised or that could have been reasonably raised. Reply 6. As noted in *Sand Revolution*, such a broad stipulation better addresses concerns of duplicative efforts and potentially conflicting decisions in a much more substantial way. *Sand Revolution* 12 n.5. Accordingly, Petitioner’s broad stipulation ensures that an *inter partes* review is a true alternative to the district court proceeding. *Id.*

Thus, we find that this factor weighs strongly in favor of not exercising discretion to deny institution under 35 U.S.C. § 314(a).

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

Petitioner and Patent Owner acknowledge the parties are the same in the *inter partes* proceeding and in the parallel proceeding. Prelim. Resp. 20; Reply 6–7. Thus, this factor supports denying institution. *See Fintiv* DI 15; *Sand Revolution* 12–13; *cf. Fintiv* Order 13–14 (“If a petitioner is unrelated to a defendant in an earlier court proceeding, the Board has weighed this fact against exercising discretion.”).

Factor 6: other circumstances and considerations that impact the Board's exercise of discretion, including the merits

As discussed below, on this preliminary record, Petitioner has met its burden of demonstrating a reasonable likelihood that it would prevail in showing that claims of the '735 patent are unpatentable.³ Although we recognize the record may change during trial, as discussed in detail below, Petitioner has made a sufficiently persuasive showing, on the record presently before us, that the prior art references cited in the Petition teach or suggest all limitations of the challenged claims. *See Fintiv* Order 14–15 (discussing the merits of the Petition as a consideration).

We determine that this factor does not weigh for or against denying institution in this case

Conclusion

We take “a holistic view of whether efficiency and integrity of the system are best served by denying or instituting review” when considering the six *Fintiv* factors. *Fintiv* Order 6. Our holistic review of the *Fintiv* factors, namely that the timing of the Petition was reasonable, the relatively limited investment in the parallel proceeding to date, that there is minimal potential overlap of the two proceedings, and that the merits of the Petition are reasonably sufficient, indicates that the *Fintiv* factors weigh in favor of instituting *inter partes* review. As such, we are not persuaded that the

³ The parties include arguments directed to the merits of the asserted grounds in their discussions of Factor 6. *See* Reply 7; Sur-reply 4–7. We do not rely on these arguments in our determination below that Petitioner has presented a reasonable likelihood of success on the merits (*see infra* Sections II.D–L).

interests of the efficiency and integrity of the system would be best served by invoking our authority under 35 U.S.C. § 314(a) to deny institution of a meritorious Petition. For the reasons discussed above, we decline to deny institution under § 314(a).

B. Principles of Law

1. Obviousness

A claim is unpatentable under 35 U.S.C. § 103(a) 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. *See 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 ordinary skill in the art; and (4) objective evidence of nonobviousness.⁴ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). In that regard, an obviousness analysis “need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *KSR*, 550 U.S. at 418; *accord In re Translogic Tech., Inc.*, 504 F.3d 1249, 1259 (Fed. Cir. 2007).

⁴ At this stage of the proceeding, the parties have not directed our attention to any objective evidence of non-obviousness.

2. *Level of Ordinary Skill in the Art*

Petitioner contends that a person of ordinary skill in the art “would have been a person with at least a B.S. degree in electrical or biomedical engineering or a related field with at least two years’ experience designing patient monitoring systems.” Pet. 14 (citing Ex. 1003 ¶¶ 25–32). Patent Owner does not offer any rebuttal on the current record.

Based on the current record and for the purposes of this Decision, we adopt Petitioner’s proposed description of the person of ordinary skill in the art.

C. *Claim Construction*

In an *inter partes* review for a petition filed on or after November 13, 2018, 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) (2019). In applying this claim construction standard, we are guided by the principle that the words of a claim “are generally given their ordinary and customary meaning,” as understood by a person of ordinary skill in the art in question at the time of the invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc) (citation omitted). “In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence.” *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17). Of course, “[t]here is a heavy presumption that claim terms are to be given their ordinary and customary meaning.” *Aylus*

Networks, Inc. v. Apple Inc., 856 F.3d 1353, 1358 (Fed. Cir. 2017). “Properly viewed, the ‘ordinary meaning’ of a claim term is its meaning to the ordinary artisan after reading the entire patent.” *Id.* (quoting *Phillips*, 415 F.3d at 1321).

Petitioner contends that “the terms of the unexpired ’735 patent’s claims are to be given their plain and ordinary meaning, as understood by one of ordinary skill in the art, in view of the ’735 patent’s specification.” Pet. 14. Petitioner further states that “the Board need not construe any claim terms to find the claims invalid.” Pet. 14–15, n.1. At this stage of the proceeding, Patent Owner does not propose any specific term or phrase need be construed.

Only those terms that are in controversy need be construed, and only to the extent necessary to resolve the controversy (*e.g.*, whether the claim reads on a prior art reference). *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017). At this stage of the proceeding, we give the claim terms their plain and ordinary meaning and determine that it is unnecessary to further construe any claim term.

We do note, however, that the claims require “sensor communication port(s).” *See, e.g.*, Ex. 1001, claim 1. To the extent the parties contend that “sensor communication port” has any special meaning or otherwise should be construed, the parties should clearly identify what they contend the scope of a sensor communication port encompasses.

D. The Asserted Prior Art

1. Goldberg

Goldberg is titled, “Medical Monitoring Device and System,” and it broadly discloses a wireless, wearable patient monitoring device. Ex. 1005, codes (54), (57). More specifically, Goldberg teaches portable device 100 that receives data from multiple sensors, displays the sensor data, and wirelessly transmits sensor data to a remote computer. *Id.* at 1:29–44, 2:27–29, 4:20–30, 4:50–56, 5:3–8, 2:37–42, 2:47–55. Goldberg discloses that “[v]arious sensors 104 are known in the art for converting physiological characteristics . . . into electrical signals,” and that “sensor(s) 104 can be coupled to the controller 102 and/or memory by wire or wirelessly, and such ways for coupling are well known in the art.” *Id.* at 4:23–30.

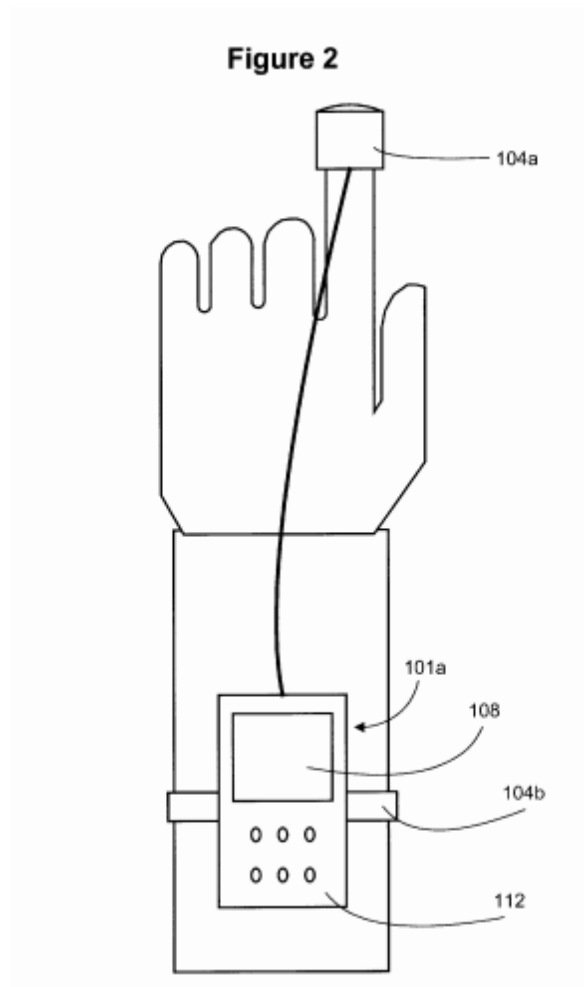


Figure 2 of Goldberg depicts portable device 101a mounted in an assembly or housing 112 that is sized to be carried by an individual and strapped to the wrist or forearm by any conventional strap apparatus. Ex. 1005, 4:57–60. In this embodiment, sensor 104a is a pulse oximetry sensor and blood pressure cuff sensor 104b monitors blood pressure. *Id.* at 4:63–67.

In other embodiments, “the medical monitoring device may contain one, all, or any combination of the above-mentioned sensor types,” including also a sensor to measure electrolyte levels. *Id.* at 5:1–8. The Specification states that the “invention may be comprised of any type of physiological sensor 104 suitable [f]or use with a portable monitoring device.” *Id.*

2. Kiani

Kiani discloses a portable pulse oximetry sensor that communicates with conventional bedside monitors. Ex. 1006, code (57). Kiani seeks to provide a transportable pulse oximeter that can stay with and continuously monitor the patient as they are transported. *Id.* at 3:1–4. Kiani describes conventional pulse oximetry sensors, including sensors with sensor ports, as well as portable devices having both batteries and displaying status indicators. *Id.* at 3:21–23, 5:21–22, 8:31–9:2, Fig. 5. Kiani notes that its portable docking station combination is also universally compatible with pulse oximeters from various manufacturers. *Id.* at code (57).

As depicted below, Kiani describes handheld embodiment 500 of the universal/upgrading pulse oximeter that includes external power supply input 530, oximeter output port 540 for connection to the external pulse oximeter, and a single sensor input 550 at the top edge. *Id.* at Fig. 5, 8:31–9:2.

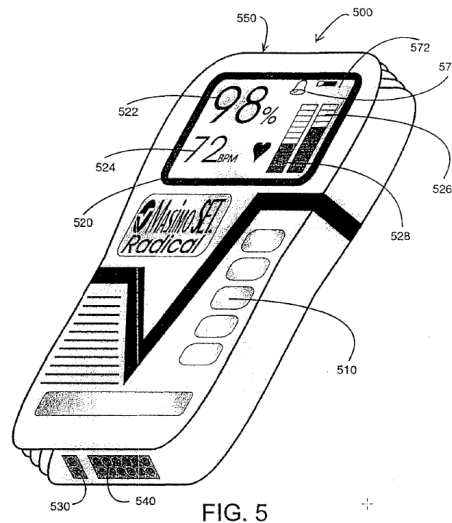


Figure 5 of Kiani depicts a handheld embodiment. As shown, Kiani's display shows measured oxygen saturation 522, pulse rate 524, confidence

bar 528, low battery 572, and alarm enabled 574 status indicator. Ex. 1006, Fig. 5, 8:31–9:2

3. Akai

Akai is titled “Monitoring physical condition of a patient by telemetry,” and it discloses a wearable monitoring device for monitoring blood glucose levels. Ex. 1007, codes (54), (57). Akai teaches a measurement unit that connects to three or more sensors, displays readings from the sensors, and wirelessly transmits those readings to a central computer. *Id.* at code (57). As depicted below, Akai’s housing has a wired connection with a pulse oximetry sensor that extends along a path substantially perpendicular to the side of housing 112 facing the hand. *Id.* at Fig. 1; *see* Ex. 1003 ¶ 43.

Fig. 1

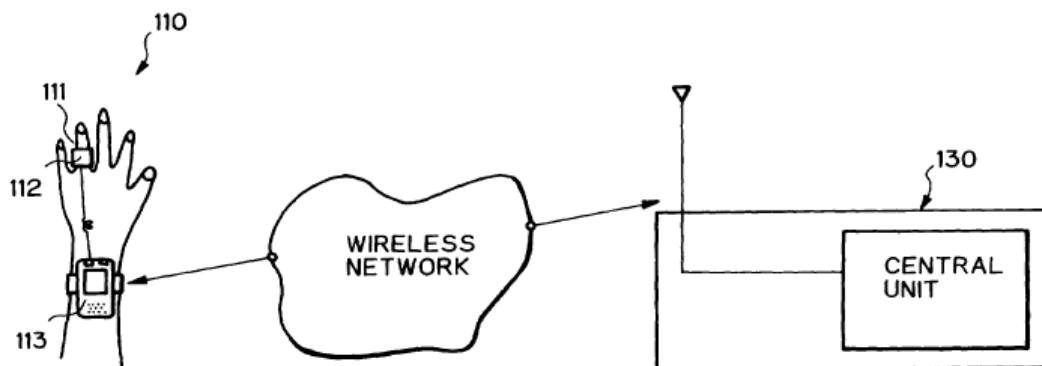


Figure 1 of Akai depicts a perspective view of a blood glucose monitoring system. Ex. 1007, 4:17–19.

4. Money

Money is titled “Vital Sign Remote Monitoring Device.” Ex. 1008, code (54). Money teaches a portable, multi-parameter patient monitor that receives digital signals from some sensors and analog signals from other

sensors. Ex. 1008, 5:48–51, 5:61–6:10, 7:4–8. An RF transmitter transmits both analog and digital vital sign data to a remote monitoring station. *Id.* at code (57). The remote patient monitoring device “must provide an electronic interface to a wide variety of vital sign transducers, and process both analog and digital data.” *Id.* at 7:4–6. Overall logic control and processing of data by the remote patient monitoring device is determined by a processor, which has “integral analog to digital (A/D) conversion capabilities . . . to allow direct connection of vital sign data in analog format.” *Id.* at 7:32–34, 7:49–52.

5. *Fujisaki*

Fujisaki is titled “Apparatus for Checking Pulse and Heart Rates.” Ex. 1016, code (54). Fujisaki is a small portable device for checking pulse rate and it teaches that wearable devices include removable cables to interface with sensors. *Id.* at code (57), 5:37–44, Figs. 2, 6. Figure 2 of Fujisaki is reproduced below.

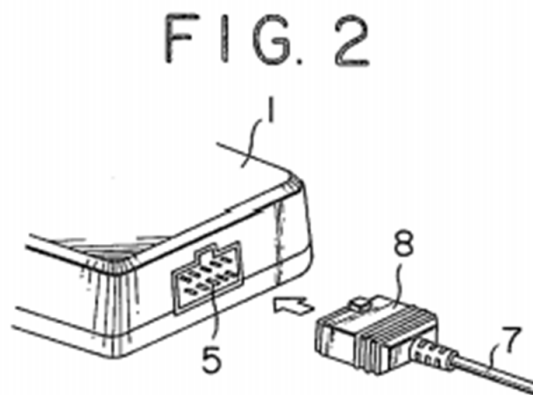


Figure 2 of Fujisaki depicts a partial perspective view of connector pin 5 provided for receiving connector plug 8 to create a removable connection for either a heart or pulse sensor.

6. *Estep*

Estep teaches a wearable electric signal measurement device with a display 31 surrounded by a bezel (i.e., border). Ex. 1009, 4:24–27, Fig. 3C; Ex. 1003 ¶ 45.

E. Asserted Obviousness in View of Goldberg, Kiani, and Money

Petitioner asserts that claims 1, 2, and 7–9 would have been obvious in view of Goldberg, Kiani, and Money. *See* Pet. 16–35. We discuss below the parties’ arguments as to claim 1 as representative of this ground for purposes of this Decision. Patent Owner also does not present separate arguments regarding the remaining claims for this ground at this stage of the proceeding.

1. *Petitioner’s Arguments and Evidence*⁵

As described in more detail in the Petition, Petitioner relies on Goldberg as teaching most of the features of claim 1. *See* Pet. 16–35. Petitioner first notes that “Goldberg, Kiani, and Money are all related to the same field (portable, wearable patient monitoring) and describe the same device: a portable medical monitor.” Pet. 16. Petitioner relies on Kiani for

⁵ We note that both parties have taken some liberty with stylistic formatting of their papers that impacts word count. For example, Petitioner has cut out spaces in citations (EX1001) and Patent Owner has cut and pasted image files (Prelim. Resp. 44, 55) that include substantive argument, but the words would not be captured in an automated word count. Although these liberties do not appear to us to be excessive and an attempt to circumvent our rules, the parties are cautioned to be mindful in future briefing. *See Google Inc. v. Makor Issues & Rights Ltd.*, IPR2016-01535, Paper 8 (PTAB Dec. 1, 2016). In the interest of fairness, Patent Owner may use Petitioner’s citation conventions in preparing its Patent Owner Response. The parties also may use these conventions for any other briefing in this proceeding.

its teachings that portable electronic devices require battery power, and wired connections often include sensor ports. Pet. 18, 22, 39. Petitioner also contends sensor ports would be features a person of ordinary skill in the art would understand Goldberg to also implicitly disclose. *Id.* Petitioner relies on Money for its teaching of a system that may receive both analog signals from some sensors and digital signals from others, as explained more below. Pet. 28. Petitioner also argues that combining Kiani and Goldberg represents a combination of prior art elements according to known methods to yield predictable results. Pet. 23. Petitioner likewise argues that modifying Goldberg/Kiani with Money would have been a combination of familiar elements according to known methods yielding predictable results. Pet. 29.

For ease of reference, we refer to each claim limitation according to the labeling set forth above, and adopted by Petitioner. *See* Pet. xiii–xiv.

Petitioner first contends the preamble (1a) is not limiting, but even if so, Goldberg teaches the claimed body worn medical monitoring device to minimize cable wiring from a sensor by placement of one or more sensor communication ports. Pet. 17; Ex.1005, 4:57–67. Goldberg discloses portable device 100 strapped to a person’s wrist or forearm, which may receive data from at least a pulse oximetry sensor, a blood pressure cuff sensor, and a third sensor such as an electrolyte sensor. Pet. 17; Ex. 1005, 4:57–67, 5:3–8, 5:39–47.

As shown in Figure 1, Goldberg teaches that the pulse oximetry sensor 104a is positioned on a user’s finger, and the blood pressure cuff sensor 104b is positioned on a person’s forearm or wrist. According to Petitioner, Goldberg teaches the wire between pulse oximetry sensor 104a

and housing 112 is at the closest possible location to the patient's hand, where a pulse oximetry sensor attaches to minimize the length of the wire using the shortest distance between two points. Pet. 17–18 (citing Ex. 1003 ¶ 57; Ex. 1005, 4:26–29, 4:60–62, Fig. 2).

As for the preamble discussion of one or more sensor communication ports, Petitioner argues that a person of ordinary skill in the art would understand the wire electrically connects to the housing via a port, or it would have been obvious to include a port as part of this electrical connection in view of Kiani. Pet. 18. These sensor communication port limitations are discussed more below. Whether the preamble is limiting, Petitioner shows sufficiently for purposes of institution that the recitation in the preamble is satisfied by the prior art.

As for limitation 1(b), Petitioner persuasively shows that Goldberg teaches a housing secured or strapped to the person being measured at the person's wrist or forearm. Pet. 18–19 (citing Ex. 1003 ¶¶ 59–60; Ex. 1005, 4:19–30, 4:57–60, 4:64–67, Fig. 2). Goldberg's blood pressure cuff sensor 104b functions as both a sensor and a strap secured to the back of the housing to fix the portable device to the patient's wrist. *Id.*

Limitation 1(c) requires a display positioned on a face of the housing. *See supra.* Petitioner shows how Goldberg teaches a display 108 that displays sensor data and is located on a face of the housing opposite the strap and visible to a user. Pet. 19 (citing Ex. 1003 ¶ 62; Ex. 1005, 6:32–45, Figs. 6A–B).

Petitioner next shows how Goldberg teaches the limitations of 1(d) related to a first sensor communication port positioned on a side of the housing and configured to face a hand of the lower arm. Pet. 20–21.

Dr. Yanulis testifies that “[a] port is typically a female connection or socket of a wired connection.” Ex. 1003 ¶ 64 (citing Ex. 1001, 5:33–36, Fig. 4B). Dr. Yanulis testifies that a person of ordinary skill in the art would assume that Goldberg would use a port to transmit the signals into the housing and to the controller because “the male-female relationship of wired connections is a preferred method of electrical connection because it provides a more secure connection than merely contacting two electrical conductors.” *Id.* Dr. Yanulis testifies that “[p]orts are also preferable over hardwiring a sensor to a monitor because hardwiring a sensor to a monitor provides no adaptability,” and patients benefit from the adaptability to connect wired connects through ports, which provide an end user the ability to disconnect and connect a variety of sensors as needed. *Id.*; Pet. 23 (a person of ordinary skill would understand how to “build wired connections that allow for sensors to be readily connected and disconnected as needed, and ports were known to provide such adaptability”).

Petitioner and Dr. Yanulis note that the types of connections Goldberg could use would be limited to a select few, including a hardwired connection or a port. *Id.*; Pet. 21–22. Petitioner contends that Kiani provides specific teachings and motivation for using a port in Goldberg:

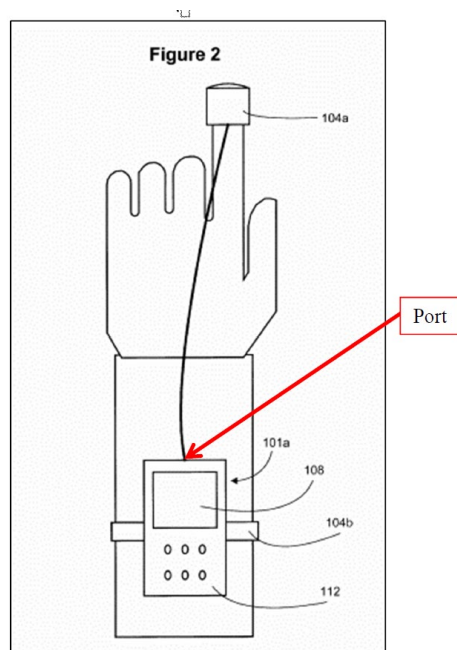
To the extent Goldberg doesn’t explicitly recite a port, Kiani teaches that sensor input ports 540,^[6] 550 were well-known for wired communication. EX1006, 3:21-27, 8:31-9:2. As such, Kiani explicitly explains that which was implicitly known to a PHOSITA: wired connections can communicate with electrical devices via ports, such as the wired connection of

⁶ Port 540 is the oximeter output for connection to the external pulse oximeter. Ex. 1006, Fig. 5, 8:31–9:2. Thus, we question whether port 540 should be classified as a sensor input port.

the pulse oximetry sensor 104a shown in Goldberg. *Id.*; EX1003, ¶ 65. It would have been obvious to include the port taught by Kiani on the portable device of Goldberg to establish easy removal and replacement of the sensor 104a, and predictably resulting in a secure, wired connection. EX1006, 2:34-3:4; EX1003, ¶¶ 64-65.

Pet. 22. Similarly, Dr. Yanulis testifies that “Kiani shows that sensor input ports 540, 550 were a known vehicle for wired communication,” and including a port on Goldberg’s housing would predictably enable wired communication with the pulse oximeter 104a while allowing easy removal and replacement of the sensor 104a providing the adaptability required by clinicians. Ex. 1003 ¶ 65.

Figure 2 of Goldberg shows the first sensor communication port faces the hand and exists on the side of the housing facing the hand when the person is wearing the portable device as further required by this claim limitation 1(d) and as depicted below. *Id.* (citing Ex. 1003 ¶ 66).



Petitioner’s annotated Figure 2 of Goldberg (Pet. 21) with added notation showing where Petitioner contends Kiani’s port would be located.

Petitioner shows how the combination of Goldberg and Kiani teach that the pulse oximetry sensor 104a provides electrical signals representing oxygen saturation to the electronic controller 102 via a wired connection and through the first sensor communication port. Pet. 21, 23–24. As further required by limitation 1(e), Petitioner demonstrates that Goldberg’s pulse oximetry sensor is attached to a finger of the patient’s hand. Pet. 24.

Limitation 1(f) requires that “the wired communication with the pulse oximetry sensor provided at least partly in the analog domain.” *See supra*. Petitioner recognizes that Goldberg does not explicitly state whether the signal from the pulse oximetry sensor is analog or digital. Pet. 24. Petitioner relies on Kiani because “Kiani teaches a sensor interface 120 with an amplifier and a filter that receives an analog signal from a pulse oximetry sensor.” *Id.* (citing Ex. 1006, 1:26–28). Petitioner contends “the combination of Goldberg and Kiani represents a substitution of one equivalent SpO2 [sic] sensor for another to achieve predictable results (transferring oxygen saturation data via an analog signal).” Pet. 25.

Relying on the testimony of Dr. Yanulis, Petitioner reasons that “it would have been obvious to provide the wired communication with the pulse oximetry sensor of Goldberg in the analog domain because there are only a finite number of options (two) for transmitting signals: analog or digital, and choosing analog would have been, at worst, obvious to try.” *Id.* (citing Ex. 1003 ¶¶ 71–73). Further, Dr. Yanulis testifies that “signals are either analog or digital. There are only two options, so it would have been obvious to transmit signals as either digital or analog signals.” Ex. 1003 ¶ 73.

Limitation 1(g) requires the first sensor communication port positioned on the side of the housing and wired connection path to extend

from the first sensor communication port to the digit of the digit of the patient in a path that is substantially perpendicular to the side of the housing. *See supra*. Petitioner shows persuasively how Goldberg (Fig. 2) includes a wire between the pulse oximetry sensor 104a and the housing 112 that extends from the first sensor communication port along a path substantially perpendicular to the first side (side facing the patient's hand) of the housing. Pet. 25. As shown in Figure 2, Goldberg's wire's path is the shortest from any side of the housing when the sensor is attached to the patient's finger because the wire's path is the most direct path possible from the housing to the finger. *Id.* (citing Ex. 1003 ¶¶ 74, 75; Ex. 1005, Fig. 2).

Limitation 1(h) next recites a plurality of additional sensor communications ports positioned on the housing and configured to provide wired communication with a plurality of additional physiological sensors at least partly in the digital domain. Petitioner contends Goldberg teaches a system capable of communicating with more than two sensors. Pet. 26 (Ex. 1003 ¶ 76; Ex. 1005, 4:19–29, 5:3–8). According to Petitioner, “Goldberg explains the portable device 100a communicates with three or more sensors (SpO₂, blood pressure, and electrolyte), but the electrolyte sensor could also be replaced with an ECG, temperature, or respiration rate sensor.” *Id.* (citing Ex. 1005, 4:57–5:8, 1:37–44, 4:24–27). Further, Goldberg teaches sensors communicate with the controller via wired connections. *Id.* (citing Ex. 1005, 4:19–29, 5:3–8).

Although Petitioner contends “Goldberg implicitly teaches these wired connections include ports,” Petitioner also argues that sensor ports were conventional for wired connections, and it would have been obvious in view of Kiani to include sensor ports for all wired connections with sensors.

Pet. 27 (citing Ex. 1003 ¶¶ 77, 79; Ex. 1005, 4:19–29, 5:3–8, 3:21–27, 8:31–9:2). Relying on Dr. Yanulis, Petitioner contends “Kiani also teaches sensor ports are positioned on a monitor’s housing,” thus, “Goldberg as ‘modified’ by Kiani would predictably include a plurality of ports positioned on the housing 112 and configured to receive signals from the blood pressure and electrolyte (or others) sensors via wired connections.” *Id.* (citing Ex. 1005, 4:19–29, 5:3–8; Ex. 1003 ¶ 78).

Next, in addressing the requirement for digital communications, Petitioner argues “Goldberg doesn’t expressly teach whether the sensors communicate via digital (or analog) communications, but Goldberg teaches the portable device 100 can communicate with any sensor, which would include analog and digital devices.” Pet. 28 (citing Ex. 1005, 5:6–8). Petitioner relies on Money because it “teaches a system that receives analog signals from some sensors and digital signals from others,” and “Money even describes the power requirements and requisite circuitry to communicate with both sensor types.” *Id.* (citing Ex. 1003 ¶¶ 81, 82; Ex. 1008, 5:48–51, 7:4–8, 7:16–20, 7:58–62, 12:4–7, 13:24–32).

Dr. Yanulis explains how Money teaches the requisite circuitry to output a digital signal representative of a patient’s temperature and how to send digital packets via the RS232 protocol to be received by a serial port. Ex. 1003 ¶ 83 (citing Ex. 1008, 10:59–11:5, Fig. 1, 7:49–52, 6:11–20, 11:51–53). Dr. Yanulis also testifies that data may be digitized in different locations and that determination is a simple design choice. Ex. 1003 ¶ 84 (“it is simply a design choice as to which sensor to connect to the RS232 port”). Dr. Yanulis testifies that “[i]t would have been obvious to modify Goldberg with Money so that the system of Goldberg would function with

more sensors and more sensor types,” and Goldberg may communicate with any conventional sensor using either digital data, or analog data. Ex. 1003 ¶ 85 (citing Ex. 1008, 5:48–51, 7:4–8, 7:16–20, 13:24–32).

Petitioner demonstrates how Goldberg teaches a controller 102 configured to process sensor signals, thus meeting limitation 1(i). Pet. 29 (citing Ex. 1003 ¶ 87; Ex. 1005, 4:34–36). Limitation 1(j) requires the display of physiological measurements derived from the pulse oximetry sensor and the plurality of additional physiological sensors. *See supra*. Petitioner contends, and we agree, that Goldberg’s controller derives and displays measurements of oxygen saturation, blood pressure, and glucose based on the signals received from the sensors. Pet. 30 (citing Ex. 1003 ¶ 88; Ex. 1005, 4:19–23, 4:30–36, 50–55, Figs. 6A–C).

As for limitation 1(k), Petitioner demonstrates how Goldberg wirelessly transmits information indicative of the physiological measurements to a remote computing device. Pet. 30. More specifically, Goldberg discloses how communication unit 110 wirelessly transmits sensor measurements, including oxygen saturation and blood pressure, to remote computer 302. *Id.* (citing Ex. 1005, 4:19–23, 4:50–55, 5:9–24, Figs. 6A–C; Ex. 1003 ¶ 89).

2. Patent Owner’s Arguments and Evidence

Patent Owner first argues that Petitioner has not demonstrated sufficient motivations to combine or shown a reasonable expectation of success, and has used improper hindsight in making the combination. Prelim. Resp. 21–26. For the reasons set forth below, and based on the current record, we disagree.

Patent Owner argues that “Petitioner’s motivations to combine rely on conclusory and unsupported assertions, contradict other opinions offered by

its expert, or are inconsistent with the references themselves.” *Id.* at 22. Patent Owner next contends that “Petitioner fails to mention a reasonable expectation of success even once, let alone marshal evidence to support its position.” *Id.* at 23 (emphasis omitted). These arguments are general assertions not tied to any specific limitation or proposed combination by Petitioner, and we find these generic arguments unpersuasive. We address Patent Owner’s specific contentions below.

Patent Owner contends Petitioner improperly uses hindsight to argue for the addition of multiple ports to Goldberg. *Id.* at 25. Patent Owner similarly argues that Petitioner does not explain why a person of skill would have had a reasonable expectation of success in modifying Goldberg to include sensor ports. *Id.* at 35. To the contrary, we find Goldberg suggests the use of multiple sensors that were well-known in that art, as well as multiple wired connections. *See* Ex. 1005, 4:50–5:8. Goldberg discusses the advantages of employing multiple sensors and notes its “monitoring device may contain one, all, or any combination of the above-mentioned sensor types, as well as other sensors,” and that the “present invention may be comprised of any type of physiological sensor . . . with a portable monitoring device.” *Id.* Petitioner, and Dr. Yanulis, explain persuasively that Goldberg’s sensors are wired connections that could either be hard wired or use a port, and both options were well-known. *See* Ex. 1003 ¶¶ 64, 65.

Petitioner then relies on Kiani for its disclosure of using a sensor port for wired connections and Dr. Yanulis explains that the combination would be putting together known concepts (wired electrical communication and wired electrical communication using ports) to yield predictable results. *Id.*

For the purpose of this Decision on Institution, we credit Dr. Yanulis's testimony as to what Kiani's teachings would have conveyed to a skilled artisan concerning sensor ports. We, however, are cognizant that Patent Owner has not yet cross-examined Dr. Yanulis or provided countervailing testimony from its own expert on the matter. Based on the current record, Petitioner has shown a reasonable expectation of success of combining Kiani's teaching of using sensor ports in Goldberg's multiple sensor device.

Patent Owner similarly contends that Petitioner has not established a likelihood of success because Goldberg does not disclose any sensor communication ports, which are required by all claims and Petitioner fails to present a motivation to add three sensor ports to Goldberg's device. Prelim. Resp. 32–33. Again, at this phase of the proceeding, we find Petitioner's evidence and supporting testimony more persuasive than Patent Owner's attorney argument. Petitioner's evidence and supporting testimony show that there were only a few options for the wired sensor connections disclosed in Goldberg, and with the teachings of Kiani, using sensor communication ports would have predictably allowed for adaptability and flexibility in patient care that would have been desirable to a person of ordinary skill. *See* Ex. 1003 ¶¶ 64, 65. Petitioner establishes a likelihood of success by demonstrating that using Kiani's sensor ports in Goldberg is adopting a well-known and preferred method of electrical connection that provides a more adaptable, yet secure, connection than merely contacting two electrical conductors. *Id.* ¶ 65. On the current record, we find Petitioner's contentions persuasive.

Patent Owner makes several attorney arguments related to drawbacks of the proposed combination outweighing the benefits. *See* Prelim. Resp.

28–34. For example, Patent Owner contends that adding multiple ports to Goldberg would increase the size of the device and add to the number of sensors attached to a patient making it undesirable. *Id.* at 33. Similarly, Patent Owner argues that Petitioner fails to

consider whether port connections have any disadvantages compared to hardwired connections that would dissuade a POSITA from making the alleged combination. For example, plug and port connections can be accidentally detached, may have faulty or loose connections, require more space and hardware to accommodate than a hardwired cable, and introduce additional parts, expense, and points of failure to a device.

Prelim. Resp. 31–32. Likewise, Patent Owner contends that power utilization is key to the success of Money’s device, but adding converters Petitioner proposes would increase the power consumption and decrease efficiency. *Id.* at 40.⁷ Patent Owner’s highly factual arguments may have merit if supported, but based on the record before us and in view of Petitioner’s supporting evidence, and in particular Dr. Yanulis’s testimony, we find Petitioner demonstrates a reasonable likelihood of success.

Specifically, Petitioner has provided several persuasive rationales for the proposed combination of Kiani’s sensor ports into Goldberg and for employing a second and third sensor with sensor communication ports in Goldberg. *See, e.g.*, Ex. 1003 ¶¶ 76–79, 78 (“including second and third ports on Goldberg’s housing would have predictably enabled wired communication with the second and third sensors while allowing easy removal and replacement of the third sensor and providing a secure, wired connection between the blood pressure sensor 104b and the housing 112”),

⁷ *See also* Prelim. Resp. 44, 55 (providing a graphical display with argument as to why Petitioner’s proposed physical alterations are not practical).

79 (“inclusion of a generic third port would have been obvious as a mere duplication of parts”).

Patent Owner next argues that Petitioner has failed to show any reference teaches the claimed data signal configurations. Prelim. Resp. 36. The data signal configuration Patent Owner refers to for claim 1 are limitations 1(f) and 1(h) requiring “the wired communication with the pulse oximetry sensor provided at least partly in the analog domain” and “a plurality of additional physiological sensors at least partly in the digital domain,” respectively. *See supra*. Patent Owner contends that Goldberg does not teach whether the signals from its sensors are analog or digital, and none of the references show “the specific data signal communications required by the claims—a physiological sensor, ***separate from a pulse oximeter sensor***, that provides digital communications.” Prelim. Resp. 37. Further, Patent Owner points out that “[t]he sensor configuration of Money is the opposite of that recited in the claims. The only physiological sensor that provides digital data in Money is the pulse oximeter (SpO₂) sensor.” *Id.* (citing Ex. 1008, 5:38–39, 6:15–20, 7:58–62, 8:20–27, 13:26–28, Fig. 1).

Apart from the argument that the references don’t teach the precise data configuration claimed, Patent Owner separately argues that a person of ordinary skill in the art would not have been motivated to include the claimed data signal configurations. *Id.* at 39. Patent Owner notes that the claims require a second sensor arrangement, separate from the pulse oximetry sensor, that provides digital communications, but none of the asserted references disclose transferring digital data for anything other than Money’s pulse oximetry sensor. *Id.* Because Money’s data configuration is opposite of that claimed, Patent Owner argues “a person of skill would have

no reason to try transferring digital data from the temperature or blood pressure sensors based on reading the asserted references.” *Id.* It is with this last line of argument that we disagree based on the current record before us.

Both parties seem to agree that Goldberg does not explicitly teach whether the signals from its sensors are analog or digital. Petitioner’s position, however, notes that the signals must be one or the other, and that transferring a signal, or data, in either domain was well-known. *See* Ex. 1003 ¶¶ 71, 72, 73 (“Lastly, signals are either analog or digital. There are only two options, so it would have been obvious to transmit signals as either digital or analog signals.”). At this juncture, we find persuasive Petitioner’s contention that Goldberg teaches its portable device can communicate with any sensor, which would include analog and digital devices. Pet. 28.

As for limitation 1(f) and the requirement of the pulse oximetry sensor provided at least partly in the analog domain, we are persuaded on this record by Dr. Yanulis’s testimony that “[t]ypically, light-based pulse oximetry sensors operate in the analog domain and transmit analog signals, and a PHOSITA would understand this. Kiani expressly explains this well-known fact.” Ex. 1003 ¶ 70 (citing Ex. 1006, 1:26–28). Petitioner contends it would have been at least obvious to try integrating Kiani’s light-based pulse oximetry sensors operating in the analog domain and transmitting analog signals into Goldberg because there were only two options, both of which were well-known to work. Pet. 25. For the purpose of this Decision on Institution, we credit Dr. Yanulis’s testimony as to what Kiani’s teachings would have conveyed to a skilled artisan concerning transmitting

analog signals and that the combination would work as expected. *See* Ex. 1003 ¶¶ 71–73. We, however, are cognizant that Patent Owner has not yet cross-examined Dr. Yanulis or provided countervailing testimony from its own expert on the matter. Based on the current record, Petitioner has shown a reasonable expectation of success of combining Kiani’s teaching of transmitting analog signals in Goldberg such that the pulse oximetry sensor would be provided at least partly in the analog domain. Thus, on this record we are persuaded that it would have been obvious for Goldberg’s pulse oximeter 104a to transmit analog information in view of Kiani. *Id.*

Petitioner relies on the combination of Goldberg, Kiani, and Money for teaching the requirements of limitation 1(h), including the requirement for additional physiological sensors at least partly in the digital domain. *See* Pet. 28–29. Petitioner contends that in view of Money it would have been obvious to transmit data digitally as packets because Money teaches the power requirements and requisite circuitry necessary to communicate with both sensor types. Pet. 28 (citing Ex. 1008, 5:48–51, 7:4–20, 7:58–62, 12:4–7, 13:24–32; Ex. 1003 ¶¶ 81, 82). Although we are cognizant of Patent Owner’s argument that the only physiological sensor that provides digital data in Money is the pulse oximeter (SpO₂) sensor, which is essentially the opposite of what is claimed, (Prelim. Resp. 37), we find Petitioner’s arguments and evidence persuasive at this juncture.

Based on the record before us, including Dr. Yanulis’s unchallenged testimony, Money teaches data transmitted digitally and it would have been obvious to modify Goldberg with Money so that the system of Goldberg would function with more sensors and more sensor types in the digital domain. Pet. 29; Ex. 1003 ¶¶ 83–85. Thus, combining the references as

proposed by Petitioner, Money and Goldberg would have predictably allowed for the portable device of Goldberg to communicate with both analog and digital sensors. Ex. 1003 ¶ 86. Dr. Yanulis explains the conditions when an analog signal would be preferable in Goldberg's device based on Kiani's disclosure, and also why a digital signal would be advantageous based on Money teachings. Ex. 1003 ¶¶ 70, 71, 81–85.

We have considered Patent Owner's remaining arguments but find them unpersuasive on the current record. For example, Patent Owner contends it would not have been practical to add more sensors and also impossible to arrive at the claimed data signal configurations absent hindsight. *See* Prelim Resp. 39–45. For the reasons set forth above, we disagree. Goldberg explains that multiple physiological sensors, either wired or wireless, may be used in “any combination.” *See* Ex. 1005, 4:50–5:8. Further, Dr. Yanulis explains the desirability of these sensors using ports as opposed to basic hard wiring. *See* Ex. 1003 ¶¶ 76–79. At this stage of the proceeding, we find Petitioner's evidence, including the testimony of Dr. Yanulis, sufficient to establish a reasonable likelihood that claim 1 would have been unpatentable over Goldberg, Kiani, and Money.

3. Conclusion

On this record, Petitioner has shown sufficiently for purposes of this Decision that the combination of Goldberg, Kiani, and Money teaches all the limitations of claim 1 and has articulated a sufficient rationale for combining the teachings of the references, with a reasonable expectation of success in making the combination. Accordingly, for the reasons discussed above, we are persuaded that Petitioner has demonstrated a reasonable likelihood of prevailing on its assertion that claim 1 of the '735 patent would have been obvious in view of Goldberg, Kiani, and Money.

We have reviewed Petitioner's contentions and supporting evidence regarding claims 2 and 7–9 as well, and find them sufficient based on the current record. *See* Pet. 30–35. Patent Owner does not directly challenge these claims at this point in the proceeding.

F. Asserted Obviousness in view of view of Goldberg, Kiani, Money, and Fujisaki

Petitioner contends that claims 3–6 and 13–19 are unpatentable under 35 U.S.C. § 103 as obvious in view of Goldberg, Kiani, Money, and Fujisaki. Pet. 6, 35–46. Relying on the testimony of Dr. Yanulis, Petitioner contends that the combined references teach or suggest the subject matter of the challenged claims and that a person having ordinary skill in the art would have combined the teachings of the references in the manner asserted. *Id.*

In accordance with USPTO Guidance, “if the PTAB institutes a trial, the PTAB will institute on all challenges raised in the petition.” *See Guidance on the Impact of SAS on AIA Trial Proceedings* (April 26, 2018) (available at <https://www.uspto.gov/patents-application-process/patent-trial-and-appeal-board/trials/guidance-impact-sas-aia-trial>). In light of *SAS*, the USPTO Guidance, and our above-described determination that Petitioner has met its burden under § 314(a) as to its challenge of claim 1 as obvious in view of Goldberg, Kiani, and Money, we also determine that it is appropriate to institute *inter partes* review based on Petitioner's remaining challenges. Therefore, at this stage of the proceeding, it is not necessary for us to provide a detailed assessment of each remaining ground.

Patent Owner disputes the sufficiency of Petitioner's allegations, and in particular makes a similar argument for independent claim 13 as we have addressed above for claim 1. Prelim. Resp. 38 (“Claim 13 differs slightly

from Claims 1 and 20, but nonetheless also requires a second sensor arrangement, *separate from the pulse oximetry sensor*, that provides digital communications.”). As noted above, however, a detailed analysis of this ground is not necessary at this time, and for purpose of this Decision, we do not address in detail Patent Owner’s arguments regarding the sufficiency of Petitioner’s allegations. This does not constitute, however, a determination regarding the persuasiveness of Patent Owner’s arguments in this regard.

We have reviewed the parties’ contentions and supporting evidence regarding claims 3–6 and 13–19, and institute *inter partes* review of Petitioner’s remaining challenges as a part of this proposed ground .

G. Asserted Obviousness in view of Goldberg, Kiani, Money, and Estep

Petitioner contends that claims 10–12 are unpatentable under 35 U.S.C. § 103 as obvious in view of Goldberg, Kiani, Money, and Estep. Pet. 6, 47–50. Relying on the testimony of Dr. Yanulis, Petitioner contends that the combined references teach or suggest the subject matter of the challenged claims and that a person having ordinary skill in the art would have combined the teachings of the references in the manner asserted. *Id.* Petitioner adds Estep for its teaching of wearable devices with bezels and argues “to the extent Goldberg doesn’t expressly teach a bezel, it would have been obvious to include a bezel around the display 108 of Goldberg in view of Estep.” Pet. 48.

As noted above, a detailed analysis of this ground is not necessary at this time, and for purpose of this Decision, we do not address in detail Patent Owner’s arguments regarding the sufficiency of Petitioner’s allegations. We note, however, that Patent Owner presents a plausible, but undeveloped,

argument. Specifically, Patent Owner argues that “Estep is a non-analogous reference directed to equipment for use in measuring electrical signals in telecommunication systems.” Prelim. Resp. 56. To the extent Estep is necessary for this combination (*see* Ex. 1003 ¶ 144), we will closely examine whether Estep’s electrical signal measurement device used to measure the characteristics of electrical signals, such as radio frequency signal level, is analogous art. *See* Ex. 1009, 1:5–11.

We have reviewed the parties’ contentions and supporting evidence regarding claims 10–12, and institute *inter partes* review of Petitioner’s remaining challenges.

H. Asserted Obviousness in view of Goldberg, Kiani, Money, Fujisaki, and Estep

Petitioner contends that claim 20 is unpatentable under 35 U.S.C. § 103 as obvious in view of Goldberg, Kiani, Money, Fujisaki, and Estep. Pet. 6, 50–76. Relying on the testimony of Dr. Yanulis, Petitioner contends that the combined references teach or suggest the subject matter of the challenged claims and that a person having ordinary skill in the art would have combined the teachings of the references in the manner asserted. *Id.* Petitioner adds Fujisaki for its teaching of wearable devices with removable cables, and Estep for its teachings of bezels as noted above.

We have reviewed the parties’ contentions and supporting evidence regarding claim 20, and institute *inter partes* review of Petitioner’s remaining challenges.

I. Asserted Obviousness in view of Money, Akai, and Kiani.

Petitioner contends that claims 1–2 and 7–9 are unpatentable under 35 U.S.C. § 103 as obvious in view of Money, Akai, and Kiani. Pet. 6, 61–81. Relying on the testimony of Dr. Yanulis, Petitioner contends that the combined references teach or suggest the subject matter of the challenged claims and that a person having ordinary skill in the art would have combined the teachings of the references in the manner asserted. *Id.*

As noted above, a detailed analysis of this ground is not necessary at this time, and for purpose of this Decision, we do not address in detail Patent Owner’s arguments regarding the sufficiency of Petitioner’s allegations. *See SAS*, 138 S. Ct. at 1356. We note, however, that Patent Owner argues that Money would not be a suitable reference because of its size and not being designed to wear on a patient’s arm. Prelim. Resp. 45–47. Also, Patent Owner argues Money fails to teach the claimed data signal configurations. *Id.* at 47–52. Patent Owner makes several arguments as to the impracticality of the proposed combination and provides an annotated Figure 1 of Money displaying the proposed modifications necessary and why Patent Owner contends these could only be achieved through hindsight logic. *Id.* at 53–63, 55. To the extent Patent Owner maintains these arguments during trial, we will examine them as developed, and this Decision on Institution does not constitute a determination regarding the persuasiveness of Patent Owner’s arguments in this regard.

We have reviewed the parties’ contentions and supporting evidence regarding claims 1–2 and 7–9, and institute *inter partes* review of Petitioner’s remaining challenges.

J. Asserted Obviousness in view of Money, Akai, and Kiani, and Fujisaki

Petitioner contends that claims 3–6 and 13–19 are unpatentable under 35 U.S.C. § 103 as obvious in view of Money, Akai, Kiani, and Fujisaki. Pet. 6, 81–91. Relying on the testimony of Dr. Yanulis, Petitioner contends that the combined references teach or suggest the subject matter of the challenged claims and that a person having ordinary skill in the art would have combined the teachings of the references in the manner asserted. *Id.* .

We have reviewed the parties’ contentions and supporting evidence regarding claims 3–6 and 13–19, and institute *inter partes* review of Petitioner’s remaining challenges.

K. Asserted Obviousness in view of Money, Akai, and Kiani, and Estep

Petitioner contends that claims 10–12 are unpatentable under 35 U.S.C. § 103 as obvious in view of Money, Akai, Kiani, and Estep. Pet. 6, 91–94. Relying on the testimony of Dr. Yanulis, Petitioner contends that the combined references teach or suggest the subject matter of the challenged claims and that a person having ordinary skill in the art would have combined the teachings of the references in the manner asserted. *Id.* .

We have reviewed the parties’ contentions and supporting evidence regarding claims 10–12 and institute *inter partes* review of Petitioner’s remaining challenges.

L. Asserted Obviousness in view of Money, Akai, and Kiani, Fujisaki, and Estep

Petitioner contends that claim 20 is unpatentable under 35 U.S.C. § 103 as obvious in view of Money, Akai, Kiani, Fujisaki, and Estep. Pet. 6, 94–103. Relying on the testimony of Dr. Yanulis, Petitioner contends that

the combined references teach or suggest the subject matter of the challenged claims and that a person having ordinary skill in the art would have combined the teachings of the references in the manner asserted. *Id.*

We have reviewed the parties' contentions and supporting evidence regarding claim 20 and institute *inter partes* review of Petitioner's remaining challenges.

III. CONCLUSION

After considering the evidence and arguments presented in the Petition and Preliminary Response, we determine that Petitioner has demonstrated a reasonable likelihood of success in proving that at least one claim of the '735 patent unpatentable. In accordance with *SAS* and the Director's guidance, we institute a trial of all of the challenged claims on all grounds set forth in the Petition.

Our factual findings and determinations at this stage of the proceeding are preliminary, and based on the evidentiary record developed thus far. This is not a final decision as to the patentability of the claim for which *inter partes* review is instituted. Our final decision will be based on the record as fully developed during trial.

IV. ORDER

For the foregoing reasons, it is

Accordingly, it is

ORDERED that pursuant to 35 U.S.C. § 314(a), an *inter partes* review of claims 1–20 of U.S. Patent No. 9,788,735 B2 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, *inter partes* review of the '735 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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