

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SOTERA WIRELESS, INC.,
Petitioner,

v.

MASIMO CORPORATION,
Patent Owner.

IPR2020-01015
Patent 9,795,300 B2

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

COCKS, *Administrative Patent Judge*.

JUDGMENT

Final Written Decision

Determining All Challenged Claims Unpatentable

35 U.S.C. § 318(a)

Granting In Part and Dismissing In Part Petitioner's Motion to Correct
Typographical Errors in the Petition

37 C.F.R. § 42.104(c)

Dismissing Petitioner's Motion to Exclude

37 C.F.R. § 42.64

I. INTRODUCTION

A. Background and Summary

Sotera Wireless, Inc. (“Petitioner”) filed a Petition requesting *inter partes* review of claims 1–20 (“the challenged claims”) of U.S. Patent No. 9,795,300 B2 (“the ’300 patent,” Ex. 1001). Paper 1 (“Pet.”).¹ We instituted trial to determine whether the challenged claims were unpatentable as follows:

Claims Challenged	35 U.S.C. §	Reference(s)/Basis
1–20	103	Goldberg, ² Kiani, ³ Money ⁴
1–20	103	Money, Kiani, Akai ⁵
1–5, 10–20	103	Goldberg, Kiani, Money, Taylor ⁶
1–5, 10–20	103	Money, Kiani, Akai, Taylor
6–9	103	Goldberg, Kiani, Money Taylor, Hylton ⁷

¹ In support of its Petition, Petitioner relies on the Declaration of Dr. George Yanulis (Ex. 1003).

² US Patent No. 6,840,904 issued Jan. 11, 2005 (“Goldberg”) (Ex. 1005).

³ PCT Publication No. WO 00/42911, published on July 27, 2000 (“Kiani”) (Ex. 1006).

⁴ US Patent No. 5,919,141 issued on July 6, 1999 (“Money”) (Ex. 1008).

⁵ EP0880936A2 published on Dec. 2, 1998 (“Akai”) (Ex. 1007).

⁶ PCT Publication WO 96/15994, published on May 23, 1996 (“Taylor”) (Ex. 1009).

⁷ U.S. Patent No. 5,793,413 issued Aug. 11, 1998 (“Hylton”) (Ex. 1010).

Claims Challenged	35 U.S.C. §	Reference(s)/Basis
6–9	103	Money, Kiani, Akai, Taylor, Hylton

See Paper 12 (“Inst. Dec.”).

Masimo Corporation (“Patent Owner” or “Masimo”) timely filed a Patent Owner Response. Paper 23 (“PO Resp.”).^{8,9} Petitioner filed a Reply to the Response. Paper 27 (“Pet. Reply”).¹⁰ Patent Owner filed a Sur-reply. Paper 32 (“PO Sur-reply”). Petitioner also filed a Motion to Exclude. Paper 36 (“MTE”). Patent Owner filed an Opposition to that Motion to Exclude (Paper 36, “PO Opp. MTE”), to which Petitioner replied (Paper 38, “Pet. Reply MTE”). We held an oral hearing on August 26, 2021.¹¹ A transcript of the oral argument appears in the record. Paper 42 (“Tr.”).

For the reasons set forth below, we determine that Petitioner has shown by a preponderance of the evidence that claims 1–20 of the ’300 patent are unpatentable. See 35 U.S.C. § 316(e).

⁸ Patent Owner provides a “Declaration of Alan L. Oslan In support of Patent Owner’s Response” (Ex. 2010).

⁹ As was authorized by the panel (Paper 15), and prior to the filing of the Patent Owner Response, Petitioner filed a “Petitioner’s Motion to Correct Typographical Errors in the Petition Under 37 C.F.R. § 42.104(c).” Paper 16 (“MTC”). Patent Owner filed an Opposition to that Motion. Paper 17 (“Opp. MTC”). We address Petitioner’s Motion to the extent necessary in this Final Written Decision.

¹⁰ In support of the Reply, Petitioner provides a Declaration of Bryan Bergeron, MD. Ex. 1040.

¹¹ As was requested by both parties (Papers 33, 34), we held a consolidated oral argument that involved each of IPR2020-00912, IPR2020-00954, IPR2020-01015 (this proceeding), and IPR2020-01054.

B. Related Proceedings

The parties identify *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 '300 patent. Pet. 2; Paper 4, 1. Patent Owner also identifies the following *inter partes* review proceedings involving patents asserted in the related proceeding:

IPR2020-00912, challenging U.S. Patent No. 10,213,108;
IPR2020-00954, challenging U.S. Patent No. 9,788,735;
IPR2020-00967, challenging U.S. Patent No. RE47,244;
IPR2020-01019, challenging U.S. Patent No. RE47,353;
IPR2020-01033, challenging U.S. Patent No. RE47,249;
IPR2020-01054, challenging U.S. Patent No. 9,872,623;
IPR2020-01078, challenging U.S. Patent No. RE47,218; and
IPR2020-01082, challenging U.S. Patent No. 10,255,994.

Paper 4, 2.¹²

Patent Owner further identifies various applications that claim priority to, or share a priority claim with, the '300 patent. *Id.* at 1–2.

C. The '300 Patent

The '300 patent is titled “Wearable Portable Patient Monitor.” Ex. 1001, code (54). The '300 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 '300 patent is directed to “[a] wearable portable physiological monitor configured to wirelessly

¹² With the exception of IPR2020-01082, trial was instituted in all of the noted proceedings.

transmit real time information regarding a plurality [of] physiological parameters.” *Id.* at code (57). As is further described in the Abstract:

The portable monitor includes a plurality of sensor ports, where at least a first sensor port is positioned on a side of a housing of the portable monitor such that, when the portable monitor is attached to an arm of a patient, a wired connection extending from the first sensor port to a first physiological sensor positioned on a digit of the patient follows a path to the digit of the patient that avoids tangling of the wired connection. The portable monitor further includes one or more processing devices configured to cause display of parameter values, combine information indicative of the signals into a single word or bit stream, and encode and generate a baseband signal. Further includes a transmitter to modulate the baseband signal and wirelessly transmit.

Id.

The '300 patent additionally expresses that a drawback to “[c]onventional physiological measurement systems,” is the requirement of a “patient cable connection between sensor and monitor.” *Id.* at 2:23–24. And it describes the problems related with “disconnection of monitoring equipment and a corresponding loss of measurements,” when needing to move patients. *Id.* at 2:24–28. A goal of the '300 patent is to allow wireless pulse oximetry monitoring. *Id.* at 2:34–38; *compare* Fig 1¹³, *with* Fig. 3.

¹³ Figure 1 is labeled “Prior Art” and is described as “an illustration of a prior art pulse oximetry system.” *Id.* at 3:66–67.

Figure 3 of the '300 patent is reproduced below:

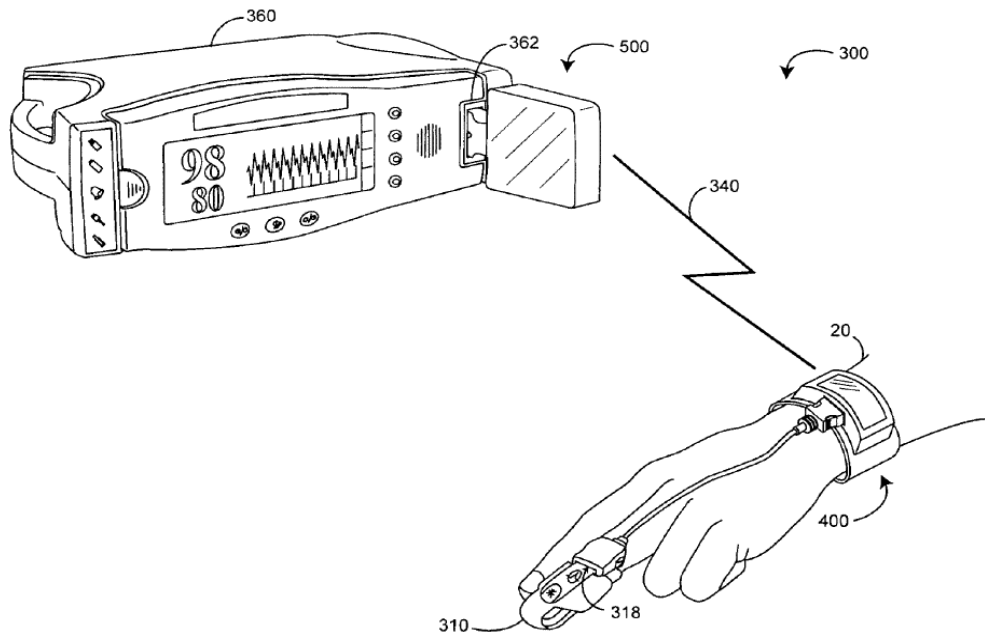


FIG. 3

Figure 3 above illustrates “a physiological measurement communications adapter.” *Id.* at 4:3–4. Communications adapter 300 includes sensor module 400 and monitor module 500. *Id.* at 4:49–50.

Figure 4A of the '300 patent is reproduced below:

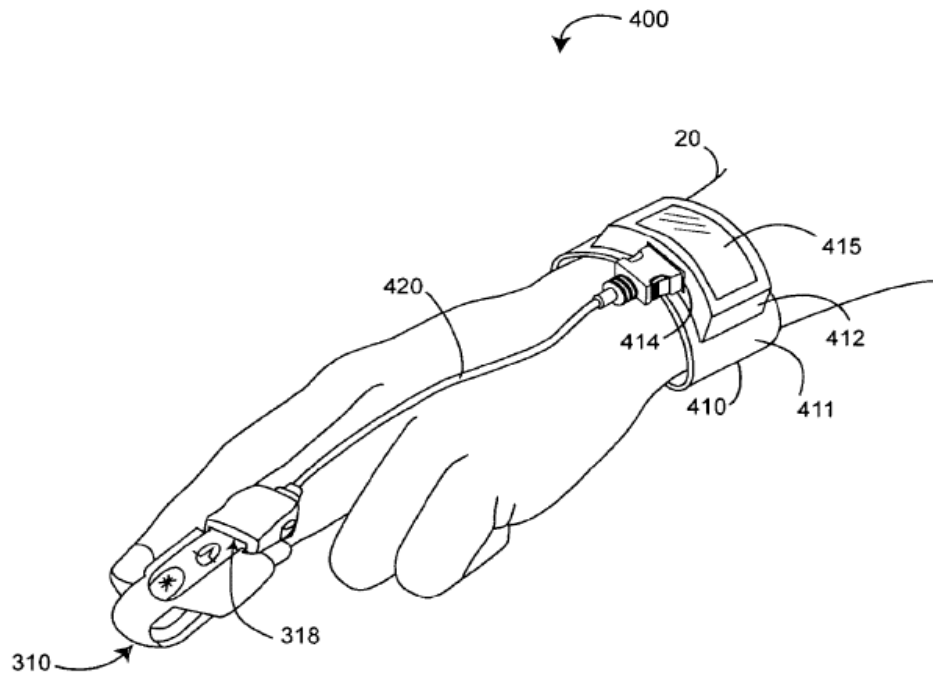


FIG. 4A

Figure 4A above shows an embodiment of sensor module 400. *Id.* at 5:28–29. Sensor module 400 includes wrist-mounted module 410, which in turn includes wrist strap 411, case 412 and auxiliary cable 420. *Id.* at 5:29–31. Auxiliary cable 420 mates to sensor connector 318 and provides a wired link between sensor 310 and wrist-mounted module 410. *Id.* at 5:35–38. 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. 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 5:56–62. 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 (reproduced below). *Id.* at 11:54–67.

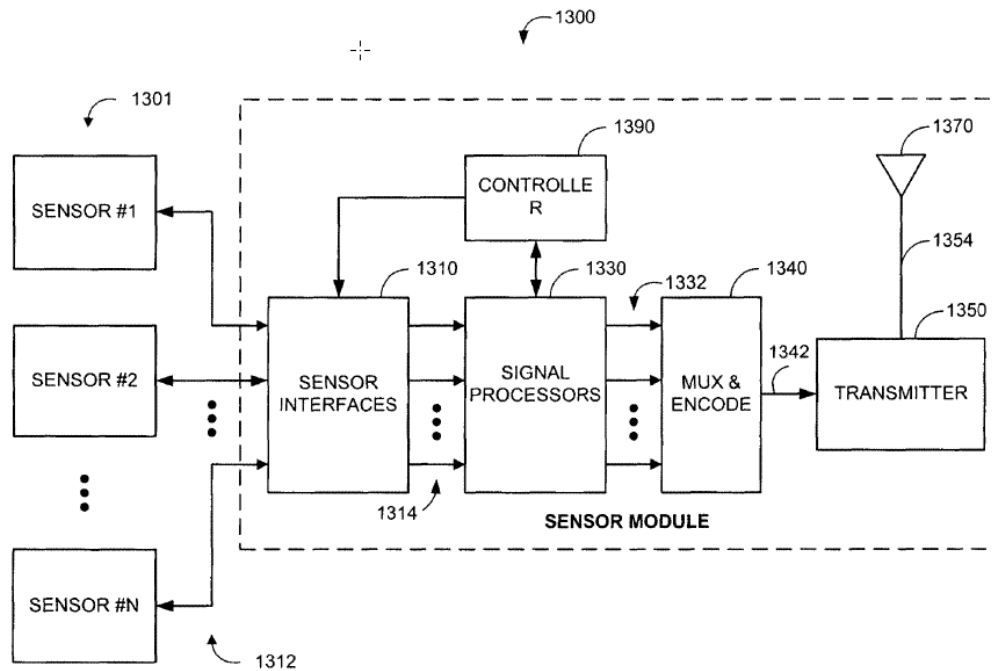


FIG. 13

Figure 13 depicts a functional block diagram of a sensor module configured for multiple sensors. *Id.* at 4:26–27.

D. Illustrative Claim

Claim 1 is illustrative of the claims at issue and is reproduced below in chart form with Petitioner’s added designations for ease of discussion in this Decision:

Designation	Claim Language
Claim1 Preamble 1(a)	A wearable, portable physiological monitor configured to wirelessly transmit real time information regarding a plurality physiological parameters, the portable monitor comprising:

Designation	Claim Language
Limitation 1(b)	a plurality of sensor ports positioned on a housing of the portable monitor and configured to provide respective wired interfaces with different respective physiological sensors of a plurality of physiological sensors, wherein:
1(c)	at least a first sensor port of the plurality of sensor ports is positioned on a side of the housing of the portable monitor such that, when the portable monitor is attached to an arm of a patient, a wired connection extending from the first sensor port to a first physiological sensor positioned on a digit of the patient follows a path to the digit of the patient that is substantially perpendicular to the side of the housing and avoids tangling of the wired connection;
1(d)	one or more processing devices configured to:
1(e)	receive, via the plurality of sensor ports, a plurality of signals from the plurality of physiological sensors, at least some of the plurality of signals including digital information, and at least some of the plurality of signals including analog information;
1(f)	cause to be displayed, on a display of the portable monitor, a plurality of physiological parameters values responsive to the plurality of signals;
1(g)	combine information indicative of the plurality of signals into a single digital word or bit stream; and
1(h)	encode the single digital word or bit stream to generate a baseband signal; and
1(i)	a transmitter configured to:
1(j)	modulate the baseband signal with a carrier to generate a transmit signal; and
1(k)	wirelessly transmit the transmit signal to a remote patient monitoring device configured to decode the signal and display, on a remote display, the plurality of physiological parameters values responsive to the plurality of signals.

Pet. xii; *see* Ex. 1001, 13:12–49.

Independent claim 16 (also challenged) is similar to claim 1 and directed to a “battery-powered wearable physiological monitoring device.” *Id.* at 14:44–45. Claim 16 specifies that a “plurality of sensor communication ports” includes a first, second, and third sensor communication port. *Id.* at 14:48–66. Similar to claim 1, claim 16 also distinctively requires “the first signal including analog information,” and “the second signal including digital information.” *Id.* at 15:3–7.

II. ANALYSIS

Petitioner bears the burden of establishing the unpatentability of any claim by a preponderance of the evidence. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). This burden of persuasion never shifts to the patent owner. *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

A. Petitioner’s Motion to Correct

As authorized by the panel (Paper 15), Petitioner filed a “Motion to Correct Typographical Errors in the Petition Under 37 C.F.R. § 42.104(c).” *See* Paper 16 (“MTC” or “Motion to Correct”). As was also authorized, Patent Owner filed an “Opposition to Petitioner’s Motion Under 37 C.F.R. § 42.104(c).” *See* Paper 17 (“Opp. MTC”). In the Motion to Correct, Petitioner seeks to correct what it characterizes as “[t]wo typographical errors (a ‘numerical typo’ and an ‘alphabetical typo’) [that] occurred in several cross-references in the petition.” MTC 1. Patent Owner opposes the motion on the basis that, in its view, each of four factors evaluated by the panel in *Ivantis, Inc. v. Glaukos Corp.*, IPR2018-01180, Paper 14 at 9

(PTAB 2018) in considering a Rule 41.104(c) motion weighs against Petitioner's Motion. Opp. MTC 2.¹⁴

1. Numerical Typos

We turn first to the “numerical typo[s]” that Petitioner seeks to correct. See MTC 1. Petitioner contends the following:

The numerical typo occurred on pages 45 and 74, in Sections IX.A.17.d, IX.A.17.e, IX.B.17.d, and IX.B.17.e. In each of these sections, the petition says, “See Section IX.A.11.a”, “See Section IX.A.11.b”, “See Section IX.B.11.a” or “See Section IX.B.11.b”. Petitioner seeks to correct the petition to remove the lowercase “a” or “b” in these four instances. This error is clear because the (uncorrected) referenced subsections (...11.a, ...11.b) do not exist, as recognized in Patent Owner's Preliminary Response (“POPR”).

Regarding the numerical typos, in earlier drafts of the petition, Petitioner separated Sections IX.A/B.11 into two subsections based on claim 10's multiple limitations, and Sections IX.A/B.11 previously had subsections “11.a” and “11.b”. Subsequently, subsections 11.a and 11.b were merged into one section, resulting in Sections IX.A.11 and IX.B.11. Due to an oversight, Petitioner failed to update the cross-references in Sections IX.A.17.d, IX.A.17.e, IX.B.17.d, and IX.B.17.e to reflect that merger.

MTC 1, 2.

Thus, with respect, for instance, to page 45 of the Petition, Petitioner contends that the noted references to sections “IX.A.11.a” and “IX.A.11.b” in addressing claim 16 were inadvertent vestiges of a preliminary draft of the

¹⁴ Those factors are stated to include “Nature of the error” (Opp. MTC 2), “Length of time” (*id.* at 3), “Prejudice to Patent Owner by allowing the proposed revisions” (*id.*), and “Impact of the proposed revisions on the proceeding” (*id.* at 5).

Petition, and that the Petition intended to simply reference section “IX.A.11” as a whole.

It is apparent that there are no separate subsections “a” and “b” as a part of section IX.A.11. But, it is also clear that there is only one section “IX.A.11” (the entirety of which appears on page 39 of the Petition), which conveys that the references on page 45 of the Petition to sections “IX.A.11.a” and “IX.A.11.b” plainly direct a reader to the portion of the Petition on page 39 that constitutes section “IX.A.11.” That section “IX.A.11” addresses claim 10, which depends from claim 1 and adds the features of “a second sensor port configured to receive a signal from an EKG sensor arrangement; and a third sensor port configured to receive a signal from a blood pressure sensor arrangement.” Ex. 1001, 14:18–21. The identified portions of claim 16 on page 45, designated as limitations “16(d)” and “16(e)” in the Petition, refer to components of “a plurality of sensor communication ports,” which include “a second sensor communication port” and “a third sensor communication port.” *Id.* at 13:48, 58–65. Despite the errant references to subsections “a” and “b” as a part of page 45 of the Petition, it follows plainly and logically that the Petition seeks to address the “second sensor communication port” and “third sensor communication port” limitations of claim 16 via the discussion of the “second sensor port” and “third sensor port” limitations that are recited in claim 10 (as is discussed in section IX.A.11 appearing on page 39 of the Petition). Given the apparent similarities of the added additional second and third port limitations of claim 10 considered alongside the second and third port limitations of claim 16 (limitations 16(d) and 16(e)), it is difficult to reach the conclusion that the

Petition is unintelligible in that regard, as is seemingly advocated by Patent Owner (*see, e.g.*, PO Resp. 15–16).

We are cognizant of Patent Owner’s view that the above-noted “numerical typos” correction to the Petition sought by Petitioner constitutes a substantive change to the Petition (Opp. MTC 1–2), was not made in a timely fashion (*id.* at 3), presents prejudice to Patent Owner (*id.* at 3–5), and presents what Patent Owner regards as a “new unpatentability ground[]” (*id.* at 4). We, however, cannot conclude that the transparent mistaken reference in the Petition to sections “IX.A.11.a” and “IX.A.11.b” in lieu simply of a reference to section “IX.A.11” introduces a new ground that is of substantively distinct character to what was set forth in the Petition. As discussed above, there is manifest correspondence as between the “second sensor port” and “third sensor port” limitations of claim 10 with the “second sensor communication port” and “third sensor communication port” limitations of claim 16. That is plainly true irrespective of the minor indirection that may be attributed to the errant “a” and “b” subsection identifiers present at page 45 of the Petition. Indeed, in other briefing of record, Patent Owner, itself, characterizes the terms “sensor port” and “sensor communication port” as being “interchangeabl[e].” PO Sur-reply 2 n.2.

Moreover, we do not agree with Patent Owner’s assertions that it faces prejudice on the basis that the proposed correction of the noted numerical typo on page 45 of the Petition constitutes a “new unpatentability ground[]” (MTC Opp. 4), or because of the timing of Petitioner’s request to correct that typo (*id.* at 3). Initially, we observe that Petitioner filed its Motion to Correct on January 11, 2021 (Paper 16), nearly two months before

the filing of the Patent Owner Response on March 2, 2021 (Paper 23). Thus, Patent Owner was on notice well before the filing of its Patent Owner response as to Petitioner's position concerning the typos on page 45 in mistakenly referencing subsections "a" and "b" of section IX.A.11.¹⁵

Furthermore, a central dispute as a part of this proceeding, and which is the focus of both parties' briefings to the panel, is whether the recitation of multiple sensor ports as a part of the claims of the '300 patent distinguishes those claims over the prior art of record. Independent claim 1 of the '300 patent, for instance, includes the requirement of "a plurality of sensor ports" (Ex. 1001, 13:16), and dependent claim 10 specifically introduces "a second sensor port" and "a third sensor port" (*id.* at 14:16–21). Petitioner unambiguously proposes that the combined teachings of Goldberg and Kiani account for those requirements of multiple sensor ports. *See, e.g.*, Pet. 18–23, 39. Patent Owner had the opportunity, and, indeed, availed itself of that opportunity, to challenge the Petition in that regard. *See, e.g.*, PO Resp. 21–36; PO Sur-reply 6–15. It is a dubious proposition that the mistaken references to subsections "a" and "b" in connection with section IX.A.11 in the Petition (Pet. 45) suggest that Patent Owner was unaware or lacked notice that Petitioner was also challenging claim 16, and specifically its recited "second sensor communication port" and "third sensor communication port" features, based on the combined teachings of Goldberg

¹⁵ We note in passing, as does Petitioner (MTC 3–4), that the declaration of Dr. Yanulis that accompanied the Petition included cross-references addressing claim limitations, including those of claim 16, without any typographical errors.

and Kiani as expressed in section IX.A.11 (appearing on page 39 of the Petition).

Even further, as noted above, both parties requested a consolidated oral argument involving each of IPR2020-00912, IPR2020-00954, IPR2020-01015, and IPR2020-01054. Patent Owner, in particular, requested such consolidation “[d]ue to the overlap in issues between the four IPRs.”

Paper 33, 2. Each of the patents underlying IPR2020-00912, IPR2020-00954, and IPR2020-01054 includes claims that require multiple sensor ports, and specifically second and third sensor ports.¹⁶ In each of those three proceedings, Petitioner advances grounds of unpatentability based, in part, on Goldberg and Kiani, whose teachings are stated to account for second and third sensor ports in essentially the same manner as Petitioner does here with respect to all of the claims of the ’300 patent, including claim 16.

For instance, in IPR2020-00912, Petitioner proposes that Goldberg’s and Kiani’s teachings account for limitations in claim 1 of the ’108 patent of “a second sensor port” and “a third sensor port.” *See* IPR2020-00912, Paper 1, xii, 28–30. In IPR2020-00954, Petitioner contends that Goldberg and Kiani teach the limitations in claim 13 of the ’735 patent of “a second sensor communication port” and “a third sensor communication port.” *See* IPR2020-00954, Paper 1, xvi, 41. Similarly, in IPR2020-01054, Petitioner conveys that Goldberg and Kiani teach the limitations in claim 1 of the ’623 patent of “a second sensor port” and “a third sensor port.” IPR2020-01054,

¹⁶ *See, e.g.*: (1) US Patent No. 10, 213,108 B2 (“the ’108 patent”) (IPR2020-00912, Ex. 1001), claims 1 and 19; (2) US Patent No. 9,788,735 B2 (“the ’735 patent”) (IPR2020-00954, Ex. 1001), claims 1, 13, and 20; and (3) US Patent No. 9,872,623 B2 (“the ’623 patent”) (IPR2020-01054, Ex. 1001), claims 1, 17, and 20.

Paper 1, xiv, 31–32. Additionally, during the oral hearing, which involved all four of the pertinent proceedings, counsel for Patent Owner expressed recognition that a basis of Petitioner’s proposal of unpatentability is “to modify Goldberg in view of Kiani to add three sensor ports[.]” Tr. 57:22–58:4. Given the above, and particularly given Patent Owner’s recognition of the “overlap in issues” between the four proceedings, this is not a circumstance that supports Patent Owner’s view that the typos on at least page 45 of the Petition obfuscated Petitioner’s clear intent, as a part of its Petition, to apply Goldberg’s and Kiani’s teachings to elements 16(d) and 16(e) of the ’300 patent involved here.

Accordingly, having considered the respective positions of the parties as to Petitioner’s Motion to Correct, we conclude that granting in part of the Motion is warranted at least to the extent that we regard the numerical typos pertaining to the references to “a” and b” in connection with section IX.A.11 that appear on page 45 as clearly inadvertent errors that do not obscure the Petition’s assessment of the noted requirements of claim 16 in conjunction with the prior art. In that regard, in considering the Motion to Correct taken with the Petition, it is clear that page 45 of the Petition directs attention to section IX.A.11 that appears on page 39 of the Petition, which plainly correlates limitations of claim 10, pertaining to second and third sensor ports, with corresponding limitations of claim 16.¹⁷

¹⁷ We determine that it is unnecessary to reach the same conclusion when it comes to the numerical typos on pages 74 of the Petition. Those typos apply to alternative proposed grounds of unpatentability based primarily on Money. As discussed *infra*, however, we determine that it is unnecessary to address those grounds based on Money. Accordingly, we need not reach the Motion to Correct when it comes to those grounds, and, therefore, dismiss

2. Alphabetical Typos

The errors in the Petition that Petitioner characterizes as the “alphabetical typo[s]” are more substantial in nature than the numerical typos discussed above. *See* MTC 1. We also are cognizant of the inconsistencies noted by Patent Owner when it comes to Petitioner’s Motion addressing those alphabetical typos. *Opp.* MTC 2. Specifically, as Patent Owner notes (*id.*), the Motion requests “to correct the petition to replace the letter “A” with “B” in . . . twelve instances” in sections appearing on pages 77, 79, and 83–85, yet those pages include fourteen instances of the appearance of “A” in reference to sections of the Petition. *See* MTC 1; *Pet.* 77, 79, and 83–85. It is not particularly clear just precisely which instances of “A” Petitioner actually seeks to change to “B.” Nevertheless, all of the alphabetical typos are directed to proposed grounds of unpatentability based primarily on Money. As discussed below, we determine that it is not necessary to reach the merits of those grounds.

Accordingly, we conclude that we need not reach the Motion to Correct in connection with the alphabetical typos, and dismiss the Motion pertaining to those particular alphabetical typos as moot.

B. Principles of Law

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

the Motion to Correct in connection with the numerical typo on page 74 of the Petition as moot.

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.¹⁸ *See 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).

At this final stage, we determine whether a preponderance of the evidence of record shows that the challenged claims would have been rendered obvious in view of the asserted prior art. We analyze the asserted grounds of unpatentability in accordance with these principles.

C. 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. 14–15 (citing Ex. 1003 ¶¶ 27–32). Patent Owner does not dispute Petitioner’s contention on the final record, or propose its own assessment of the level of ordinary skill in the art. *See* PO Resp. 11.

¹⁸ The parties have not directed our attention to any objective evidence of non-obviousness.

Based on the record before us, we adopt Petitioner’s proposed description of the person of ordinary skill in the art. We also note that the applied prior art reflects the appropriate level of skill at the time of the claimed invention. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

D. 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).

In the Petition, Petitioner expressed that “the terms of the unexpired ’300 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 '300 patent's specification." Pet. 15. Petitioner further stated that "the Board need not construe any claim terms to find the claims invalid." *Id.* at 15 n.1.

In our Decision on Institution, we gave all claim terms their plain and ordinary meaning and determined that it was unnecessary to make explicit that meaning for any claim term. Inst. Dec. 22. We, however, did note that "the claims require multiple 'sensor ports'," and expressed that "[t]o the extent the parties contend this term has any special meaning or otherwise should be construed, the parties should clearly identify what they contend the scope of a 'sensor port' encompasses." *Id.* Both parties have provided discussion as to the meaning of "sensor port," although neither party contends that "sensor port" has a special meaning. *See* PO Resp. 11–15; PO Sur-reply 1–6; Pet. Reply 1–4.

According to Patent Owner, "sensor port" should be given its plain and ordinary meaning, and that such meaning is a "connector that mates with a compatible connector from a sensor." PO Resp. 11; PO Sur-reply 1–2.¹⁹ Patent Owner cites to various portions of the Specification describing how sensor ports connect to modules through use of a cable and also how a sensor connector mates with an auxiliary cable providing a wired link between a conventional sensor and a wrist-mounted module. PO Resp. 11–13 (citing Ex. 1001, 5:1–5, 5:33–36, Figs. 3, 4A). In essence, Patent Owner seeks to distinguish a connection that is a "port" from a connection regarded as a "hardwired or direct connection." *Id.* at 14; *see* PO Sur-reply 2–6. More specifically, Patent Owner is of the view that a person of ordinary skill in the

¹⁹ Patent Owner also characterizes its proposed meaning as applying to "sensor communication port." PO Sur-reply 2.

art “would understand that the term ‘sensor port’ involves a removable connection, and does not include hardwired connections.” PO Resp. 14.

Petitioner, in Reply, argues that “[t]he construction of ‘sensor port’ is not an issue that the Board must resolve to find the ’300 Patent invalid,” and “Masimo makes no contention that the prior art ports are not ports under its construction.” Pet. Reply 1–2. Petitioner additionally argues that “Masimo’s expert freely admitted that ports were known,” and “[a]s such, construction of this term is not case dispositive.” *Id.* at 2 (citing Ex. 1042, 23:3–5). *See also* Tr. 35:16–23 (“[T]hey cite the dictionary definitions technically a port does not have to be removed. I think in the more normal sense of a port it’s removable but even if you look at slide 15 of their deck, the dictionary definitions don’t require removable. It does not matter. We’ve got prior art all over the place.”).

Because we determine that Kiani in combination with Goldberg teaches the claimed sensor ports under any reasonable definition, including those offered by Patent Owner, we need not further elaborate on the scope of a “sensor port” or “sensor ports.” *See, e.g.*, Tr. 34:23–35:23, 36:14–24, 40:20–41:16, 53:18–19. That is to say that even if we agree with Patent Owner that the term “sensor port” involves a removable connection, and does not include hardwired connections (PO Resp. 19), such a determination is not dispositive because Kiani clearly teaches a removable connection that is a sensor port as further explained below.²⁰ Only those terms that are in

²⁰ Indeed, we also note that Patent Owner itself describes Kiani as disclosing a sensor port, albeit in connection with other arguments discounting Kiani as disclosing multiple sensor ports. *See* PO Resp. 25 (“[B]oth experts now agree that Kiani teaches a single sensor port, **not** multiple ports.”). Furthermore, at the oral hearing, counsel for Patent Owner acknowledged

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).

We do not see the need to expressly construe any additional claim term.

E. 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 medical monitoring 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, 4:14–20. Goldberg describes the use of “one or more sensors 104” as a part of device 100. *Id.* at 4:14–17. Goldberg further 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.

that “Kiani would have a single sensor input port under our construction.” Tr. 53:18–19.

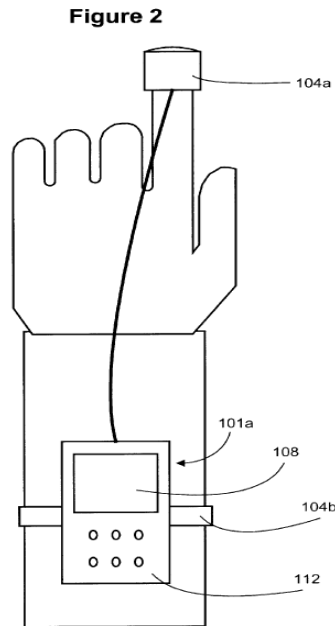


Figure 2 of Goldberg depicts portable device 101a with assembly or housing 112 that is sized to be carried by an individual and strapped to the wrist or forearm by any conventional strap apparatus. Ex. 1005, 4:57–60. In this embodiment, sensor 104a is a pulse oximetry sensor and blood pressure cuff sensor 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 3:1–4.²¹ 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).

Kiani's Figure 5 is reproduced below:

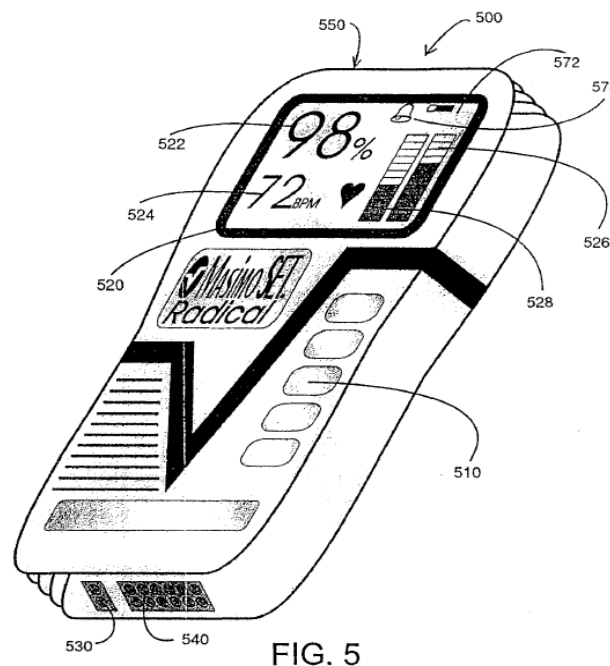


Figure 5 above depicts a handheld embodiment of a Universal/Upgrading Pulse Oximeter (UPO). Ex. 1006, 7:2. Kiani describes that handheld embodiment 500 of the UPO includes external power supply input 530, output port 540 for connection to the external pulse

²¹ Like both parties, we refer to the original page numbering of Kiani (the first page numbering appearing at the lower, middle of the pages of Kiani), and not the page numbering added by Petitioner at the upper left corner of each page and also beneath Kiani's page numbering).

oximeter, and sensor input 550 at the top edge. *Id.* at 8:31–9:2. Kiani’s display 520 shows measured oxygen saturation 522, pulse rate 524, confidence bar 528, low battery 572, and alarm enabled 574 status indicator. *Id.*

3. *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. *Id.* at 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.

4. *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). 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.

5. *Taylor*

Taylor is titled “Wireless Radio Modem with Minimal Interdevice RF Interference.” Ex. 1009, code (54). Taylor’s Abstract reads as follows:

A wireless radio modem that may be incorporated into a host system or connected through a PCMCIA or similar port to a host system includes radio frequency modulation/demodulation circuitry employing electronic device elements that operate in a frequency range that minimizes the RF interference between the radio modem and the host system. Radio modem power conservation is maximized by 1) simplifying signal modulation processing by use of a two-point waveform transition table, thereby reducing processing requirements; and 2) incorporating a “sleep mode” feature in which all non-timer circuitry is powered-down when not in use.

Id. at code (57).

6. *Hylton*

Hylton is titled “Wireless Video Distribution.” Ex. 1010, code (54). Hylton’s Abstract is reproduced below:

A system and method for providing interactive multimedia services to subscriber premises utilizing wireless distribution within the subscriber premise. The service is provided via a communications link delivering to the subscriber premises broadband digital information including video and audio from a plurality of information providers and control signals in a multiplexed form. This multiplexed signal is then separated and processed on premise and distributed in a two-way fashion using frequency hopping code division multiple access (CDMA) spread spectrum using radio frequency signals preferably at UHF Upstream control signals from the user installation are

communicated from the individual user terminals in the same wireless manner.

Id. at code (57).

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

Petitioner asserts that claims 1–20 would have been obvious in view of Goldberg, Kiani, and Money. *See* Pet. 17–50.

1. Summary of Petitioner’s Arguments and Evidence

a) Claim 1

(1) Preamble 1(a): “A wearable, portable physiological monitor configured to wirelessly transmit real time information regarding a plurality physiological parameters, the portable monitor comprising:”

Petitioner points to Goldberg as disclosing preamble 1(a) pertaining to a wearable portable patient monitoring device. Pet. 17–18. More particularly, Petitioner contends that “Goldberg teaches a portable device 100 worn on a person’s wrist or forearm, which receives data from at least a pulse oximetry sensor, a blood pressure cuff sensor, and a third sensor (e.g., an electrolyte sensor, etc.).” *Id.* at 18 (citing Ex. 1005, 4:57–67, 5:3–8, 5:39–47; Ex. 1003 ¶¶ 56–57). Petitioner also contends that Goldberg discloses that its “portable device is configured to wirelessly transmit a plurality of real-time parameters measurements measured by the plurality of physiological sensors connected to the portable device.” *Id.* (citing Ex. 1005, 4:19–23, 4:50–55, 5:9–24, Figs. 6A–C).²²

²² The parties do not dispute that Goldberg teaches the subject matter recited in preamble. We agree that the preamble is satisfied by the prior art. Accordingly, we need not decide whether the preamble is limiting.

(2) *Limitation 1(b): “a plurality of sensor ports positioned on a housing of the portable monitor and configured to provide respective wired interfaces with different respective physiological sensors of a plurality of physiological sensors, wherein:”*

With respect to limitation 1(b) and its required plurality of “sensor ports,” Petitioner refers to Goldberg as disclosing that its “portable device 100a communicates with three or more sensors (SpO₂, blood pressure, and electrolyte), but the electrolyte sensor could be replaced with an ECG, temperature, or respiration rate sensor.” Pet. 19 (citing Ex. 1005, 4:57–5:8, 1:37–44, 4:24–27). Petitioner also contends that Goldberg’s sensors communicate with the controller via “wired connections (‘wired interfaces’).” *Id.* at 19–20 (citing 4:19–29, 5:3–8, 4:67–5:8, 4:19–29, Fig. 2; Ex. 1003 ¶¶ 61–62). Petitioner expresses that a person of ordinary skill in the art would have “assume[d]” that Goldberg discloses a plurality of sensor ports as “ports are a common and typical electrical connection for a housing.” *Id.*

Alternatively, Petitioner relies on Kiani and reasons that Kiani provides specific teachings and motivation for using ports in Goldberg:

To the extent that Goldberg doesn’t explicitly recite a port, Kiani teaches that sensor input ports 540, 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 [person having ordinary skill in the art (PHOSITA)]: wired connections often communicate with electrical devices via ports, such as the wired connection of the pulse oximetry sensor 104a and the blood pressure sensor 104b shown in Goldberg. *Id.*; EX1003, ¶ 63 It would have been obvious to include the port taught by Kiani on the housing 112 of Goldberg’s portable device (if ports were not already there) to establish easy removal and replacement of the sensor 104a, 104b and predictably

resulting in a secure, wired connection. EX1006, 2:34-3:4;
EX1003, ¶ 63.

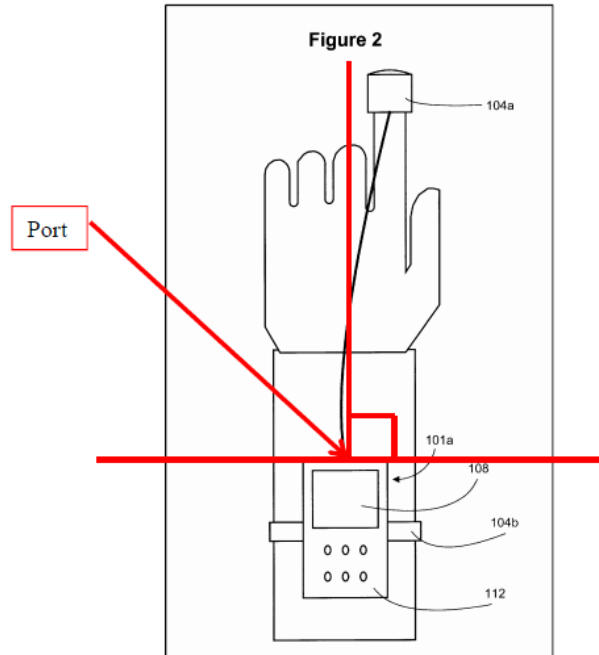
Pet. 20–21 (citing Ex. 1006, 3:21–27, 8:31–92; Ex. 1003 ¶ 63).²³ Petitioner also reasons that one of ordinary skill in the art “would be motivated to include ports on a multi-parameter monitor, like the portable device 100 of Goldberg, using only basis common sense and knowledge of user expectations, which in this setting would be the expectations of clinicians,” and that such modification would employ “known methods to yield predictable results.” *Id.* at 22–23 (citing Ex. 1003 ¶¶ 62–63; Ex. 1005, 5:3–8).

(3) Limitation 1(c): “at least a first sensor port of the plurality of sensor ports is positioned on a side of the housing of the portable monitor such that, when the portable monitor is attached to an arm of a patient, a wired connection extending from the first sensor port to a first physiological sensor positioned on a digit of the patient follows a path to the digit of the patient that is substantially perpendicular to the side of the housing and avoids tangling of the wired connection;”

With respect to limitation 1(c), Petitioner relies on Goldberg’s teachings pertaining to a first sensor connection positioned on a side of the housing and configured to face a hand of the lower arm. Pet. 23–24.

We reproduce below a version of Goldberg’s Figure 2 as annotated by Petitioner:

²³ We are mindful that Dr. Yanulis, like Petitioner, uses the term “sensor input ports” in reference to Kiani’s components 540 and 550. Ex. 1003 ¶ 63. We note, however, that Kiani, itself, uses the term “output port” to refer to oximeter output for connection to the external pulse oximeter 540 and the term “sensor input” to refer to component 550. *See* Ex. 1006, 8:31–33.



The annotated Figure 2 above depicts an embodiment of Goldberg’s portable medical monitoring device with Petitioner’s annotations showing the proposed location of a port. *See id.* at 24. In connection with the above-noted Figure, Petitioner expresses that “a wired connection extending from the first sensor port to the pulse oximetry sensor 104a positioned on a finger of the patient follows a path to the finger that is substantially perpendicular to the side of the housing.” *Id.* (citing Ex. 1005, 4:57–62; Ex. 1003 ¶¶ 65–66). Petitioner also contends that “Goldberg teaches a port, or it would have been obvious to include a port as a part of this wired connection in view of Kiani.” *Id.*

(4) Limitation 1(d): “one or more processing devices configured to”

As to limitation 1(d), Petitioner makes reference to Goldberg’s controller 102 as constituting a processor “configured to process signals from the sensors.” Pet. 25 (citing Ex. 1003 ¶ 70; Ex. 1005, 4:34–36).

(5) *Limitation 1(e): “receive, via the plurality of sensor ports, a plurality of signals from the plurality of physiological sensors, at least some of the plurality of signals including digital information, and at least some of the plurality of signals including analog information”*

In connection with limitation 1(e), Petitioner argues that “Goldberg teaches an embodiment that receives signals from a first sensor (SpO₂), second sensor (blood pressure) and third sensor (e.g., electrolyte or others) respectively wired to the portable device 100 via first, second, and third sensor ports.” Pet. 25. Petitioner also again takes the position that either Goldberg’s teachings taken alone or with those of Kiani account for a plurality of sensor ports. *Id.*

Limitation 1(e) also requires that “at least some of the plurality of signals including digital information, and at least some of the plurality of signals including analog information.” We discern that Petitioner assesses that requirement in connection with the prior art in several ways. For instance, Petitioner contends the following:

Goldberg does not 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 implicitly include analog and digital sensors. EX1005, 5:6-8; EX1003, ¶¶ 72-73. Also, at the very least, it would have been obvious to try transferring either analog or digital data because there are only two signal possibilities: analog or digital. *KSR*, 550 U.S. at 421; EX1003, ¶¶ 74-75. Additionally, it would have been obvious to modify a digital signal from a sensor to be analog with a basic digital-to-analog converter or to modify an analog signal from a sensor to be digital using a basic analog-to-digital converter. EX1003, ¶¶ 73-75. Such circuitry and conversions were conventional. *Id.*; see EX1008, 7:49-52.

Id. at 26. Thus, in the above-quoted assessment, Petitioner argues that it would have been obvious to one of ordinary skill in the art based simply on Goldberg’s disclosure and “conventional” knowledge in the art to employ either analog or digital signals or to modify analog or digital signals based on a basic analog-to-digital converter. Petitioner additionally contends that Kiani expressly teaches that “finger-positioned, pulse oximetry sensors transmit analog data” and that “data can be transmitted either analog or digitally.” *Id.* at 26–27 (citing, e.g., Ex. 1006, 1:15–21, 26–28, 33–35).

Lastly, Petitioner also points to the teachings of Money in support of a position that “it would have been obvious to receive both analog information and digital information from different sensors.” *Id.* at 27. According to Petitioner, “Money 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 ¶ 76; Ex. 1008, 5:48–51, 7:4–8, 7:16–20, 7:58–62, 12:4–7, 13:24–32). Petitioner also argues that “Money suggests that discrete data is best transmitted via digital signals, whereas continuous data is best transmitted via analog signals.” *Id.* at 28 (citing Ex. 1003 ¶ 80; Ex. 1008, 5:61–6:10). With further reliance on Money’s disclosure, and the testimony of Dr. Yanulis as to what a skilled artisan would have understood from that disclosure regarding the application of analog and digital signal transmission in the context of portable patient monitoring devices, Petitioner proposes that limitation 1(e) is satisfied by the combined teachings of Goldberg, Kiani, and Money. *Id.* at 28–30.

(6) *Limitation 1(f): “cause to be displayed, on a display of the portable monitor, a plurality of physiological parameters values responsive to the plurality of signals;”*

In conjunction with limitation 1(f), Petitioner states “Goldberg teaches the controller 102 derives and displays, on the display 108, a plurality of physiological measurements (e.g., oxygen saturation, blood pressure, glucose) based on the signals received from the connected sensors (pulse oximetry, blood pressure, electrolyte sensors).” Pet. 30 (citing Ex. 1003 ¶ 85; Ex. 1005, 4:19–23, 4:30–36, 4:50–55, Figs. 6A–C). Goldberg’s Figures 6A–C “are illustrations of text displayed by the display of a portable medical monitoring device” and include display of “[m]easurement data, statistical data, and sensor data.” Ex. 1005, 4:1–2, 6:35–36.

(7) *Limitation 1(g): “combine information indicative of the plurality of signals into a single digital word of bit stream;”*

Concerning limitation 1(g), Petitioner relies on Goldberg as teaching that “communication unit 110 wirelessly transmits sensor data or physiological measurements, including oxygen saturation and blood pressure, to a remote computer 302.” Pet. 30–31 (citing Ex. 1004, 4:19–23, 4:50–55, 5:9–24, Figs. 6A–C; Ex. 1003 ¶ 86). Petitioner also submits that “Goldberg further teaches the portable device 100a converts sensors readings into digital packets and transmits data using packet-based protocols,” and that “[t]he data from the sensors prior to packet conversion is bitstream.” *Id.* at 31 (citing Ex. 1005, 5:62–6:5, Ex. 1003 ¶¶ 87, 88). Petitioner, concludes that “Goldberg implicitly teaches combining all data received from various sensors.” *Id.* (citing Ex. 1005, 4:41–49, 5:9–24, 5:62–6:5; Ex. 1003 ¶ 89).

(8) Limitation 1(h): “encode the single digital word or bit stream to generate a baseband signal;”

Petitioner characterizes this limitation as describing “generic wireless data transmission” and that one of ordinary skill in the art “would understand a baseband signal is simply a signal encoded for wireless transmission.” Pet. 31 (citing Ex. 1003 ¶¶ 90–92). Petitioner also contends that Goldberg teaches wireless digital pack-based transmission and that “[c]reation of a digital packet implicitly involves encoding the data from the connected sensors 104a, 104b.” *Id.* (citing Ex. 1005, 4:43–49, 5:65–6:5; Ex. 1003 ¶ 91).

(9) Limitations 1(i)–1(k)

Limitations 1(i)–1(k) generally introduce a transmitter and its configuration to modulate the baseband signal to create a transmit signal and to wirelessly transmit that signal to a remote patient monitoring device that is, in turn, configured to decode the signal and “display, on a remote display, the plurality of physiological parameters values responsive to the plurality of signals.” Ex. 1001, 13:42–49. In accounting for those limitations, Petitioner points to Goldberg’s communication unit 110 as a transmitter and its description of wireless signal transmission, containing various sensor data, to remote computer 302 for display. Pet. 32–33 (citing Ex. 1005, 4:19–23, 4:50–55, 5:9–24; 5:62–6:5, 6:6–14; Ex. 1003 ¶¶ 95–98).

b) Summary of Petitioner’s Proposed Reasons to Combine the Teachings of the Prior Art

Petitioner, and Dr. Yanulis, explain that to the extent Goldberg’s connections are not themselves ports, hard-wired connections and ports are both options that were well-known in the portable monitoring devices. In

that respect, and as discussed above, Petitioner and Dr. Yanulis support their views as to the ubiquity of ports in the art through citation to record evidence, e.g., Kiani, and that a skilled artisan would have, for example, (1) appreciated that such ports provide adaptability and are desirable in patient care, and (2) had a reasonable expectation of success in implementing ports in Goldberg's device. *See, e.g.*, Pet. 20–23; Ex. 1003 ¶¶ 62–63. Petitioner also reasons that record evidence, including the teachings of Money, conveys that a skilled artisan would have recognized that Goldberg's portable device may communicate with any sensor, which would include sensors transmitting either analog or digital information. *See, e.g.*, Pet. 26–30, 34–35; Ex. 1003 ¶¶ 73–84.

c) Claims 2–15

Claims 2–15 ultimately depend from claim 1. With respect to each of those dependent claims, Petitioner points to teachings from one or more of Goldberg, Kiani, and Money as disclosing the features added by each of claims 2–15. *See* Pet. 33–43 (citing various portions of Exs. 1005, 1006, 1008 and also the Declaration testimony of Dr. Yanulis (Ex. 1003)). We do not discern that Patent Owner makes any specific challenges with respect to the limitations of claims 2–15.

For instance, claim 2 appears as follows:

2. The portable monitor of claim 1, wherein the one or more processing devices are further configured to:
 - process, at least in part in the analog domain, at least a first signal of the plurality of signals to determine at least a first one or more of the plurality of physiological parameters values; and
 - Process, at least in part in the digital domain, at least a second signal of the plurality of signals to determine at least a

second one or more of the plurality of physiological parameters values.

Ex. 1001, 13:50–59.

In accounting for the added features of claim 2, Petitioner points to disclosures of Goldberg and Money. Pet. 33–35 (citing Ex. 1005, 4:34–36, 62–64, 64–67, 5:6–8; Ex. 1008, 5:48–51, 5:61–6:10, 7:4–8, 16–20, 8:20–27, 12:4–7, 13:24–32; Ex. 1003 ¶¶ 99–102).

Claim 3 depends from claim 2 and adds “wherein the first signal is received via the first sensor port from the first physiological sensor.” Ex. 1001, 13:60–62. Claim 4 depends from claim 3 and adds “wherein the first physiological sensor comprises a pulse oximetry sensor.” *Id.* at 13:63–64. Petitioner relies on disclosure of Goldberg as to those added limitations. Pet. 35 (citing Ex. 1005, 4:62–64; Ex. 1003 ¶ 103).

Claim 5 depends from claim 4 and adds “wherein the first one or more of the plurality of physiological parameters values comprises at least oxygen saturation and pulse rate.” Ex. 1001, 13:65:67. For claim 5, Petitioner points to disclosures of Goldberg and Kiani. Pet. 35–36 (citing Ex. 1005, 4:19–23, 50–55, Figs. 6A–C; Ex. 1006, 6:7–10; Ex. 1003 ¶¶ 105–108).

Claim 6 appears below:

6. The portable monitor of claim 2, wherein the one or more processing device comprise:

[6a] a multiplexer configured to combine the information indicative of the plurality of signals into the single digital word or bit stream; and

[6b] an encoder configured to encode the single digital word or bit stream to generate the baseband signal.

Ex. 1001, 14:1–7.

Petitioner contends that a “multiplexer” is a “fundamental and basic piece[] of circuitry” and points to disclosure in Goldberg and also Money

pertaining a “summer/amplifier 110” as being a structure that one of ordinary skill in the art would understand “is a multiplexer or equivalent to a multiplexer.” Pet. 36–38 (citing Ex. 1008, 10:12–35, 6:8–10, 3:24–29; Ex. 1005, 4:41–49; Ex. 1003 ¶¶ 111–116).

With respect to claims 7–15, Petitioner makes similar citations to record evidence as noted above with respect to claims 2–6. *See* Pet. 38–44.

d) Claims 16–20

Claim 16 is independent. Claims 17–20 ultimately depend from claim 16. Similar to claim 1, claim 16 is drawn to a “battery-powered wearable physiological monitoring device” that is configured to communicate with multiple sensors. Claim 16 also requires multiple ports, and specifies specifically the presence of a first, second, and third sensor communication ports configured in particular arrangements. Further, similar to claim 1, claim 16 generally requires a display, a processor configured to process signals indicative of physiological parameter measurements from the sensors and permit display of said measurement, and a transmitter configured to generate a transmit signal and wirelessly transmit that signal to a patient monitoring device. Claim 16 additionally requires first, second, and third sensor interfaces that receive and output signals in connection with first, second, and third sensor arrangements. Ex. 1001, 14:44–16:3. Lastly, claim 16 requires a battery with a specified configuration. *Id.* at 16:4–8.

Petitioner lays out where it believes all features of claims 16–20 are found in the prior art. *See* Pet. 44–50.

2. *Summary of Patent Owner's Arguments and Evidence*

a) *Claims 1–15*

The main thrust of Patent Owner's challenges to Petitioner's proposed ground of unpatentability centers on Petitioner's positions as to the requirement of a plurality of sensor ports. Patent Owner first discounts the teachings of Goldberg as to disclosure of a sensor port. PO Resp. 21–24. In Patent Owner's view, Goldberg does not disclose any sensor ports. *Id.* at 21. According to Patent Owner, that is so because one of ordinary skill in the art would have understood Goldberg's Figure 2 as being limited “to showing a hardwired connection between sensor 104a and the housing 112.” *Id.* at 22 (citing Ex. 2010 ¶¶ 69–70). Patent Owner and its declarant, Mr. Oslan, also postulate that “[t]he hardwired sensor of Goldberg cannot be readily replaced with another sensor.” *Id.*; Ex. 2010 ¶¶ 69–70.

Patent Owner further argues: (1) that Kiani teaches only a single sensor port (PO Resp. 25–26); (2) that Petitioner has not provided credible reasons to combine Goldberg and Kiani (*id.* at 26–32 (citing Ex. 2010 ¶¶ 51–53, 75–76, 77, 79–84, 85, 86, 89–90, 108–110; Ex. 1003 62–63)); (3) that a person of ordinary skill in the art would not have added a plurality of ports to Goldberg (*id.* at 32–33 (citing Ex. 2010 ¶¶ 79, 80, 83–84, 85, 88)); (4) that one of ordinary skill in the art would not specifically add a port between Goldberg's blood pressure cuff and housing (*id.* at 33–36 (citing Ex. 2010 ¶¶ 71–72, 91–93, 94, 95–107)); and (5) that Petitioner's reasoning for modifying Goldberg is based only on hindsight (*id.* at 43–46).²⁴

²⁴ Patent Owner also generally echoes the noted arguments as a part of the Sur-reply. *See* PO Sur-reply 6–13.

Patent Owner additionally argues that Petitioner has not accounted adequately for features pertaining to “analog and digital requirements” of the claims. PO Resp. 36–42 (citing Ex. 2010 ¶¶ 85, 112–113, 114–116, 117–125, 169–174); PO Sur-reply 15–16. Specifically, Patent Owner generally discounts the teachings of Money in meeting those requirements when combined with Goldberg and Kiani. For instance, according to Patent Owner, “Petitioner does not explain what feature from Money would be combined with Goldberg to result in a device that receives both analog and digital signals.” PO Resp. 37. Patent Owner also disparages Money’s teachings as to implementation of both analog and digital sensors on the basis that, although Money discloses several analog sensors, it describes only a single digital sensor. *Id.* at 37–39. Patent Owner contends that the single digital sensor in Money does not form part of Petitioner’s proposed combination of Goldberg, Kiani, and Money. *Id.* at 38. Thus, in Patent Owner’s view, “[t]he combination of Goldberg, Kiani, and Money, as proposed by Petitioner, therefore does not teach any digital sensor.” *Id.*

b) Claims 16–20

With respect to claim 16–20, Patent Owner characterizes Petitioner’s ground of unpatentability based on Goldberg, Kiani, and Money as being deficient because of the reference to subsections “a” and “b” in connection with section IX.A.11 on page 45 of the Petition. PO Resp. 16.²⁵

²⁵ Regarding this argument, as noted above (§ II.A.1), it is clear from the record, including Petitioner’s persuasive explanation in its Motion to Correct, that the references to the noted subsections “a” and “b” on page 45 of the Petition were typographical errors and that the intended recitation on page 45 was simply to section IX.A.11 as a whole.

3. Discussion

For the reasons below, we conclude that Petitioner has shown by a preponderance of the evidence that claims 1–20 would have been obvious in light of the proposed grounds of unpatentability that apply Goldberg as a principal reference. *See* Pet. 17–50, 80–83, 86–87.

a) Claims 1–15

(1) Goldberg and Kiani

A central tenet of Patent Owner’s arguments challenging Petitioner’s proposed ground of unpatentability lies in the claim requirement of multiple sensor ports. We note that in advancing its arguments as to a lack of disclosure of “ports” in Goldberg, Patent Owner contends that a hardwired connection is not a port and focuses on Goldberg’s Figure 2. In that regard, Patent Owner dismisses Goldberg’s Figure 2 as being limited to disclosure of hardwire connections, specifically a hardwired connection between sensor 104a and housing 12. *See, e.g.*, PO Resp. 21–24. Yet, even accepting that a hardwired connection does not amount to a sensor port, whether or not Goldberg’s Figure 2 depicts a hardwired connection between sensor 104a and housing 112 is not particularly relevant as that figure does not constitute the entirety of Goldberg’s teachings as to sensor connections.

In particular, in other portions of Goldberg, its controller 102 may include multiple sensors 104, and those multiple sensors “can be coupled to the controller 102 and/or memory by wire or wirelessly, and such ways of coupling are well known in the art.” Ex. 1005, 4:26–29. That is not a disclosure that conveys restriction to any one particular sensor connection

style, e.g., hardwired, but rather encompasses a wide variety of different connection styles.

Moreover, Patent Owner's and Mr. Oslan's recognition that a "hardwired sensor of Goldberg cannot be readily replaced with another sensor" (PO Resp. 22; Ex. 2010 ¶¶ 69–70) suggests that a skilled artisan would look beyond hardwired sensors in considering Goldberg's teachings of implementing multiple sensors as a part of its device. *See* Ex. 1005, 4:26–29. In view of Goldberg's disclosure, it simply does not follow that a person of ordinary skill in the art would regard Goldberg as being limited to a single type of sensor connection that is only hardwired. Dr. Yanulis and Dr. Bergeron also explain the desirability of having sensors with port connections as opposed to basic hard wiring. *See, e.g.*, Ex. 1003 ¶¶ 62, 63; Ex. 1040 ¶ 67 ("no POSITA [person of ordinary skill in the art] would ever design Goldberg's device to be hardwired" and "[a] hardwired system provides no adaptability whatsoever."). We credit the testimony of Dr. Yanulis and Dr. Bergeron as consistent with the clear disclosure of Goldberg when it comes to sensor connections.

Furthermore Goldberg also is explicit that its device "may contain one, *all, or any combination*" of sensors, which "may be comprised of any type of physiological sensor 104 suitable [f]or use with a portable monitoring device." Ex. 1005, 5:3–8 (emphasis added). We disagree with Patent Owner that these are mere "aspirational statements" that do not disclose or imply using multiple sensors in the same device. *See* PO Resp. 32; PO Sur-reply 13. In light of Goldberg's above-noted disclosures, and the credible testimony of Dr. Yanulis and Dr. Bergeron, we conclude that

Goldberg unambiguously contemplates the use of multiple and varied sensors and sensor connections as a part of its medical monitoring device.

Turning to Kiani, as noted above (*see supra* § II.D (Claim Construction)), there is no dispute that Kiani discloses a connection for a sensor that is recognized as a “sensor port.” In that regard, the parties are in agreement that Kiani’s “sensor input 550” constitutes a sensor port. *See, e.g.,* Pet. 20; PO Resp. 25. Patent Owner places a great deal of emphasis on its argument that Kiani’s teachings should be regarded as being limited to a single sensor port. *See, e.g.,* PO Resp. 25–33. Yet, we note that Kiani clearly contemplates the presence of other types of connections understood as “ports.” *See, e.g.,* Ex. 1006, 8:31–33 (“output port 540”). Nevertheless, even assuming that Kiani is limited to disclosure of a single sensor port, the question of obviousness is not limited solely to consideration of Kiani’s teachings. Where, as here, a ground of unpatentability is based on the teachings of multiple references, the test for obviousness is what the combined teachings of those references would have suggested to one of ordinary skill in the art. *In re Young*, 927 F.2d 588, 591 (Fed. Cir. 1991). Furthermore, in an obviousness analysis, it is not necessary to find precise teachings in the prior art directed to the specific subject matter claimed because inferences and creative steps that a person of ordinary skill in the art would employ can be taken into account. *KSR*, 550 U.S. at 418.

As noted above, Goldberg clearly teaches the use of multiple physiological sensors coupled to a controller of its medical monitoring device and explicitly discloses that the device “may contain one, all, or any combination” of various types of sensors. Ex. 1005, 4:50–5:8. Goldberg also clearly sets forth that the sensors may be coupled to the device “by wire

or wirelessly, and such ways of coupling are well known in the art.” *Id.* at 4:23–30. Kiani clearly discloses that a sensor port is one such well known style of coupling. *See, e.g.*, Ex. 1006, 8:31–9:2; Pet. 20; PO Resp. 25. In light of the teachings of Goldberg and Kiani, including those discussed above, it follows that a person of ordinary skill and creativity would have appreciated from the combined teachings of those references that a medical monitoring device, such as that of Goldberg, may include multiple sensor connections that are recognized as sensor ports. *See, e.g.*, Ex. 1003 ¶ 63; Ex. 1040 ¶ 71.

Patent Owner makes several arguments related to the sizing of the portable device and how adding up to three sensor ports would be undesirable to minimizing size. *See, e.g.*, PO Resp. 43. These arguments are countered by Kiani, which shows three connectors (regardless of type) while still remaining handheld in size. Ex. 1006, Fig. 5, 8:31; Ex. 1042,²⁶ 116:15–117:7; Ex. 1040 ¶ 73 (“Kiani showed a device having three ports, at least according to Patent Owner’s construction, and the device of Kiani was still small enough to be ‘handheld’.”). We see no persuasive evidence that including multiple ports would somehow cause Goldberg’s device to be too big for wrist attachment. To the contrary, the final record before us establishes that even if Goldberg’s device increased in size to accommodate a third port, such increase would be minor and still allow the monitor to be wearable and portable as set forth in the ’300 patent. *See* Ex. 1040 ¶ 75 (“A POSITA would know that the electronics necessary to form wired connections are relatively simple and do not take up much space.”).

²⁶ Exhibit 1042 is the deposition of Patent Owner’s declarant, Alan Oslan, taken April 28–29, 2021.

Patent Owner also challenges Petitioner's motivation to combine the teachings of Goldberg and Kiani, arguing that clinicians are not the end-user for Goldberg's device. PO Sur-reply 13–14. Whether the end-user is a clinician, or a patient acting at the direction of a clinician, we see no dispositive difference as to how a person of ordinary skill in the art would perceive the combinability of the prior art references and the reasons for that combination. Dr. Bergeron persuasively explains that “the motivation to combine arguments in the Petition apply equally to both at-home use and clinical use.” Ex. 1040 ¶ 79. For example, the advantages of interchangeability and adaptability discussed below would be desired by the clinician, but appreciated by both the clinician and the patient in use. *See id.* (“a POSITA would be motivated to use a port to allow a user or a clinician to remove and replace a sensor”); *id.* ¶ 70 (“I am a clinician, and I agree with Dr. Yanulis. A POSITA designing a multi-parameter monitor would design it to have ports and adaptability via ports. If given the choice between a static, hardwired monitor and a monitor that offered flexibility, a POSITA would choose the monitor that offered adaptability for patients.”).

Patent Owner criticizes Petitioner for not weighing potential disadvantages with ports, such as: accidental disconnection, ports being complicated, faulty connections, requiring more space, additional parts, and other potential drawbacks. *See, e.g.*, PO Resp. 27 (“Yanulis failed to consider whether ports have any disadvantages compared to hardwired connections.”), *id.* (“Petitioner and Yanulis fail to consider whether any disadvantages of adding a port would dissuade a PHOSITA from making the alleged combination.”); Ex. 2010 ¶ 77 (“adding a connector increases cost . . . adds an additional point of failure . . . may introduce contact noise due to

poor or unstable electrical connections”). Petitioner cites evidence and testimony calling into question these perceived disadvantages with ports, noting that in 2002, ports often included locks or tabs to securely connect cables to ports, shields and error checking prevented noise, and there is nothing complicated about plugging a wire into a slot. Pet. Reply 14; Ex. 1040 ¶ 76. Dr. Bergeron addresses each of the alleged disadvantages and concludes that ports are not complications, but benefits. Ex. 1040 ¶ 76. Further, Patent Owner’s own prior art technology, Kiani, teaches ports and the benefits of using ported connections despite these perceived disadvantages. *See* Ex. 1006, codes (71), (57).

Examining the potential advantages versus disadvantages of the proposed combination, Petitioner has shown persuasively that the downsides are not outweighed by the distinct advantages of having a port, which enables removal of a faulty sensor without replacing the entire unit. As explained by Dr. Bergeron, “[s]ensors can fail. Ease of replacing a failed port is the primary advantage of using a removable port over a hardwired, nonremovable connection.” Ex. 1040 ¶ 76; *see also* Ex. 1003 ¶ 63 (“ports generally provide removable wired connections, so a medical worker would replace a sensor with a different sensor if a new physiological parameter is to be measured”). A person of ordinary skill in the art would have perceived that the proposed combination would also achieve the significant advantages of interchangeability and adaptability. Ex. 1003 ¶ 63 (“[I]ncluding a port on Goldberg’s housing . . . would predictably enable wired communication with any sensor (e.g., the pulse oximeter 104a) while allowing easy removal and replacement of the sensor and providing a secure, wired connection between the pulse oximetry sensor 104a and the housing 112.”).

We further agree with Dr. Bergeron that “[p]orts had clear advantages over hardwired connections, such as the ability to replace a faulty sensor without replacement of the entire system,” and “ports would allow for connections to ‘one, all or any combination of’ any known physiological sensor.” Ex. 1040 ¶ 69 (quoting Ex. 1005, 4:50–56, 5:3–8). We find that Petitioner has provided persuasive rationales that a skilled artisan would have appreciated that Goldberg’s explicit teachings of the advantages of using all, or any combination, of the disclosed sensor types would combine with Kiani’s teaching of the benefits of having removable ported connections. *See* Pet. 20–23; *see also* Ex. 1003 ¶ 63 (“modifying Goldberg with Kiani would have been a combination of known concepts (wired electrical communication and wired electrical communication using ports) to yield predictable results (transmission of signals through wires and ports to the controller 102)” (citing Ex. 1005, 4:19–29; Ex. 1006, 3:21–27, 8:31–92)); Ex. 1040 ¶ 71 (“[a] POSITA having knowledge of Kiani would know how to create a ported connection for each respective wired connection to a sensor that was taught by Goldberg” (citing Ex. 1005, 4:50–56; Ex. 1006, 3:21–22)).

We have considered Patent Owner’s arguments, and Mr. Oslan’s testimony, related to potential disadvantages associated with the proposed combination but determine that, in the aggregate, Petitioner presents stronger evidence as to advantages that a person of ordinary skill in the art would have considered in 2002. *See Winner Int’l Royalty Corp. v. Wang*, 202 F.3d 1340, 1349 n. 8 (Fed. Cir. 2000) (“The fact that the motivating benefit comes at the expense of another benefit, however, should not nullify its use as a basis to modify the disclosure of one reference with the teachings of

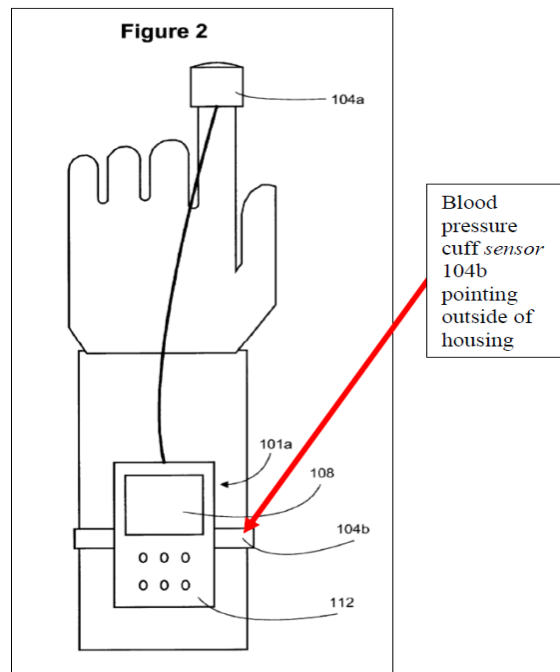
another. Instead, the benefits, both lost and gained, should be weighed against one another.”). We further address Patent Owner’s specific arguments challenging Petitioner’s proposed modification of Goldberg to include a sensor port for its blood pressure cuff, and the alleged disadvantages with that arrangement.

Patent Owner argues that a skilled artisan would not have added a port for Goldberg’s blood pressure sensor because if Goldberg’s blood pressure sensor is positioned between the housing and blood pressure cuff it would create several issues and potentially not work as intended. PO Resp. 33–36; PO Sur-reply 6–12.

We first note that Goldberg teaches that all sensors, including pulse oximetry sensor 104a and blood pressure sensor 104b may communicate with the controller 102 via a wired connection, thus, the connection between controller 102 and the blood pressure sensor 104b includes a wired connection. *See* Ex. 1003 ¶¶ 62, 63 (citing Ex. 1005, 4:19–29, 5:3–8). Further, Goldberg teaches blood pressure cuff *sensor* 104b, not just the blood pressure cuff, and Goldberg teaches and illustrates the blood pressure cuff sensor as outside of the housing as illustrated below. Ex. 1040 ¶ 81 (“Goldberg teaches that the blood pressure cuff *sensor* 104b is outside of the housing and that the communications with the sensor is wired. This wired connection and the sensor’s location outside the housing would necessarily include a port” (citing Ex. 1005, 4:26–29, 4:64–67, Fig. 2)).

Goldberg also explains that sensors may be coupled to the controller by wire and the blood pressure cuff sensor may be used to sense the monitored person’s blood pressure and the strap also functions to secure the mountable device to a person’s forearm or wrist. Ex. 1005, 4:26–29, 4:64–

67. Relying on Dr. Bergeron’s testimony, Petitioner persuasively shows that a person of ordinary skill in the art would have understood that the electrical sensor is outside the portable device, and the sensor provides the signal to the controller 102 via a wire, as illustrated in the annotated Figure 2, reproduced below. Pet. Reply 17–18 (citing Ex. 1005, 4:26–29; Ex. 1040 ¶ 81).



Petitioner’s annotated Figure 2 of Goldberg depicts portable device 101a mounted in an assembly or housing 112 with an added annotation stating “Blood pressure cuff sensor 104b pointing outside of housing.” *Id.* at 18. Based on the final record before us, we discern no requirement that the blood pressure sensor be mounted directly between the cuff and the housing as Patent Owner alleges. *See* PO Sur-reply 7.

Patent Owner’s arguments related to mounting a second sensor port on Goldberg would be stronger if Petitioner relied solely on Goldberg. As explained above, however, Petitioner relies on the teachings of Kiani for showing the benefits of adding sensor ports into Goldberg’s multiple wired

connections. We find persuasive Dr. Yanulis's testimony that "the connection between the controller 102 and the blood pressure sensor 104b would be a wired connection." Ex. 1003 ¶ 78. As Dr. Yanulis explains, Kiani shows that sensor input ports were known electrical structures for wired communication and "it would have been obvious to combine Goldberg and Kiani to include a second and third port on the housing 112 as a part of the wired connections with the second and third sensors." *Id.* Thus, we disagree with Patent Owner's contention that Petitioner "relies on inherency to argue that a sensor port exists between Goldberg's cuff and housing." PO Sur-reply 7. As explained above, Goldberg provides the express disclosure of using any combination of sensor types as well as any type of physiological sensor for use with a portable monitoring device. In view of Kiani, a skilled artisan would have understood that the blood pressure cuff sensor is connectable to the portable monitoring device through an additional sensor port. *See, e.g.*, Ex. 1003 ¶ 78. The combined teachings of Goldberg and Kiani are express and the motivations for making the combined modifications are well supported.

(2) *Money*

The dispute when it comes to Money's teachings is Petitioner's reliance on that reference to account for claim requirements (e.g., limitation 1(e) and claim 2) pertaining to receipt of signals from physiological sensors that in some cases include digital information and in other cases include

analog information. *See, e.g.*, Pet. 27–30.²⁷ Petitioner notes that Goldberg does not explicitly teach whether the signals from its sensors are analog or digital. *Id.* at 26. Petitioner’s position, however, is that the signals from those sensors must be one or the other of those two signals types, and that transferring a signal in either type was well-known, as evidenced, for instance, by Money’s teachings. *See, e.g., id.* at 27–30; Pet. Reply 19–21; Ex. 1003 ¶¶ 73–84.²⁸ Thus, Petitioner contends that “it would have been obvious to receive both analog and digital information from different sensors in view of Money.” Pet. 27.

Although acknowledging that Money discloses the use of both analog and digital sensors, Patent Owner generally dismisses Petitioner’s reliance on Money’s teachings to account for a digital sensor transmitting digital signals. *See* PO Resp. 36–39; PO Sur-reply 15–16. In essence, Patent Owner is of the view that the Petition is deficient in not mapping precisely which sensors taught by the combination of Goldberg and Kiani would transmit digital signals, and which would transmit analog signals.

²⁷ Petitioner also relies on Money as disclosing a “summer/amplifier 110” that constitutes the “multiplexer” required by claim 6. Pet 36–38. Patent Owner does not dispute Petitioner’s reliance on Money in that regard.

²⁸ Dr. Yanulis testifies, for example: (1) “[i]ndeed, 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 ¶ 75); (2) “Money teaches a system that receives analog signals from some sensors and digital signals from other sensors” (*id.* ¶ 76 (citing Ex. 1008, 5:48–51, 7:4–8, 7:16–20, 7:58–62, 12:4–7, 13:24–32)); and (3) “Money also explains the circuitry and power used to communication with both analog and digital sensors” (*id.* ¶ 78 (citing Ex. 1008, 7:4–20)).

In our Decision on Institution, we made an initial determination that Goldberg teaches a system that can communicate with any sensor, which would include analog and digital sensors, and nothing in the final record credibly undermines that determination. *See* Inst. Dec. 39; *see also* Ex. 1003 ¶ 83 (“Goldberg teaches that it wishes to communicate with any conventional sensor.”). We find persuasive Dr. Yanulis’ testimony that Money teaches a system that receives analog signals from some sensors and digital signals from other sensors, and his explanation pertaining to the circuitry and power requirements that are necessary to communicate with both analog and digital sensors. Ex. 1003 ¶¶ 75–84 (citing, *inter alia*, Ex. 1008, 5:48–51, 7:4–8, 7:16–20, 7:58–62, 12:4–7, 13:24–32). Further, we agree with Dr. Yanulis that Money teaches the benefits of adopting a portable, wearable patient monitoring device that receives digital signals from one sensor and analog signals from other sensors. *Id.* ¶ 78; *see id.* ¶ 76 (“Money receives digital signals from the pulse oximetry sensor cuff 39 through a RS232 serial port, and analog signals from other sensors”) (citing Ex. 1008, 5:65–6:2, 6:11–20, 7:58–62, 12:4–7, 13:24–32). Thus, it is clear from the record that, in the art of portable patient monitoring devices, the use of either digital signals or analog signals was known for transmitting data from sensors as of 2002.

Patent Owner appears to focus on Money’s disclosure of an example digital sensor that is a pulse oximetry sensor as a basis for challenging the applicability of Money’s teachings to Goldberg’s disclosure. *See* PO Resp. 37–38. Patent Owner seemingly views Money’s teachings as being limited to that particular example when it comes to digital sensors. One example of a pulse oximeter sensor operating in the digital domain (*see* Ex. 1008,

Fig. 1), however, does not negate Money’s comprehensive teachings that sensor data may be reported in “two modes,” either digitized or in analog waveform, and the device must “process both analog and digital signals.” *See* Ex. 1008, 5:61–6:10, 7:4–7.

In the circumstance where there are limited number of known options (two—analogue or digital) addressing a particular matter (transmitting data from sensors) a person of ordinary skill in the art has good reason to pursue those known options. *See KSR*, 550 U.S. at 421 (“When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense.”).

The Petition provides a clear evidentiary basis supporting the position that a skilled artisan would have known that either digital or analog sensors are available options for the sensors taught by the combination of Goldberg and Kiani. *See* Pet. 27–30, 34–35. We also credit Dr. Yanulis’s testimony to that effect. *See* Ex. 1003 ¶¶ 75–84, ¶ 83 (“Goldberg provides the motivation to adopt the teachings of Money to be able to communicate with any conventional sensors (both analog and digital)” (citing Ex. 1005, 4:50–56)). We reject Patent Owner’s arguments that discount the clear teachings of Money as to the known use of sensors in the art for transmitting either digital or analog signals. We conclude that those arguments do not consider appropriately what one of ordinary skill in the art would have understood as to the use of sensors relaying either digital or analog signals as a part of a patient monitoring device. *See* Ex. 1003 ¶¶ 75–84.

(3) Conclusion—Claims 1–15

Based on the final record, and having considered the respective positions of the parties, we conclude that Petitioner has shown persuasively that all the features of claims 1–15 are accounted for by the combined teachings of Goldberg, Kiani, and Money. *See* Pet. 17–43. Petitioner also articulated several reasoned rationales for combining the teachings of the references, with a reasonable expectation of success in making the combination. *See, e.g., id.* at 20–23, 26–30, 34–35; Ex. 1003 ¶¶ 62–63, 73–84. Accordingly, for the reasons discussed above, we are persuaded that Petitioner has demonstrated by a preponderance of the evidence that claims 1–15 of the ’300 patent would have been obvious in view of Goldberg, Kiani, and Money.

b) Claims 16–20

As discussed above (*see supra* § II.A.1), we conclude that the minor typographical errors appearing on page 45 of the Petition do not render unintelligible the basis for Petitioner’s accounting of claims 16–20. Other than generally arguing that the Petition is deficient based on those typos, Patent Owner does not provide any specific arguments directed to particular claim features of claims 16–20. Having considered the parties’ positions, we conclude that Petitioner has shown how the features of claims 16–20 are accounted for by the teachings of Goldberg, Kiani, and Money. *See* Pet. 74–79. As discussed above, we also conclude that Petitioner has provided adequate reasoning that a person of ordinary skill in the art would have combined the teachings of those references. Accordingly, we conclude that Petitioner has shown by a preponderance of the evidence that claims 16–20 would have been obvious over Goldberg, Kiani, and Money.

G. Asserted Obviousness in view of (i) Goldberg, Kiani, Money, and Taylor, and (ii) Goldberg, Kiani, Akai, Taylor, and Hylton

Petitioner also contends that: (i) claims 1–5 and 10–20 are unpatentable under 35 U.S.C. § 103 based on Goldberg, Kiani, Money, and Taylor; and (ii) claims 6–9 are unpatentable based on Goldberg, Kiani, Money, Taylor, and Hylton. *See* Pet. 79–82, 86–87.

As discussed above, we conclude that Petitioner has shown by a preponderance of the evidence that claims 1–20 are unpatentable based on Goldberg, Kiani, and Money. Petitioner applies Taylor and Hylton as alternative teachings to account for certain limitations of the claims Petitioner also accounted for as a part of the teachings of Goldberg, Kiani, and Money. *See* Pet. 79–82, 86–87. In particular, Petitioner alternatively relies on Taylor as accounting for: (1) limitations of claim 1 that are identified in this Decision as limitations 1(g), 1(h), 1(j), and 1(k); (2) limitation 6(b); and (3) limitations of claims 7–9. Pet. 80–82, 86–87. Petitioner relies on Hylton as alternatively disclosing limitation 6(a). *Id.* at 86.

As discussed above, we conclude that Petitioner has shown that all the features of claims 1–20 are found in the prior art. Because of that conclusion we determine that a need to consider the alternative teachings of Taylor and Hylton has not materialized. In that respect, we determine that it is unnecessary to further address Petitioner’s proposed grounds for claims 1–20 that alternatively involve the teachings of Taylor and Hylton. *See Boston Scientific SCIMED v. Cook Group*, 809 Fed. Appx. 984, 990 (Fed. Cir. Apr. 30, 2020) (nonprecedential) (“We agree that the Board need not address issues that are not necessary to the resolution of the proceeding.”); *see also SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1359 (2018) (holding that a

petitioner “is entitled to a final written decision addressing all of the claims it has challenged”).

H. Asserted Obviousness in view of: (i) Money, Kiani, and Akai; (ii) Money, Kiani, Akai, and Taylor; and (iii) Money, Kiani, Akai, Taylor, and Hylton

Petitioner further contends that: (i) claims 1–20 are unpatentable based on Money, Kiani, and Akai; (ii) claims 1–5 and 10–20 are unpatentable based on Money, Kiani, Akai, and Taylor; and (iii) claims 6–9 are unpatentable based on Money, Kiani, Akai, Taylor, and Hylton. Pet. 6, 51–79, 83–85, 87–88. Because we find that each of claims 1–20 are unpatentable based on the grounds involving Goldberg, Kiani, and Money, we determine it is unnecessary to reach the remaining grounds based on Money as the principal applied reference.

I. Petitioner’s Motion to Exclude

In connection with its Motion to Exclude, Petitioner seeks to exclude the following:

Evidence sought to be excluded	Description of the evidence
Ex. 2010	Declaration of Alan L. Oslan (¶¶ 82, 84, 100–102, 104, 106, 109)
Ex. 2016	Transcript of Deposition of George Yanulis, conducted on September 10, 2020, in <i>Masimo Corp. v. Sotera Wireless, Inc.</i> , Case No. 3:19-cv-01100-BAS-NLS (S.D. Cal.)
Ex. 2024	Allison Rhodes Westover et al., <i>Human Factors Analysis of an ICU</i> , 23 J Clin Eng 110 (1998)
Ex. 2025	Gianfranco Parati et al., <i>Self blood pressure monitoring at home by wrist devices: a reliable approach?</i> ,

Evidence sought to be excluded	Description of the evidence
	20 J Hypertension573 (2002)
Ex. 2027	Japanese Publication JP4777640B2 to Junichi and English machine translation available from Espacenet
Ex. 2028	Photographs of Omron Gold Wrist Blood Pressure Monitor (Model No. BP4350) taken by Alan Oslan
Ex. 2036	Japanese Publication JP4777640B2 to Junichi – Certified English translation

MTE 1.

The exhibits and testimony identified by Petitioner as a part of its Motion to Exclude either have not been relied upon as a part of this Final Written Decision, or have not been considered in a manner that is adverse to Petitioner. Accordingly, we determine that Petitioner’s Motion to Exclude is moot, and we *dismiss* it as such.

III. CONCLUSION²⁹

For the foregoing reasons, we conclude that Petitioner has met its burden to show by a preponderance of the evidence that claims 1–20 are unpatentable over the prior art.

In summary,

Claims	35 U.S.C. §	Reference(s)/ Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1–20	103	Goldberg, Kiani, Money	1–20	

²⁹ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this

Claims	35 U.S.C. §	Reference(s)/ Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1–5, 10– 20	103	Goldberg, Kiani, Money, Taylor ³⁰		
6–9	103	Goldberg, Kiani, Money, Taylor, Hylton ³¹		
1–20	103	Money, Kiani, Akai ³²		
1–5, 10– 20	103	Money, Kiani, Akai, Taylor ³³		

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

³⁰ As explained above, we do not reach this ground of unpatentability. See *supra* § II.G.

³¹ As explained above, we do not reach this ground of unpatentability. See *supra* § II.G.

³² As explained above, we do not reach this ground of unpatentability. See *supra* § II.H.

³³ As explained above, we do not reach this ground of unpatentability. See *supra* § II.H.

Claims	35 U.S.C. §	Reference(s)/ Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
6–9	103	Money, Kiani, Akai, Taylor, Hylton ³⁴		
Overall Outcome			1–20	

IV. ORDER

For the foregoing reasons, it is

ORDERED that “Petitioner’s Motion to Correct Typographical Errors in the Petition Under 37 C.F.R. § 42.104(c)” (Paper 16) is *granted-in part* and *dismissed in part*;

FURTHER ORDERED that Petitioner has shown by a preponderance of the evidence that claims 1–20 are unpatentable over the prior art;

FURTHER ORDERED that Petitioner’s Motion to Exclude (Paper 36) is *dismissed as moot*; and

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

³⁴ As explained above, we do not reach this ground of unpatentability. *See supra* § II.H.

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Patent 9,795,300 B2

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