

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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SOTERA WIRELESS, INC.,  
Petitioner,

v.

MASIMO CORPORATION,  
Patent Owner.

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IPR2020-01054  
Patent 9,872,623 B2

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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)*  
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. 9,872,623 B2 (“the ’623 patent,” Ex. 1001). Paper 1 (“Pet.”).<sup>1</sup> We instituted trial to determine whether the challenged claims were unpatentable as follows:

| Claims Challenged     | 35 U.S.C. § | Reference(s)/Basis                                                                             |
|-----------------------|-------------|------------------------------------------------------------------------------------------------|
| 1, 2, 4, 5, 12, 14–17 | 103         | Goldberg, <sup>2</sup> Kiani, <sup>3</sup>                                                     |
| 3                     | 103         | Goldberg, Kiani, Fujisaki <sup>4</sup>                                                         |
| 6–11, 13, 18, 19      | 103         | Goldberg, Kiani, Money <sup>5</sup>                                                            |
| 20                    | 103         | Goldberg, Kiani, Money, Fujisaki, Estep, <sup>6</sup> Taylor, <sup>7</sup> Hylton <sup>8</sup> |

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<sup>1</sup> In support of its Petition, Petitioner relies on the Declaration of George E. Yanulis, D.Eng. (Ex. 1003).

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

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

<sup>4</sup> US Patent No. 4,425,921, issued on Jan. 17, 1984 (“Fujisaki”) (Ex. 1009).

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

<sup>6</sup> PCT Publication No. WO 99/13698, published Mar. 18, 1999 (“Estep”) (Ex. 1010).

<sup>7</sup> PCT Publication WO 96/15994, published on May 23, 1996 (“Taylor”) (Ex. 1011).

<sup>8</sup> U.S. Patent No. 5,793,413 issued Aug. 11, 1998 (“Hylton”) (Ex. 1012).

| Claims Challenged | 35 U.S.C. § | Reference(s)/Basis                                       |
|-------------------|-------------|----------------------------------------------------------|
| 1, 2, 4–19        | 103         | Money, Kiani, Akai <sup>9</sup>                          |
| 3                 | 103         | Money, Kiani, Akai,<br>Fujisaki                          |
| 20                | 103         | Money Kiani, Akai,<br>Fujisaki, Estep, Taylor,<br>Hylton |

*See* Paper 12 (“Inst. Dec.”).

Masimo Corporation (“Patent Owner” or “Masimo”) timely filed a Patent Owner Response. Paper 20 (“PO Resp.”).<sup>10</sup> Petitioner filed a Reply to the Response. Paper 24 (“Pet. Reply”).<sup>11</sup> Patent Owner filed a Sur-reply. Paper 29 (“PO Sur-reply”). Petitioner also filed a Motion to Exclude. Paper 33 (“MTE”). Patent Owner filed an Opposition to that Motion to Exclude (Paper 34), to which Petitioner replied (Paper 35). We held an oral hearing on August 26, 2021.<sup>12</sup> A transcript of the oral argument appears in the record. Paper 38 (“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 ’623 patent are unpatentable. *See* 35 U.S.C. § 316(e).

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<sup>9</sup> EP0880936A2 published on Dec. 2, 1998 (“Akai”) (Ex. 1007).

<sup>10</sup> In support of the Patent Owner Response, Patent Owner relies on a Declaration of Alan L. Oslan. Ex. 2010.

<sup>11</sup> In support of the Reply, Petitioner provides a Declaration of Bryan Bergeron, MD. Ex. 1040.

<sup>12</sup> 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, and IPR2020-01054 (this proceeding).

*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 '623 patent. Pet. 2; Paper 5, 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;  
IPR2020-01015, challenging U.S. Patent No. 9,795,300;  
IPR2020-01033, challenging U.S. Patent No. RE47,249;  
IPR2020-01078, challenging U.S. Patent No. RE47,218; and  
IPR2020-01082, challenging U.S. Patent No. 10,255,994.

Paper 5, 2.<sup>13</sup>

Patent Owner further identifies various applications that claim priority to, or share a priority claim with, the '623 patent. *Id.* at 1–2.

*C. The '623 Patent*

The '623 patent is directed to an “Arm Mountable Portable Patient Monitor.” Ex. 1001, code (54). The '623 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 '623 patent is directed to “[a]n arm mountable portable patient monitoring device

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<sup>13</sup> With the exception of IPR2020-01082, trial was instituted in all of the noted proceedings.

configured for both on patient monitoring of parameter measurements using one or more sensors operatively connected to the portable patient monitoring device and wireless transmission of parameter measurements.” *Id.* at code (57). As is further described in the Abstract:

The arm mountable portable patient monitoring device includes a pulse oximetry sensor configured to be wrapped around a digit of a patient, a housing having a size and shape configured for mounting to a lower arm of the patient, and a strap mountable to the back side of the housing and configured to secure the housing to the lower arm of the patient. The housing includes a display, a first sensor port positioned on the housing to face toward a hand of the patient, second and third sensor ports, a battery, signal processing arrangements to cause display of parameter measurements, and a transmitter to transmit information indicative of the measurements.

*Id.*

The ’623 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 2:22–24. And 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 ’623 patent is to allow wireless pulse oximetry monitoring. *Id.* at 2:34–38; *compare* Fig 1,<sup>14</sup> *with* Fig. 3.

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<sup>14</sup> 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 '623 patent is reproduced below.

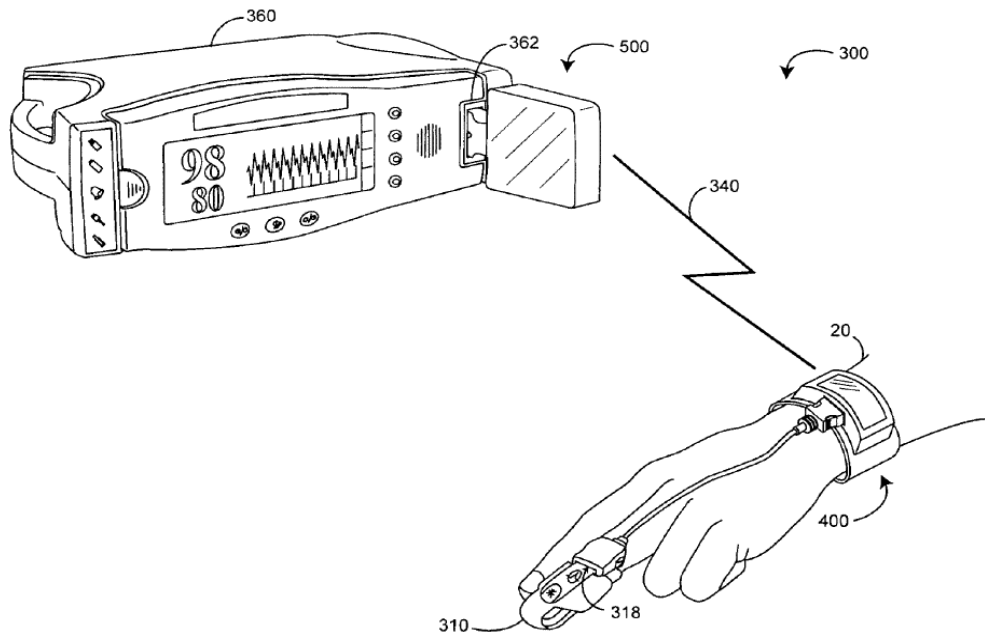


FIG. 3

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 '623 patent is reproduced below:

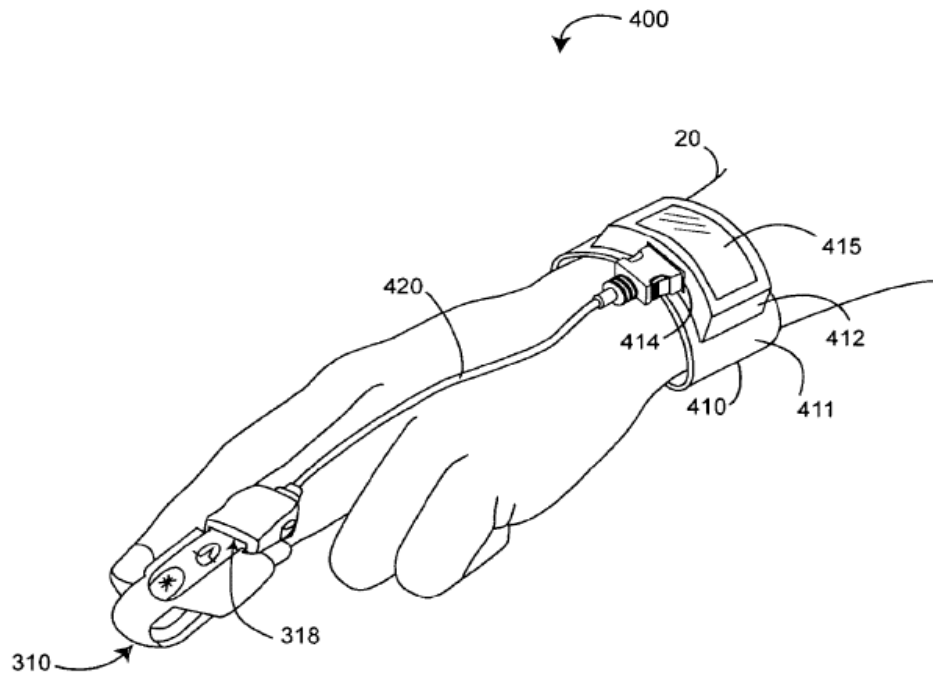


**FIG. 4A**

Figure 4A above shows an embodiment of sensor module 400. *Id.* at 5:28–29. Sensor module 400 includes wrist-mounted module 410, which further 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.

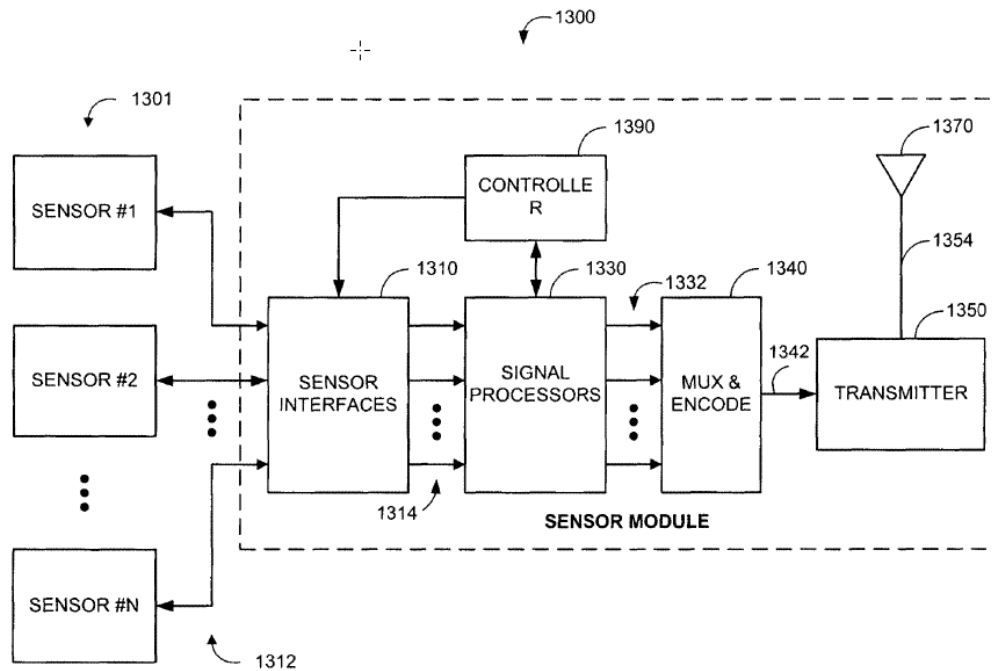


FIG. 13

Figure 13 depicts a functional block diagram of a sensor module configured for multiple sensors. *Id.* at 4:24–25.

#### 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                                                                                                                                                                                                                                                                                                            |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Claim 1<br>Preamble<br>1(a) | An arm mountable portable patient monitoring device configured for both on-patient monitoring of parameter measurements using one or more sensors operatively connected to the portable patient monitoring device and wireless transmission of parameter measurements, the portable patient monitoring device comprising: |

| Designation        | Claim Language                                                                                                                                                                                                                                                                                                         |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Limitation<br>1(b) | a pulse oximetry sensor configured to be wrapped around a digit of a patient, the pulse oximetry sensor including at least:                                                                                                                                                                                            |
| 1(c)               | a light emitter configured to emit light into a tissue site of the digit of the patient;                                                                                                                                                                                                                               |
| 1(d)               | a light detector configured output a signal responsive to at least a portion of the emitted light after attenuation by tissue of the tissue site; and                                                                                                                                                                  |
| 1(e)               | a tail configured to electrically convey the signal;                                                                                                                                                                                                                                                                   |
| 1(f)               | a housing configured for, and having a size and shape configured for, mounting to a lower arm of the patient, the housing including at least:                                                                                                                                                                          |
| 1(g)               | a display positioned on a front side of the housing that is opposite a back side of the housing, the display configured to show a status of the portable patient monitoring device and one or more parameter measurements so as to be viewable by a user;                                                              |
| 1(h)               | a first sensor port positioned on a first side of the housing, the first side of the housing configured to face toward a hand having the digit of the patient under measurement,                                                                                                                                       |
| 1(i)               | the first sensor port configured to physically couple to the tail of the pulse oximetry sensor and to electrically receive the signal from the pulse oximetry sensor,                                                                                                                                                  |
| 1(j)               | wherein the first sensor port is positioned on the first side of the housing such that, when the tail is physically coupled to the first sensor port, the tail extends from the first sensor port along an axis perpendicular to a face of the first side of the housing on which the first sensor port is positioned; |
| 1(k)               | a second sensor port configured to receive information from an EKG <sup>[15]</sup> sensor arrangement via a wired connection;                                                                                                                                                                                          |

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<sup>15</sup> We understand that the '623 patent and Patent Owner use the abbreviation "EKG" to refer to electrocardiogram (*see, e.g.*, Ex. 1001, 1:42; PO Resp. 35), whereas Petitioner uses the abbreviation "ECG" (*see, e.g.*, Pet. 31).

| Designation | Claim Language                                                                                                                                                                                                          |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1(l)        | a third sensor port configured to receive information from a blood pressure sensor arrangement via a wired connection;                                                                                                  |
| 1(m)        | a rechargeable battery configured to power the portable patient monitoring device including the pulse oximetry sensor;                                                                                                  |
| 1(n)        | one or more signal processing arrangements configured to:                                                                                                                                                               |
| 1(o)        | receive the signal from the pulse oximetry sensor;                                                                                                                                                                      |
| 1(p)        | derive, based on the signal, measurements of oxygen saturation and pulse rate; and                                                                                                                                      |
| 1(q)        | cause to be displayed, on the display, the measurements of oxygen saturation and pulse rate; and                                                                                                                        |
| 1(r)        | a transmitter configured to:                                                                                                                                                                                            |
| 1(s)        | wirelessly transmit a transmit signal indicative of the measurements of oxygen saturation and pulse rate to a separate computing device configured to display the measurements of oxygen saturation and pulse rate; and |
| 1(t)        | strap mountable to the back side of the housing, the strap configured to secure the housing to the lower arm of the patient.                                                                                            |

Pet. xiii–xiv; *see* Ex. 1001, 13:14–14:6.

Independent claims 17 and 20 (also challenged) are similar to claim 1 and are each directed to an “arm mountable portable patient monitoring device.” *Id.* at 16:12–13.

## 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. 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 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.<sup>16</sup> *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.

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<sup>16</sup> The parties have not directed our attention to any objective evidence of non-obviousness.

*B. 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. 16 (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. 15.

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

*C. Claim Construction*

In an *inter partes* review for a petition filed on or after November 13, 2018, a claim “shall be construed using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. [§] 282(b).” 37 C.F.R. § 42.100(b) (2019). In applying this claim construction standard, we are guided by the principle that the words of a claim “are generally given their ordinary and customary meaning,” as understood by a person of ordinary skill in the art in question at the time of the invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc) (citation omitted). “In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence.” *DePuy Spine, Inc. v. Medtronic*

*Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17). Of course, “[t]here is a heavy presumption that claim terms are to be given their ordinary and customary meaning.” *Aylus Networks, Inc. v. Apple Inc.*, 856 F.3d 1353, 1358 (Fed. Cir. 2017) (citing *Aventis Pharm. Inc. v. Amino Chems. Ltd.*, 715 F.3d 1363, 1373 (Fed. Cir. 2013). “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 “’623 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 ’623 patent’s specification.” Pet. 17. Petitioner further stated that “the Board need not construe any claim terms to find the claims invalid.” *Id.* at 17 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. 23. 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. 16–20; PO Sur-reply 1–6; Pet. Reply 1–5.

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. 16; PO Sur-reply 1–2.

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. *Id.* at 16–18 (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 19; *see* PO Sur-reply 2–6. More specifically, Patent Owner is of the view that a person of ordinary skill in the art “would understand that the term ‘sensor port’ to involve a removable connection, and does not include hardwired connections.” PO Resp. 19.

Petitioner, in Reply, argues that “[t]he construction of ‘sensor port’ is not an issue that the Board must resolve to find the ’623 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, as discussed below, 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 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.<sup>17</sup> Only those terms that are in controversy need be construed, and only to the extent necessary to resolve the controversy (e.g., whether the claim reads on a prior art reference). *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017).

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

#### *D. The Asserted Prior Art*

##### *1. Goldberg*

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

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<sup>17</sup> 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. 28 (“[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 that “Kiani would have a single sensor input port under our construction.” Tr. 53:18–19.

coupled to the controller 102 and/or memory by wire or wirelessly, and such ways for coupling are well known in the art.” *Id.* at 4:23–30.

Figure 2 of Goldberg is reproduced below.

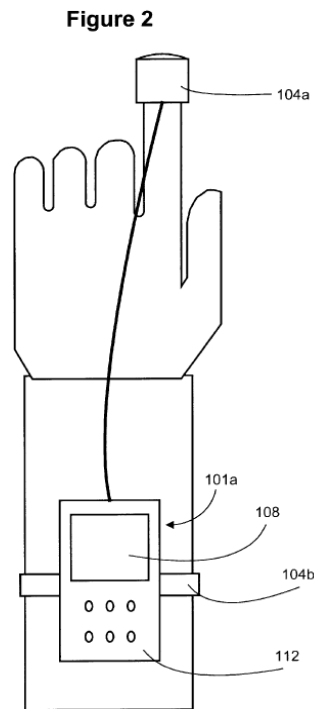


Figure 2 of Goldberg depicts portable device 101a with assembly or housing 112 that is sized to be carried by an individual and strapped to the wrist or forearm by any conventional strap apparatus. Ex. 1005, 4:57–60. In this embodiment, sensor 104a is a pulse oximetry sensor and blood pressure cuff sensor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

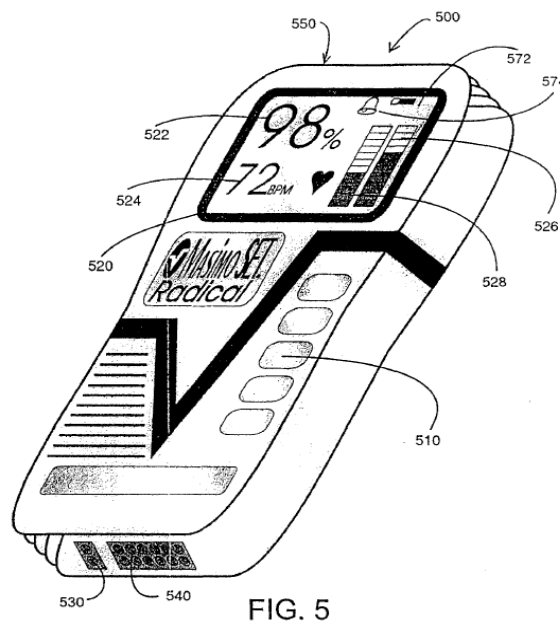


Figure 5 above depicts a handheld embodiment of a Universal/Upgrading Pulse Oximeter (UPO). Ex. 1006, 7:2. Kiani describes that handheld embodiment 500 of the UPO that includes external power supply input 530, output port 540 for connection to the external pulse oximeter, and sensor input 550 at the 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. *Fujisaki*

Fujisaki is titled “Apparatus for Checking Pulse and Heart Rates.” Ex. 1009, code (54). Fujisaki teaches a small portable device for checking pulse rate and that wearable devices include removable cables to interface with sensors. *Id.* at code (57), 5:37–44, Figs. 2, 6. Figure 2 of Fujisaki is reproduced below.

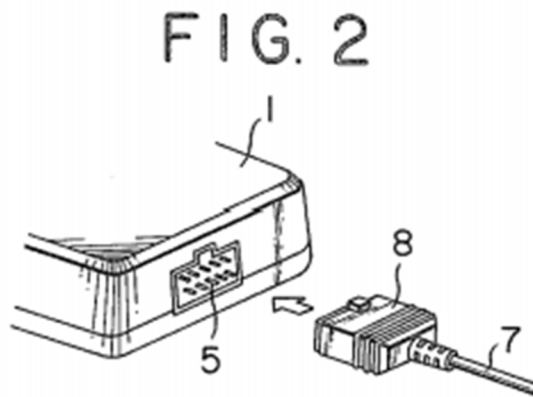


Figure 2 of Fujisaki depicts a partial perspective view of connector pin 5 provided for receiving connector plug 8 to create a removable connection for either a heart or pulse sensor.

### 4. *Money*

Money is titled “Vital Sign Remote Monitoring Device.” Ex. 1008, code (54). Money teaches a portable, multi-parameter patient monitor that receives digital signals from some sensors and analog signals from other sensors. *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. “[O]verall logic control and processing of data” by the remote patient monitoring device is determined by a processor, which has “integral analog to digital (A/D) conversion capabilities . . . to allow direct connection of vital sign data in analog format.” *Id.* at 7:32–34, 7:49–52.

5. *Estep*

Estep teaches a wearable electric signal measurement device with a display 31 surrounded by a bezel (i.e., border). Ex. 1010, 4:24–27, Fig. 3C; Ex. 1003 ¶ 45.

6. *Taylor*

Taylor is titled “Wireless Radio Modem with Minimal Interdevice RF Interference.” Ex. 1011, 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).

7. *Hylton*

Hylton is titled “Wireless Video Distribution.” Ex. 1012, 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).

8. *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).

*E. Asserted Obviousness in View of Goldberg and Kiani*

Petitioner asserts that claims 1, 2, 4, 5, 12, and 14–17 would have been obvious in view of Goldberg and Kiani. *See* Pet. 17–41. Patent Owner challenges that assertion. *See* PO Resp. 23–44; PO Sur-reply 6–14. We consider below the parties’ arguments made in connection with this ground.

*1. Summary of Petitioner's Arguments and Evidence*

*a) Claim 1*

*(1) Preamble 1(a): "An arm mountable portable patient monitoring device configured for both on-patient monitoring of parameter measurements using one or more sensors operatively connected to the portable patient monitoring device and wireless transmission of parameter measurements, the portable patient monitoring device comprising:"*

Petitioner points to Goldberg as disclosing preamble 1(a) pertaining to an arm mountable portable patient monitoring device. Pet. 19–20. More particularly, Petitioner contends that “Goldberg teaches a portable device 100 strapped to 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 19 (citing Ex. 1005, 4:57–67, 5:3–8, 5:39–47; Ex. 1003 ¶ 59). Petitioner also contends that Goldberg discloses that “the sensor data collected by the portable device is transmitted to a remote computer 302.” *Id.* at 20 (citing Ex. 1003 ¶ 60; Ex. 1005, 5:9–24, 5:39–47).<sup>18</sup>

*(2) Limitation 1(b): "a pulse oximetry sensor configured to be wrapped around a digit of a patient, the pulse oximetry sensor including at least:"*

With respect to limitation 1(b), Petitioner contends that “Goldberg teaches a pulse oximetry sensor wrapping around a patient’s finger.” Pet. 20 (citing Ex. 1005, 4:60–64, Fig. 2; Ex. 1003 ¶ 62).

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<sup>18</sup> 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.

*(3) Limitation 1(c): “a light emitter configured to emit light into a tissue site of the digit of the patient;”*

Concerning limitation 1(c), Petitioner notes that Goldberg teaches a pulse oximetry sensor, but that the sensor may not include a light emitter. Pet. 21. Petitioner, however, notes that “Kiani teaches pulse oximetry sensors [that] include a light emitter to detect oxygen saturation by emitting light into finger tissue.” *Id.* (citing Ex. 1006, 1:15–23; Ex. 1003 ¶ 64). Petitioner reasons that “it would have been obvious to modify Goldberg with Kiani because this modification represents a simple substitution of one known equivalent element (a pulse oximetry sensor) for another (a light-based oximetry sensor) to yield predictable results (non-invasively measure oxygen saturation using light absorption differential.)” *Id.* (citing *KSR*, 550 U.S. at 415–16; Ex. 1006, 1:22–2:23; Ex. 1003 ¶ 65).

*(4) Limitation 1(d): “a light detector configured to output a signal responsive to at least a portion of the emitted light after attenuation by tissue of the tissue site; and”*

For limitation 1(d), Petitioner submits that “Kiani teaches the pulse oximetry sensor includes a light detector configured to output a signal responsive to an amount of light attenuated by tissue.” Pet. 21 (citing Ex. 1006, 1:15–23; Ex. 1003 ¶ 66).

*(5) Limitation 1(e): “a tail configured to electrically convey the signal;”*

As to limitation 1(e), Petitioner urges that the ’623 patent does not distinguish a “tail” from a wire, and that one of ordinary skill in the art would “assume that a tail is a wire.” *Id.* at 22 (citing Ex. 1003 ¶ 67). Petitioner also refers to Goldberg’s teaching of a wire connecting pulse

oximetry sensor 104a to controller 102. *Id.* (citing Ex. 1003 ¶ 68; Ex. 1005, 4:19–29, Fig. 2).

(6) *Limitation 1(f): “a housing configured for, and having a size and shape configured for, mounting to a lower arm of the patient, the housing including at least;”*

For limitation 1(f), Petitioner contends that Goldberg discloses a housing that is sized and shaped to be strapped to a patient’s wrist or forearm. *Id.* (citing Ex. 1005, 4:19–30, 4:57–60, Fig. 2; Ex. 1003 ¶ 69).

Patent Owner does not challenge the above-noted contention. On this Limitation 1(g): “a display positioned on a front side of the housing that is opposite a back side of the housing, the display configured to show a status of the portable patient monitoring device and one or more parameter measurements so as to be viewable by a user;”

As to limitation 1(g), Petitioner directs attention to Goldberg’s display 108 and its display of sensor data that is visible when the device is strapped to a patient’s wrist. *Pet.* 23 (citing Ex. 1003 ¶¶ 70–71; Ex. 1005, 4:30–34, 6:32–45, Figs. 6A–B, 2). Petitioner also contends that a skilled artisan would understand the display of “daily or weekly averages” as indicating the status of the device in either a daily or weekly display mode. *Id.* at 24 (citing Ex. 1005, Figs. 6B–C; Ex. 1003 ¶ 72).

(7) *Limitations 1(h)–1(l)*

Limitations 1(h)–1(l) pertain to first, second and third sensor ports and their respective configurations. Petitioner describes where it believes all limitations 1(h)–1(l) are accounted for by the teachings of Goldberg and Kiani. *See Pet.* 26–32. More specifically, concerning the requirement of each of a first, second, and third “sensor port,” Petitioner refers to Goldberg

as disclosing that its “portable device 100a communicates with three or more sensors (SpO<sub>2</sub>, blood pressure, and ECG).” *Id.* at 31 (citing Ex. 1005, 1:37–44, 4:24–27, 4:50–56, 5:57–5:8).

Petitioner also contends that Goldberg’s sensors communicate with the controller via “wired connections.” *Id.* at 26, 31 (citing Ex. 1003 ¶ 78; Ex 1005, Fig. 2, 1:37–44, 4:19–29, 4:50–56, 4:64–5:8). 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.* at 27–28 (citing Ex. 1005, 4:19–29; Ex. 1003 ¶ 76).

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 can communicate with electrical devices via ports, such as the wired connection of the pulse oximetry sensor 104a shown in Goldberg. *Id.*; EX1003, ¶ 77 . . . . It would have been obvious to include the port taught by Kiani on the portable device of Goldberg to establish easy removal and replacement of the sensor 104a, and predictably resulting in a secure, wired connection. EX1006, 2:34-3:4; EX1003, ¶¶ 77–78.

Pet. 28 (citing Ex. 1006, 3:21–27, 8:31–92; 2:34–3:4; Ex. 1003 ¶¶ 77–78).<sup>19</sup>

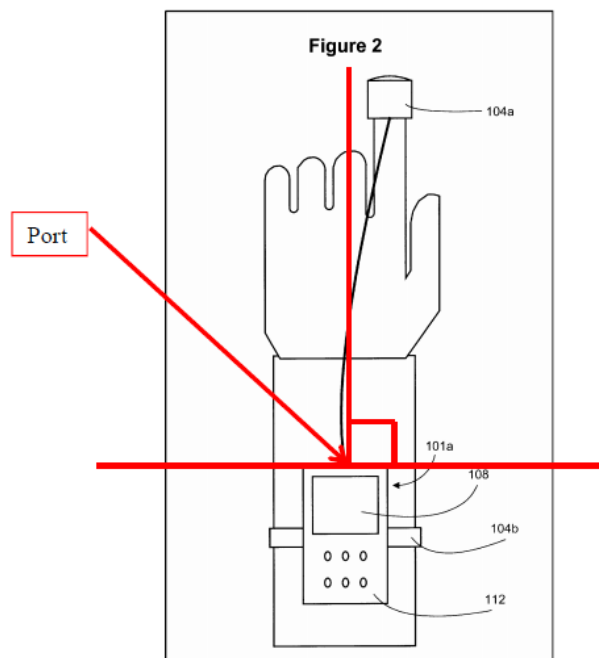
Petitioner also reasons that one of ordinary skill in the art “would be

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<sup>19</sup> We observe 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

motivated to include ports on a multi-parameter monitor, like the portable device 100 of Goldberg, using only basic common sense and knowledge of user expectations, which would be the expectations of clinicians,” and that such modification would employ “known methods to yield predictable results.” *Id.* at 29 (citing Ex. 1003 ¶¶ 76–79; Ex. 1005, 5:3–8).

Limitation 1(j) requires a particular placement on the side of the housing such that “when the tail is physically coupled to the first sensor port, the tail extends from the first sensor port along an axis perpendicular to a face of the first side of the housing on which the first sensor port is positioned.” 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. 30. We reproduce below a version of Goldberg’s Figure 2 as annotated by Petitioner:



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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.* In connection with the above-noted Figure, Petitioner expresses that “Goldberg illustrates the wire between the pulse oximetry sensor and the housing as extending from the first sensor port following a path substantially perpendicular to the first side (side facing the patient’s hand) of the housing.” *Id.* (citing Ex. 1005, Fig. 2; Ex. 1003 ¶¶ 82–83).

*(8) Limitation 1(m): “a rechargeable battery configured to power the portable patient monitoring device including the pulse oximetry sensors;”*

With respect to limitation 1(m), Petitioner notes that Goldberg discloses that its device is “portable” and thus to be functional must implicitly include a battery. Pet. 32 (citing Ex. 1005, Abstract, 4:57–60; Ex. 1003 ¶ 93). Alternatively, Petitioner points to Kiani as teaching portable devices that are rechargeable battery-powered. *Id.* (citing Ex. 1006, 5:21–22, 9:11–13; Ex. 1003 ¶ 94). Petitioner reasons that “[i]t would have been obvious to include a rechargeable battery in the portable device of Goldberg so the portable device operates without being tethered to a wall outlet.” *Id.* (citing Ex. 1003 ¶¶ 93–94).

*(9) Limitation 1(n): “one or more signal processing arrangements configured to:”*

For limitation 1(n), Petitioner contends that “Goldberg teaches a controller 102 configured to process signals from the sensors.” *Id.* at 33 (citing Ex. 1003 ¶ 95; Ex. 1005, 3:13–16, 4:34–36). Patent Owner does not challenge that contention.

*(10) Limitation 1(o): “receive the signal from the pulse oximetry sensor;”*

With respect to limitation 1(o), Petitioner contends that “Goldberg teaches the controller receives electrical signals from the pulse oximetry sensor.” *Id.* (citing Ex. 1003 ¶ 96; Ex. 1005, 4:19–29, Fig. 2).

*(11) Limitations 1(p)–1(q)*

Limitations 1(p) and 1(q) together read “derive, based on the signal, measurements of oxygen saturation and pulse rate; and cause to be displayed, on the display, the measurements of oxygen saturation and pulse rate.” For those limitations, Petitioner argues that “Goldberg teaches the controller derives and displays on the display 108, measurements of oxygen saturation and pulse rate based on the signals received from the pulse oximetry sensors 104a.” *Id.* at 33 (citing Ex. 1005, 4:19–36, 4:50–56, 4:60–64, 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. Petitioner further contends that as is evident from at least Goldberg’s Figure 6A, the type of data displayed includes both heart rate and oxygen saturation. Pet. 33.

Alternatively, Petitioner points to Kiani’s teachings that “explain[] that conventional pulse oximetry sensors detect pulse and oxygen saturation simultaneously.” *Id.* at 34 (citing Ex. 1006, 1:11–13, 6:7–9). Petitioner reasons that “even if Goldberg doesn’t expressly teach that the pulse oximetry sensor detects both oxygen saturation and pulse, it would have been obvious to modify the pulse oximetry sensor 104a to detect both parameters in view of Kiani.” *Id.* Petitioner also reasons that such

modification would have been simply the substitution of one known sensor for another, and that the substitution would “minimize the number of sensors attached to a patient, thereby decreasing patient discomfort.” *Id.* (citing Ex. 1003 ¶¶ 98–101).

*(12) Limitations 1(r)–1(s)*

Limitations 1(r) and 1(s) require a “transmitter configured to: wirelessly transmit a transmit signal indicative of the measurements of oxygen saturation and pulse rate to a separate computing device configured to display the measurements of oxygen saturation and pulse rate.” 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. 34–35 (citing Ex. 1005, 4:19–23, 4:40–424:50–55, 4:46–49, 4:60–64, 5:9–24, 5:15–17, 6:29–31; Ex. 1003 ¶¶ 104–106).

*(13) Limitations 1(t): “a strap mountable to the back side of the housing, the strap configured to secure the housing to the lower arm of the patient.”*

For limitation 1(t), Petitioner contends that “Goldberg teaches a blood pressure cuff sensor 104(b) that function as both a sensor and a strap used to secure portable device 100 to the patient’s wrist/arm.” *Id.* at 35 (citing Ex. 1005, 4:57–60, 4:64–67; Ex. 1003 ¶ 107). On this final record, we are persuaded that that Petitioner’s cited evidence sufficiently supports its contentions regarding those limitations.

*(14) Summary of Petitioner's 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. 28–29; Ex. 1003 ¶¶ 77–78.

*b) Claims 2, 4, 5, 12, and 14–17*

Claims 2, 4, 5, 12, and 14–16 ultimately depend from claim 1. Independent claim 17 includes limitations similar to those discussed above with respect to claim 1. Petitioner explains how all of the features required by claims 2, 4, 5, 12, and 14–17 are accounted for by the combined teachings of Goldberg and Kiani. *See* Pet. 38–41. Patent Owner does not direct any arguments specifically to limitations required by those claims.

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

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. 24–27. In Patent Owner's view, Goldberg does not disclose any sensor ports. *Id.* at 24.

According to Patent Owner, that is so because one of ordinary skill in the art would understand Goldberg's Figure 2 as being limited "to show[ing] a hardwired connection between sensor 104a and the housing 112." PO Resp. 25 (citing Ex. 2010 ¶¶ 63–64). 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 ¶¶ 64.

Patent Owner further argues: (1) that Kiani teaches only a single sensor port (PO Resp. 28–29) (citing Ex. 2010 ¶¶ 73); (2) that Petitioner provides only "conclusory statements" to add a sensor port to Goldberg's device (*id.* at 29–35 (citing Ex. 2010 ¶¶ 51–53, 74, 75, 76–77, 78–79, 80–81, 82–83, 84, 85, 105–108, 110–113)); (3) that Goldberg does not disclose second and third sensor ports for EKG and blood pressure sensors (limitations 1(k) and 1(l)) (*id.* at 35–36 (citing Ex. 2010 ¶¶ 71, 72)); (4) that a person of ordinary skill in the art would not have been motivated to add a third sensor port for Goldberg's blood pressure cuff (*id.* at 36–43 (citing Ex. 2010 ¶¶ 88–89, 90–109)); and (5) that second and third sensor ports are not duplication of parts (*id.* at 42–43 (citing ¶¶ 110–112)).<sup>20</sup>

### 3. Discussion

For the reasons below, we conclude that Petitioner has shown by a preponderance of the evidence that claims 1, 2, 4, 5, 12, and 14–17 would have been obvious in light of the proposed grounds of unpatentability that based on Goldberg and Kiani. *See* Pet. 18–60.

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<sup>20</sup> Patent Owner also generally echoes the noted arguments as a part of the Sur-reply. *See* PO Sur-reply 6–14.

*a) Multiple Sensor Ports*

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. 24–27. 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, the reference contemplates that its controller 102 of a portable medical monitoring device 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. 25; Ex. 2010 ¶ 64) suggests that a skilled artisan would have looked beyond hardwired sensors in assessing Goldberg's teachings of implementing multiple sensors as a part of its device. *See, e.g.*, Ex. 1005,

4:26–29; 5:3–8. In view of Goldberg’s disclosure of the use of “all, or any combination” (*id.* at 5:3–8) of various sensor types, 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 hardwiring. *See, e.g.*, Ex. 1003 ¶¶ 76, 77; Ex. 1040 ¶ 67 (“no POSITA would ever design Goldberg’s device to be hardwired” and “[a] hardwired system provides no adaptability whatsoever.”) We credit the testimony of each of Dr. Yanulis and Dr. Bergeron as their testimony is consistent with the clear disclosure of Goldberg when it comes to sensor connections. 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 sensors and sensor connections as a part of its medical monitoring device.

Turning to Kiani, as noted above (*see supra* § II.C. (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. 28; PO Resp. 28. 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. 28–29. 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 Int'l Co.* 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 any type of physiological sensor 104 suitable [f]or use with a portable monitoring device.” Ex. 1005, 5:3–8. 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 plainly discloses that a sensor port is one such well known style of coupling. *See, e.g.*, Ex. 1006, 8:31–9:2; Pet. 28; PO Resp. 28. 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 wired connections that are recognized as sensor ports. *See, e.g.*, Ex. 1003 ¶ 77; Ex. 1040 ¶ 70–73.

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. 33–34, 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,<sup>21</sup> 116:15–117:7; Ex. 1040 ¶ 74 (“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 arm mountable as set forth in the ’623 patent. *See* Ex. 1040 ¶ 76 (“A POSITA would know that the electronics necessary to form wired connections are relatively simple and do not take up much space.”).

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 12–14. 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 ¶ 81. 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

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<sup>21</sup> Exhibit 1042 is the deposition of Patent Owner’s declarant, Alan Oslan, taken April 28–29, 2021.

to remove and replace a sensor”); *id.* ¶ 71 (“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, require more space, additional parts, and other potential drawbacks. *See, e.g.*, PO Resp. 29 (“Yanulis failed to consider whether ports have any disadvantages compared to hardwired connections.”), *id.* at 31. (“fail to consider whether any disadvantages of adding a port would dissuade a PHOSITA from making the alleged combination”); Ex. 2010 ¶ 76 (“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 ¶ 78.

Dr. Bergeron addresses each of the alleged disadvantages and concludes that ports are not complications, but benefits. Ex. 1040 ¶ 78. 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 ¶ 78; *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”). The proposed combination would also achieve the significant advantages of interchangeability and adaptability. *See* Ex. 1003 ¶ 77 (“including a port on Goldberg’s housing . . . would predictably enable wired communication with the pulse oximeter sensor 104a while allowing easy removal and replacement of the sensor 104a 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 ¶ 70 (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 have been combined with Kiani’s teaching of the benefits of having removable ported connections. *See, e.g.*, Pet. 28–29; *see also* Ex. 1003 ¶ 77 (“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 ¶ 72 (“[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 sensor ports as a part of the proposed combination but determine that, in the aggregate, Petitioner presents stronger evidence as to advantages of such ports 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.”).

In light of the final record before us, and for the reasons discussed above, Petitioner adequately establishes that a person of ordinary skill in the art would have had reason to combine the teachings of Goldberg and Kiani, and, in doing so, would have recognized that a portable patient monitoring device, such as that of Goldberg, would have included wired connections understood as multiple sensor ports.

We further address Patent Owner’s specific arguments challenging Petitioner’s contentions that Goldberg discloses second and third sensor ports for EKG and blood pressure, and Petitioner’s proposed modification of Goldberg to include a third sensor port for its blood pressure cuff.

*b) Second and Third Sensor Ports for EKG and Blood Pressure*

Petitioner expresses that “Goldberg explains the portable device 100a communicates with three or more sensors (SpO<sub>2</sub>, blood pressure, and ECG).” Pet. 31 (citing Ex. 1005, 1:37–44, 4:24–27, 4:50–56, 4:57–5:8). Petitioner also contends that “Goldberg teaches [that] sensors communicate with the controller via wired connections.” *Id.* (citing Ex. 1005, 4:19–29, 5:3–8). Petitioner further contends that “Goldberg as ‘modified’ by Kiani would predictably include second and third ports configured to receive respective signals from the ECG and blood pressure sensors via wired connections.” *Id.* (citing Ex. 1005, 4:19–29, 5:3–8; Ex. 1003 ¶¶ 88, 91).

Goldberg clearly contemplates multiple sensors for sensing physiological parameters including SpO<sub>2</sub>, blood pressure, and ECG that may be connected in different ways, including wired connections. *See, e.g.*, 1005, 1:37–44, 4:24–27, 4:50–5:8. Patent Owner characterizes Petitioner as having “mixe[d] scattered citations” to account for EKG and blood pressure sensors that misrepresent Goldberg’s teachings. PO Resp. 35–36. We disagree. We determine that Petitioner’s citations accurately reflect Goldberg’s teachings. In view of Goldberg’s express disclosure, it is clear that sensors for EKG and blood pressure were well known in the art. *See, e.g.*, Ex. 1005, 1:37–44 (explaining that sensor data may include “physiological signs and parameters such as blood pressure, heart rate, body temperature, electrocardiogram, glucose level, substances and/or chemical present or level”). It is also clear that Goldberg contemplates use of multiple sensors. *See, e.g., id.* at 5:3–8. Thus, a skilled artisan would have understood that Goldberg’s disclosure encompasses multiple sensors for

sensing, among other parameters, EKG and blood pressure. *See, e.g.*, Ex. 1003 ¶¶ 88, 89.

Patent Owner also disputes that Goldberg suggests a wired connection for a blood pressure sensor. PO Resp. 36. We disagree. Goldberg clearly contemplates that sensors may be connected either wirelessly or via wired connection. Ex. 1005, 4:27–29. That is not disclosure, as seemingly suggested by Patent Owner (PO Resp. 36), that provides restriction as to either one of those connection styles.

Lastly, Patent Owner contends that Goldberg does not disclose any sensor ports. PO Resp. 36. As discussed above (*see supra* § II.E.3.a.), we conclude Goldberg’s teachings taken with Kiani account for the requirement of multiple sensor ports.

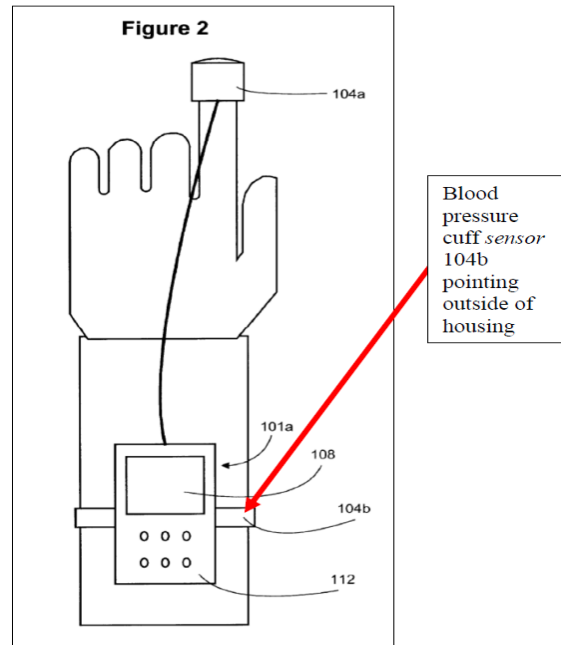
*c) Third Sensor Port for Goldberg’s Blood Pressure Cuff*

Patent Owner additionally disputes that a skilled artisan would have added a third port to Goldberg’s blood pressure sensor cuff. PO Resp. 36–42; PO Sur-reply 6–12. The general bases for that dispute is that (1) neither Goldberg nor Kiani individually disclose multiple sensor ports, i.e., second and third ports, and (2) that a person of ordinary skill in the art would not have had a reasonable expectation of success in adding a third sensor port between Goldberg’s housing and blood pressure cuff. PO Resp. 36–42; Sur-reply 6–12.

As discussed above (*see supra* §§ II.E.3.a, II.E.3.b.), we conclude that a person of ordinary skill in the art would have appreciated that a portable patient monitoring device would include multiple sensor ports. We also again 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 ¶¶ 76, 77 (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 ¶ 83 (“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 ¶ 83).



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 third 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. For reasons that we have discussed above, 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 ¶ 89. 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 third port as

part of the wired connection between the blood pressure sensor 104b and the housing 112 of Goldberg.” *Id.* at 91. 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 additional sensor ports, including a third sensor port, and would have had a reasonable expectation of success in combining the teachings of Goldberg and Kiani. *See, e.g.*, Ex. 1003 ¶¶ 77, 89–92 (“A PHOSITA would understand that a third sensor and a third port would have been easily included with the portable device 100 just as the first or second sensor and the first or second port. EX 1005, 4:50-56. As such, a PHOSITA would find the inclusion of additional (second, third, etc.) sensors and ports on the housing to be an obvious modification to any housing having second and third sensors.”).

*d) Conclusion—Goldberg and Kiani*

We have considered the respective positions of the parties, including all of the arguments that have been advanced by Patent Owner in connection with the ground based on Goldberg and Kiani. *See, e.g.*, PO Resp. 23–44; PO Sur-reply 6–14. Based on the final record before us, we conclude that Petitioner has shown persuasively that all the features of claims 1, 2, 4, 5, 12, and 14–17 are accounted for by the combined teachings of Goldberg and Kiani. *See* Pet. 18–41. Petitioner also articulated several reasoned rationales for combining the teachings of the references, with a reasonable

expectation of success in making the combination. *See id.*; Ex. 1003

¶¶ 57–146. Accordingly, for the reasons discussed above, we are persuaded that Petitioner has demonstrated by a preponderance of the evidence that claims 1, 2, 4, 5, 12, and 14–17 of the ’623 patent would have been obvious in view of Goldberg and Kiani.

*F. Asserted Obviousness in View of (i) Goldberg, Kiani, and Fujisaki; and (ii) Goldberg, Kiani, and Money*

Petitioner also contends that (i) claim 3 is unpatentable under 35 U.S.C. § 103 based on Goldberg, Kiani, and Fujisaki, and (ii) claims 6–11, 13, 18, and 19 are unpatentable based on Goldberg, Kiani, and Money. Claims 3 and 6–11, 13, 18, and 19 ultimately depend from either claim 1 or claim 17. Pet. 41–50. Petitioner persuasively points to content of the record to account for all features of claim 3, 6–11, 13, 18, and 19 in the teachings of the prior art, and persuasively contends that a skilled artisan would have had adequate reason to combine those teachings. *Id.* Patent Owner argues that the two above-noted grounds of unpatentability are deficient for the same reasons that Patent Owner offers for the ground of unpatentability based on Goldberg and Kiani. PO Resp. 44. As discussed above, we do not agree that any deficiency exists. *See supra* § II.E.3. We also conclude that Petitioner has shown by a preponderance of the evidence that claims 3, 6–11, 13, 18, and 19 are unpatentable over the prior art. *See* Pet. 41–50.

*G. Asserted Obviousness in view of Goldberg, Kiani, Money, Fujisaki, Estep, Taylor, and Hylton*

Petitioner also contends that claim 20 is unpatentable based on Goldberg, Kiani, Money, Fujisaki, Estep, Taylor, and Hylton. Pet. 50–60. Similar to claim 1, claim 20 is an independent claim drawn to an “arm

mountable portable patient monitoring device.” Ex. 1001, 17:59. We discern that Petitioner identifies citation to the record for every feature recited in claim 20. Pet. 50–60.

Patent Owner contends that, for the same reasons that were advanced for claim 1, Petitioner has not demonstrated the obviousness of claim 20. PO Resp. 44. We do not find that argument availing, as we conclude that Petitioner has shown by a preponderance of the evidence that claim 1 is unpatentable over Goldberg and Kiani. *See supra* § II.E.3.

Patent Owner also contends that the ground advanced for claim 20 is deficient on the theory that each of Estep and Hylton is non-analogous art. PO Resp. 44–48; PO Sur-reply 23. We discern that the teachings of Estep and Hylton are offered in the alternative to account for features of claim 20 that are also stated to be accounted for by other prior art. In particular, Estep is advanced as alternatively satisfying the limitation in claim 20 of a “bezel.” Pet. 51–53. Hylton is advanced as alternatively satisfying the limitation of a “multiplexer.” *Id.* at 59.

With respect to the “bezel” feature of claim 20, Petitioner initially contends that “Goldberg teaches the housing has a border around the display.” *Id.* at 51 (citing Ex. 1005, Fig. 2). Petitioner also expresses that “[a] PHOSITA would understand this border is a bezel because a bezel is simply a border around a screen.” *Id.* (citing Ex. 1003 ¶197 (“Goldberg teaches a display 108, and FIG. 2 illustrates a border of the housing 112 surrounding the display 108. A PHOSITA would understand that a bezel is simply a border around a display 108. Thus, Goldberg teaches a bezel.”)). Patent Owner does not dispute that the border around Goldberg’s

display 108 is a bezel. We find persuasive Petitioner's position, and also credit Dr. Yanulis's testimony to that effect.

With respect to the "multiplexer" feature, Petitioner states a "multiplexer is one of the most fundamental and basic pieces of circuitry." Pet. 59 (citing Ex. 1003 ¶ 222 and referencing "Section IX.C.6" of the Petition). Dr. Yanulis testifies that "Taylor almost certainly already includes a multiplexer" and that "Goldberg's portable device already likely includes a multiplexer for the reasons discussed in paragraph 171-175)." Ex. 1003 ¶ 222. Section IX.C.6 appears on page 49 of the Petition and describes that Money discloses a "summer/amplifier 110" that a person of ordinary skill in the art would understand to be "a multiplexer or equivalent to a multiplexer because Money's summer combines various signals into one output signal." Pet. 49 (citing Ex. 1003 ¶ 175). Patent Owner does not contend that any of teachings pertaining to Goldberg, Taylor, or Money are inadequate to account for the recited "multiplexer." In that regard, we credit Dr. Yanulis's above-noted testimony, and conclude that the Petition satisfies the "multiplexer" as a part of any of Goldberg's, Taylor's, or Money's teachings.

Accordingly, we conclude that a need to consider the alternative teachings of Estep and Hylton has not materialized, as the record reflects no dispute that other applied prior art as a part of the proposed ground of unpatentability of claim 20 account for the limitation to which Estep and Hylton are alternatively applied. Stated differently, Petitioner accounts for all the features of claim 20 based on prior art teachings that are not alleged to be non-analogous art. In this circumstance, we conclude that it is

unnecessary to consider Estep's or Hylton's teachings that are alternative to other prior art teachings that fully account for the features of claim 20.

Lastly, Patent Owner indicates that claim 20 "differs slightly" from claim 1 in reciting "the second sensor port is connectable to wire extending from the blood pressure sensor arrangement to provide electrical communication with the blood pressure sensor arrangement." PO Resp. 44 n.2. According to Patent Owner, "Petitioner does not address this additional limitation." *Id.* (citing Pet. 55, Ex. 1005, Fig. 2; Ex. 2010 ¶ 127). Both Patent Owner and Mr. Oslan base their views on the theory that Goldberg's Figure 2 "does not show a wire extending from the blood pressure cuff sensor 104b." *Id.*; Ex. 2010 ¶ 127.

In this proceeding, and with respect to all of the grounds involving Goldberg, Petitioner relies on the entirety of Goldberg's disclosure with respect to connecting sensors to a patient monitoring device via wired connections, not merely what is illustrated in Goldberg's Figure 2. That disclosure includes, for instance, that "sensor(s) 104 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, 4:27–29. It comes as no surprise that Petitioner also does so here for the pertinent limitation of claim 20. *See* Pet. 55 (citing Ex. 1005, 4:27–29; Ex. 1003 ¶ 208 ("For reasons I discussed above in paragraphs 159, 171-175, Goldberg in view of Kiani and money renders obvious this limitation. Goldberg further reaches that all connection to sensors can be attached via wired communication. EX1005, 4:26-30.")). We conclude that Petitioner persuasively demonstrates that the recitation in claim 20 of "the second sensor port is connectable to wire extending from the blood pressure sensor arrangement

to provide electrical communication with the blood pressure sensor arrangement” does not distinguish the claim from the prior art teachings on which Petitioner relies.

Thus, we conclude that, in light of the final record before us, Petitioner has shown by a preponderance of the evidence that claim 20 would have been obvious based on the proposed ground characterized by Petitioner as being over Goldberg, Kiani, Money, Fujisaki, Estep, Taylor, and Hylton. *See* Pet. 50–60.

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

Petitioner further contends that: (1) claim 20 is unpatentable based on Money, Kiani, Akai, Fujisaki, Estep, Taylor, and Hylton; (2) claims 1–2 and 4–19 are unpatentable over Money, Kiani, and Akai; and (3) claim 3 is unpatentable over Kiani, Akai, and Fujisaki. Pet. 60–96. Because we find that each of claims 1–20 are unpatentable based on the grounds involving Goldberg, we determine it is unnecessary to reach the remaining grounds based on Money as the principal applied reference. *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”).

#### *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 (¶¶ 81, 83, 102–104, 106, 108, and 111)                                                                                              |
| Ex. 2016                       | Transcript of Deposition of George Yanulis, conducted on September 10, 2020, in Masimo Corp. v. Sotera Wireless, Inc., 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> , 20 J Hypertension 573 (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. CONCLUSION<sup>22</sup>

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,

| <b>Claims</b>            | <b>35<br/>U.S.C. §</b> | <b>Reference(s)/<br/>Basis</b>                                   | <b>Claims<br/>Shown<br/>Unpatentable</b> | <b>Claims Not<br/>Shown<br/>Unpatentable</b> |
|--------------------------|------------------------|------------------------------------------------------------------|------------------------------------------|----------------------------------------------|
| 1, 2, 4, 5,<br>12, 14–17 | 103                    | Goldberg, Kiani                                                  | 1, 2, 4, 5, 12,<br>14–17                 |                                              |
| 3                        | 103                    | Goldberg, Kiani,<br>Fujisaki                                     | 3                                        |                                              |
| 6–11, 13,<br>18, 19      | 103                    | Goldberg, Kiani,<br>Money                                        | 6–11, 13, 18,<br>19                      |                                              |
| 20                       | 103                    | Goldberg, Kiani,<br>Money, Fujisaki,<br>Estep, Taylor,<br>Hylton | 20                                       |                                              |

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<sup>22</sup> Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner’s attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. 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).

| Claims                 | 35<br>U.S.C. § | Reference(s)/<br>Basis                                                    | Claims<br>Shown<br>Unpatentable | Claims Not<br>Shown<br>Unpatentable |
|------------------------|----------------|---------------------------------------------------------------------------|---------------------------------|-------------------------------------|
| 1, 2, 4–19             | 103            | Money, Kiani,<br>Akai <sup>23</sup>                                       |                                 |                                     |
| 3                      | 103            | Money, Kiani,<br>Akai, Fujisaki <sup>24</sup>                             |                                 |                                     |
| 20                     |                | Money Kiani,<br>Akai, Fujisaki,<br>Estep, Taylor,<br>Hylton <sup>25</sup> |                                 |                                     |
| <b>Overall Outcome</b> |                |                                                                           | 1–20                            |                                     |

#### IV. ORDER

For the foregoing reasons, it is

ORDERED that claims 1–20 of U.S. Patent No. 9,872,623 B2 are unpatentable;

ORDERED that Petitioner’s Motion to Exclude is *dismissed* as moot; and

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

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<sup>23</sup> As explained above, we do not reach this ground of unpatentability. *See supra* § II.H.

<sup>24</sup> As explained above, we do not reach this ground of unpatentability. *See supra* § II.H.

<sup>25</sup> As explained above, we do not reach this ground of unpatentability. *See supra* § II.H.

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PETITIONER:

Rudolph A. Telscher, Jr.  
Nathan P. Sportel  
Daisy Manning  
HUSCH BLACKWELL LLP  
[PTAB-RTelscher@huschblackwell.com](mailto:PTAB-RTelscher@huschblackwell.com)  
[Nathan.Sportel@huschblackwell.com](mailto:Nathan.Sportel@huschblackwell.com)  
[PTAB-DManning@huschblackwell.com](mailto:PTAB-DManning@huschblackwell.com)

PATENT OWNER:

Sheila N. Swaroop  
Irfan A. Lateef  
Benjamin J. Everton  
Brian C. Claassen  
KNOBBE, MARTENS, OLSON, & BEAR, LLP  
[2sns@knobbe.com](mailto:2sns@knobbe.com)  
[2ial@knobbe.com](mailto:2ial@knobbe.com)  
[2bje@knobbe.com](mailto:2bje@knobbe.com)  
[2bcc@knobbe.com](mailto:2bcc@knobbe.com)