

Patent Owner Masimo Corporation's Demonstratives For Oral Hearing

May 22, 2025

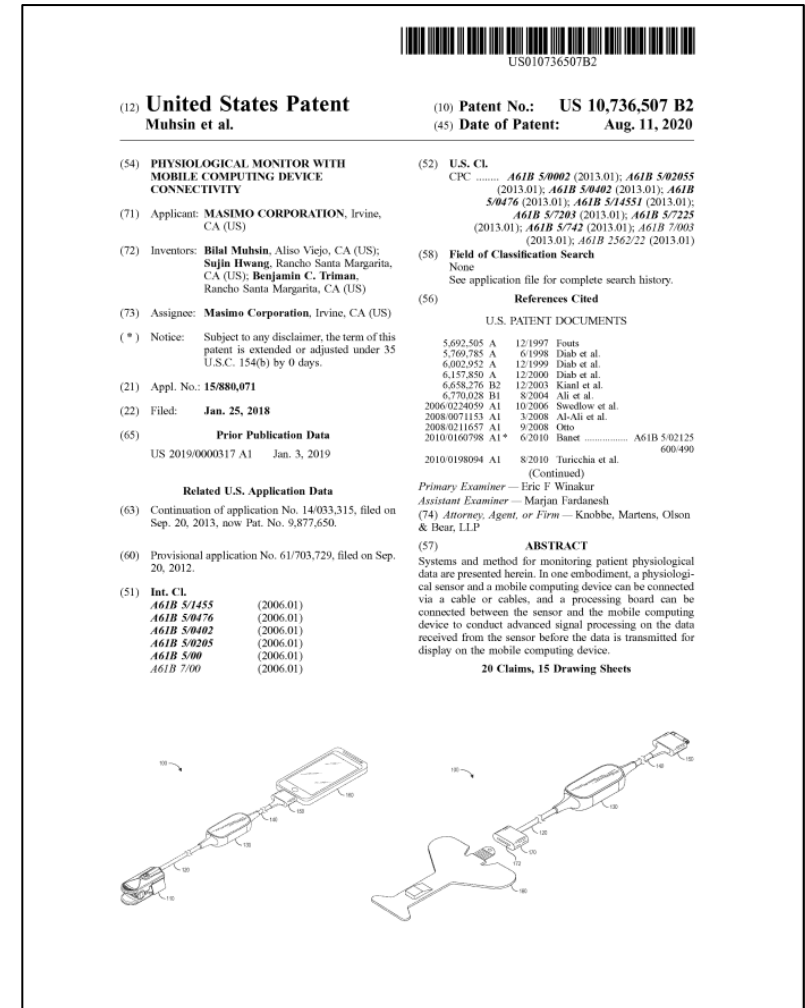
Apple Inc. v. Masimo Corporation

IPR2024-00294

U.S. Patent No. 10,736,507

'507 Patent

- Accurate measurements of SpO₂ outside hospital environment
- Optical sensor acquires signal
- Dedicated SpO₂ board processes signal
- Smartphone displays measurement



Claim Construction: “signals responsive to light”

Construction of “signals responsive to light”

- “signals responsive to light” is part of every claim
- Ordinary meaning: “data actually acquired with the optical sensor”
- Apple purports to use ordinary meaning but doesn’t provide that meaning

Construction of “signals responsive to light”

1. A mobile pulse oximetry system for informing a user of mobile measurement of oxygen saturation (“SpO2”), the mobile pulse oximetry system comprising:

an SpO2 measurement system including:

an optical sensor configured to output one or more signals responsive to light from a light source attenuated by tissue of the user at a measurement site, said one or more signals responsive to an oxygen saturation of said tissue; and

a processing board in data communication with the optical sensor and a mobile computing device including a display and cellular communication, wherein the processing board is configured to:

receive said one or more signals from the optical sensor;

process said one or more signals to generate SpO2 measurement values; and

output the SpO2 measurement values to the mobile computing device; and

one or more hardware processors of the mobile computing device configured to execute an application, the application configured to execute commands to:

generate a graphical user interface having a plurality of display portions;

display, in at least one portion of the plurality of display portions, a representation of a physiological parameter of a plurality of physiological parameters comprising at least the SpO2 measurement values; and display, in a different portion of the plurality of display portions, a plurality of user inputs configured to allow the user to interact with at least one of the plurality of display portions or the application;

wherein the processing of the one or more signals to generate SpO2 measurement values is performed only on the processing board, thereby freeing up memory available to the mobile computing device; and

wherein the processing board is configured to draw power for operation from the mobile computing device.

Construction of “signals responsive to light”

13. A computer-implemented method of informing a user of mobile measurement of oxygen saturation (“SpO2”), the computer-implemented method comprising:

outputting, from an optical sensor of an SpO2 measurement system, one or more signals responsive to light from a light source attenuated by tissue of the user at a measurement site, said one or more signals responsive to an oxygen saturation of said tissue; and

via a processing board of the SpO2 measurement system, the processing board in data communication with the optical sensor and a mobile computing device including a display:

receiving said one or more signals from the optical sensor;

processing said one or more signals to generate the SpO2 measurement values; and

outputting the SpO2 measurement values to the mobile computing device; and

via an application configured to execute commands on the mobile computing device:

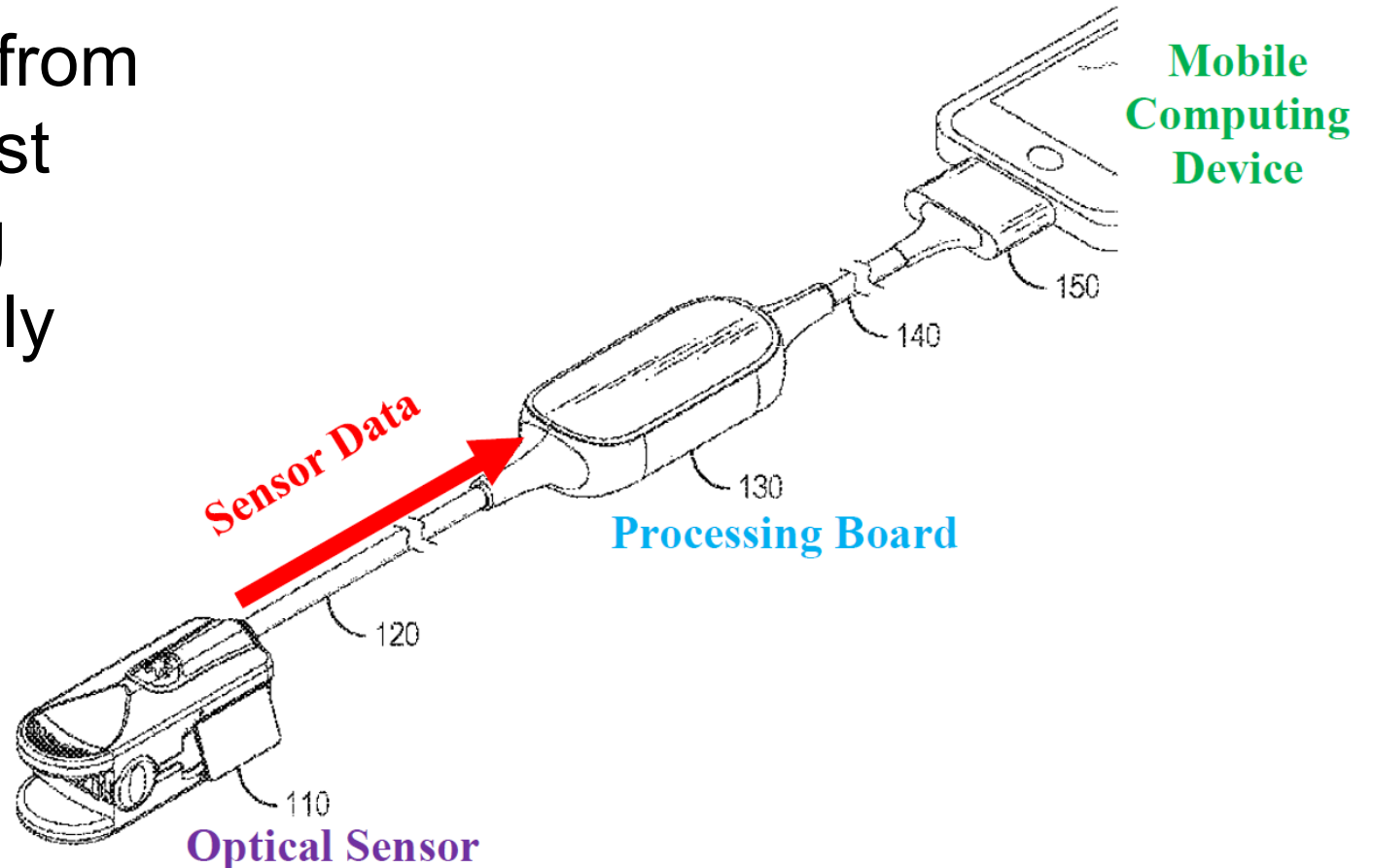
generating a graphical user interface having a plurality of display portions;

displaying, in at least one portion of the plurality of display portions, a representation of a physiological parameter of a plurality of physiological parameters comprising at least the SpO2 measurement values; and

displaying, in a different portion of the plurality of portions, a plurality of user inputs configured to allow the user to interact with at least one of the plurality of display portions or the application.

Construction of “signals responsive to light”

“sensor data is transmitted from the sensor 110 along the first cable 120 to the processing module 130, which can apply noise filtering and signal processing techniques”



Construction of “signals responsive to light”

Oximetry utilizes a noninvasive optical sensor to measure physiological parameters of a patient. In general, the sensor has light emitting diodes (LEDs) that transmit optical radiation into a tissue site and a detector that responds to the intensity of the optical radiation after absorption (e.g., by transmission or transreflectance) by, for example, pulsatile arterial blood flowing within the tissue site. Based on this response, a processor determines measurements for oxygen saturation (SpO_2), pulse rate, plethysmograph waveforms,

Construction of “signals responsive to light”

Oximetry utilizes a noninvasive optical sensor to measure physiological parameters of a patient. In general, the sensor has light emitting diodes (LEDs) that transmit optical radiation into a tissue site and a detector that responds to the intensity of the optical radiation after absorption (e.g., by transmission or transreflectance) by, for example, pulsatile arterial blood flowing within the tissue site. Based on this response, a processor determines measurements for oxygen saturation (SpO_2), pulse rate, plethysmograph waveforms,

Construction of “signals responsive to light”

In various oximeter embodiments, the sensor 110 provides data in the form of an output signal indicative of an amount of attenuation of predetermined wavelengths (ranges of wavelengths) of light by body tissues, such as, for example, a digit, portions of the nose or ear, a foot, or the like. The predetermined wavelengths often correspond to

Board Has Not Construed “signals responsive to light”

- Institution Decision:
“No terms require express construction
at this stage”
- Claim construction is now required to resolve the dispute

O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co., 521 F.3d 1351, 1362 (Fed. Cir. 2008). (“A determination that a claim term ‘needs no construction’ or has the ‘plain and ordinary meaning’ may be inadequate when a term has more than one ‘ordinary’ meaning or when reliance on a term’s ‘ordinary’ meaning does not resolve the parties’ dispute.”)

Apple Fails to Show Obviousness Over Mendelson

Apple's Grounds All Rely on Mendelson

Ground	Claims	§102 Prior Art
1A1	13, 15, 18-19	Mendelson
Ground	Claims	§103 Prior Art
1A2	13, 15, 18-19	Mendelson
1B	16, 18, 20	Mendelson, Tran
1C	14, 17	Mendelson, Kianl
1D	1-2, 5, 7, 9, 12-15, 17-19	Mendelson, D'Angelo
1E	3	Mendelson, D'Angelo, Ordning
1F	4-6, 8, 16, 18, 20	Mendelson, D'Angelo, Tran
1G	2, 7, 14, 17	Mendelson, D'Angelo, Kianl
1H	3	Mendelson, D'Angelo, Kianl, Ordning
1I	10-11	Mendelson, D'Angelo, Goldsmith

Ground	Claims	§102 Prior Art
2A	13, 15, 18-19	Mendelson, Moon
2B	16, 18, 20	Mendelson, Moon, Tran
2C	14, 17	Mendelson, Moon, Kianl
2D	1-2, 5, 7, 9, 12-15, 17-19	Mendelson, Moon, D'Angelo
2E	3	Mendelson, Moon, D'Angelo, Ordning
2F	4-6, 8, 16, 18, 20	Mendelson, Moon, D'Angelo, Tran
2G	2, 7, 14, 17	Mendelson, Moon, D'Angelo, Kianl
2H	3	Mendelson, Moon, D'Angelo, Kianl, Ordning
2I	10-11	Mendelson, Moon, D'Angelo, Goldsmith

No Obviousness Over Mendelson

- Mendelson does not disclose:

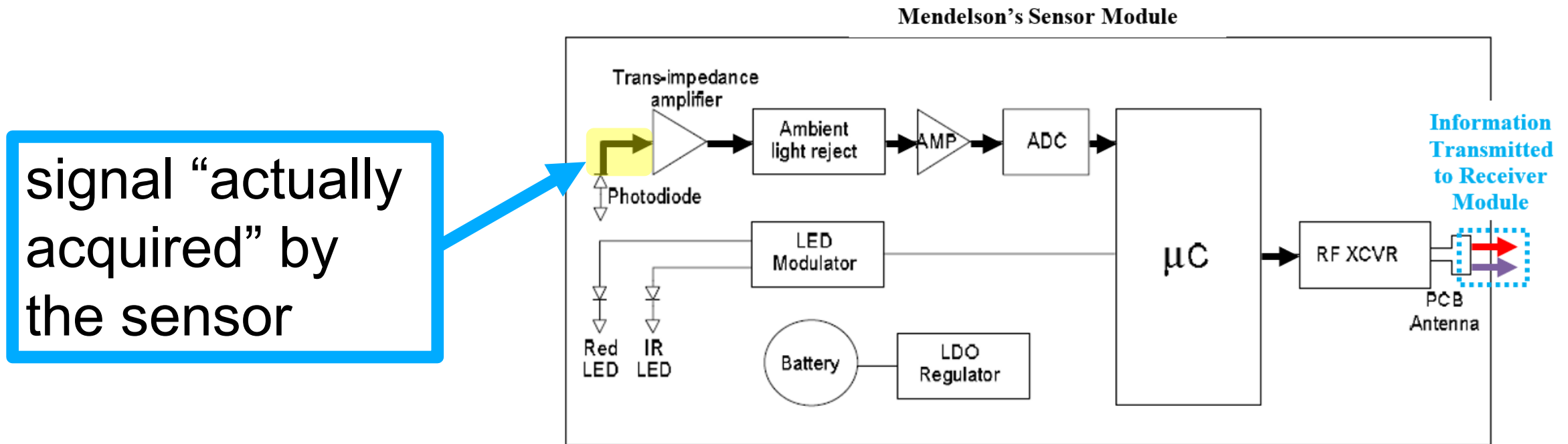
13. A computer-implemented method of informing a user of mobile measurement of oxygen saturation (“SpO2”), the computer-implemented method comprising:

outputting, from an optical sensor of an SpO2 measurement system, one or more signals responsive to light from a light source attenuated by tissue of the user at a measurement site, said one or more signals responsive to an oxygen saturation of said tissue; and
via a processing board of the SpO2 measurement system, the processing board in data communication with the optical sensor and a mobile computing device including a display:

receiving said one or more signals from the optical sensor;
processing said one or more signals to generate the SpO2 measurement values; and
outputting the SpO2 measurement values to the mobile computing device; and

No Obviousness Over Mendelson

- Mendelson transmits something different, not the signal its sensor actually acquires



No Obviousness Over Mendelson

- Apple purports to use Masimo's claim construction, but adds further concepts:
 - “information”
 - “representing”

Apple never argues that Mendelson's output is "data actually acquired with the optical sensor"

The '507 patent does not describe sensors outputting "information"

Characterizing the prototype does not prove Mendelson is similar

¶¶15-17. Therefore, Mendelson expressly describes that its Receiver Module receives, from the Sensor Module, the "information acquired by the Sensor Module" which is the information output by the photodetector of the sensor. APPLE-1083, ¶¶9-17; APPLE-1003, ¶¶43, 55, 59; APPLE-1011, 2. These disclosures of Mendelson are consistent with the inventor's description of how the claimed optical sensor operates. Specifically, he described that the prototype provided Elements [13a] and [1b] because "the sensor generated one or more signals based on the light it detected, and output those one or more signals" without distinguishing any form of processing from the described "generat[ing]" by the sensor. EX2038, ¶13; APPLE-1083, ¶18.

Apple never argues that Mendelson's output is "data actually acquired with the optical sensor"

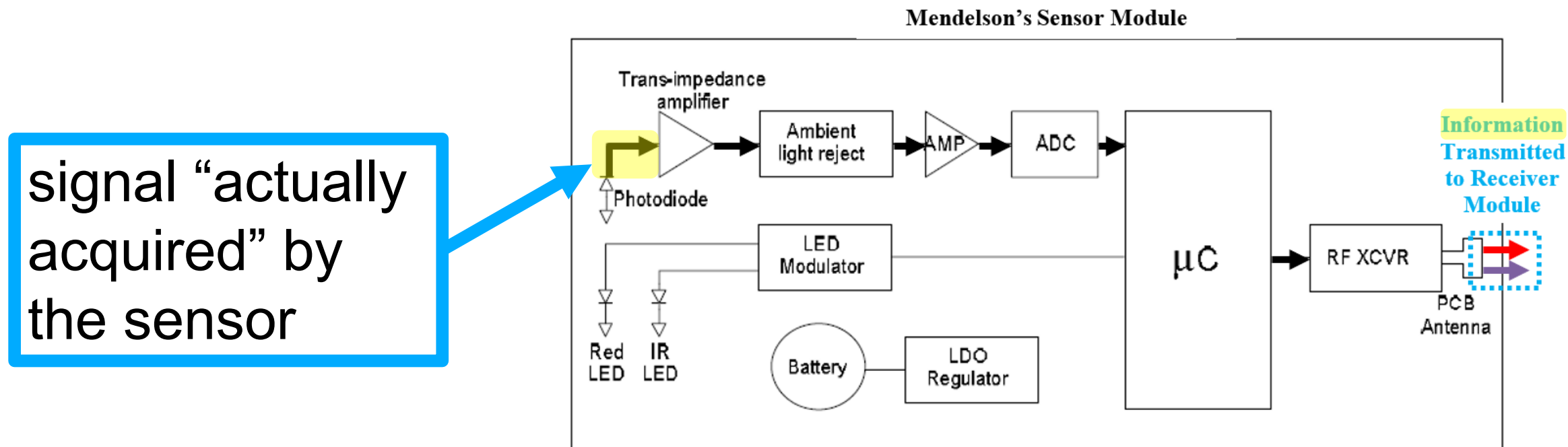
Third, the inventor testimony supports Masimo's position. Muhsin repeatedly explains that Masimo's prototype sensor directly outputs the data acquired with its detector to a separate processing board via a cable, with all processing occurring after the data reaches the processing board. EX2038 ¶¶13 ("The detector of the sensor generated one or more signals...and output those one or more signals to the processing module...through the cable."), 14 (same), 15 (the prototype's "processing board receives the one or more signals output by the detector of the finger sensor"), 22 (confirming prototype "[p]erform[ed] all of the signal processing with the processing board"). Unlike the '507 Patent's optical sensor, Mendelson's Sensor Module processes the acquired photodiode signal before outputting information to the alleged processing board (Receiver Module). POR, 20-24; EX1011, 2; EX2037 ¶¶125-129.

Apple never argues that Mendelson's output is "data actually acquired with the optical sensor"

Therefore, under Masimo's proposed plain and ordinary meaning for the term "one or more signals" of "data that is actually acquired with the optical sensor," Mendelson provides elements [13a] and [1b] because Mendelson's Sensor Module outputs "information acquired by the Sensor Module" **representing** the data output by the photodetector. APPLE-1083, ¶¶13-18; APPLE-1003, ¶¶43, 55, 59; APPLE-1011, 2.

No Obviousness Over Mendelson

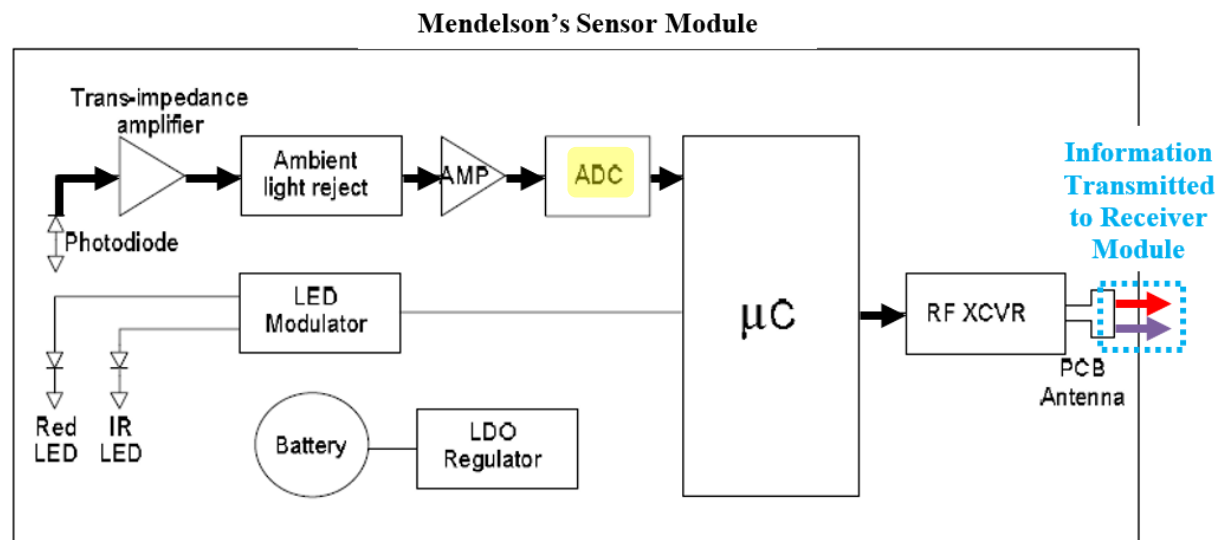
- Mendelson transmits something different, not the signal its sensor actually acquires



No Obviousness Over Mendelson

- Mendelson's actually acquired signal is **analog**
- A/D conversion is **one reason** Mendelson fails to transmit a "signal responsive to light"
- Supporting evidence, **not** a new argument

No Obviousness Over Mendelson



EX1011, 2; EX2037 ¶125. The Sensor Module has a “photodiode” that outputs a signal responsive to the detected light. *Id.* The photodiode signal is amplified

(“Trans-impedance amplifier”), filtered to remove ambient light (“ambient light reject” signal conditioning), amplified again (“AMP”), converted from analog to digital by an “ADC,” and received by a microcontroller (“μC”). *Id.* The microcontroller processes the signal and provides the resulting information to the RF transceiver (“RF XCVR”). *Id.* The RF transceiver then processes that information into packets that are transmitted to, and received by, Mendelson’s Receiver Module. *Id.*

As Dr. Duckworth explains, and a POSITA would have understood, Mendelson’s Sensor Module does not output data actually acquired with the Sensor Module. EX2037 ¶126. Instead, the Sensor Module computes and outputs *average* red and infrared PPG samples to the Receiver Module.⁵ *Id.*

D'Angelo Is Not Prior Art

Apple Requires D'Angelo To Obviate Claims 1-12

- Apple relies solely on D'Angelo for the Claim 1 limitation requiring the processing board to “draw power for operation from the mobile computing device”

1D	1-2, 5, 7, 9, 12-15, 17-19	Mendelson, D'Angelo
1E	3	Mendelson, D'Angelo, Ording
1F	4-6, 8, 16, 18, 20	Mendelson, D'Angelo, Tran
1G	2, 7, 14, 17	Mendelson, D'Angelo, Kianl
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D'Angelo is not Prior Art Under 102(b)

- The '507 Patent's earliest priority is Sep. 20, 2012, and D'Angelo was published less than a year before that:

Date Added to IEEE Xplore: 01 December 2011

- Apple **speculates** that D'Angelo was published shortly after the August 30th to September 3rd conference:

7 A. I don't know if there's a strict
8 policy on that. My general expectation is that
9 conference proceedings are made available within
10 weeks, maybe up to a month or so, of the completion
11 of the conference. That can depend on the execution
12 of the committee running the meeting, in particular,
13 but that's the understanding that those proceedings
14 are made available to the public soon after the
15 conference.

D'Angelo is not Prior Art Under 102(b)

- Apple's IEEE declarant **did not attend** the 2011 conference where D'Angelo was allegedly presented
- MacPherson admissions show IEEE's "business rule" for publishing on the last day of a conference is not definitive evidence:

3 Q. Even if an article was not distributed
4 during the conference, as a business rule, the IEEE
5 still recognizes a conference paper's date of
6 publication as the date that the conference opened;
7 right?
8 A. Yes, that's right.

Masimo Invented Prior to D'Angelo

- D'Angelo's earliest proven publication is December 1, 2011
- The inventions in Claims 1, 13 were reduced to practice by August 31, 2011
- Therefore, D'Angelo is **not** Prior Art Under 102(a)

Masimo Invented Prior to D'Angelo

- Evidence of reduction to practice prior to December 1, 2011:
 - Declaration of Inventor Muhsin (EX2038)
 - User Interface Summary (EX2040)
 - Prototype Video (EX2039)
- Apple only challenges corroboration for **one aspect**:
“processing board depicted in [the] ‘Prototype Video’ functioned to generate the SpO2 measurement values”
- Sufficiency is evaluated under a “rule of reason”

Medtronic, Inc. v. Teleflex Innovations S.A.R.L., 68 F.4th 1298, 1306 (Fed. Cir. 2023).

Masimo's Swear-Behind Argument in the POR

B. D'Angelo Is Not Prior Art

D'Angelo became publicly available on December 1, 2011, *less than one year* before the '507 Patent's effective filing date. *Supra* §VIII.A. Thus, D'Angelo is not § 102(b) prior art. At most, D'Angelo might qualify as § 102(a) art. But, here, the claimed inventions were reduced to practice before the reference date of D'Angelo. And indeed, the inventions recited in the independent Claims 1 and 13 were reduced to practice by August 31, 2011. EX2037 ¶¶41-88. Thus, D'Angelo, which published months later in December 2011, is also not § 102(a) prior art.

Accordingly, D'Angelo is not prior art. Because Apple's Grounds 1D and 2D rely on D'Angelo (Pet. 1-2), both grounds of unpatentability fail.⁶

Masimo's swear-behind argument in the POR

Parties are routinely permitted “to support [their] contention with expert testimony.”

Gene Co. Pty Ltd. v. Trustees of Columbia Univ., 2024 WL 3104511, *18 (PTAB June 24, 2024) (permitting reliance on expert's declaration that “do[es] not provide wholly new arguments not found in the [briefing]” and instead provides “technical details underlying” the brief's arguments)

Expedia, Inc. v. IBM Corp., 2019 WL 2511366, *2 (PTAB June 17, 2019) (permitting reliance on declaration)

A POSITA would not have modified Mendelson so that the Receiver Module draws power from the PDA

No Modification of Mendelson based on D'Angelo

Apple's proposed modification is only for "backup" power source.

- It would defeat Mendelson's intended purpose of providing "Remote Physiological Monitoring" via the Receiver Module, such as in a battlefield.
- The Receiver Module does not store measurements that could be "read out" after its battery died.
- It would ruin Mendelson's design configured to "monitor multiple wearable pulse oximeters simultaneously."

No Modification of Mendelson based on D'Angelo

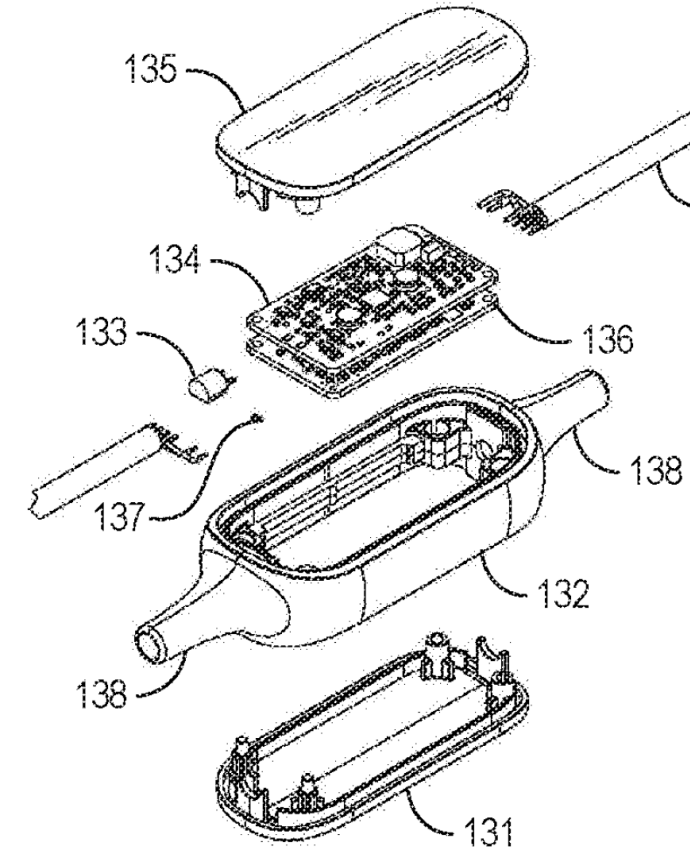
- The Receiver Module's existing batteries provide power for days of operation, which is plenty for the transient hazardous events. Replacing the Receiver Module's batteries would have been an easier solution while retaining remote functionality.
- It would drain the PDA's batteries more quickly, thereby rendering the entire system unusable.
- It would add components to the Receiver Module, making it larger, heavier, and more expensive to produce.
- Apple's Expert only suggests a POSITA "would consider" such a modification, not that they would have been motivated to do it.

Revised Contingent Motion to Amend Claims

The RMTA Claims Satisfy 35 U.S.C. § 112

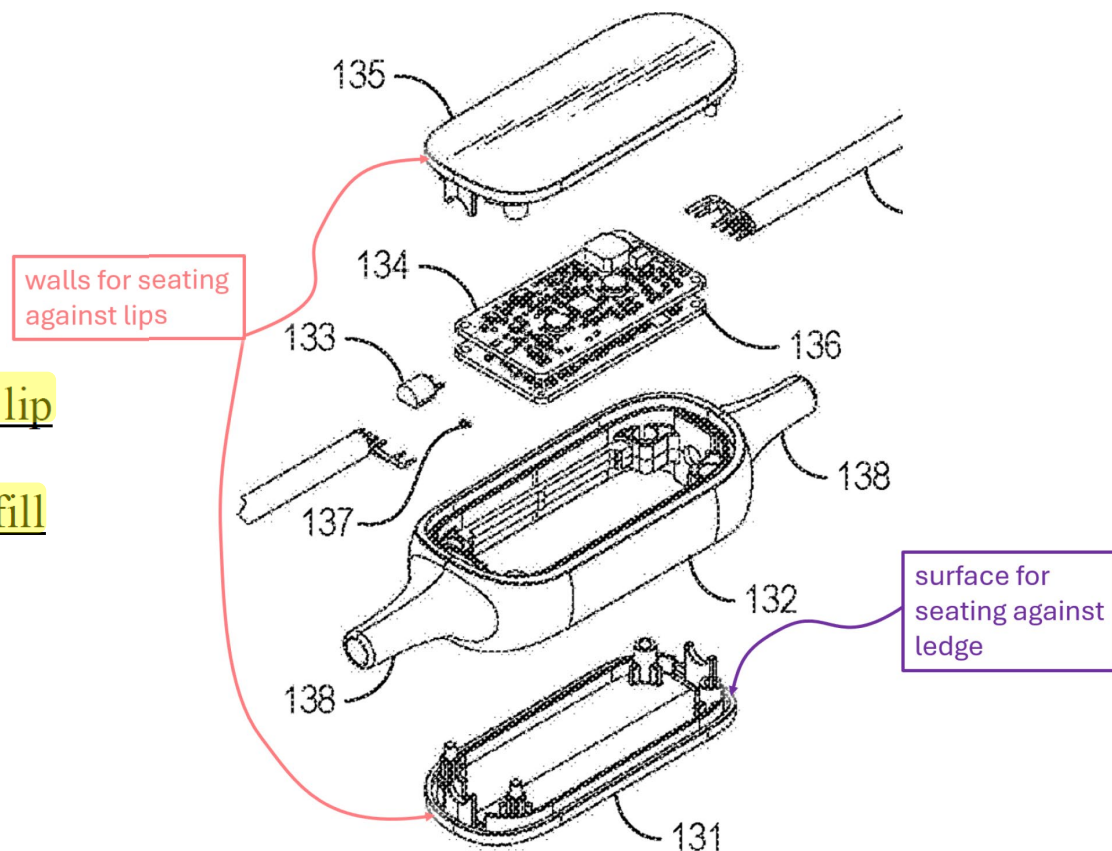
Openings with Lips and Ledges are Supported

[21n] the processing board surrounded within a protective assembly comprising upper and lower shells and a rounded rectangular enclosure forming a cavity with upper and lower openings, the openings having an inner ledge and a perimeter lip sized and configured to receive the upper and lower shells to fill the openings such that the perimeter lip surrounds at least a portion of perimeter sides of the upper and lower shells;

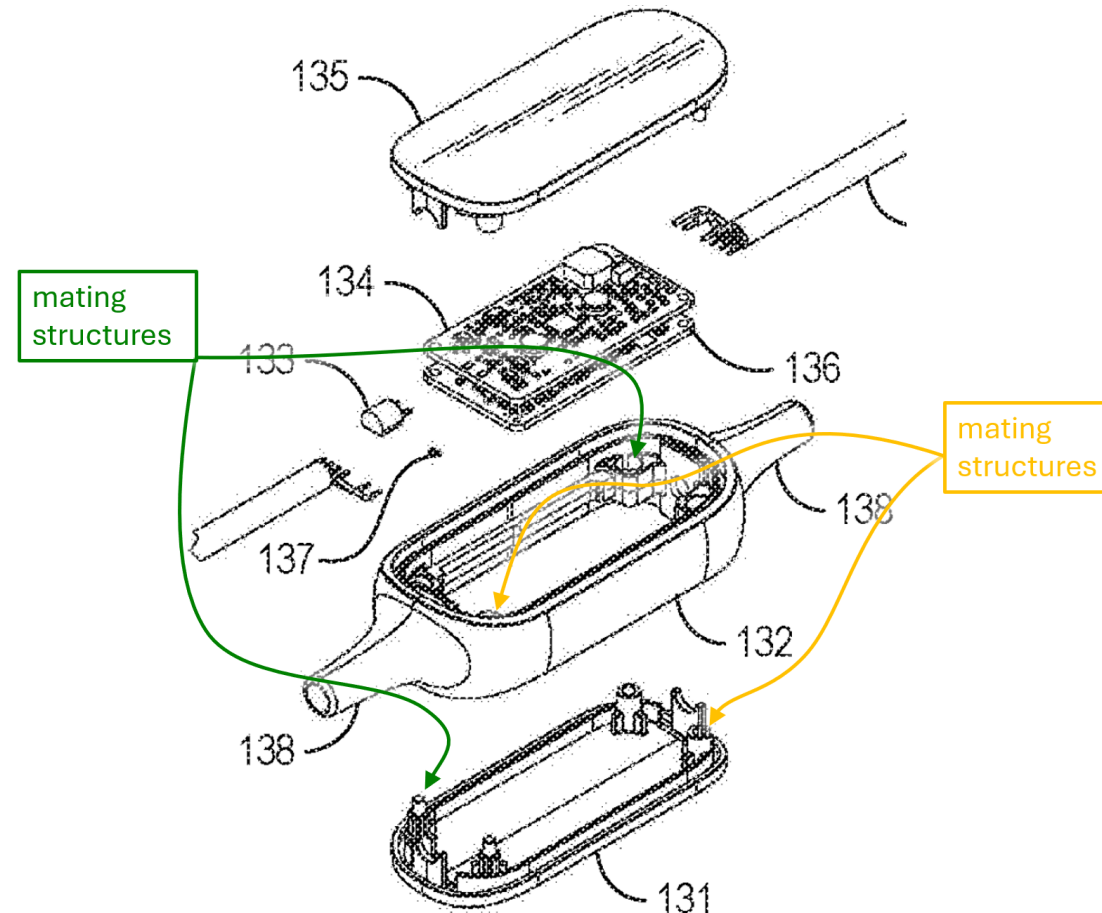
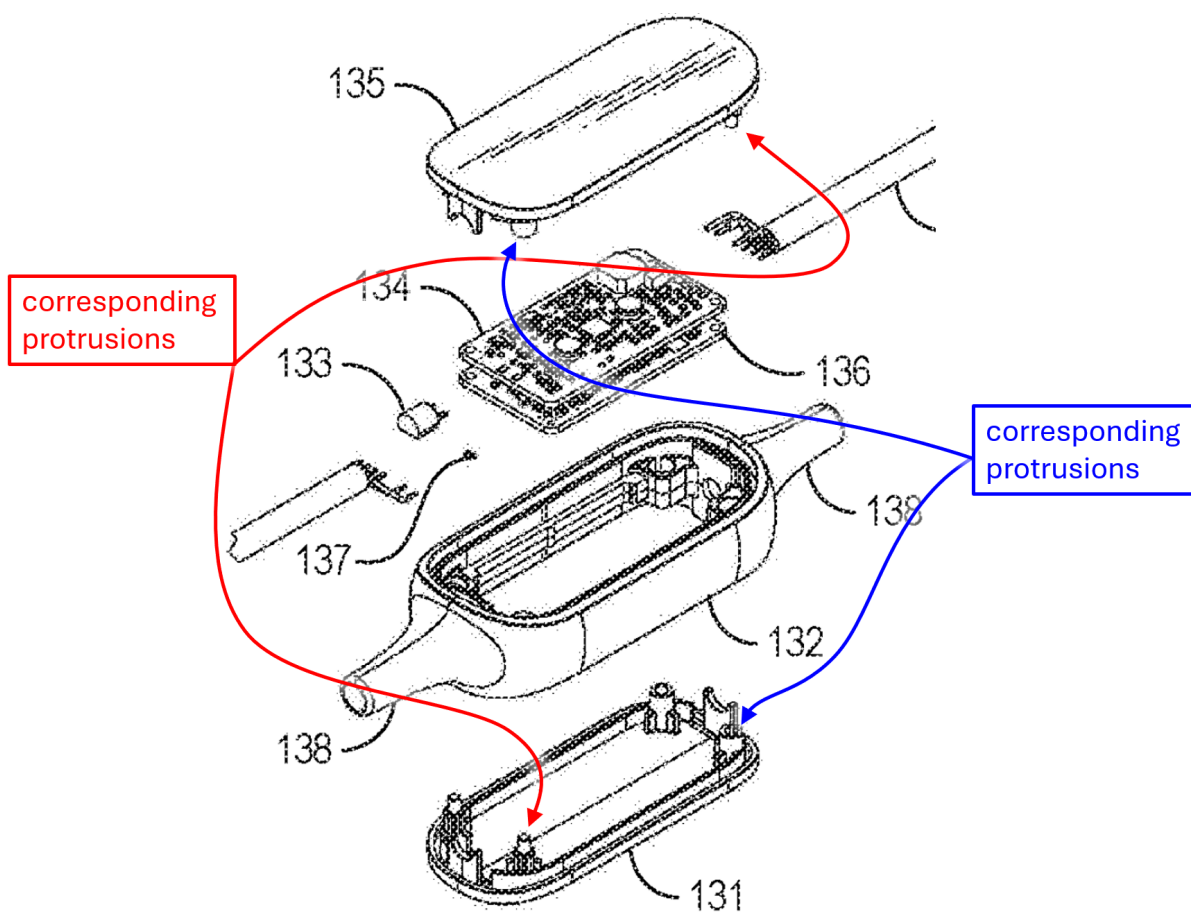


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[21n] the processing board surrounded within a protective assembly comprising upper and lower shells and a rounded rectangular enclosure forming a cavity with upper and lower openings, the openings having an inner ledge and a perimeter lip sized and configured to receive the upper and lower shells to fill the openings such that the perimeter lip surrounds at least a portion of perimeter sides of the upper and lower shells;



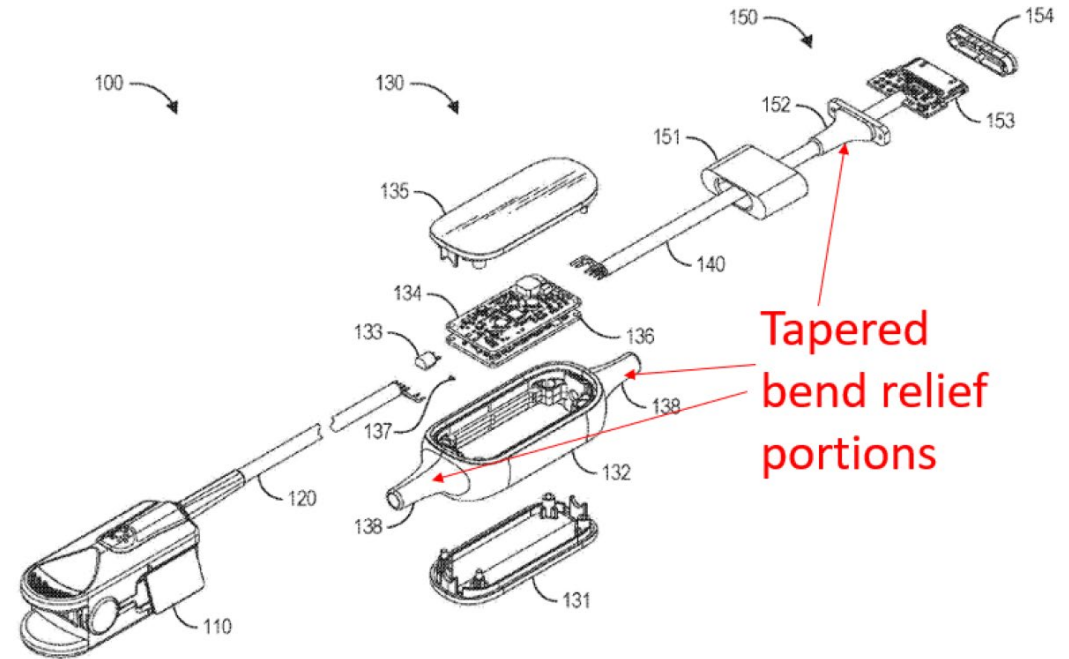
Openings with Lips and Ledges are Supported



Wireless Transmission Includes Bend Relief Portions

- Apple speculates that wireless-transmission embodiments **replace** cable 140 with a wireless connection, but the '507 patent describes a port 150 (beyond cable 140) having a wireless interface:

and electrically connect with a specific device. Connection port 150 can be one of many different types of ports. For example, connection port 150 can be a device-specific port such as an iPhone port or another smartphone port, a USB port, an Ethernet port for connection to a wired network, a serial port (e.g., RS232), a video out port which allows projection of the device screen on a larger display, combinations of the same, or the like. Further, the connection port 150 can be equipped with one or more wireless interfaces (such as WiFi, Bluetooth, Zigbee, or the like).



EX2045, FIG. 1C

The “Included Together” Limitations Are Definite

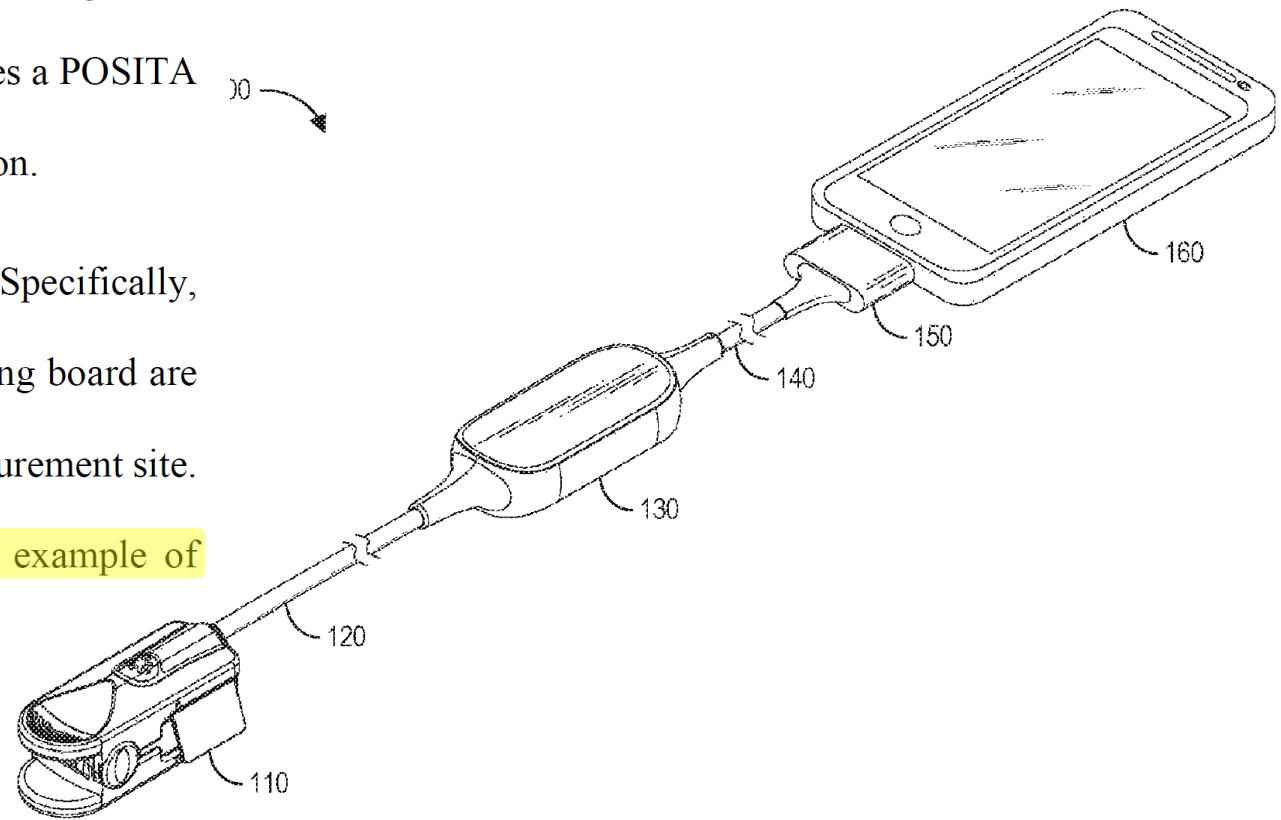
- Dr. Duckworth’s Analysis:

45. Apple argues that “including the sensor and processing board together” is indefinite. *Id.* at 7. But it is my opinion that the ’507 Patent provides a POSITA reasonable certainty as to the scope of the included-together limitation.

* * *

Specifically, the included-together limitation describes that the sensor and processing board are included together in the portable measurement system used at the measurement site.

In Figures 1A-1C, the specification of the ’507 Patent provides an example of including the sensor and processing board together.



The “Included Together” Limitations Are Definite

18 Q. In your expert opinion, looking at
19 Figure 7, you are unable to determine if the
20 sensor 116 and monitor 118 are included
21 together, is that correct?

22 MR. NELSON: Objection, foundation.
1 Mischaracterizes evidence.

2 THE WITNESS: I've not said I'm
3 unable to do that. I've said I'm not
4 prepared to provide a new opinion on that
5 at the moment.

The “Advanced Signal Processing” Limitations Are Definite

- Dr. Duckworth’s Analysis:

51. Apple incorrectly argues that the specification lacks “objective boundaries” between limitation [22c]’s “*advanced* signal processing algorithm” and other signal processing. Opposition at 8–9. However, paragraph [0032] identifies two forms of “advanced signal processing...including parallel engines and adaptive filters.” Exhibit 2045 at [0032]. That paragraph explains that the advanced signal processing separates physiological signals from noise “to allow accurate monitoring of arterial oxygen saturation and pulse rate even during the most challenging conditions.” *Id.* Therefore, in my opinion, a POSITA could ascertain with reasonable certainty whether a signal processing algorithm is advanced based on its use of parallel engines and/or adaptive filters to reduce noise and improve measurement accuracy.

The “Advanced Signal Processing” Limitations Are Definite

So sitting here today, you don't know whether or not noise filtering that does not use adaptive filters would fall within the scope of the claimed advanced signal processing algorithm, is that correct?

MR. NELSON: Objection, foundation, mischaracterizes evidence.

THE WITNESS: Counselor, I did not say I did not know. You were giving an example that is -- you were saying without the use of adaptive filters. I explained -- and I've explained many times in paragraph 51 that signal processing algorithm is advanced based on use of parallel engines and/or adaptive filters.

Apple Fails to Show Obviousness of the RMTA Claims

Apple's Grounds Rely Upon an A/D Converter in the Sensor

Poeze discloses “finger clip sensor 116” that sends “signal data” to monitor 118. APPLE-1110, [0031], [0093]. “[S]ensor 116 includes an emitter 504” that emits “optical radiation transmitted towards measurement site” and “detectors 506 [that] capture and measure light transmitted from the emitter 504 that has been attenuated or reflected from the tissue in the measurement site.” *Id.*, [0106], [0118]. The “output of the detectors 506...is responsive to desired physiological parameters” including “oxygen saturation (SpO2).” *Id.*, [0120], [0114]; FIG. 8.

Apple's Grounds Rely Upon an A/D Converter in the Sensor

[0106] In the depicted embodiment shown in FIG. 8, the sensor 116 includes an emitter 504, a tissue shaper 522, a set of detectors 506, and a front-end interface 508. The emitter

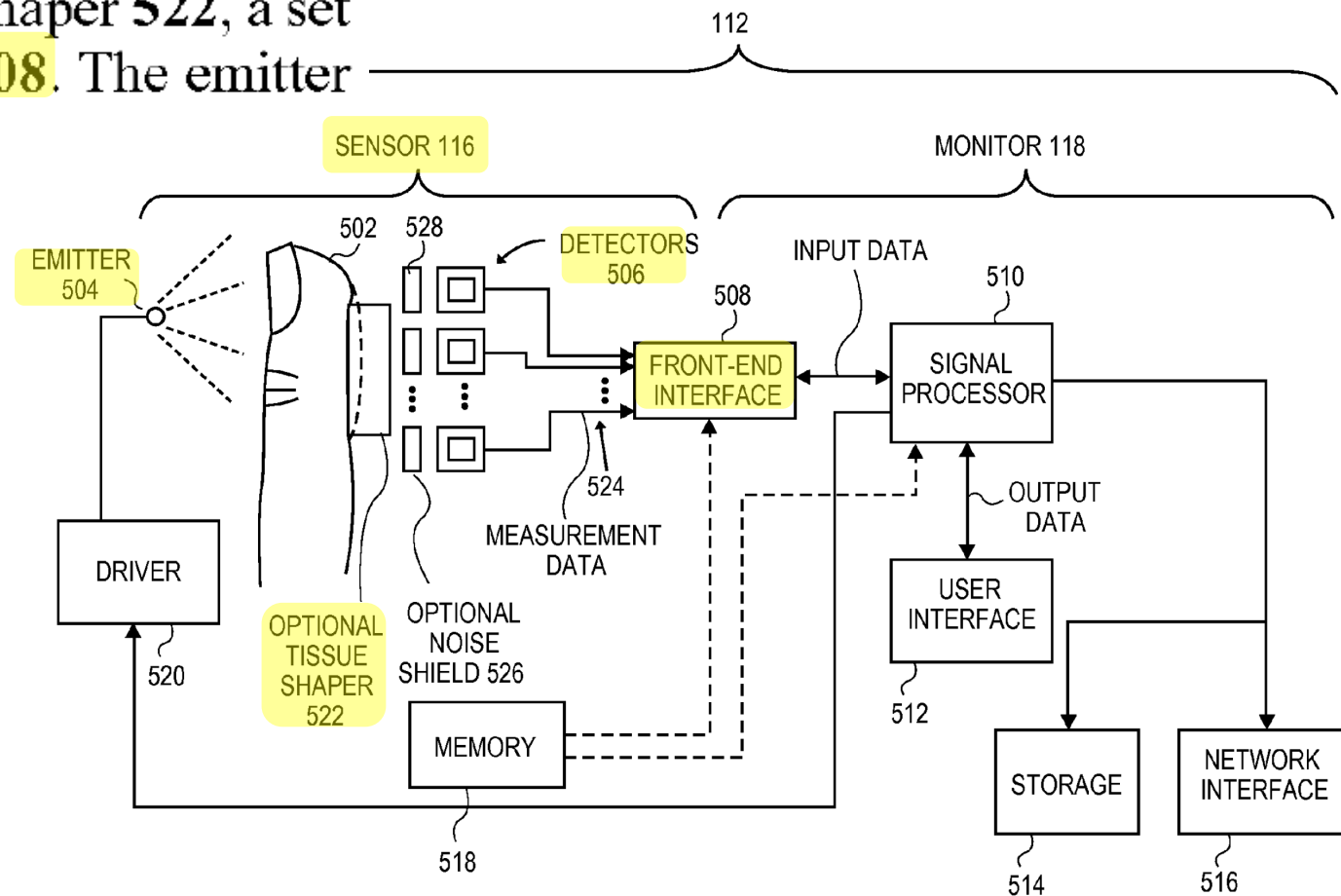
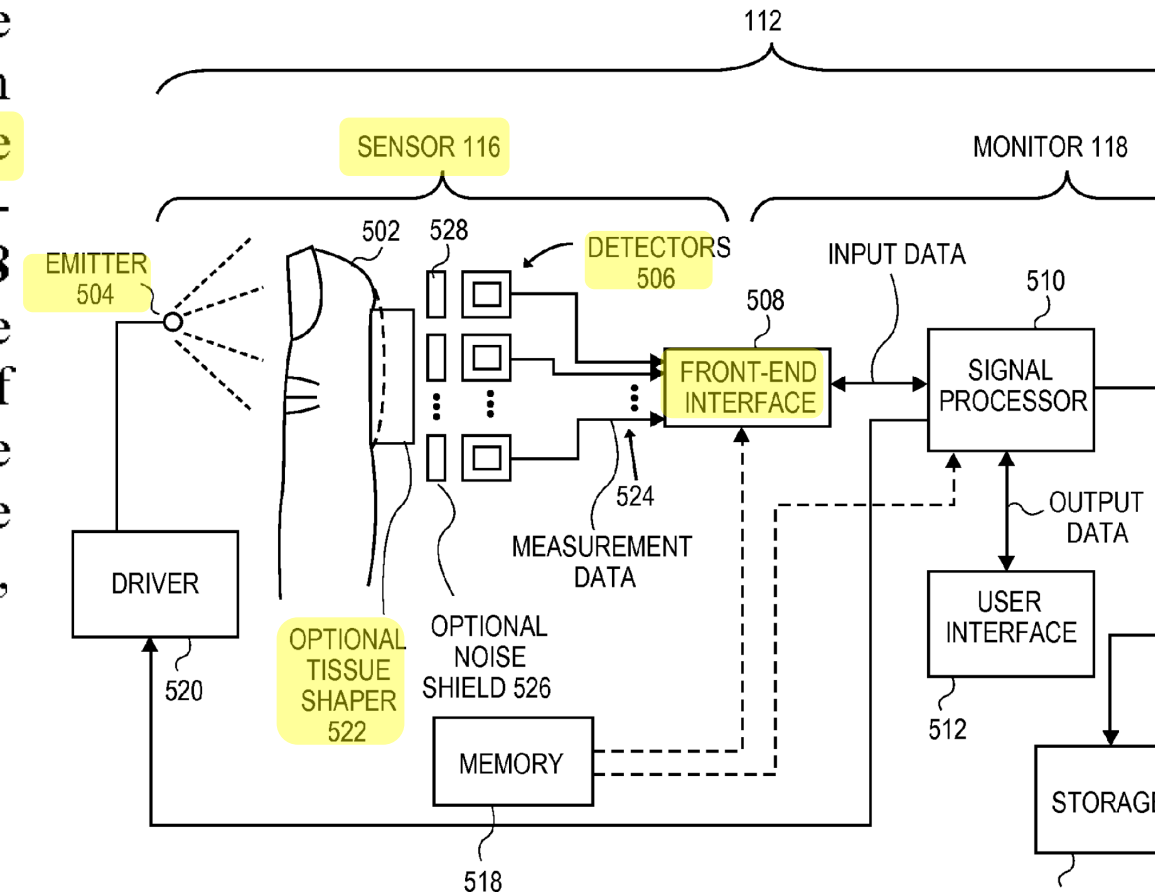


FIG. 8

Apple's Grounds Rely Upon an A/D Converter in the Sensor

[0120] The front-end interface 508 provides an interface that adapts the output of the detectors 506, which is responsive to desired physiological parameters. For example, the front-end interface 508 can adapt a signal 524 received from one or more of the detectors 506 into a form that can be processed by the monitor 118, for example, by a signal processor 510 in the monitor 118. The front-end interface 508 can have its components assembled in the sensor 116, in the monitor 118, in connecting cabling (if used), combinations of the same, or the like. The location of the front-end interface 508 can be chosen based on various factors including space desired for components, desired noise reductions or limits, desired heat reductions or limits, and the like.



Apple's Grounds Rely Upon an A/D Converter in the Sensor

Poeze's system includes "front-end interface [that] adapt[s] a signal 524 received from one or more of the detectors 506 into a form that can be processed by the monitor 118" and "can have its components assembled in the sensor 116, in the monitor 118, [or] in connecting cabling." *Id.* As such, in various embodiments, the sensor 116 alone, or a combination of the sensor 116 and front-end interface 508 provides the claimed optical sensor. APPLE-1109, ¶¶53-56. An "analog to digital

No Hint of Hindsight Allowed

Moreover, an appropriate obviousness inquiry cannot involve even a “hint of hindsight.” *Star Sci., Inc. v. R.J. Reynolds Tobacco Co.*, 655 F.3d 1364, 1375 (Fed. Cir. 2011). A petitioner may not “simply retrace[] the path of the inventor with hindsight, discount[] the number and complexity of the alternatives, and conclude[] that the invention ... was obvious.” *Ortho-McNeil Pharm., Inc. v. Mylan Labs., Inc.*, 520 F.3d 1358, 1364 (Fed. Cir. 2008). Likewise, “care must be taken to avoid hindsight reconstruction by using the patent in suit as a guide.” *In re NTP, Inc.*, 654 F.3d 1279, 1299 (Fed. Cir. 2011) (cleaned up).

No Motivation to Provide an ADC “on a board” of the Monitor

processor 510 “on a board” in the monitor 118. Apple generically argues this modification was “well-known in the art” and allows electrical communication “in a reliable, well-known manner.” Opp., 16. But Apple’s assertion that mounting components on a circuit board was well known “does not show a motivation to combine.” *See, e.g., Virtek Vision Int’l ULC v. Assembly Guidance Sys., Inc.*, 97 F.4th 882, 888 (Fed. Cir. 2024). Apple also asserts that a benefit of using a PCB is reliable electrical communication “while securing the components within the assembly.” Opp., 16. But the claims do not generically recite mounting components on a PCB. Rather, they require arranging the components such that “analog signals from the optical sensor” are received via the processing board. Thus, by merely

No Motivation to Provide an ADC “on a board” of the Monitor

EX1113 at [0066]:

[0066] Electronic device components can be placed within volume 122 using any suitable approach. For example, electronic device 100 can include components 130 and 132 can be inserted into volume 122. Each of components 130 and 132 can include individual components, or several components assembled together as a component layer or stack, or include several distinct layers of components to insert within volume 122. In some embodiments, components 130 and 132 can each represent several components stacked along the height of the device. The component layers can be electrically coupled to each other to enable data and power transfers, as required for the proper operation of electronic device 100. For example, the component layers can be electrically coupled using one or more of a PCB, flex, solder, SMT, wires, connectors, or combinations of these. The component layers can

EX1113 at [0070]:

[0070] In some embodiments internal platform 140 and/or opening 122 can include one or more electrically conductive elements for providing electrical connections between the components. For example, internal platform 140 and/or opening 122 can include one or more PCB, flex, wire, solder pad, cable, connector, or other electrically conductive mechanism for connecting components within the electronic device.

No Motivation to Provide an ADC “on a board” of the Monitor

EX1092 at 11:6–20:

This signal is then received by processor **314**, which preferably extracts medical information from the measurement of the physiological parameter. Processor **314** optionally and preferably features a crystal oscillator **312**, for stabilizing the internal clock of processor **314**. Processor **314** may communicate with the real time clock of the device (not shown). Also not shown are the extended memory, transceiver (communication unit), A/D converter and analog front end of the device.

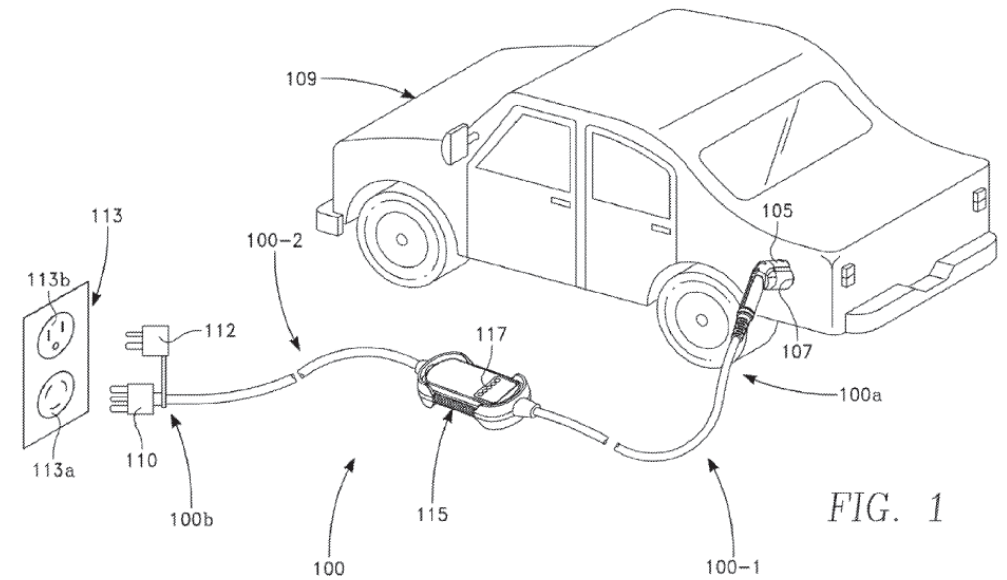
Processor **314**, oscillator **312** and push button **316** are all preferably mounted on a PCB board **308**. PCB board **308** is then preferably sandwiched between battery **106** and a device cover **304**. Device cover **304** preferably features a soft por-

No Motivation to Provide an ADC “on a board” of the Monitor

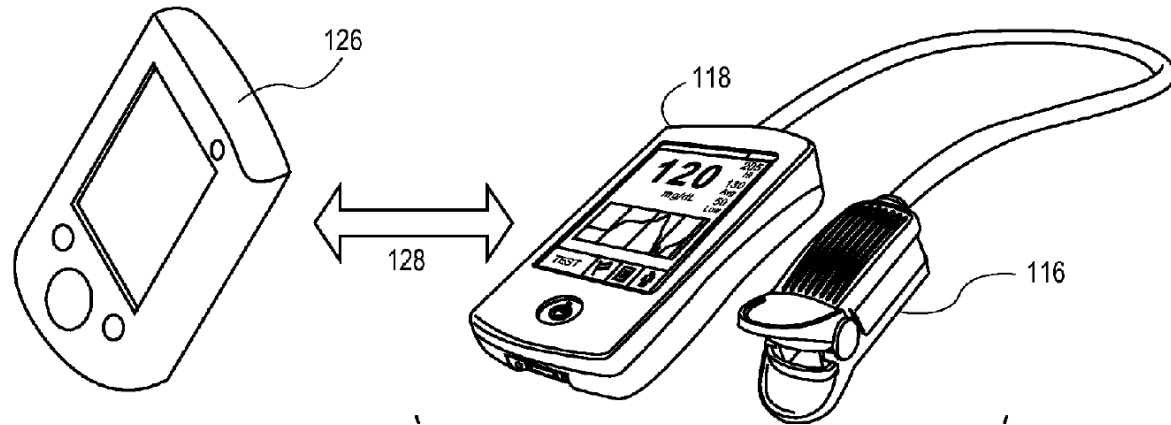
EX1118 at [81]:

[81] A circuit board 614 supports the electrical and electronic components of the in-line controller 115

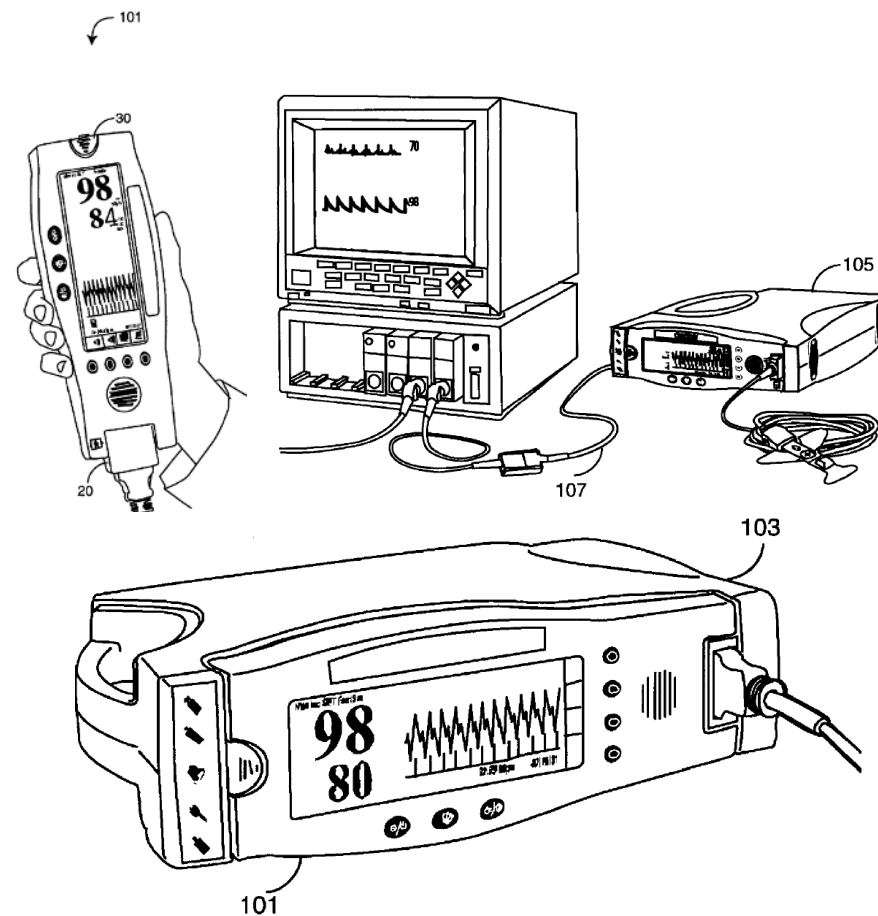
previously described herein with reference to FIGS. 2 and 3. The circuit board 614 is held within the interior volume formed between the two half shells 602, 604, as shown in FIG. 11. The circuit board 614 has a pair of holes 616a, 616b through which the reinforcing posts 612 extend. The components mounted on the circuit board 614 are the components of the in-line controller 115 of FIGS. 1 and 2, and include the light emitting diodes 117 previously referred to herein, and transparent covers 118. LED holes 622 in the ceiling 602a are in



Apple's [21f]-[21l] Combinations use Impermissible Hindsight



Poeze



Kianl

Apple's Sur-Reply Adds New Arguments

- Apple's RMTA Opposition failed to even assert a reasonable expectation of success for combining Poeze and Kianl for limitations [1h]-[1l]

- Apple's Sur-Reply:

displaying physiological measurement information. Opp., 11-12. The fact that FIG.

1A of Kianl expressly shows its display device easily fitting in a user's hand (with

significant portions of the display being empty) indicates that such information

would have been predicably and easily displayed on Poeze's smartphone. Indeed,

D'Angelo confirms that a POSITA would have had an expectation of success in

fitting two graphs, two numeric values, four input icons, and additional

information on a single iPhone display screen. APPLE-1007, 3-4.

The RMTA Demonstrates Support for the Substitute Claims

We decline to adopt a *per se* rule that string citations, in general, are not sufficient for Patent Owner to meet its burden under 37 C.F.R. § 42.121(b). The underlying question at issue is factual in nature, namely, whether “[t]he amendment seeks to ... introduce new subject matter” (37 C.F.R. § 42.121(a)(2)(ii))—i.e., whether there is written description support under 35 U.S.C. § 112, first paragraph. In some cases, written description support may be apparent simply by identification of the relevant disclosure. Other cases may require further explanation.

PEAG LLC v. Varta Microbattery GMBH, IPR2020-01213, Paper 26, 6 (PTAB July 21, 2021). Here, Masimo provided citations to specific paragraphs and figures of

Claim 1

A mobile pulse oximetry system for informing a user of mobile measurement of oxygen saturation (“SpO2”), the mobile pulse oximetry system comprising:

an SpO2 measurement system including:

- an optical sensor configured to output one or more signals responsive to light from a light source attenuated by tissue of the user at a measurement site, said one or more signals responsive to an oxygen saturation of said tissue; and

- a processing board in data communication with the optical sensor and a mobile computing device including a display and cellular communication, wherein the processing board is configured to:

 - receive said one or more signals from the optical sensor;

 - process said one or more signals to generate SpO2 measurement values; and

 - output the SpO2 measurement values to the mobile computing device; and

one or more hardware processors of the mobile computing device configured to execute an application, the application configured to execute commands to:

- generate a graphical user interface having a plurality of display portions;

- display, in at least one portion of the plurality of display portions, a representation of a physiological parameter of a plurality of physiological parameters comprising at least the SpO2 measurement values; and

- display, in a different portion of the plurality of display portions, a plurality of user inputs configured to allow the user to interact with at least one of the plurality of display portions or the application;

wherein the processing of the one or more signals to generate SpO2 measurement values is performed only on the processing board, thereby freeing up memory available to the mobile computing device; and

wherein the processing board is configured to draw power for operation from the mobile computing device.

Claim 13

A computer-implemented method of informing a user of mobile measurement of oxygen saturation (“SpO2”), the computer-implemented method comprising:

outputting, from an optical sensor of an SpO2 measurement system, one or more signals responsive to light from a light source attenuated by tissue of the user at a measurement site, said one or more signals responsive to an oxygen saturation of said tissue; and

via a processing board of the SpO2 measurement system, the processing board in data communication with the optical sensor and a mobile computing device including a display:

- receiving said one or more signals from the optical sensor;

- processing said one or more signals to generate the SpO2 measurement values; and

- outputting the SpO2 measurement values to the mobile computing device; and

via an application configured to execute commands on the mobile computing device:

- generating a graphical user interface having a plurality of display portions;

- displaying, in at least one portion of the plurality of display portions, a representation of a physiological parameter of a plurality of physiological parameters comprising at least the SpO2 measurement values; and

- displaying, in a different portion of the plurality of portions, a plurality of user inputs configured to allow the user to interact with at least one of the plurality of display portions or the application.

Substitute Claim 21

A computer-implemented method of informing a user of mobile measurement of oxygen saturation ("SpO2"), the computer-implemented method comprising:

- outputting, from an optical sensor of an SpO2 measurement system, one or more analog signals responsive to light from a light source attenuated by tissue of the user at a measurement site, said one or more analog signals responsive to an oxygen saturation of said tissue; and

- via a processing board of the SpO2 measurement system, the processing board in data communication with the optical sensor and a smartphone mobile computing device including a touch-sensitive smartphone display:

 - receiving through a wired connection said one or more analog signals from the optical sensor;

 - processing said one or more analog signals to generate the SpO2 measurement values and heart rate; and

 - wirelessly outputting the SpO2 measurement values and heart rate to the smartphone mobile computing device; and

- via an application configured to execute commands on the smartphone mobile computing device:

 - generating a graphical user interface having a plurality of display portions on the touch-sensitive smartphone display;

 - displaying, in at least one portion of the plurality of display portions at one or more times, a representation of a physiological parameter of a plurality of physiological parameters comprising the SpO2 measurement values;

 - displaying, in at least one portion of the plurality of display portions at one or more times, a graph of a history of the SpO2 measurement values;

 - displaying, in at least one portion of the plurality of display portions at one or more times, a graph of a history of the heart rate;

 - displaying, in at least one portion of the plurality of display portions at one or more times, a graphical representation of a heart; and

 - displaying, in a different portion of the plurality of portions, a plurality of user inputs configured to allow the user to use the touch-sensitive smartphone display to interact with at least one of the plurality of display portions or the application;

 - wherein the computer-implemented method is configurable to authenticate user data access by using at least one of fingerprint, facial, and voice recognition technologies;

 - the processing board surrounded within a protective assembly comprising upper and lower shells and a rounded rectangular enclosure forming a cavity with upper and lower openings, the openings having an inner ledge and a perimeter lip sized and configured to receive the upper and lower shells to fill the openings such that the perimeter lip surrounds at least a portion of perimeter sides of the upper and lower shells;

 - the light from the light source comprises at least red and infrared light; and

 - the SpO2 measurement system is configured to be portable by including the sensor and processing board together, wirelessly connectable to the smartphone mobile computing device for display of physiological data.

Substitute Claim 23

23. (Substitute for claim 17, if that claim is found unpatentable). The computer-implemented method of claim [[13]]21, further comprising, via the application, updating the representation of the physiological parameter to comprise one or more of a plurality of graphical representations of the SpO2 measurement values, the plurality of graphical representations comprising at least one of bar graphs or charts;

the rounded rectangular enclosure comprising, on a first side, a first transition from the enclosure to a tapered flexible support member, and on a second side opposite the first side, a second transition from the enclosure to a tapered flexible support member;

wherein the sensor and processing board are provided together with a wrist-mounted device.

Mendelson Figure 1

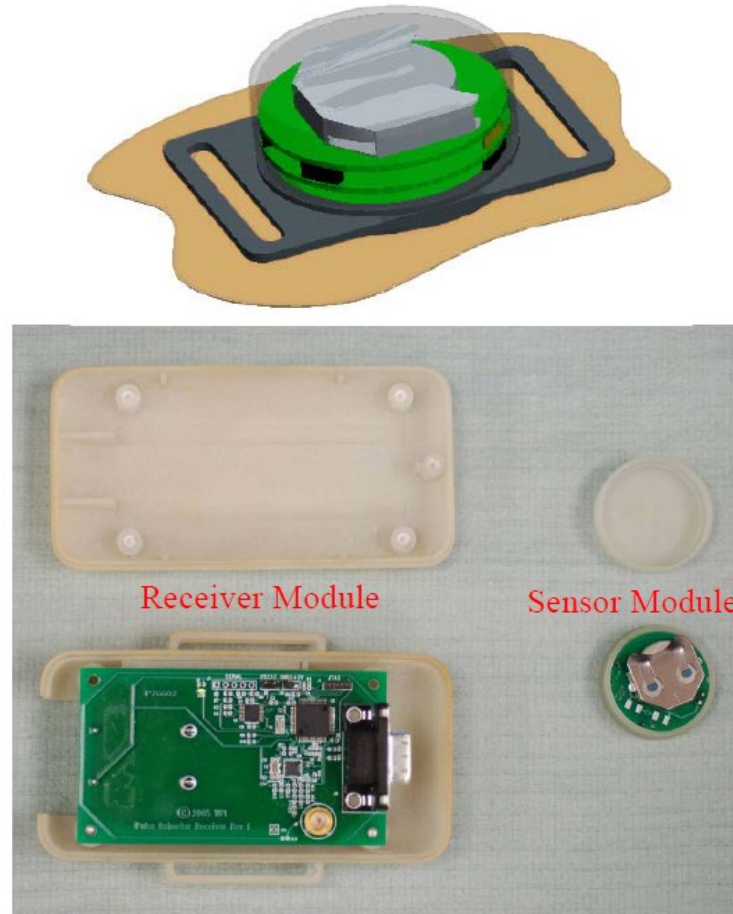


Fig. 1. (Top) Attachment of Sensor Module to the skin; (Bottom) photograph of the Receiver Module (left) and Sensor Module (right).

Mendelson Figure 2

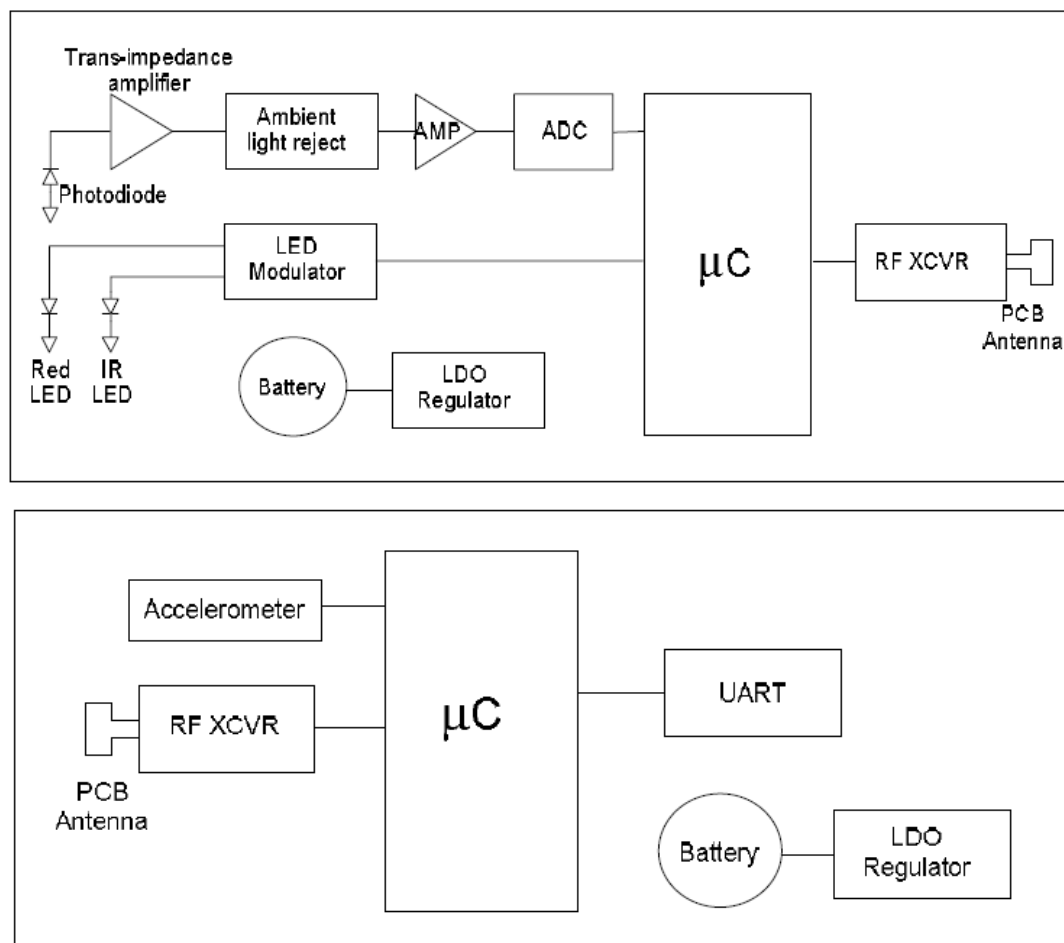


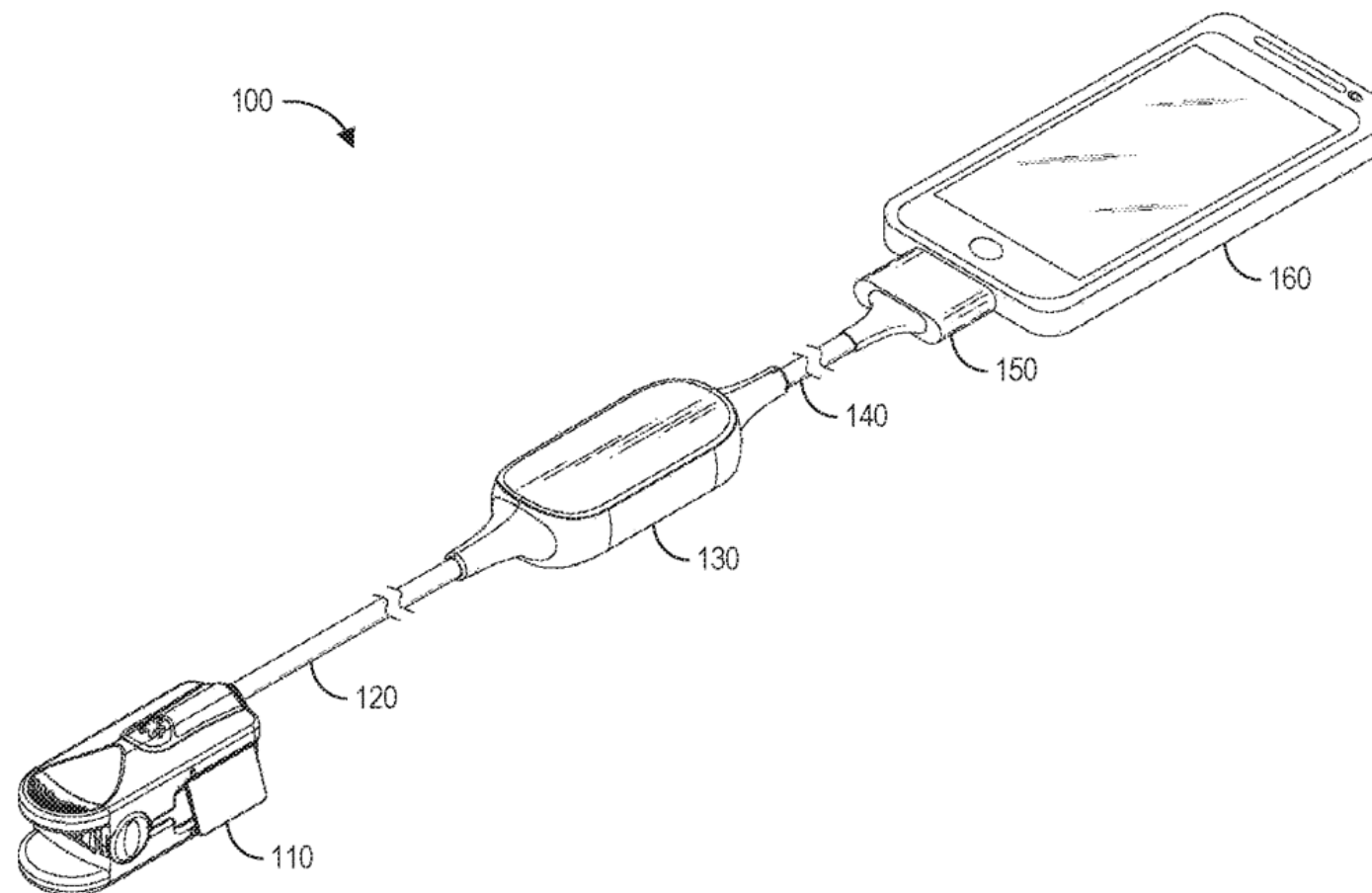
Fig. 2. System block diagram of the wearable, wireless, pulse oximeter. Sensor Module (top), Receiver Module (bottom).

Mendelson Figure 3

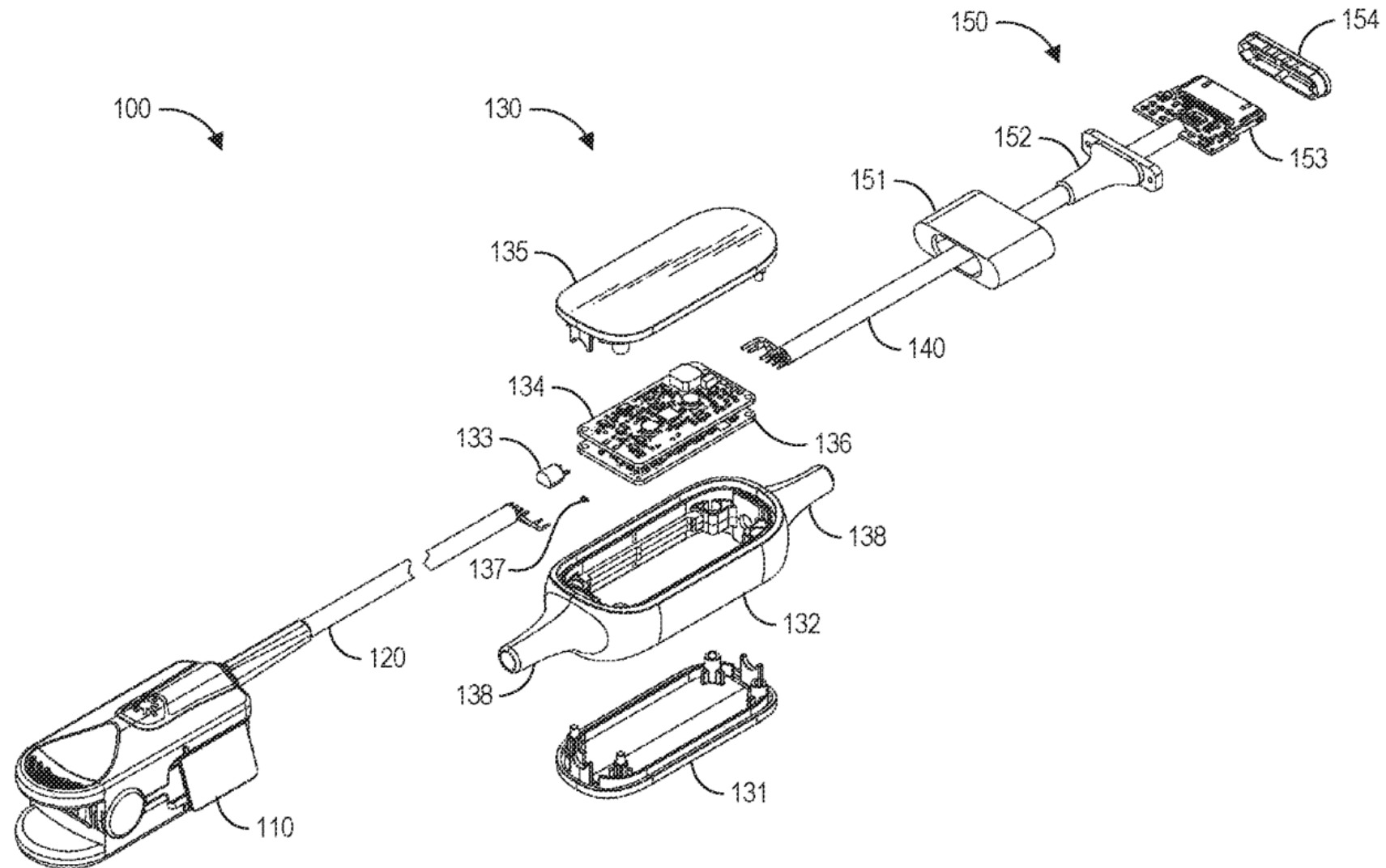


Fig. 3. Sample PDA Graphical User Interface (GUI).

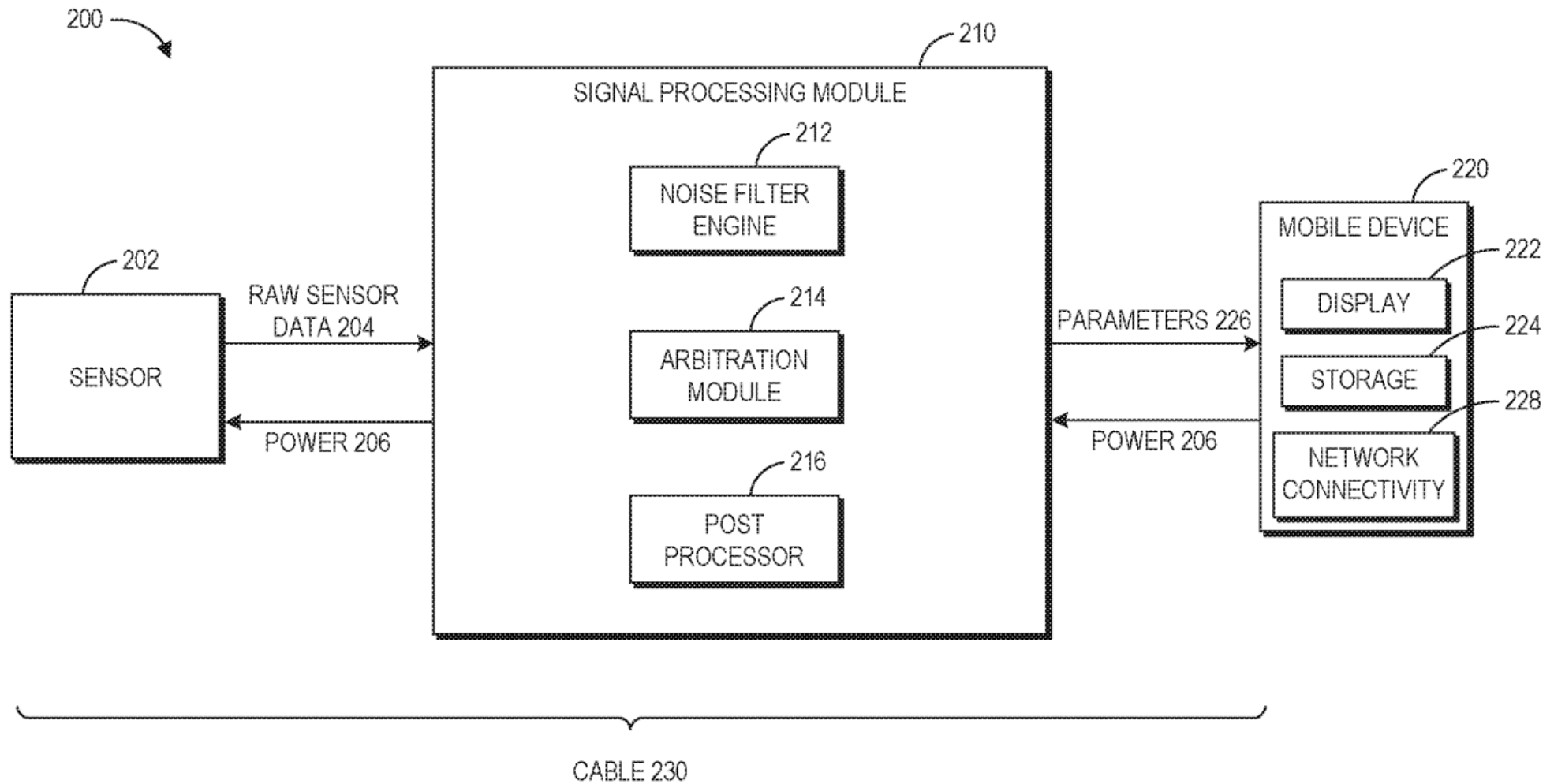
'507 Figure 1A



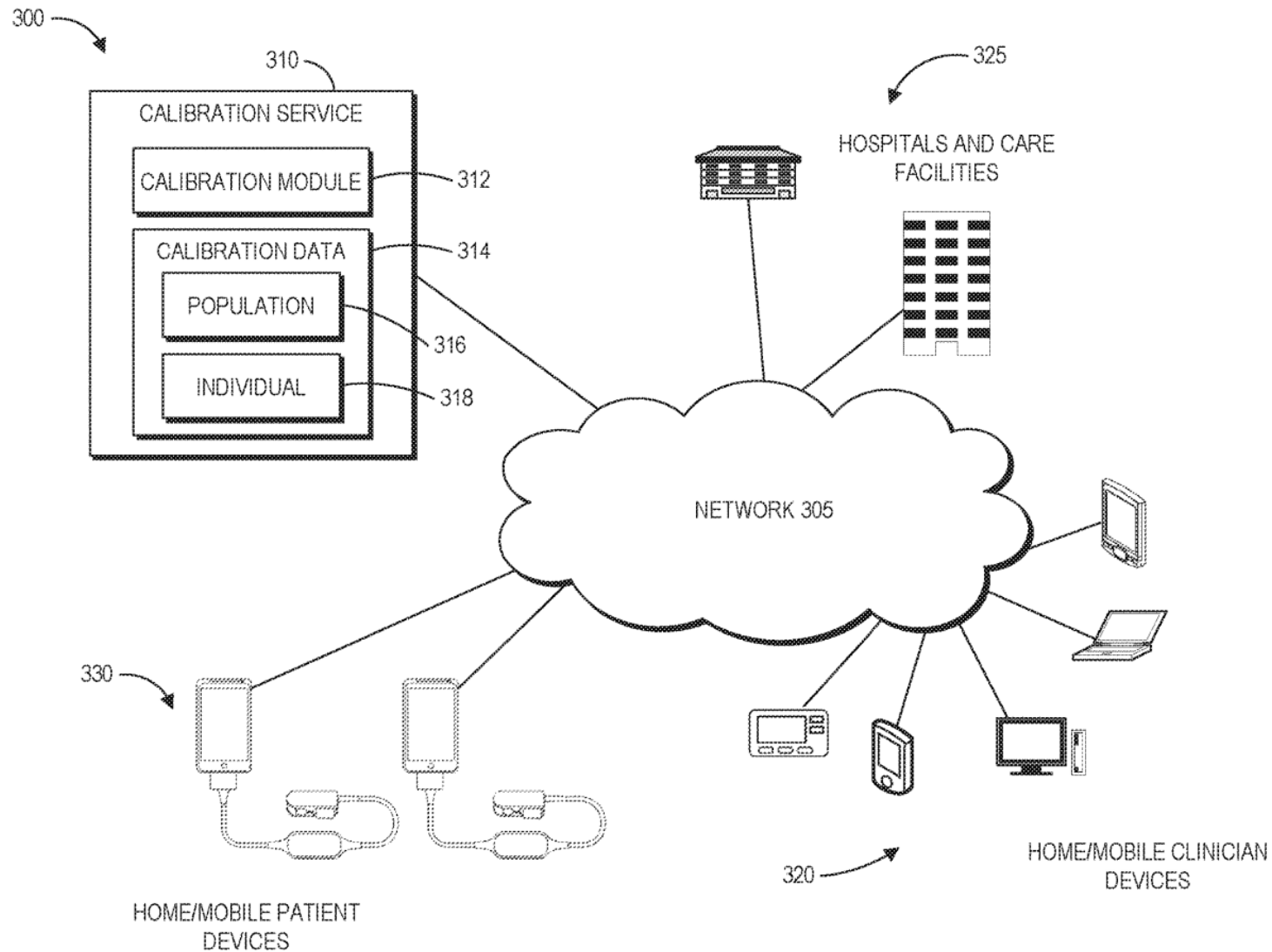
'507 Figure 1C



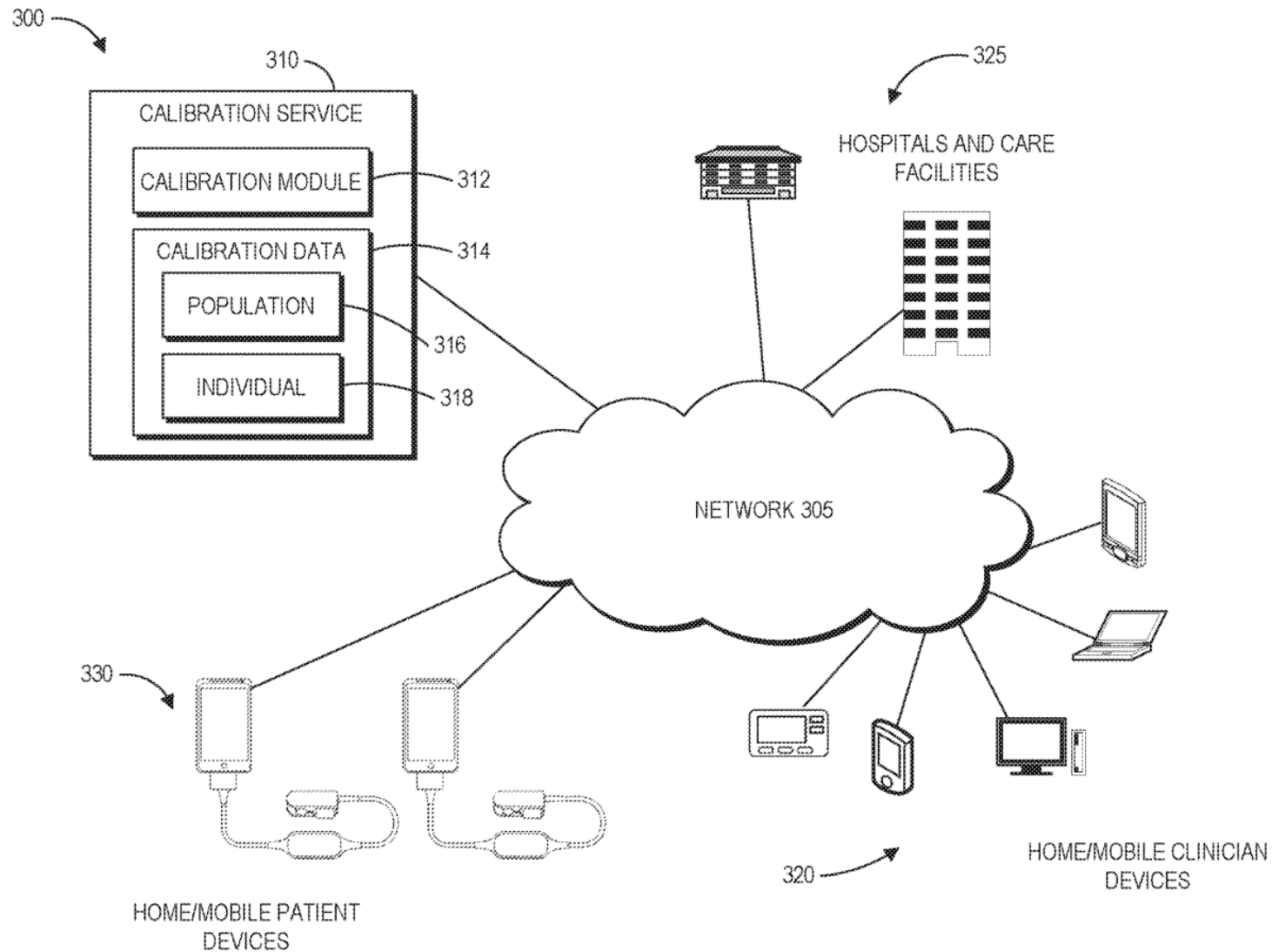
'507 Figure 2



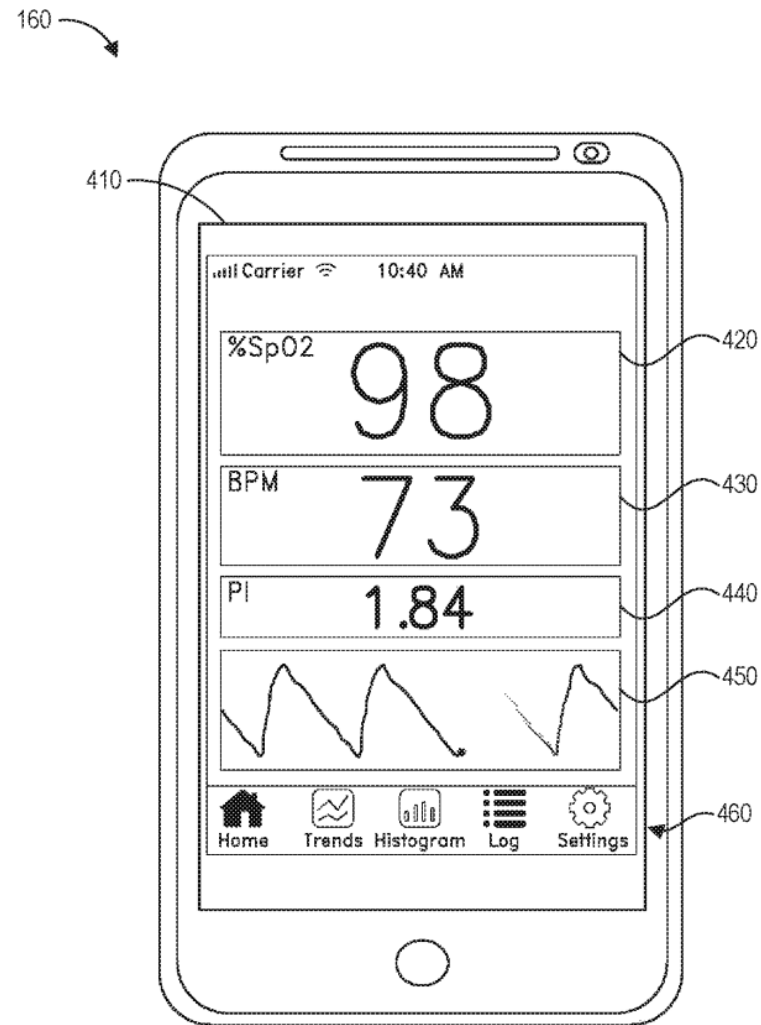
'507 Figure 3



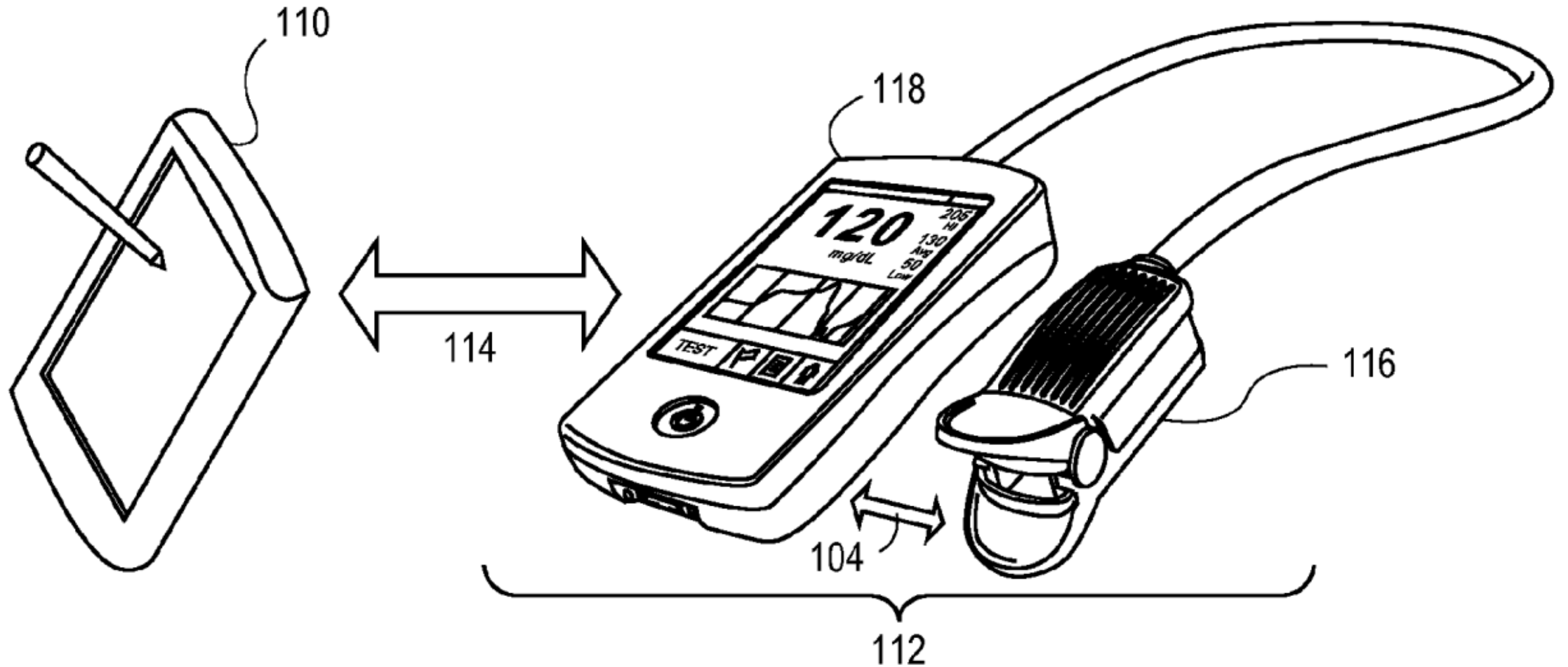
'507 Figure 3



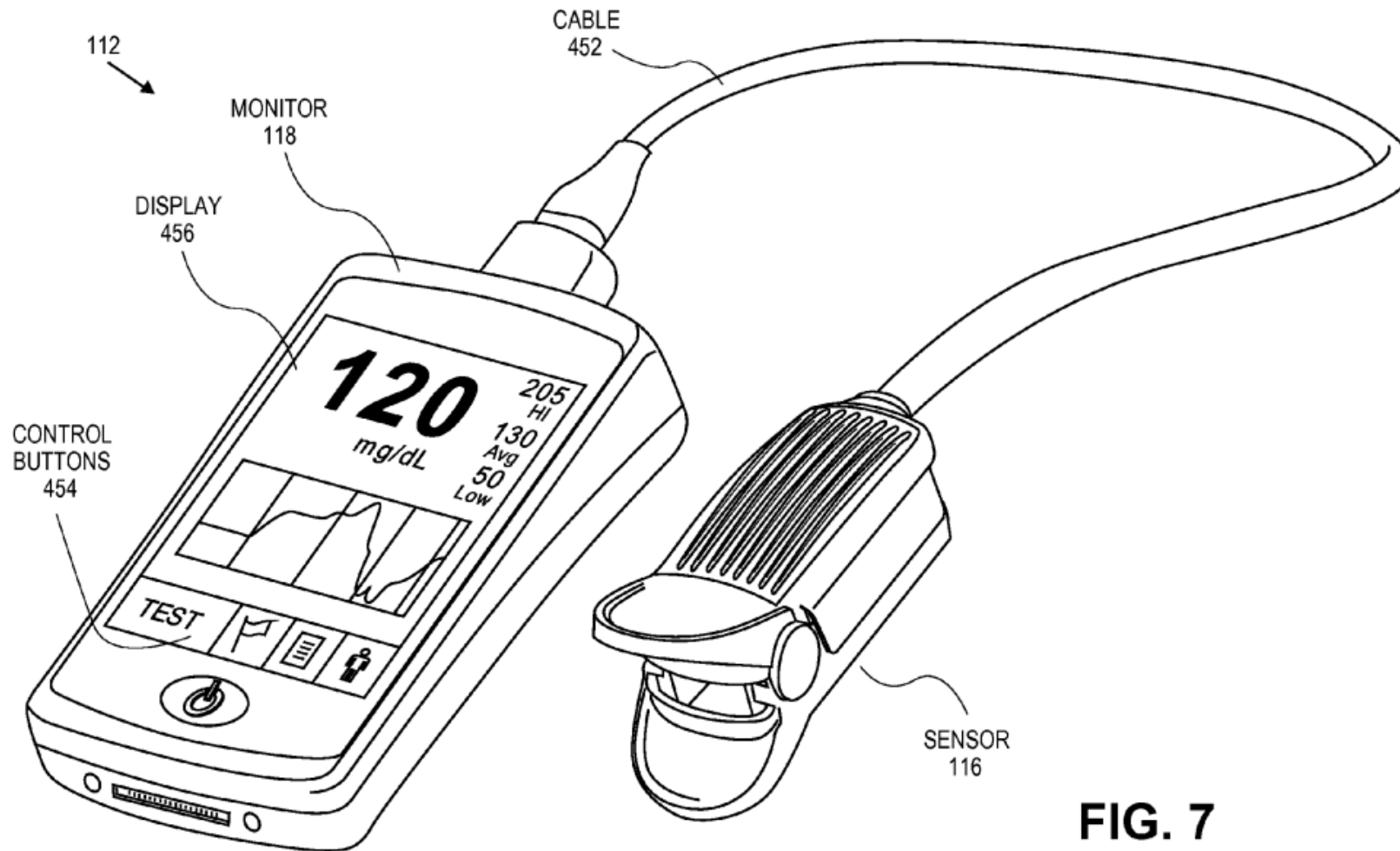
'507 Figure 4



Poeze Figure 1B



Poeze Figure 7



Poeze Figure 8

