

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner,

v.

MASIMO CORPORATION,
Patent Owner

Case IPR2024-00294
U.S. Patent 10,736,507

**PETITIONER'S SUR-REPLY TO PATENT OWNER'S REPLY TO
PETITIONER'S OPPOSITION TO
PATENT OWNER'S REVISED MOTION TO AMEND**

TABLE OF CONTENTS

I.	SUB. CLAIMS 21-24 LACK WRITTEN DESCRIPTION SUPPORT	1
A.	PO has still not identified support for any of the sub. claims	1
1.	Element [21n] Lacks Written Description Support	3
2.	Claim 23 Lacks Written Description Support.....	4
II.	SUB. CLAIMS 21 AND 22 ARE INDEFINITE	4
A.	Element [21p] is Indefinite.....	4
B.	Element [22c] is Indefinite.....	5
III.	PETITIONER’S CITATION TO THE PETITION IS ENTIRELY PROPER.	5
IV.	THE PRIOR ART RENDERS THE SUB. CLAIMS OBVIOUS.....	7
A.	The Opp. Does Not Rely on Hindsight	7
B.	Sub. Claim 21 is Obvious.....	8
1.	Poeze Discloses the Claimed “one or more analog signals”	8
2.	The Opp. to RMTA Does Not Rely on Combining Different Embodiments of Poeze.....	11
3.	It Was Obvious to Mount Poeze’s ADC and Signal Processor 510 on a Circuit Board Based on Pakula’s Suggestion.....	13
4.	It Would Have Been Obvious to Apply Kianl and Baba’s Teachings to Poeze.....	15
C.	Sub. Claim 22 is Obvious.....	19
1.	RMTA Grounds 1C, 2C, 3C, and 4C render claim 22 obvious	19
2.	RMTA Grounds 1B, 2B, 3B, and 4B render claim 22 obvious	19
D.	Sub. Claim 23 is Obvious.....	20

1. RMTA Grounds 1D, 2D, 3D, and 4D render claim 23 obvious...20

2. RMTA Grounds 1A, 2A, 3A, and 4A render claim 23 obvious...20

E. Sub. Claim 24 is Obvious.....20

LIST OF EXHIBITS

APPLE-1001	U.S. Patent No. 10,736,507 (“the ’507 patent”)
APPLE-1002	U.S. Patent No. 10,736,507 File History
APPLE-1003	Declaration of Dr. Thomas Kenny
APPLE-1004	RESERVED
APPLE-1005	U.S. Patent Application Pub. No. 2008/0004904 to Tran (“Tran”)
APPLE-1006	U.S. Patent No. 6,658,276 to Kianl et al. (“Kianl”)
APPLE-1007	Lorenzo T. D’Angelo, et al., A Sensor Network to iPhone Interface Separating Continuous and Sporadic Processes in Mobile Telemedicine, 33rd Annual International Conference of the IEEE EMBS Boston, Massachusetts USA, August 30 - September 3, 2011 (“D’Angelo”)
APPLE-1008	U.S. Patent No. 7,812,826 to Ording et al. (“Ording”)
APPLE-1009	U.S. Patent Application Pub. No. 2007/0093786 to Goldsmith et al. (“Goldsmith”)
APPLE-1010	U.S. Patent Application Pub. No. 2010/0324387 to Moon et al. (“Moon”)
APPLE-1011	Y. Mendelson, et al., A Wearable Reflectance Pulse Oximeter for Remote Physiological Monitoring, Proceedings of the 28th IEEE EMBS Annual International Conference New York City, USA, Aug 30-Sept 3, 2006
APPLE-1012	Declaration of June Munford
APPLE-1013	U.S. Patent No. 8,195,848 to Jones (“Jones”)

- APPLE-1014 Exemplary Infringement Claim Chart for the '507 patent from Apple Inc. v. PO Corporation et al., Case No. 1-22-cv-01378 (D. Del. Oct. 20, 2022)
- APPLE-1015 Exemplary Infringement Claim Chart for the '911 patent from Apple Inc. v. PO Corporation et al., Case No. 1-22-cv-01378 (D. Del. Oct. 20, 2022)
- APPLE-1016 – 1059 [RESERVED]
- APPLE-1060 U.S. District Courts—Combined Civil and Criminal Federal Court Management Statistics (Sep. 30, 2023) | United States Courts (uscourts.gov),
https://www.uscourts.gov/sites/default/files/data_tables/fcms_na_distprofile0630.2023.pdf
- APPLE-1061 Memorandum, Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation (USPTO June 21, 2022) (“Director’s Guidance”)
- APPLE-1062 Apple’s Complaint for Patent Infringement (Design), Apple Inc., v PO Corporation, et al., Case No. 1-22-cv-01377 (D. Del. Oct. 20, 2022)
- APPLE-1063 Apple’s Complaint for Patent Infringement (Utility), Apple Inc., v PO Corporation, et al., Case No. 1-22-cv-01378 (D. Del. Oct. 20, 2022)
- APPLE-1064 Defendant PO Corporation’s Answer to Complaint and Counterclaims, Apple Inc., v PO Corporation, et al., Case No. 1-22-cv-01378 (D. Del. Dec. 12, 2022)
- APPLE-1065 Order Granting Joint Motion to Amend the Case Schedule, Apple Inc., v PO Corporation, et al., Case No. 1-22-cv01378 (D. Del. Sep. 21, 2023)

APPLE-1066 Stipulation by Apple Inc.

APPLE-1067 Email Identifying PO's District Court Invalidity Grounds (Nov. 16, 2023)

APPLE-1068 Excerpt of Apple's District Court Expert Invalidity Report, *Apple Inc., v PO Corporation, et al.*, Case No. 1-22-cv-01378 (Nov. 22, 2023)

APPLE-1069 Order Granting Unopposed Motion to Stay Certain Patent Counterclaims, *Apple Inc., v PO Corporation, et al.*, Case No. 1-22-cv-01378 (Jan. 10, 2023)

APPLE-1070 – 1074 [RESERVED]

APPLE-1075 Joint Letter for March 20, 2024 Case Management Conference, *Apple Inc., v Masimo Corporation, et al.*, Case No. 1-22-cv-01378 (Mar. 16, 2024)

APPLE-1076 Combined Civil and Criminal Federal Court Management Statistics (Dec. 31, 2023) | United States Courts (uscourts.gov), available at: https://www.uscourts.gov/sites/default/files/fcms_na_distprofile1231.2023_0.pdf

APPLE-1077 Median Time to Disposition in Cases Terminated After Hearing or Submission | United States Court of Appeals for the Federal Circuit (Sep. 30, 2023), available at: [MedDispTimeMERITS-Table-FY23.pdf \(uscourts.gov\)](https://www.uscourts.gov/sites/default/files/MedDispTimeMERITS-Table-FY23.pdf)

APPLE-1078 *Sotera* Stipulation by Apple Inc.

APPLE-1079 Board Email Authorizing Motion to Strike and Evidence

APPLE-1080 Email Record of Meet-and-Confer Regarding Patent Owner Response, Petitioner Reply, and Patent Owner Sur-Reply Deadline Extensions

APPLE-1081 Email Record of Meet-and-Confer Regarding Motion to Strike

APPLE-1082	Declaration of Gordon MacPherson
APPLE-1083	Second Declaration of Dr. Thomas Kenny
APPLE-1084	Definition of “responsive” from Chambers Concise Dictionary, Chambers Harrap Publishers Ltd. (2009)
APPLE-1085	Definition of “responsive” from Bloomsbury English Dictionary, Bloomsbury Publishing Plc (2004)
APPLE-1086	Definition of “response” from The New Penguin Dictionary of Civil Engineering, Penguin Books (2005)
APPLE-1087	Transcript of the Deposition of Dr. R. James Duckworth (December 20, 2024)
APPLE-1088	RESERVED
APPLE-1089	RESERVED
APPLE-1090	RESERVED
APPLE-1091	U.S. Patent Application Pub. No. 2006/0253010 to Brady et al. (“Brady”)
APPLE-1092	U.S. Patent No. 7,598,878 to Goldreich (“Goldreich”)
APPLE-1093	U.S. Patent Application Pub. No. 2013/0069431 to Tseng et al. (“Tseng”)
APPLE-1094	J. Hudson, et al., Usability Testing of a Prototype Phone Oximeter with Healthcare Providers in High- and Low-Medical Resource Environments, 67 Anaesthesia 957-67 (2012) (“Hudson”)
APPLE-1095	Joseph A. Sankman, et al., Development of a Remote Pulse Oximeter, Bachelor’s thesis, University of Arizona (2010)
APPLE-1096	RESERVED

APPLE-1097	Walter Karlen, et al., Human-Centered Phone Oximeter Interface Design for the Operating Room, Proceedings of the International Conference on Health Informatics, Rome, Italy, SciTePress, 433-38 (2011)
APPLE-1098	Press Release, EDN, Nonin Medical Launches Low Power Xpod® Model 3012LP, OEM Pulse Oximeter Globally (May 3, 2011) available at https://www.edn.com/nonin-medical-launches-low-power-xpod-model-3012lp-oem-pulse-oximeter-globally/
APPLE-1099	Nonin, Xpod®: External EOM Pulse Oximeter (February 9, 2011) available at http://www.nonin.com/OEMSolutions/Xpod
APPLE-1100	U.S. Patent Application Pub. No. 2010/0146463 to Cho et al.
APPLE-1101	U.S. Patent No. 7,650,176 to Sarussi et al.
APPLE-1102	U.S. Patent No. 7,468,036 to Rulkov et al.
APPLE-1103	U.S. Patent Application Pub. No. 2009/0231960 to Hutcheson
APPLE-1104	U.S. Patent Application Pub. No. 2007/0173705 to Teller et al.
APPLE-1105	U.S. Patent Application Pub. No. 2007/0016053 to Lo et al.
APPLE-1106	Arpita Shah, PDA based ambulatory pulse oximeter, New Jersey Institute of Technology, May 2006 (“Shah”)
APPLE-1107	Transcript of the Deposition of Bilal Muhsin (January 8, 2025)
APPLE-1108	Second Declaration of June Munford
APPLE-1109	Third Declaration of Dr. Thomas Kenny
APPLE-1110	U.S. Patent Application Pub. No. 2011/0082711 to Poeze et al. (“Poeze”)
APPLE-1111	U.S. Patent Application Pub. No. 2010/0030040 to Poeze et al. (“Poeze-040”) (incorporated by reference in APPLE-1084)

APPLE-1112	U.S. Patent Application Pub. No. 2006/0211924 to Dalke et al. (“Dalke”) (incorporated by reference in APPLE-1084)
APPLE-1113	U.S. Patent Application Pub. No. 2011/0187245 to Pakula et al. (“Pakula”)
APPLE-1114	U.S. Patent Application Pub. No. 2003/0176815 to Baba et al. (“Baba”)
APPLE-1115	U.S. Patent Application Pub. No. 2009/0149299 to Tchao et al. (“Tchao”)
APPLE-1116	U.S. Patent Application Pub. No. 2011/0003665 to Burton et al. (“Burton”)
APPLE-1117	U.S. Patent No. 6,443,614 to Read (“Read”)
APPLE-1118	PCT Pub. No. WO2011/127446 to Soden et al. (“Soden”)
APPLE-1119	U.S. Patent Application Pub. No. 2010/0113950 to Lin et al. (“Lin”)
APPLE-1120	U.S. Patent No. 6,970,792 to Diab (“Diab”)
APPLE-1121	U.S. Patent No. 7,712,970 to Lee (“Lee”)
APPLE-1122	U.S. Patent No. 6,869,315 to Nakai et al. (“Nakai”)
APPLE-1123	U.S. Patent Application Pub. No. 2005/0265668 to Martin (“Martin”)
APPLE-1124	U.S. Patent Application Pub. No. 2004/0089570 to Chien et al. (“Chien”)
APPLE-1125	U.S. Patent Application Pub. No. 2011/0194234 to Kim et al. (“Kim”)

APPLE-1126	U.S. Patent Application Pub. No. 2011/0216482 to Moscovitch et al. (“Moscovitch”)
APPLE-1127	U.S. Patent No. 7,649,741 to Liu (“Liu”)
APPLE-1128	U.S. Patent Application Pub. No. 2008/0223892 to Hamilton (“Hamilton”)
APPLE-1129	U.S. Patent Application Pub. No. 20120122519 to Jochheim (“Jochheim”)
APPLE-1130	U.S. Patent Application Pub. No. 2010/0004522 to Varela (“Varela”)
APPLE-1131	U.S. Patent Application Pub. No. 2009/0171170 to Li et al. (“Li”)
APPLE-1132	Pomona Model 3231 Size B Aluminum Box With Cover BNC Male/Female specification (1999)
APPLE-1133	Pomona Model 3301 Size F Extruded Aluminum Box With Cover specification (1999)
APPLE-1134	Transcript of the Deposition of Dr. R. James Duckworth (May 13, 2025)

LISTING OF SUBSTITUTE CLAIMS

Claim 21 (Substitute for claim 13)	
[21pre]	A computer-implemented method of informing a user of mobile measurement of oxygen saturation (“SpO2”), the computer-implemented method comprising:
[21a]	outputting, from an optical sensor of an SpO2 measurement system, one or more <u>analog</u> signals responsive to light from a light source attenuated by tissue of the user at a measurement site, said one or more <u>analog</u> signals responsive to an oxygen saturation of said tissue; and
[21b]	via a processing board of the SpO2 measurement system, the processing board in data communication with the optical sensor and a <u>smartphone</u> mobile computing device including a <u>touch-sensitive smartphone</u> display:
[21c]	receiving <u>through a wired connection</u> said one or more <u>analog</u> signals from the optical sensor;

[21d]	processing said one or more <u>analog</u> signals to generate the SpO2 measurement values <u>and heart rate</u> ; and
[21e]	<u>wirelessly</u> outputting the SPO2 measurement values <u>and heart rate</u> to the <u>smartphone</u> mobile computing device; and
[21f]	via an application configured to execute commands on the <u>smartphone</u> mobile computing device:
[21g]	generating a graphical user interface having a plurality of display portions <u>on the touch-sensitive smartphone display</u> ;
[21h]	displaying, in at least one portion of the plurality of display portions <u>at one or more times</u> , a representation of a physiological parameter of a plurality of physiological parameters comprising the SpO2 measurement values;
[21i]	<u>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</u> ;

[21j]	<u>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;</u>
[21k]	<u>displaying, in at least one portion of the plurality of display portions at one or more times, a graphical representation of a heart; and</u>
[21l]	displaying, in a different portion of the plurality of portions, a plurality of user inputs configured to allow the user to <u>use the touch-sensitive smartphone display to</u> interact with at least one of the plurality of display portions or the application;
[21m]	<u>wherein the computer-implemented method is configurable to authenticate user data access by using at least one of fingerprint, facial, and voice recognition technologies;</u>
[21n]	<u>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</u>

	<u>the openings such that the perimeter lip surrounds at least a portion of perimeter sides of the upper and lower shells;</u>
[21o]	<u>the light from the light source comprises at least red and infrared light; and</u>
[21p]	<u>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.</u>
Claim 22 (Substitute for claim 14)	
[22pre]	The mobile pulse oximetry system of claim [[13]] <u>21</u> , further comprising, via the application:
[22a]	performing a trend analysis on received SpO ₂ measurement values; and
[22b]	displaying results of the trend analysis in at least one portion of the plurality of display portions;

[22c]	<u>wherein the processing said one or more analog signals comprises applying an advanced signal processing algorithm with data filtering.</u>
Claim 23 (Substitute for claim 17)	
[23a]	The computer-implemented method of claim [[13]] <u>21</u> , 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;
[23b]	<u>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;</u>
[23c]	<u>wherein the sensor and processing board are provided together with a wrist-mounted device.</u>

Claim 24 (Substitute for claim 19)

[24]	The computer-implemented method of claim ~~[[13]]~~<u>21</u>, <u>wherein the protective assembly is configured to protect sensitive</u> <u>circuitry of the processing board from water damage</u> ~~further~~ ~~comprising wirelessly transmitting the SpO2 measurement values~~ ~~from the SpO2 measurement system to the mobile computing~~ ~~device.~~
------	--

**LISTING OF GROUNDS FROM OPPOSITION TO PATENT
OWNER'S REVISED MOTION TO AMEND**

Ground	Claim(s)	35 U.S.C. § 103
RMTA 1A	21, 23-24	Poeze (APPLE-1110) in view of Kianl (APPLE-1006), Baba (APPLE-1114), and Pakula (APPLE-1113)
RMTA 1B	22	Poeze in view of Kianl , Baba , Pakula , and Moon (APPLE-1010)
RMTA 1C	22	Poeze in view of Kianl , Baba , Pakula , and Diab (APPLE-1120)
RMTA 1D	23-24	Poeze in view of Kianl , Baba , Pakula , and Teller (APPLE-1104)
RMTA 2A	21, 23-24	Poeze in view of Kianl , Baba , Pakula , and Lin (APPLE-1119)
RMTA 2B	22	Poeze in view of Kianl , Baba , Pakula , Lin , and Moon
RMTA 2C	22	Poeze in view of Kianl , Baba , Pakula , Lin , and Diab
RMTA 2D	23-24	Poeze in view of Kianl , Baba , Pakula , Lin , and Teller
RMTA 3A	21, 23-24	Poeze in view of Kianl , Baba , and Soden (APPLE-1118)
RMTA 3B	22	Poeze in view of Kianl , Baba , Soden , and Moon

Ground	Claim(s)	35 U.S.C. § 103
RMTA 3C	22	Poeze in view of Kianl, Baba, Soden, and Diab
RMTA 3D	23-24	Poeze in view of Kianl, Baba, Soden, and Teller
RMTA 4A	21, 23-24	Poeze in view of Kianl, Baba, Soden, and Lin
RMTA 4B	22	Poeze in view of Kianl, Baba, Soden, Lin, and Moon
RMTA 4C	22	Poeze in view of Kianl, Baba, Soden, Lin, and Diab
RMTA 4D	23-24	Poeze in view of Kianl, Baba, Soden, Lin, and Teller

The substitute claims presented in Patent Owner (“PO”) Masimo’s Revised Motion to Amend (RMTA) lack written description support, are indefinite and are rendered obvious by the known prior art. Despite Petitioner identifying numerous flaws in the substitute claims and RMTA, PO’s Reply fails to identify how any of the claim elements are supported by the specification or the “objective boundaries” of the elements identified as indefinite. Moreover, PO fails to demonstrate that its substitute claims are patentable in light of the identified prior art by often ignoring the express disclosures of the references themselves.

I. SUB. CLAIMS 21-24 LACK WRITTEN DESCRIPTION SUPPORT

A. PO has still not identified support for any of the sub. claims

Despite Petitioner informing PO of its obligation “to explain how the material cited in the claim chart supports the claims,” PO has not even attempted to do so in its Reply. *NeuroDerm Ltd. v. AbbVie Inc.*, PGR2022-00040, Paper 77 at 15 (PTAB Oct. 31, 2023). This failure of PO alone is dispositive, demonstrating that the RMTA fails to meet the burden of CFR §42.121 to set forth written description support for the substitute claims.

PO’s Reply misapplies the cited case law. In *Ariad Pharms.*, the court’s holding concerned “the level of detail required to satisfy the written description requirement” *in the specification*, not the level of detail with which a patent owner is required to identify support for claim amendments. 598 F.3d 1336, 1351 (Fed.

Cir. 2010). PO similarly misinterprets *PEAG LLC*. While it is true that the Board in that case “decline[d] to adopt a *per se* rule that string citations, in general, are not sufficient” to establish written description support, that panel also made clear that patent owners need to “provide[] citations to specific paragraphs and figures of the [original] application ***for each annotated claim element*** of each proposed substitute claim.” IPR2020-01213, Paper 26 at 6 (PTAB July 21, 2021) (“In this case, Patent Owner provides ***different citations for each different element*** of the claims.”) (all emphasis added unless otherwise noted). Indeed, PO is required to explain how the various citations “support[] each of the proposed substitute ***limitations***”; a burden it has not even attempted to meet. *B.E. Tech., L.L.C. v. Google, Inc.*, 2016 WL 6803057 at *7 (Fed. Cir. Nov. 17, 2016).

“It is not the responsibility of the Board to search through the string citations to find sufficient written description support for each element” and as such, the Board should “decline Patent Owner’s invitation to do so.” *Intel Corp. v. Alacritech Inc.*, IPR2017-01391, Paper 81 at 43 (PTAB Nov. 26, 2018) (citing *Respironics, Inc. v. Zoll Med. Corp.*, IPR2013-00322, Paper 46 at 24 (PTAB Sept. 17, 2014)(“Zoll’s string citations amount to little more than an invitation to us (and to [Petitioner], and to the public) to peruse the cited evidence and piece together a coherent argument for them. This we will not do; it is the province of advocacy.”)).

PO's single string citation in the RMTA is entirely inadequate to provide sufficient guidance to the fact finder to determine whether or not the original specification included the required level of detail to support the **16 bullet points** of claim amendments identified by PO for sub. claim 21. While simple "identification of the relevant disclosure" is sufficient to show written description support in some cases, PO has not met even this bare minimum requirement by failing to identify specific disclosure for each claim limitation. IPR2020-01213, Paper 26 at 6. The Board should decline PO's invitation "to play archaeologist with the record." *DeSilva v. DiLeonardi*, 181 F.3d 865, 866-67 (7th Cir. 1999).

Finally, the fact that page limit restrictions limited Apple to addressing the lack of written description support for only a select number of elements does not relieve PO of its burden to identify support for each and every claim element.

1. Element [21n] Lacks Written Description Support

PO insists that "[t]he claimed ledge and lip are present in both upper and lower openings" ***yet does not point to any structures that it considers to be support*** for the respective "ledge and lip" for each opening. Paper 53, 4. Indeed, PO's expert stated that the claimed lower ledge and lip are not depicted in FIG. 1C. APPLE-1134, 172:8-173:4. PO points to alleged "protrusions" and "mating structures" without identifying if it believes these structures represent the claimed inner ledges, perimeter lips, both, or neither. *Id.* Furthermore, FIG. 1C's limited

view fails to support PO's allegations that the identified structures are identical or corresponding. Additionally, the internal lines of enclosure 132 are different near the bottom when compared to the top, undermining PO's assertion that the top and bottom are the same. Finally, Petitioner has never alleged that the lower shell 131 would not seal with the enclosure 132. Rather, Petitioner pointed out that such sealing does not inherently involve a "perimeter lip [that] surrounds at least a portion of perimeter sides of the...lower shell." Opp., 2-3.

2. Claim 23 Lacks Written Description Support

PO did not even attempt to rebut any of Petitioner's arguments regarding lack of written description support for element [23c]. Opp., 6. For this reason alone, claim 23 lacks written description support. With respect to [23b], PO asserts "[t]he enclosure has a transition for each of these tapered support members" yet cites to no support for this assertion and does not identify what disclosures in the specification represent such transitions. Paper 53, 6. PO's arguments with respect to [23b] are flawed for numerous additional reasons, as discussed at Opp., 4-6.

II. SUB. CLAIMS 21 AND 22 ARE INDEFINITE

A. Element [21p] is Indefinite

PO's expert asserts that "a POSITA would understand the scope of the included-together limitation with reasonable certainty" yet neither PO nor its expert makes any attempt to identify this supposed apparent scope. EX2058, ¶¶45-

47; Paper 53, 10-12. If the scope of this element were so apparent, Dr. Duckworth should have been able to articulate it. Indeed, under questioning, Dr. Duckworth was unable to determine if straight forward examples from Poeze fell within the scope of this “included-together” limitation, indicating that the scope of this element is far from clear. APPLE-1134, 103:4-109:5. This claim term is indefinite.

B. Element [22c] is Indefinite

Dr. Duckworth asserts that “parallel engines and/or adaptive filters” fall within the scope of this claim element but refused to articulate whether this claim term is limited to these two forms of processing or could include additional forms of processing. EX2058, ¶51; APPLE-1134, 187:5-192:15. He was also unable to determine if other forms of processing would fall within the scope of this term. *Id.* Dr. Duckworth’s inability to identify what forms of processing fall within the scope of this claim element demonstrate its indefiniteness.

III. PETITIONER’S CITATION TO THE PETITION IS ENTIRELY PROPER

References to the Petition made by Petitioner in the Opp. brief addressing teachings of the previously identified prior art with respect to original claim limitations and the benefits achieved by applying features described in the prior art into known pulse-oximetry systems are entirely proper. On this issue, PO once again presents an incomplete and inaccurate framing of the relevant case law.

For example, far from representing a blanket ban on citation to earlier briefs from the same proceeding, as PO implies, the order in *Cisco Sys.* (cited at Paper 53, 13) addressed special briefing granted in response to a change in law due to the Federal Circuit's decision in *Aqua Prods., Inc. v. Matal*. Specifically, the supplemental briefing in *Cisco* was limited to "limitations not previously addressed by Petitioners based on the prior art in the record" and as such, similar to the present case, the Petitioner did not need to address application of prior art to claim elements that had already been addressed in previous briefs in the proceeding. IPR2016-01257, Paper 57, 6 (PTAB Oct. 19, 2017). Similarly, in *Samsung Elecs.*, the Petitioner was advised to "focus its Opposition on the newly-added limitations" because application of the prior art to original claim limitations that had been presented in previous briefs was not necessary. IPR2017-00037, Paper 21 at 3-4 (PTAB Oct. 18, 2016). That is precisely the case here. Petitioner already addressed application of the teachings of Kianl and Moon to original claim elements in the Petition and therefore was not required to repeat that analysis in the Opp. brief. *See Tesla, Inc. v. Autonomous Devices, LLC*, IPR2023-01169, Paper 44 at 89-92 (PTAB Jan. 6, 2025) (finding that citation to the Petition in the Opposition is not an improper incorporation by reference). Indeed, "the Board '***must consider the entirety of the record*** before it when assessing the patentability of amended claims.'" *Nike, Inc. v. Adidas AG*, 955 F.3d 45, 51-52 (Fed. Cir. 2020) (quoting

Aqua Prods., Inc. v. Matal, 872 F.3d 1290 (Fed. Cir. 2017) (en banc)). Such a wholistic assessment of the record ensures “that patent monopolies are kept within their legitimate scope.” *Titan, Inc. v. Dyna Energetics Eur. GmbH*, 28 F.4th 1371, 1380 (Fed. Cir., 2022) (quoting *Oil States Energy Servs., LLC v. Greene's Energy Grp., LLC*, 138 S. Ct. 1365, 1374 (2018)).

The remaining cases cited by PO (Paper 53, 13-14) are inapplicable as they relate to improper incorporation by reference of an expert declaration or secondary considerations of non-obviousness evidence into a brief. That is simply not the case here. Petitioner already properly provided analysis of the application of Kianl and Moon to the original claim elements in a paper on the record, the Petition, and therefore was not required repeat that analysis in the Opp. brief.

IV. THE PRIOR ART RENDERS THE SUB. CLAIMS OBVIOUS

A. The Opp. Does Not Rely on Hindsight

Petitioner identified multiple reasons that would have prompted a POSITA to modify Poeze’s system in the proposed manner to achieve known benefits for each proposed combination in the Opp. brief. Opp., 9, 11-14, 16, 18, 27-29, 32, 34-36, 38-39. As such, the Opp. properly identifies why a POSITA “would have selected these components for combination in the manner claimed” and identifies how the resulting system provides each claim element of the claims as a whole rather than “simply identify[ing] individual claim components” as PO asserts. *In*

Re Kotzab, 217 F.3d 1365, 1371 (Fed. Cir. 2000). As held by the Supreme Court in *KSR*, “[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *KSR Int. Co. v. Teleflex Inc.*, 550 U.S. 398, 415-16 (2007). Such is the case here.

B. Sub. Claim 21 is Obvious

1. Poeze Discloses the Claimed “one or more analog signals”

As discussed in the Opp., Poeze’s “detectors 506 capture and measure light from the measurement site” and the “output of the detectors 506...is responsive to desired physiological parameters” including “oxygen saturation (SpO2).” APPLE-1110, [0106], [0120], [0114]. As such, these output signals represent the data actually acquired by the detectors. As shown in FIG. 8, the front-end interface 508 directly receives the signal 524 from the

detectors 506 and this “is an analog signal.” *Id.*, [0120]; APPLE-1134, 52:18-53:18. Poeze also expressly states that “[t]he *front-end interface 508 can have its components assembled* in the

sensor 116 [or] *in the monitor 118.*” APPLE-1110, [0120]. Poeze therefore expressly discloses that the monitor 118 receives unprocessed, analog signals when the front-end interface 508 is assembled “in the monitor 118.” Furthermore, the

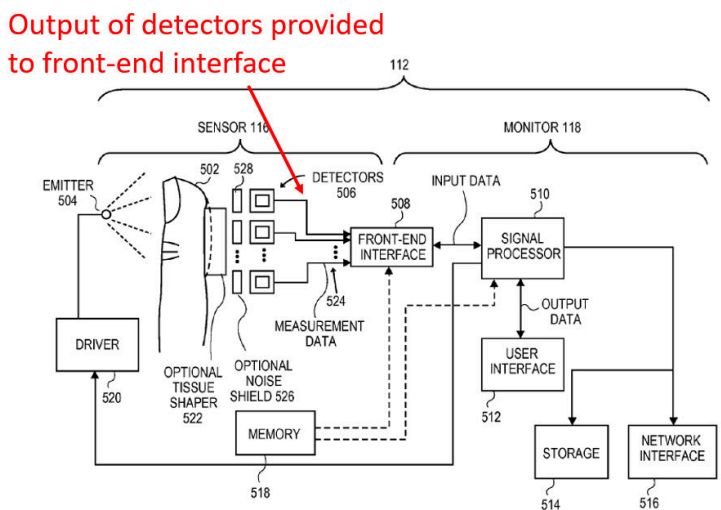


FIG. 8

Opp. properly identified obvious benefits that would have been achieved from mounting the signal processor 510, ADC, and front-end interface 508 on the same processing board (based on Pakula) in embodiments in which the front-end interface 508 is located in the monitor 118. Opp., 16. The Opp. therefore explained that the analog signals output by the detector are received by the processing board of the monitor 118 in the resulting combination. *Id.*, 15-17.

While PO's assertion that the analog signal must be converted "into a digital signal (another 'form') before it can be processed by the signal processor 510" is true (Paper 53, 21), the Opp. expressly identifies that this analog to digital conversion is performed by "*an ADC in the monitor 118*" that receives "the output of a transimpedance-based front-end interface 508." APPLE-1110, [0124]; Opp., 15-16; APPLE-1134, 33:15-34:9, 36:10-17 (Masimo's expert confirming that the PGA and ADC in monitor 118 receive an analog signal), 99:6-20. As discussed in the Opp., it would have been obvious to mount the components of Poeze's monitor 118 on a processing board, based on Pakula's suggestion, and therefore, in the predictable combination, the processing board of the monitor receives an analog signal that is converted to a digital signal by the ADC prior to reaching the signal processor 510. *Id.* This is true for both embodiments in which the front-end interface 508 is located within the monitor 118 and embodiments in which the front-end interface 508 is located outside of the monitor 118 because the Opp.

expressly relies upon embodiments in which the ADCs are “in the monitor 118.” Opp., 15 (citing APPLE-1110, [0122]-[0124]). PO’s assertion that “Apple relies on Poeze embodiments where the front-end interface 508 converts the detector signal to a digital signal before it reaches the monitor 118” (Paper 53, 22) has no basis, the Opp. expressly quotes Poeze’s description of “an ADC in the monitor 118.”

Notably, Poeze describes “another embodiment” in paragraph [0125] in which the front-end interface 508 “can provide a digital signal to the signal processor 510” yet this paragraph is *cited nowhere in the Opp.* In other words, the Opp. *never even cites to* the embodiment that PO now insists “Apple relies on.” PO’s assertion that the Opp. relies on an embodiment described in a single paragraph of Poeze that is never cited in the Opp. is simply wrong. As a side note, even if the Opp. had relied on this embodiment of Poeze (it did not), in such embodiments the monitor 118 would still receive an analog signal in configurations in which “front-end interface 508 [has] its components assembled...in the monitor 118.” APPLE-1110, [0120].

Responsive to PO’s assertion that “Apple never proposes removing the front-end interface 508 from Poeze’s sensor 116” (Paper 53, 22), there was no need for Apple to propose such an alleged modification because Poeze expressly describes embodiments in which “front-end interface 508 [has] its components assembled...in the monitor 118.” APPLE-1110, [0120]. However, even in

embodiments of Poeze in which the front-end interface 508 is “assembled in the sensor 116,” these embodiments still satisfy element [21c]’s requirement that the processing board (the components of Poeze’s monitor 118 mounted to a PCB as suggested by Pakula) receive “said one or more analog signals” because the Opp. expressly relies on embodiments in which the ADCs are “in the monitor 118.” Opp., 15 (citing APPLE-1110, [0122]-[0124]).

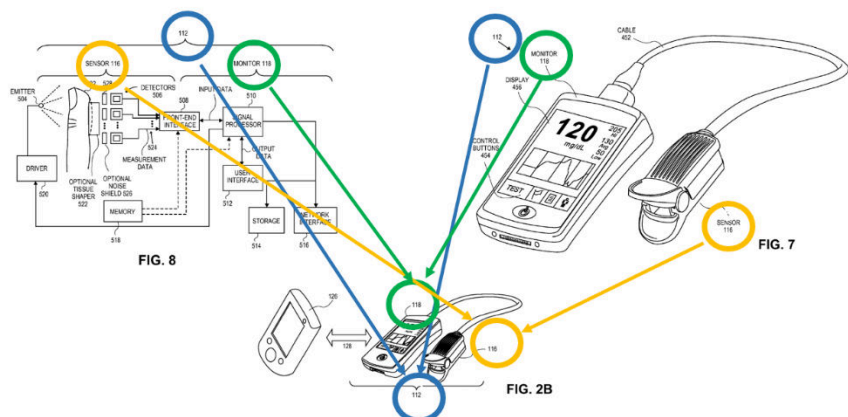
2. The Opp. to RMTA Does Not Rely on Combining Different Embodiments of Poeze

PO asserts that “Apple relies on multiple different embodiments of Poeze” without describing “how or why a POSITA would have modified or combined those embodiments to arrive at the claims.” Paper 53, 23-24. However, the Opp. clearly identifies what the “various embodiments’ relied upon are and how each of those embodiments individually provides the recited claim elements. Opp., 15. Specifically, the Opp. identifies that in embodiments in which the front-end interface 508 is located within the monitor 118 “the sensor 116 alone...provides the claimed optical sensor” and in other embodiments (where the front-end interface 508 is located in the sensor 116 or connecting cabling), “a combination of the sensor 116 and front-end interface 508 provides the claimed optical sensor.” *Id.* That is, the Opp. expressly states that regardless of whether the front-end interface 508 is located within or outside of the monitor 118, both arrangements provide

element [21a] because in both cases the ADCs are located “in the monitor 118,” thus indicating that the monitor 118 receives an analog signal in either case. *Id.*, see also *Id.*, 16 (indicating that the front-end interface 508 would be mounted to the circuit board (based on Pakula’s suggestion) “in some embodiments” in which the front-end interface 508 is located in the monitor 118). It is entirely proper for Petitioner to identify multiple mappings of the prior art to the claims.

Furthermore, the Opp. does not rely on different, disparate embodiments with respect to FIGs. 1B, 2B, 7, and 8, as PO implies, because all relevant disclosures relied upon with respect to those figures are directed toward the same embodiment. Specifically, the Opp. relies on FIGs. 1B, 7, and 8 only for their teachings with respect to the health data collection device 112 having sensor 116 and monitor 118, which are entirely applicable to FIG. 2B. Opp., 14-18; APPLE-1134, 127:7-128:22. The only difference between the embodiment of FIG. 1B and that of FIG. 2B is that FIG. 2B replaces the “personal health organizer 110” of FIG. 1B with a “general computing device 126” such as a smartphone. APPLE-1110, [0029], [0035]. The

fact that Poeze consistently uses the same terminology and reference numerals makes clear that



these disclosures all relate to the same embodiment. PO's assertion that these figures, which use the same reference numerals, somehow relate to distinct, disparate embodiments begs the question of whether PO (and its expert) have even read the Poeze reference.

3. It Was Obvious to Mount Poeze's ADC and Signal Processor 510 on a Circuit Board Based on Pakula's Suggestion

First, PO's assertion that "the ADC is not an internal component of Poeze's monitor 118" is directly refuted by the express disclosures of Poeze regarding "one or more analog to digital converters (ADCs) (*which can be in the monitor 118*)."

Pap. 53, 24-25; APPLE-1110, [0122]-[0124] ("*an ADC in the monitor*").

Second, the Opp. expressly discusses multiple benefits that would have been achieved by modifying "Poeze's system based on Pakula to include an improved electronic device housing for *mounting and protecting* the display and *internal electronics of Poeze's monitor 118*." Opp., 13-14; APPLE-1109, ¶¶42-49. That is, the Opp. identifies numerous benefits that a POSITA would have recognized as resulting from "robustly attaching" components to "support and protect" such components, as taught by Pakula. *Id.*; APPLE-1113, [0048]-[0049]. PO never addressed or refuted these predictable benefits that would have arisen from "mounting" or "attaching" of the components of Poeze's monitor 118 within the improved electronic device housing of Pakula. APPLE-1134, 131:20-135:8.

When addressing element [21b], the Opp. went on to describe that this “mounting” or “attaching” of internal electronic components within Pakula’s electronic device housing would have been implemented based on Pakula’s teachings to mount the internal processing components on a board (e.g., PCB) to achieve the benefits described by Pakula. Opp., 16 (citing APPLE-1113, [0066], [0069]-[0070], [0085]-[0086]). In other words, the Opp. identified multiple benefits that would have resulted from applying Pakula’s teachings to mount electrical components of Poeze’s monitor 118 within Pakula’s improved electronic device housing and Pakula further provides the details on how to mount such components: *by using a circuit board*. Opp., 13-14, 16.

Third, contrary to PO’s assertion that “none of Apple’s references even mention putting an ADC on the same board as the processor” (Pap. 53, 26), the Opp. expressly identifies corroborating references in support of the knowledge of a POSITA that such a configuration was known in prior art SpO2 measuring devices. Opp., 16. For example, Goldreich describes a “processor 314,” an A/D converter, and various other components of an SpO2 measuring device all “mounted on a PCB board 308.” APPLE-1092 11:6-20 (cited at Opp., 16).

4. It Would Have Been Obvious to Apply Kianl and Baba's Teachings to Poeze

The Opp. identified six reasons that would have prompted a POSITA to apply Kianl's teachings regarding display of historical trend data and input key icons to Poeze. Opp., 11-12; APPLE-1109, ¶¶28-36. PO does not dispute any of these benefits. Rather, PO alleges a vague teaching away that is, at most, an alternative configuration while asserting that fitting two trend graphs, two two-digit numbers, four small input key icons, and a small heart icon onto the touchscreen display of an iPhone would somehow be beyond the skill of a POSITA in 2012. Pap. 53, 28-32. Such farfetched assertions are woefully deficient.

PO asserts that a POSITA would have preferred to display Kianl's user interface elements "on the same device that generates the complex data and inputs." Pap. 53, 28. However, even if this assertion were true (which the record does not support), this would be, at most, an alternative configuration to that described in the Opp., not a teaching away. *See In re Mouttet*, 686 F.3d 1322, 1334 (Fed. Cir. 2012) (better alternative is not a teaching away); *In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004). Additionally, PO's insistence that Ground 1A must adopt Kianl's teachings to display input controls and trend data "on the same device that generates the complex data" improperly reduces the POSTIA to an "'automaton' that can only add pieces of prior art." *Transocean Offshore*

Deepwater Drilling v. Maersk Contractors USA, 617 F.3d 1296, 1304 (Fed. Cir. 2010). A proper obviousness analysis may rely on the prior art for all that it teaches and does not require bodily incorporation of every aspect of a secondary reference into the primary reference. *Moultet*, 686 F.3d at 1332; *Axonics, Inc. v. Medtronic, Inc.*, 73 F.4th 950, 957 (Fed. Cir. 2023).

Regarding PO's assertion that a POSITA would not have "display[ed] complex data and inputs on a smartphone touchscreen because that information was already displayed on Kianl's handheld device," this argument completely misunderstands the proposed combination. Ground 1A starts with Poeze. As identified in the Opp., Poeze discloses that "trending data is displayed to the user in various graphical formats on the display 206 through medical data display module 344" executing on the general computing device 126 implemented as a smart phone and that device 126 "receive[s] input from a user, via the input 234 and/or the display/touch panel 206." *Id.*, [0062], [0039], [0034], [0051], [0066] ("visualization of health data tracking or trending"). Therefore, Poeze expressly discloses that trend data and touch screen user inputs are displayed on the touch screen of Poeze's device. As discussed in the Opp., a POSITA would have beneficially and predictably turned to Kianl to identify specific examples of such trend data displays and displayed input buttons to provide the functionality expressly disclosed in Poeze. Opp., 11-12; APPLE-1109, ¶¶28-36.

PO's arguments regarding "redundantly display[ing]" information fail because Poeze expressly discloses embodiments where "the data collection device 112" (having the monitor 118) "[is] provided without a user interface 112 and can simply provide an output signal to a separate display or system." Pap. 53, 28-29; APPLE-1110, [0128]. In such implementations expressly contemplated by Poeze, there would be no redundancy because the monitor 118 would not include a display at all. PO's argument also ignores situations in which the smartphone 126 is in a different physical location than the monitor 118.

PO's arguments regarding reasonable expectation of success also fail. Pap. 53, 32. Petitioner has not argued that the exact display screen of Kianl would be bodily incorporated into Poeze's smartphone but rather that Kianl's suggestions to display measurement values, and historical graphs, and input icons would have been applied to Poeze's existing smartphone that is expressly described as 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.

Regarding PO's assertion that Kianl does not disclose a touch screen, Petitioner does not rely on Kianl for this disclosure. Poeze expressly discloses that its smartphone includes a touch screen. APPLE-1110, [0034], [0040]-[0043]. Kianl provides teachings regarding on-screen control buttons displayed directly on the display screen that a user would have selected using Poeze's touch screen functionality in the resulting system. Opp., 12, 21; APPLE-1006, 9:44-10:27, FIGs. 8A-10; APPLE-1109, ¶79. As discussed above, Poeze expressly describes allowing the user to control the application using a touchscreen and Kianl provides examples of control icons displayed on a display screen that would have been applied to Poeze to allow the user to provide input expressly disclosed by Poeze. Opp., 12; APPLE-1109, ¶¶34-35. PO's assertion that the resulting combination would be required to use Kianl's "buttons or knobs" to select such control icons rather than Poeze's touch screen functionality once again improperly requires bodily incorporation of Kianl's device into Poeze's system and represents, at most, an alternative solution to the problem of how to receive user input. Contrary to PO's assertions, application of Kianl to Poeze would not have required "numerous modifications." The physiological information and control icons disclosed by Kianl would be displayed on Poeze's iPhone and selectable via the iPhone touchscreen. That's it, that's the entirety of the modification.

PO does not present any arguments with respect to Baba's displayed heart icon separate from its arguments addressing Kianl's teachings and therefore modification of Poeze-Kianl based on Baba is obvious for the reasons discussed in the Opp. and for the reasons provided above.

C. Sub. Claim 22 is Obvious

1. RMTA Grounds 1C, 2C, 3C, and 4C render claim 22 obvious

Other than alleging that citation to the Petition regarding application of Kianl to elements [22pre]-[22b] (which repeat original recitations of claim 14) is an improper incorporation by reference, PO does not otherwise dispute the reasons for applying Kianl to Poeze described in the Opp. or assert that elements [22pre]-[22b] are not disclosed by Kianl. PO also does not dispute the Opp.'s articulated reasons for applying Diab to the identified prior art combinations or that Diab discloses element [22c]. Claim 22 is therefore obvious.

2. RMTA Grounds 1B, 2B, 3B, and 4B render claim 22 obvious

Contrary to PO's assertions at Paper 53, 37-38, citation to arguments made in the Petition is not an improper incorporation by reference. *Supra*, § III. PO asserts that the motivations to combine and reasonable expectation of success arguments regarding application of Moon to Mendelson would not have applied to the application of Moon to Poeze yet does not identify any distinctions between the Mendelson and Poeze systems to support such a conclusion. Paper 53, 37-38.

PO's assertion here ignores that the Opp. itself expressly identifies four benefits achieved by the application of Moon to Poeze. As articulated in the Opp. and Petition, Moon discloses signal processing techniques for SpO2 systems and Poeze and Mendelson both disclose SpO2 systems that would have benefited from such techniques to achieve the identified benefits. Pet., §III.J.; Opp., §III.B.

D. Sub. Claim 23 is Obvious

1. RMTA Grounds 1D, 2D, 3D, and 4D render claim 23 obvious

Other than alleging that citation to the Petition regarding application of Kianl to element [23a] (which repeats original recitations of claim 17) is an improper incorporation by reference, PO does not otherwise dispute the reasons for applying Kianl to Poeze described in the Opp. or assert that element [23a] is not disclosed by Kianl. PO also does not dispute the articulated reasons for applying Teller to the identified prior art combinations or that Teller discloses element [23b]. Claim 23 is therefore obvious for the reasons discussed in the Opp.

2. RMTA Grounds 1A, 2A, 3A, and 4A render claim 23 obvious

Grounds 1A, 2A, 3A, and 4A render claim 23 obvious for the reasons discussed in the Opp.

E. Sub. Claim 24 is Obvious

PO does not address claim 24 in the Reply. Claim 24 is obvious for the reasons discussed in the Opp.

Respectfully submitted,

Date: May 15, 2025

/Patrick J. Bisenius/

W. Karl Renner, Reg. No. 41,265
Patrick J. Bisenius, Reg. No. 63,893
Andrew B. Patrick, Reg. No. 63,471
Grace Kim, Reg. No. 71,977
Fish & Richardson P.C.
60 South Sixth Street, Suite 3200
Minneapolis, MN 55402
T: 202-783-5070
F: 877-769-7945

Counsel for Petitioner

CERTIFICATE OF SERVICE

Pursuant to 37 CFR § 42.6(e)(4), the undersigned certifies that on May 15, 2025, a complete and entire copy of this Petitioner's Sur-Reply to Patent Owner's Reply to Petitioner's Opposition to Patent Owner's Revised Motion to Amend and Accompanying Exhibits were provided by email to Patent Owner by serving the correspondence email addresses of record as follows:

Brian C. Claassen (Reg. No. 63,051)
Daniel Hughes (Reg. No. 76,592)
Irfan A. Lateef (Reg. No. 51,922)
Jarom D. Kesler (Reg. No. 57,046)
Douglas B. Wentzel (Reg. No. 74,897)
Benjamin J. Everton (Reg. No. 60,659)
Philip M. Nelson (Reg. No. 62,676)
Perry D. Oldham (Reg. No. 52,082)
KNOBBE, MARTENS, OLSON, & BEAR, LLP
2040 Main St., 14th Floor
Irvine, CA 92614
Telephone: (949) 760-0404
Facsimile: (949) 760-9502

Email: AppleIPR507-2@knobbe.com

/Crena Pacheco/

Crena Pacheco
Fish & Richardson P.C.
60 South Sixth Street
Minneapolis, MN 55402
pacheco@fr.com