

UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD

**SAMSUNG ELECTRONICS CO., LTD.,
SAMSUNG ELECTRONICS AMERICA, INC.,
FOSSIL GROUP, INC.,
FOSSIL STORES I, INC.,
FOSSIL PARTNERS, L.P.,
OURA HEALTH OY, AND
ONEPLUS TECHNOLOGY (SHENZHEN) CO., LTD.**

Petitioners,

v.

OMNI MEDSCI, INC.,

Patent Owner.

Case IPR2025-01254
Patent No. 12,268,475

PETITIONERS' REPLY TO PATENT OWNER'S RESPONSE

TABLE OF CONTENTS

	<u>Page</u>
I. INTRODUCTION	1
II. CLAIM CONSTRUCTION	1
III. COLLATERAL ESTOPPEL.....	2
IV. LISOGURSKI DISCLOSES AND RENDERS OBVIOUS (ALL GROUNDS):.....	4
A. “biosensors,” “light source,” and “detection system” ([1.a], [1.d], [1.f])	4
B. “the apparatus...configured to determine, based... on the output signal, that the apparatus is being worn” ([1.n])	6
C. “a processor configured to:... (iv) determine, based... on the third output signal, that the wearable device is being worn....” ([8.g]).....	11
D. Six LEDs ([6])	13
E. First/second output signals responsive to the light source being on/off and a third output signal based on the first/second output signals having a third SNR greater than the first/second output signals’ ([8.d]-[8.f])	15
V. LISOGURSKI DISCLOSES AND RENDERS OBVIOUS THE MEMORY LIMITATION ([5]) (GROUNDS 2, 4, 6, 8)	18
VI. LISOGURSKI DISCLOSES AND RENDERS OBVIOUS—ALONE AND IN VIEW OF LEOEUF—THE ARC LIMITATION ([6]) (ALL GROUNDS).....	18
VII. NO SECONDARY CONSIDERATIONS EXIST	24
A. No Evidence of Copying or a Nexus.....	24
B. No Evidence of Long-Felt Need with a Nexus to the Claims.....	28
VIII. CONCLUSION.....	29

TABLE OF AUTHORITIES

	Page(s)
<u>Cases</u>	
<i>Alza Corp. v. Mylan Lab ’ys, Inc.</i> , 464 F.3d 1286 (Fed. Cir. 2006)	20, 22
<i>In re Applied Materials, Inc.</i> , 692 F.3d 1289 (Fed. Cir. 2012)	14
<i>Becton, Dickinson & Co. v. Tyco Healthcare Grp., LP.</i> , 616 F.3d 1249 (Fed. Cir. 2010)	5, 6
<i>Chemco Sys., L.P. v. RDP Techs., Inc.</i> , IPR2019-01563, Paper 38 (PTAB Mar. 1, 2021)	6
<i>Cisco Sys., Inc. v. Lionra Techs. Ltd.</i> , IPR2024-01281, Paper 26 (PTAB Mar. 4, 2026)	14
<i>DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.</i> , 464 F.3d 1356 (2006).....	21
<i>Enova Tech. Corp. v. Seagate Tech. (US) Holdings Inc.</i> , 706 F. App’x 987 (Fed. Cir. 2017)	24
<i>Fleming v. Cirrus Design Corp.</i> , 28 F.4th 1214 (Fed. Cir. 2022)	25
<i>In re Huai-Hung Kao</i> , 639 F.3d 1057 (Fed. Cir. 2011)	29
<i>Iron Grip Barbell Co. v. USA Sports, Inc.</i> , 392 F.3d 1317 (Fed. Cir. 2004)	26
<i>Janssen Pharm., Inc. v. Teva Pharm. USA, Inc.</i> , 97 F.4th 915 (Fed. Cir. 2024)	22
<i>In re Karpf</i> , 758 F. App’x 960 (Fed. Cir. 2019).....	29
<i>Keysight Techs., Inc. v. Centripetal Networks, LLC</i> , IPR2022-01535, Paper 26 (PTAB Apr. 16 2024)	3

<i>Keysight Techs., Inc. v. Centripetal Networks, LLC</i> , IPR2023-00446, Paper 30 (PTAB Aug. 5, 2024).....	3
<i>M2M Sols. LLC v. Amazon.com, Inc.</i> , No. 2022-1122, 2023 WL 2154964 (Fed. Cir. Feb. 22, 2023).....	2
<i>Magnolia Med. Techs., Inc. v. Kurin, Inc.</i> , 169 F.4th 1094 (Fed. Cir. 2026)	6
<i>Meta Platforms, Inc. v. Mullen Indus. LLC</i> , IPR2025-00745, Paper 10 (PTAB Oct. 15, 2025).....	9
<i>In re Mouttet</i> , 686 F.3d 1322 (Fed. Cir. 2012)	23
<i>Nat'l Steel Car, Ltd. v. Canadian Pac. Ry., Ltd.</i> , 357 F.3d 1319 (Fed. Cir. 2004)	20
<i>Oren Techs., LLC v. Proppant Express Invs. LLC</i> , No. 2019-1778, 2021 WL 3120819 (Fed. Cir. July 23, 2021)	3
<i>Power Integrations, Inc. v. Semiconductor Components Indus., LLC</i> , 926 F.3d 1306 (Fed. Cir. 2019)	3, 4
<i>Skedco, Inc. v. Strategic Operations, Inc.</i> , 685 F. App'x 956 (Fed. Cir. 2017).....	5, 6
<i>Slingshot Printing LLC v. Canon U.S.A., Inc.</i> , No. 2024-1956, 2026 WL 1098251 (Fed. Cir. Apr. 23, 2026).....	20
<i>Spectrum Sols. LLC v. Longhorn Vaccines & Diagnostics, LLC</i> , IPR2021-00847, Paper 114 (PTAB May 3, 2023)	13
<i>Vivint, Inc. v. SB IP Holdings LLC</i> , IPR2022-01364, Paper 18 (PTAB Apr. 10, 2024)	3
<i>In re Woodruff</i> , 919 F.2d 1575 (Fed. Cir. 1990)	13
<i>Xerox Corp. v. Bytemark, Inc.</i> , IPR2022-00624, Paper 9 (PTAB Aug. 24, 2022).....	4



XY, LLC v. Trans Ova Genetics, L.C.,
890 F.3d 1282 (Fed. Cir. 2018) 3

TABLE OF EXHIBITS

Exhibit No.	DESCRIPTION
1001	U.S. Patent No. 12,268,475 (“475”)
1002	File History of U.S. Application No. 18/927,698 (“475FH”)
1003	Declaration of Brian Anthony in Support of Petition for Inter Partes Review of U.S. Patent No. 12,268,475 (“Anthony”)
1004	Declaration of Brian Anthony in Support of Petition for Inter Partes Review of U.S. Patent No. 9,651,533 submitted in IPR2019-00916, Ex. 1003 (“533-Anthony”)
1005	<i>Apple Inc. v. Omni Medsci, Inc.</i> , No. IPR2019-00916, Paper 1 (PTAB Apr. 10, 2019) (“533-Pet.”)
1006	<i>Apple Inc. v. Omni Medsci, Inc.</i> , No. IPR2019-00916, Paper 23 (PTAB Jan. 31, 2020) (“533-POR”)
1007	<i>Apple Inc. v. Omni Medsci, Inc.</i> , No. IPR2019-00916, Paper 16 (PTAB Oct. 18, 2019) (“533-Inst.”)
1008	<i>Apple Inc. v. Omni Medsci, Inc.</i> , No. IPR2019-00916, Paper 39 (PTAB Oct. 14, 2020) (“533-FWD”)
1009	<i>Omni MedSci, Inc. v. Apple Inc.</i> , No. 21-01229, ECF 69 (Fed. Cir. June 8, 2022)
1010	Declaration of Brian Anthony in Support of Petition for Inter Partes Review of U.S. Patent No. 10,517,484 submitted in IPR2021-00453, Ex. 1003 (“484-Anthony”)
1011	<i>Apple Inc. v. Omni Medsci, Inc.</i> , No. IPR2021-00453, Paper 1 (PTAB Jan. 22, 2021) (“484-Pet.”)

Exhibit No.	DESCRIPTION
1012	<i>Apple Inc. v. Omni Medsci, Inc.</i> , No. IPR2021-00453, Paper 10 (PTAB Nov. 12, 2021) (“484-POR”)
1013	<i>Apple Inc. v. Omni Medsci, Inc.</i> , No. IPR2021-00453, Paper 7 (PTAB Aug. 6, 2021) (“484-Inst.”)
1014	<i>Apple Inc. v. Omni Medsci, Inc.</i> , No. IPR2021-00453, Paper 11 (PTAB Feb. 4, 2022) (“484-Pet.-Reply”)
1015	<i>Apple Inc. v. Omni Medsci, Inc.</i> , No. IPR2021-00453, Paper 22 (PTAB Aug. 3, 2022) (“484-FWD”)
1016	<i>Apple Inc. v. Omni Medsci, Inc.</i> , No. IPR2021-00453, Paper 26 (PTAB Feb. 14, 2025) (“484-RFWD”)
1017	<i>Apple Inc. v. Omni MedSci, Inc.</i> , No. 2023-1034, No. 23-01034, ECF 44 (Fed. Cir. June 21, 2024)
1018	<i>Omni MedSci, Inc. v. Apple Inc.</i> , 2:18-cv-00134-RWS, Dkt. No. 211 (E.D. Tex. June 24, 2019)
1019	<i>Omni MedSci, Inc. v. Apple Inc.</i> , 2:18-cv-00429-RWS, Dkt. No. 152 (E.D. Tex. Aug. 14, 2019)
1020	Second Amended Docket Control Order, June 16, 2025. <i>Omni MedSci, Inc. v. Samsung Electronics Co., Ltd. et al.</i> , No. 2:24-cv-01070-JRG-RSP (E.D. Tex.)
1021	<i>Reserved</i>
1022	Plaintiff's Disclosure of Asserted Claims & Infringement Contentions, May 9, 2025. <i>Omni MedSci, Inc. v. Samsung Electronics Co., Ltd. et al.</i> , No. 2:25-CV-00483-JRG-RSP (E.D. Tex.)
1023	Defendants' Supplemental Invalidity and Subject Matter Eligibility Contentions, July 18, 2025. <i>Omni MedSci, Inc. v. Samsung Electronics Co., Ltd. et al.</i> ,

Exhibit No.	DESCRIPTION
	No. 2:24-cv-01070-JRG-RSP (E.D. Tex.)
1024	<i>Reserved</i>
1025	U.S. Patent No. 9,241,676 (“Lisogurski”)
1026	U.S. Patent Pub. No. 2010/0217102 (“LeBoeuf”)
1027	U.S. Patent No. 8,108,036 (“Tran”)
1028	U.S. Patent Pub. No. 2005/0049468A1 (“Carlson”)
1029-1030	<i>Reserved</i>
1031	U.S. Patent No. 8,050,730 (“Zhang”)
1032	<i>Reserved</i>
1033	U.S. Patent Pub. No. 2011/0237911 (“Lamego”)
1034	U.S. Patent No. 5,942,749 (“Takeuchi”)
1035	U.S. Patent No. 5,822,473 (“Magel”)
1036	US Patent 5,592,124 (“Mullins”)
1037	E.F. Schubert, Light-Emitting Diodes (Cambridge Univ. Press, 2nd ed. reprinted 2014)
1038	“The Biomedical Engineering Handbook,” by Joseph D. Bronzino (1995)
1039	U.S. Patent No. 8,079,735 (“Vakil”)
1040-1043	<i>Reserved</i>
1044	U.S. Patent No. 5,511,553 (“Segalowitz”)

Exhibit No.	DESCRIPTION
1045	U.S. Patent No. 6,801,799 (“Mendelson”)
1046-1047	<i>Reserved</i>
1048	U.S. Pat. No. 9,239,951 (“Hoffberg”)
1049	U.S. Pat. Pub. 2007/0194939 (“Alvarez”)
1050-1051	<i>Reserved</i>
1052	U.S. Patent No. 8,996,088 (“Dasco”)
1053	U.S. Patent Pub. No. 2007/0149868 (“Blank”)
1054	U.S. Patent No. 8,852,103 (“Rothberg”)
1055-1056	<i>Reserved</i>
1057	U.S. Patent No. 8,922,788 (“Addison”)
1058	JP3552090 (“Denso”) (Certified English Translation)
1059	JP3552090 (“Denso”)
1060-1063	<i>Reserved</i>
1064	U.S. Patent No. 5,554,273 (“Demmin”)
1065	U.S. Patent No. 5,953,713 (“Behbehani”)
1066-1080	<i>Reserved</i>
1081	U.S. Patent No. 9,651,533 (“’533”)
1082	U.S. Patent No. 10,517,484 (“’484”)
1083	Declaration of Brian Anthony in Support of Petition for Inter Partes Review of U.S. Patent No. 9,861,286 submitted in

Exhibit No.	DESCRIPTION
	IPR2019-00914, Ex. 1003
1084	Declaration of Jonathan Bradford
1085	<i>Reserved</i>
1086	<i>Samsung Electronics Co., Ltd. et al v. Omni MedSci, Inc., No. IPR2025-01253 Paper 6 (PTAB Aug. 5, 2025)</i>
1087	<i>Reserved</i>
1088	<i>Reserved</i>
1089	<i>Reserved</i>
1090	<i>Reserved</i>
1091	<i>Apple Inc. v. Omni Medsci, Inc., No. IPR2021-00453, Paper 27 (PTAB Apr. 11, 2025)</i>
1092	<i>Samsung Electronics Co., Ltd. et al v. Omni MedSci, Inc., No. IPR2025-01249, Paper 1 (PTAB Aug. 5, 2025) (“’868 Pet.”)</i>
1093	<i>Samsung Electronics Co., Ltd. et al v. Omni MedSci, Inc., No. IPR2025-01250, Paper 1 (PTAB Aug. 5, 2025) (“’533 Pet.”)</i>
1094	<i>Samsung Electronics Co., Ltd. et al v. Omni MedSci, Inc., No. IPR2025-01251, Paper 1 (PTAB Aug. 5, 2025) (“’304 Pet.”)</i>
1095	<i>Samsung Electronics Co., Ltd. et al v. Omni MedSci, Inc., No. IPR2025-01252, Paper 1 (PTAB Aug. 5, 2025) (“’455 Pet.”)</i>
1096	<i>Reserved</i>
1097	<i>Samsung Electronics Co., Ltd. et al v. Omni MedSci, Inc., No. IPR2025-01253, Paper 1 (PTAB Aug. 5, 2025) (“’790 Pet.”)</i>

Exhibit No.	DESCRIPTION
1098	Email correspondence between counsel for Fossil to counsel for Omni
1099	U.S. Patent No. 9,055,868 (“868”)
1100	U.S. Patent No. 10,874,304 (“304”)
1101	U.S. Patent No. 11,160,455 (“455”)
1102	U.S. Patent No. 12,193,790 (“790”)
1103	<i>Reserved</i>
1104	<i>Apple Inc. v. Omni MedSci, Inc.</i> , No. IPR2020-00175, Paper 26 (PTAB June 14, 2021)
1105	<i>Omni MedSci, Inc. v. Apple Inc.</i> , No. 2021-2213, 2022 WL 2062167 (Fed. Cir. June 8, 2022), ECF No. 47
1106	<i>Apple Inc. v. Omni Medsci, Inc.</i> , No. IPR2020-00029, Paper 7 (PTAB Apr. 22, 2020)
1107	<i>Apple Inc. v. Omni Medsci, Inc.</i> , No. IPR2019-00914, Paper 13 (PTAB Nov. 6, 2019)
1108	<i>Apple Inc. v. Omni Medsci, Inc.</i> , No. IPR2019-00917, Paper 14 (PTAB Oct. 17, 2019)
1109	Plaintiff’s Second Amended Complaint, May 19, 2025. <i>Omni MedSci, Inc. v. Samsung Electronics Co., Ltd. et al.</i> , No. 2:24-cv-01070-JRG-RSP (E.D. Tex.)
1110	United States District Courts – National Judicial Caseload Profile
1111	EDTX Trials 2026-08-17
1112	Joint Mot for Preferential Trial Setting, <i>Multimedia Techs. Ltd.</i>

Exhibit No.	DESCRIPTION
	<i>v LG Elecs.</i> , 2:22-cv-00494-JRG-RSP, Dkt. No. 273 (E.D. Tex. Mar. 18, 2025)
1113	Omni’s First Set of Common Interrogatories to Defendants (2025-05-12)
1114	<i>Reserved</i>
1115	OnePlus Waiver of Service, <i>Omni MedSci, Inc. v. Samsung Electronics Co., Ltd. et al.</i> , No. 2:24-cv-01070-JRG-RSP, Dkt. No. 70 (E.D. Tex. June 27, 2025)
1116	<i>Omni MedSci, Inc. v. Apple Inc.</i> , 4:20-cv-00563, Dkt. No. 52 (N.D. Cal. Dec. 06, 2021)
1117	Declaration of James Nowell in Support of Petitioners’ Opposition to Patent Owner’s Discretionary Denial Brief
1118	Defendants’ Preliminary Constructions and Extrinsic Evidence – Exhibit A, <i>Omni MedSci, Inc. v. Samsung Electronics Co., Ltd. et al.</i> , No. 2:24-cv-01070-JRG-RSP (E.D. Tex. Oct. 31, 2025)
1119	Local Patent Rules for the United States District Court for the Eastern District of Texas
1120	Email correspondence between counsel for Samsung to counsel for Omni
1121	December 9, 2025 email from the Board authorizing Petitioners to file additional brief regarding the impact of the <i>Revvo</i> and <i>Tesla</i> decisions
1122	Claim Construction Order, <i>Omni MedSci, Inc. v. Samsung Electronics Co., Ltd. et al.</i> , No. 2:24-cv-01070-JRG-RSP, Dkt. No. 154 (E.D. Tex. Mar. 24, 2026)

Exhibit No.	DESCRIPTION
1123	Declaration of Jonathan Bradford (Mar. 4, 2026)
1124	Declaration of Brian Anthony in Support of Petitioners' Reply to Patent Owner Response ("Anthony-Reply") [CONFIDENTIAL]
1125	<i>Omni MedSci, Inc. v. Apple Inc.</i> , 4:20-cv-00563-YGR, Dkt. No. 54 (N.D. Cal. Jan. 13, 2023)
1126	<i>Omni MedSci, Inc. v. Apple Inc.</i> , 4:20-cv-00563-YGR, Dkt. No. 1 (N.D. Cal. Jan. 24, 2020)
1127	Transcript of Igor Efimov, Ph.D. (July 16, 2026) [CONFIDENTIAL]
1128	Transcript of the Deposition of Mohammed Islam, Sc.D. (July 23, 2026)
1129	Abhay Rai LinkedIn Resume
1130	Leo Lautenschlager LinkedIn Resume
1131	Badri Padmanabhan LinkedIn Resume
1132	Sanjith Thayyilthodiyil LinkedIn Resume
1133	Kevin Lee LinkedIn Resume
1134	Samsung Semiconductor, Inc.'s System LSI Webpage
1135	Samsung Electronics Co., Ltd. Consolidated Financial Statements, Dec. 31, 2024 and 2023
1136	Samsung SDS Co., Ltd. Consolidated Financial Statements, Dec. 31, 2024 and 2023
1137	Declaration of James Nowell in Support of Petitioners' Reply

Exhibit No.	DESCRIPTION
	to Patent Owner Response
1138	Declaration of Brian Anthony in Support of Petitioners' Reply to Patent Owner Response ("Anthony-Reply") [REDACTED]
1139	Transcript of Igor Efimov, Ph.D. (July 16, 2026) [REDACTED]
1140	USPTO Memorandum, "Enforcement and Non-Waiver of 37 C.F.R. § 42.104(B)(4) and Permissible Uses of General Knowledge in <i>Inter Partes</i> Reviews" (Jul. 31, 2025)

TABLE OF ABBREVIATIONS

ABBREVIATION	DESCRIPTION
'475	U.S. Patent No. 12,268,475 (Ex. 1001)
Claims / Challenged Claims	Claims 1, 5-8, 11-13 of the '475
IPR	<i>Inter Partes</i> Review
Petitioners	Petitioners Samsung Electronics Co. Ltd., Samsung Electronics America Inc., Fossil Group, Inc., Fossil Stores I, Inc., Fossil Partners, L.P., Oura Health Oy, and OnePlus Technology (Shenzhen) Co., Ltd.
PO	Patent Owner Omni MedSci, Inc.
POSITA	Person of Ordinary Skill in the Art
Board	Patent Trial and Appeal Board
EDTX	Eastern District of Texas
Pet.	<i>Samsung Electronics Co., Ltd. et al. v. Omni MedSci, Inc.</i> , No. IPR2025-01254, Paper 1 (PTAB Aug. 5, 2025) (Ex. 1096)
POR	<i>Samsung Electronics Co., Ltd. et al. v. Omni MedSci, Inc.</i> , No. IPR2025-01254, Paper 29 (PTAB May 7, 2026)
'533	U.S. Patent No. 9,651,533 (Ex. 1081)
'484	U.S. Patent No. 10,517,484 (Ex. 1082)
'533-FWD	<i>Apple Inc. v. Omni Medsci, Inc.</i> , No. IPR2019-00916, Paper 39 (PTAB Oct. 14, 2020) (Ex. 1008)
'484-FWD	<i>Apple Inc. v. Omni Medsci, Inc.</i> , No. IPR2021-00453, Paper 22 (PTAB Aug. 3, 2022) (Ex. 1015)

ABBREVIATION	DESCRIPTION
'484-RFWD	<i>Apple Inc. v. Omni Medsci, Inc.</i> , No. IPR2021-00453, Paper 26 (PTAB Feb. 14, 2025) (Ex. 1016)
Prior FWDs	'533-FWD, '484-FWD, and '484-RFWD
Prior IPRs	<i>Apple Inc. v. Omni Medsci, Inc.</i> , No. IPR2019-00916 (PTAB) and <i>Apple Inc. v. Omni Medsci, Inc.</i> , No. IPR2021-00453 (PTAB)
Texas Case	<i>Omni MedSci, Inc. v. Samsung Electronics Co., Ltd. et al.</i> , No. 2:24-cv-01070-JRG-RSP (E.D. Tex.)
Related EDTX Cases	<i>Omni MedSci, Inc. v. Apple Inc.</i> , 2:18-cv-00134-RWS (E.D. Tex.) <i>Omni MedSci, Inc. v. Apple Inc.</i> , 2:18-cv-00429-RWS (E.D. Tex.)
Lisogurski	U.S. Patent No. 9,241,676 (Ex. 1025)
LeBoeuf	U.S. Patent Pub. No. 2010/0217102 (Ex. 1026)
Tran	U.S. Patent No. US 8,108,036 (Ex. 1027)
Carlson	U.S. Patent Pub. No. 2005/0049468 (Ex. 1028)
Lamego	U.S. Patent Pub. No. 2011/0237911 (Ex. 1033)
Mendelson	U.S. Patent No. 6,801,799 (Ex. 1045)
Addison	U.S. Patent No. 8,922,788 (Ex. 1057)
Denso	JP3552090 (Certified English Translation) (Ex. 1058)
SEC	Samsung Electronics Co., Ltd.

ABBREVIATION	DESCRIPTION
SEA	Samsung Electronics America, Inc.
SDS	Samsung SDS Co., Ltd.
SSI	Samsung Semiconductor, Inc.

I. INTRODUCTION

As the Petition details, the Grounds render obvious claims 1, 5-8, 11-13 (“Claims”). Collateral estoppel applies to the vast majority of the limitations here given previous Board decisions finding identical or substantially identical limitations unpatentable. The Patent Owner Response (“POR”) relies on mischaracterizations of the Petition, prior art, law, and the Claims to challenge limited issues discussed herein. The Claims are unpatentable and the Patent Owner’s (“PO”) alleged secondary considerations fail.

II. CLAIM CONSTRUCTION

The prior art discloses the Claims’ indisputable scope—claim construction is unnecessary. Pet., 17-19. PO does not disagree, despite noting that the court in the Texas Case (“Texas Court”) construed “modulate”/“modulation” and “modulation frequency.”¹ POR, 11. Anthony-Reply, ¶¶8-10.

¹ The Board previously construed “modulating”/“modulation,” from which the Texas Court removed “to include information” requirement—broadening the term’s scope. Pet., 18; Ex.1122, 10-14, 18. The court also construed “modulation frequency” as “pulse repetition rate” (Ex.1122, 18), met by Lisogurski disclosing modulating light source “aligned with pulses of the heart.” Pet., 58; Lisogurski 5:25-

III. COLLATERAL ESTOPPEL

The Board already found limitations identical or substantially identical to [1.pre], [1.b], [1.d]-[1.m], [5], [7], [8.pre]-[8.c], and [8.e]²-[8.f] unpatentable—PO does not disagree besides cherry-picking few limitations.³ Pet., 19-21; POR, 13-15.

Collateral estoppel attaches to individual limitations. *See M2M Sols. LLC v. Amazon.com, Inc.*, No. 2022-1122, 2023 WL 2154964, at *4 (Fed. Cir. Feb. 22, 2023) (estopping plaintiff from arguing against prior art’s teaching of a disputed

47. The Petition shows that the art satisfies the terms under each construction; PO does not disagree. Pet., 18, 57-59; POR, 11. Anthony-Reply, ¶¶9-10.

² “[8.f]–[8.f]” in the Petition is a clear typo and should read “[8.e]–[8.f].” As detailed in [8.e], the Board agreed Lisogurski discloses “generat[ing] a...signal responsive to light received while the [light source is] off” based on Lisogurski’s “dark signal” generation when the light source is off. Pet., 52; ’484-FWD, 43-44.

³ PO contests limitations [5] and [7] only. Collateral estoppel applies to [5]’s artificial intelligence limitation and [7]’s additional limitations. ’484-FWD, 47-49. For [5], PO disputes only the “memory limitation”—not the AI limitation. POR, 14-15. For [7], PO disputes only the limitations of claim [6], from which [7] depends. POR, 14.

limitation); *Keysight Techs., Inc. v. Centripetal Networks, LLC*, IPR2023-00446, Paper 30 at 21 (PTAB Aug. 5, 2024) (finding PO “estoppe[d] from asserting that [certain limitations] are not taught or suggested”); POR, 13-15. While the ’484-RFWD is on appeal (POR, 16-17), it will become final—collateral estoppel thus applies—upon “affirmance.” *XY, LLC v. Trans Ova Genetics, L.C.*, 890 F.3d 1282, 1294 (Fed. Cir. 2018). Regardless, the Board’s unpatentability findings regarding substantially the same limitations in the ’484-RFWD apply equally here with no reason to “deviate from the Board’s [prior] decision.” *Vivint, Inc. v. SB IP Holdings LLC*, IPR2022-01364, Paper 18 at 52 n.15 (PTAB Apr. 10, 2024); *see* Pet., 21.

No lack of incentive exception to collateral estoppel applies to the ’484-FWD. POR, 16-17. PO was actively asserting the unpatentable ’484 claims against Apple, seeking damages. ’484-FWD; Exs.1125-1126; *Keysight Techs., Inc. v. Centripetal Networks, LLC*, IPR2022-01535, Paper 26 at 6, 19-22 (PTAB Apr. 16 2024) (applying collateral estoppel where not all claims were found unpatentable). PO’s cited *Oren Techs., LLC v. Proppant Express Invs. LLC* is inapposite—there, the lack of incentive came from a stipulated judgment of non-infringement. No. 2019-1778, 2021 WL 3120819, at *3 (Fed. Cir. July 23, 2021). *Power Integrations, Inc. v. Semiconductor Components Indus., LLC* is also inapposite—the patentee had no incentive to appeal IPR unpatentability findings because the claims were found not

infringed. 926 F.3d 1306, 1313 n.4, n.6 (Fed. Cir. 2019) (emphasizing no bearing on “IPR decisions in circumstances different than” that case).

PO mischaracterizes Dr. Anthony’s declaration as simply quoting the Board and improperly incorporating his “prior testimony.” POR, 17. Dr. Anthony’s “prior testimony” has been resubmitted here, not improperly incorporated. Ex.1004; Ex.1010. Even in [1.pre] that PO challenges, Dr. Anthony discusses the Board’s prior analysis, confirms his prior consistent testimony, compares the limitations at issue in the prior decision and in the ’475, and explains why the Board’s analysis equally applies here. Anthony, ¶¶109-112. Dr. Anthony further explains how the prior art teaches new limitations. *E.g.*, Anthony, ¶203. *Xerox Corp. v. Bytemark, Inc.* does not support PO—it involved expert testimony without any cited support. IPR2022-00624, Paper 9 at 15 (PTAB Aug. 24, 2022). Anthony-Reply, ¶¶11-12.

IV. LISOGURSKI DISCLOSES AND RENDERS OBVIOUS (ALL GROUNDS):

A. “biosensors,” “light source,” and “detection system” ([1.a], [1.d], [1.f])

Consistent with the Board’s prior findings, a POSITA would have understood that Lisogurski’s light source, detector, and front-end processing circuitry 150 (“Front-Circuitry”) are all “contained within Lisogurski’s sensor as modified,” comprising a “biosensor.” Pet., 29-30, 33-36; ’484-FWD, 24-27; ’533-FWD, 22-25. Dr. Anthony further explained that a POSITA would have understood—and at

least found obvious—to locate the Front-Circuitry with the detector to “streamline the data transmission and minimize latency.” Anthony, ¶¶117-118; Pet., 30. Anthony-Reply, ¶¶14-18.

The Petition does not rely on the same component to satisfy separate claim elements. POR, 18-19. The Petition explains that collectively integrating a light source, a detector, and Front-Circuitry into Lisogurski’s sensor satisfies the claimed “biosensor[] adapted to be placed on a user.” Pet., 29–30. “[N]othing in the claims requires [claimed elements] to be physically separated,” nor does “the intrinsic record provides an express definition or disavowal” requiring separation. *Skedco, Inc. v. Strategic Operations, Inc.*, 685 F. App’x 956, 959-60 (Fed. Cir. 2017); ’475, Cl. 1 (reciting “biosensor,” “light source,” and “detection system” as part of “[a]n apparatus adapted to be worn by a user”). Tellingly, PO’s Texas Case infringement contentions identify a BioActive Sensor as “biosensor,” and the LEDs and photodiodes within that sensor as “light source” and “detection system”—recognizing that the terms do not require separate structures. *E.g.*, Ex.2116, 4-8, 18-21, 28-42. Dr. Efimov agrees with PO’s contentions. Ex.1127, 176:12-17, 184:20-189:6. Anthony-Reply, ¶¶15-18.

PO’s cited authorities involve claim language or constructions requiring separate structures—they are inapposite. *See Becton, Dickinson & Co. v. Tyco Healthcare Grp., LP.*, 616 F.3d 1249, 1254 (Fed. Cir. 2010) (“spring means

connected to said hinged arm” construed to require separate components given “connected to”); *Magnolia Med. Techs., Inc. v. Kurin, Inc.*, 169 F.4th 1094, 1102-05 (Fed. Cir. 2026) (requiring separate components for “*a* seal ... *and a* vent” given specification); *Chemco Sys., L.P. v. RDP Techs., Inc.*, IPR2019-01563, Paper 38 at 21-24 (PTAB Mar. 1, 2021) (differing configuration constraints for “delivery means” and “conduit means” requires separate components); *but see Skedco*, 685 F. App’x at 960 (distinguishing *Becton* because, as here, “nothing in the agreed-upon constructions of ‘pump’ and ‘valve’ forbids a pump from housing an internal valve”).⁴

B. “the apparatus...configured to determine, based... on the output signal, that the apparatus is being worn” ([1.n])

As the Board recognized, a POSITA would have modified Lisogurski’s sensor to include light source, detector, and Front-Circuitry. ’484-FWD, 24-25; ’533-FWD, 22-25; Pet., 26-28. Lisogurski discloses detecting a “physiologically impossible value” or “probe-off signal,” e.g., when the device is not being worn—the absence of such signal confirms the device is worn and at minimum making such determination (“Wear-Determination”) obvious. Lisogurski, 36:66-37:2; Pet., 43-44. A POSITA would further have understood—and at least found obvious—that Lisogurski’s modified-sensor performs Wear-Determination using its “processed

⁴ All emphasis/annotations added unless otherwise noted.

signals” because such error conditions arise from the sensor’s measurements and it was conventional to perform such monitoring at the sensor level. Lisogurski, 36:66-37:2; Pet., 35-36, 42-44; Anthony, ¶¶99, 196-198. PO’s contrary arguments fail. Anthony-Reply, ¶¶19-46.

First, PO wrongly contends that Lisogurski’s “probe-off signal” does not disclose or render obvious Wear-Determination ([1.n]). POR, 21–24. PO ignores Lisogurski’s “physiologically impossible value” independently satisfying Wear-Determination. POR, 21-23; Pet., 43-44; Lisogurski, 36:66-37:2. This omission moots PO’s challenge. PO also presumes Lisogurski’s “probe-off signal” as indicating power-“off,” but Lisogurski’s “on”/“off” states are unrelated to the “probe-off” signal. POR, 22; Lisogurski, 8:27-44. Anthony-Reply, ¶¶20-26.

PO further argues Wear-Determination requires “affirmative determination” (POR, 22–24), but the claims require no particular means to “*determine...that the apparatus is being worn* by the user.” ’475, claims 1&8. A POSITA would have understood—and at least found obvious—that the absence of a “physiologically impossible value” or “probe-off signal” indicates that Lisogurski’s sensor is worn, satisfying the claimed determination. Anthony, ¶198; Pet., 43-44. Anthony-Reply, ¶¶27-29.

PO’s hypothetical errors (POR, 22-23) rely on Dr. Efimov’s conclusory assertion that probe-off signals would not be detected in certain circumstances.

████████████████████

Efimov, ¶¶99. The claim requires no error elimination. At most, those scenarios concern accuracy, not whether Wear-Determination can be made—PO’s “affirmative determination” likewise could generate errors (e.g., system malfunctioning). Likewise, PO’s mischaracterization⁵ of Dr. Antony’s testimony—incorrectly suggesting acknowledgement of other causes triggering a “probe-off” signal (POR, 23)—is immaterial. Anthony-Reply, ¶¶28-29.

Second, PO argues that Lisogurski’s sensor cannot perform Wear-Determination, ignoring Lisogurski’s teachings and the Board-approved modification. POR, 24–28; Pet., 43; Lisogurski, 15:66-16:4. The Board agreed to modify Lisogurski’s sensor to include Front-Circuitry, recognizing Lisogurski’s express teaching combining “the functionality of some of the components...in a single component.” ’533-FWD, 23 (quoting Lisogurski, 16:2-4, 16:7-9). Applying that rationale, the Petition explains a POSITA would have understood—and at least found obvious—to incorporate Wear-Determination into the sensor, consistent with industry trends toward sensor integration.⁶ Pet., 42–44; Anthony, ¶¶98-107, 196–

⁵ Dr. Anthony explained the “probe-off” signal as one among several system errors, not that it arises from multiple causes. Ex.2045, 49:2–21; Anthony-Reply, ¶29.

⁶ Dr. Anthony was not evasive or contradictory—he recognized that Lisogurski allows various functionalities including probe-off signals “can be grouped in

198; Lisogurski, 15:66–16:4. Lisogurski’s purported “silence” regarding where detection occurs is immaterial. POR, 24–25. Anthony-Reply, ¶¶30-37.

Contemporaneous art confirms Petitioners’ position. *See* Pet., 44 (citing Ex.1058, ¶¶[0025], [0030], [0034] (disclosing a sensor performing wear detection)). PO’s characterization of this evidence as “unrelated” or not “part of Ground 1” (POR, 25-26) does not undermine its relevance. Ex.1140 (USPTO memo re Permissible Uses of General Knowledge); *Meta Platforms, Inc. v. Mullen Indus. LLC*, IPR2025-00745, Paper 10 at 19 (PTAB Oct. 15, 2025) n.3 (allowing references “offered to show the general knowledge of a [POSITA]”). Anthony-Reply, ¶¶30, 33-34.

PO also asserts that only back-end circuitry (“Back-Circuitry”) performs Wear-Determination, based solely on Dr. Efimov’s conclusory statements and Lisogurski’s disclosure that the Back-Circuitry can perform certain functions. POR, 26–28; Efimov, ¶¶111–116. Lisogurski explicitly discloses Front-Circuitry performing signal processing—e.g., generating Red/IR, dark, and dark-subtracted processed signals—and emphasizes Front-Circuitry components are “merely illustrative” and Front- and Back-Circuitry functionalities “may be combined in a different ways” and “incorporated as part of the biosensor.” Ex.2046, 300:2-12; *contra* POR, 26. Anthony-Reply, ¶35.

single processor system.” Lisogurski, 13:7–14:14; 15:66-16:6; Exs.2045-2046, 54:19–55:1, 362:16–363:3 (Dr. Anthony confirming the same). At minimum, both Front-/Back-Circuitries can perform Wear-Determination. And, given Lisogurski’s express integration teaching and industry trends favoring sensor-level functionality, a POSITA would have understood—and at least found obvious—to implement Wear-Determination in Lisogurski’s modified-sensor. Pet., 42–44; Anthony ¶¶196–198; Anthony-Reply, ¶¶36-37.

Third, PO incorrectly challenges Lisogurski’s Wear-Determination using the processed signals. POR, 28–30, 39. A POSITA would have understood—and found obvious—to base Wear-Determination on the processed signals in the Board-approved modified-sensor (as discussed above), rather than raw detection signals, to improve accuracy, consistent with the well-known practice. Anthony ¶¶98-107, 147 (incorporating Ex.1004), 198; Ex.1004, ¶144; Ex.1058, claim 1, [0025], [0030], [0034], [0045], Figures 3A-3B; Pet., 43-44. PO’s attempt to isolate Lisogurski’s error-detection from System-100 in Figure 1 (POR, 29) likewise fails—Lisogurski generates error signals during a “physiological measurement” by “the system,” i.e. System-100—the only block diagram showing the internal components of Lisogurski’s “physiological monitoring system.” Lisogurski, 2:11-13, 3:8-10, 10:42-46, 12:42-51, 19:3-6, 36:48-37:5, Figure 1; Anthony-Reply, ¶¶38-43.

Fourth, PO wrongly contends that Lisogurski’s sensor cannot both transmit and use the processed signals for error detection. POR, 30–31 (citing Lisogurski, Fig. 1, 12:42–45). But transmitting processed signals to the Back-Circuitry does not restrict or preclude using processed signals at the Front-Circuitry for additional functions—Lisogurski provides no such restriction. As discussed, a POSITA would have understood—and at minimum found obvious—to use the processed signals for additional functions within the sensor—including error detection—consistent with the well-known practices and their recognized advantages. Anthony-Reply, ¶¶44–45.

C. “a processor configured to:...(iv) determine, based...on the third output signal, that the wearable device is being worn....” ([8.g])

Regarding [8.g], PO repeats the same arguments as in [1.n], which fail for the same reasons. POR, 38–45. PO’s additional assertions—that Lisogurski discloses no “processor” to perform Wear-Determination or one made using “the third output signal” (POR, 39–45)—likewise fail. Anthony-Reply, ¶¶47–65.

While [1.n] refers to “apparatus” and [8.g] to “processor,” the same analysis above (§IV.B) applies: a POSITA would have understood—and at least found obvious—to implement Wear-Determination at Front-Circuitry. POR, 40–41, 43–45. A POSITA would have also understood—and at least found obvious—that

Front-Circuitry is the sensor's⁷ processor performing Wear-Determination. Pet., 50-51; Anthony, ¶238. Anthony-Reply, ¶¶50-57.

A POSITA would have understood, and at least found obvious, to base Lisogurski's Wear-Determination⁸ on its dark-subtracted signal (i.e., ambient-noise-removed signal)—explicitly disclosed as being generated by Front-Circuitry within System-100—to improve detection accuracy. Pet., 55-56; Anthony, ¶¶251-254; POR, 42-43; §IV.B (discussing Front Circuitry's transmission and use of output signal). As the Board recognized, the dark-subtracted signal improves signal-to-noise ratio ("SNR"). '484-FWD, 44; Anthony, ¶247. A POSITA would have understood—and at least found obvious—to detect a "probe-off signal" or

⁷ PO unsuccessfully faults Petitioners for referring to the "sensor," but not Front-Circuitry, as making Wear-Determination in [8.g] (POR, 40). Wrong. Petition's [8.g] analysis expressly cross-references [8.f] analysis (and thus [8.d]–[8.e]) consistently explaining that the dark-subtraction—thus Wear-Determination using the same—is performed by the Front-Circuitry. Pet., 50-55. Regardless, Lisogurski's modified-sensor encompasses Front-Circuitry. Anthony-Reply, ¶57.

⁸ PO mischaracterizes the Petition's [8.g] analysis as "not mention[ing] or relat[ing] to dark subtraction" (POR, 42), ignoring [8.g]'s cross-reference to [8.d]–[8.f] (Pet., 55) explaining the dark-subtraction in detail (Pet., 50-54). Anthony-Reply, ¶60.

“physiologically impossible value” using dark-subtracted signals, minimizing ambient noise’s impact and improving Wear-Determination accuracy, as was well known in the art. Anthony, ¶253; Pet., 55. Indeed, Exs.1057-1058 expressly disclose Wear-Determination using dark-subtracted signals, confirming the POSITA knowledge and that this would have been understood from—and at least obvious in view of—Lisogurski. Ex.1057, 18:45-51, 20:4-6; Ex.1058, ¶¶[0032]-[0033], [0044]-[0046]; Anthony, ¶254; Pet., 56. Anthony-Reply, ¶¶58-64.

D. Six LEDs ([6])

Though Lisogurski teaches “one or more,” “multiple,” and “any number” of LEDs—each disclosing six LEDs—PO wrongly requires something more. POR, 34-35; Pet., 44-46. Where the art discloses overlapping ranges, PO must show “six” is “*critical*, generally by showing that [it] achieves unexpected results relative to the prior art range.” *In re Woodruff*, 919 F.2d 1575, 1578 (Fed. Cir. 1990); *Spectrum Sols. LLC v. Longhorn Vaccines & Diagnostics, LLC*, IPR2021-00847, Paper 114 at 57-58 (PTAB May 3, 2023) (applying *Woodruff*). PO provides none—PO’s specification cites (POR, 35) confirm only that, in addition to six input/output ports (i.e., LEDs), “*any number of ports may be used*” (’475, 27:44-45). Dr. Efimov provides no significance to six LEDs either—he merely points out that mathematically with “three distinct wavelengths...six LEDs provide exactly two LEDs per wavelength.” Efimov, ¶147; Ex.1127, 192:21-193:17 (ignoring “any

number of ports may be used” disclosure). This limitation should be given no patentable weight, and regardless is taught—and at least rendered obvious—by Lisogurski. Pet., 45-46; *In re Applied Materials, Inc.*, 692 F.3d 1289, 1297 (Fed. Cir. 2012) (affirming obviousness because there was no evidence “that the claimed range [was] ‘critical’” or “‘achieves unexpected results’”). Anthony-Reply, ¶¶66-80.

The Petition explains that additional LEDs were known to improve accuracy, and a POSITA would have understood—and at least found obvious—to use six or more LEDs. Pet., 45-47; Anthony, ¶¶203-204 (noting “improved signal to noise,” “redundancy to component failures,” “ample illumination of tissue...” and “enhance[d] physiological signal detection” based on multiple LEDs), 205-208. POSITA knowledge supports motivation to use six LEDs—Lamego explicitly teaches six LEDs and using multiple LED wavelengths to improve measurement. Pet., 45-47; Lamego, [0035], [0041]. Lamego is not part of the Grounds (POR, 36-37), but provides motivation and reasonable expectation of success in using six LEDs. *Cisco Sys., Inc. v. Lionra Techs. Ltd.*, IPR2024-01281, Paper 26 at 76 (PTAB Mar. 4, 2026). Anthony-Reply, ¶¶66-70, 76-79.

Lisogurski does not teach away from increasing LED counts (POR, 34-35)—it explicitly discloses using any number (Lisogurski, 10:52-60). Lisogurski further teaches higher-power operation to improve accuracy despite PO’s alleged power and

heat concerns. Lisogurski, 9:4-7 (“[T]he system may operate in a high power mode...following...high noise levels”); POR, 36. At best, as Dr. Anthony recognized (Ex.2045, 104:18-114:19), those concerns must be balanced against Lisogurski’s improved-accuracy objectives, e.g., by increasing LED counts (Pet., 49). Dr. Efimov neither weighs the alleged complexities of a six-LED system against the benefits, nor reconciles Lisogurski’s explicit teaching of open-ended LED counts. *See* Pet., 44-46 (Lisogurski, 10:52-60, 10:65-11:6, 17:37-39, 17:43-45, 19:22-31, 27:36-43); Efimov, ¶¶146-147. Indeed, the alleged concerns regarding heat generation, signal-processing complexity, and sensor size were routine design considerations that a POSITA would have known how to address. Anthony-Reply, ¶¶71-75.

E. First/second output signals responsive to the light source being on/off and a third output signal based on the first/second output signals having a third SNR greater than the first/second output signals’ ([8.d]-[8.f])

The Board already found Lisogurski’s modified-sensor performs:

- generating output signals (“processed signals”) having SNR (’484-FWD, 23-24, 26-27; Pet., 35-36, 50-54);
- generating first/second output signals responsive to the LEDs being on (red and IR signals)/off (“dark signal”) (’484-FWD, 43-44; Pet., 40-42, 50-52); and

- subtracting the second output signal (representing noise) from the first output signal to generate a third output signal with a greater SNR ('484-FWD, 44; Pet., 53-54).

First, PO argues incorrectly that Petitioners failed to show the third signal's greater SNR than those of first/second signals. POR, 45-47. As the Board found, Lisogurski teaches ambient light noise introduces "detrimental effect on the [SNR] of the detection signal," and dark subtraction to "reduce the effect of ambient light [and] the contribution of the noise component." Pet., 54 (quoting Lisogurski, 14:46-55); Anthony, ¶247; '484-FWD, 44. Dark subtraction improves the resulting signal's SNR relative to both the original signal—containing noise—and the ambient contribution captured by the dark signal itself. Pet., 54, Anthony, ¶247; Anthony-Reply, ¶¶81-86, 95.

PO's premise for its argument—Lisogurski's "off" signal (i.e., second signal) has no SNR—is incorrect. POR, 46. Lisogurski teaches "detection signal" as including both a "dark signal portion" (LEDs off) and a "peak portion" (LEDs on), and a process removing the dark signal's effect on the peak—Lisogurski's dark signal has a SNR. Lisogurski, 6:7-19, 13:60–14:10, 14:46–55; Pet., 53-54; Anthony, ¶¶146, 243-247; Ex.1010, ¶117. Consistently, the '475 discusses improving SNR by capturing signals with the light source on/off and differencing them, without

separately addressing whether the off-signal has a SNR.⁹ '475, 58:1-22, 70:8-27. Even under PO's logic, with "0" signal to measure, the SNR would be "0," lower than any potential third signal—satisfying the limitation. Anthony-Reply, ¶¶85-86.

Second, PO argues that Petitioners identified no signals that are being both "output signal[s]" and "responsive to the light source" on/off. POR, 47-50. The Board already proved PO wrong. '484-FWD, 43-44 (Lisogurski's Front-Circuitry "**generate[s] a dark signal**" and "**second signal responsive to light**" by "measuring...**a red signal and an IR signal**" when LEDs are off/on); Pet., 40-42, 51-52. Petitioners consistently map the claimed first/second output signals to **processed** signals, not to **detection** signals. Pet., 50 ([8.d], referring to [1.f] and [1.l] for "first output signal"), 35 ([1.f], mapping "output signal" to processed signals), 40-42 ([1.k]-[1.l], together mapping first/second output signals as outputs of Front-Circuitry—i.e., processed signals)), 51-52 ([8.e], expressly mapping "second output signal" to "[Front-Circuitry] generates a 'dark signal,' having a second [SNR]"); POR, 47-50. Anthony-Reply, ¶¶81-83, 87-95.

⁹ PO is inconsistent with its district-court contentions asserting that the accused products "increase[s] the SNR, by comparing the measured signal when the LED sources are off ('first signal') and[] on ('second signal')." Ex.2116, 157. PO cannot have it both ways.

V. LISOGURSKI DISCLOSES AND RENDERS OBVIOUS THE MEMORY LIMITATION ([5]) (GROUNDS 2, 4, 6, 8)

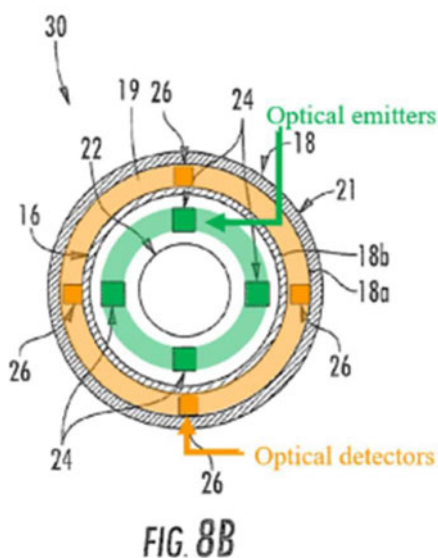
As the Petition explains, Lisogurski discloses Front-Circuitry “perform[ing] various analog and digital processing,” and POSITA would have understood—and at least found obvious—that the Front-Circuitry includes memory for those processes. Pet., 50-51, 64-65; Anthony, ¶¶238, 289. PO notes no explicit recitation of memory in Lisogurski’s Front-Circuitry (POR, 51-53), but acknowledges the Front-Circuitry’s prescribed functions requiring processing resources—e.g., memory. *Id.*; Pet., 64-65; Exs.2045-2046, 54:19-59:10, 362:16-363:3; Anthony, ¶¶238, 289. Indeed, Lisogurski teaches the Front-Circuitry’s components as “merely illustrative,” allowing “any suitable components and combinations of components may be used.” Lisogurski, 14:11-14, 7:25-27 (“Information may be encoded in...non-volatile calibration memory included in the sensor”). A POSITA would have at least found obvious to modify Lisogurski’s Front-Circuitry to include a memory. Pet., 64-65. Anthony-Reply, ¶¶96-103.

VI. LISOGURSKI DISCLOSES AND RENDERS OBVIOUS—ALONE AND IN VIEW OF LEBOEUF—THE ARC LIMITATION ([6]) (ALL GROUNDS)

Lisogurski teaches arranging “[o]ne or more detector 318” in “[a]ny suitable configuration.” Lisogurski, 17:39-43. A POSITA would have understood—and at least found obvious—to arrange the detectors in the well-known, arc arrangement to better capture light reflected at a wide range of angles. Pet., 46-47; Lisogurski,

11:16-20; Anthony, ¶209. Indeed, as Dr. Anthony explains, an arc arrangement and its benefits were well known. Anthony, ¶211; Ex.1045, 4:15-65. Anthony-Reply, ¶¶104-110.

At least, Lisogurski in view of LeBoeuf renders obvious the arc limitation. LeBeouf discloses optical emitters and detectors spatially separated in arcs.



LeBoeuf, Fig. 8B; Pet., 66-67, 70-71. A POSITA would have understood that light emitted into biological tissue undergoes significant scattering and absorption, the reflected light exits the tissue at a wide range of angles, and therefore would have been motivated to apply LeBoeuf's arc arrangement teachings to Lisogurski to improve the detection of the scattered light, increasing the SNR. Pet., 68-69; Anthony, ¶¶303-304; Ex.2045, 195:19-196:6, 198:5-17. Anthony-Reply, ¶¶111-127.

PO's contrary arguments fail. **First**, regarding Lisogurski (Ground 1), PO asserts that Petitioners arbitrarily chose an arc arrangement because neither Lisogurski nor Mendelson mentions "angled light." POR, 33 (citing *Virtek*). But, as Mendelson confirms, arranging detectors in an arc improves collecting "backscattered light" reflected at a wide range of angles from the tissue. Ex.1045, 4:14-65; Pet., 46-47, 68-69; Anthony, ¶209; *Slingshot Printing LLC v. Canon U.S.A., Inc.*, No. 2024-1956, 2026 WL 1098251, at *3 (Fed. Cir. Apr. 23, 2026) (distinguishing *Virtek* because of known design needs). The relevant inquiry is "what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to [a POSITA]" and whether there is "some articulated reasoning with some rational underpinning" for obviousness. *Alza Corp. v. Mylan Lab 'ys, Inc.*, 464 F.3d 1286, 1290-91 (Fed. Cir. 2006) (citations omitted). The arc arrangement's recognized benefits provide that "articulated reasoning." Pet., 46-47. Anthony-Reply, ¶¶104-110.

Second, PO asserts no motivation because neither LeBoeuf nor Lisogurski allegedly recites that arc arrangement improves accuracy or reliability. POR, 56. Motivation can come from figures, as LeBoeuf's does. *See Nat'l Steel Car, Ltd. v. Canadian Pac. Ry., Ltd.*, 357 F.3d 1319, 1337-38 (Fed. Cir. 2004) (finding motivation from a drawing). LeBoeuf's Fig. 8B undisputedly shows LEDs and photodetectors arranged in arcs. Dr. Anthony's testimony—which PO ignores

(POR, 56-60)—confirms Fig. 8B provides the motivation PO argues is missing.¹⁰ Ex.2045, 195:19-196:6; Pet., 68-70 (citing Anthony, ¶¶302-306). “[C]ommon knowledge” also provides the motivation (*DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1361 (2006)) as arc arrangement was known to “maximize the fraction of backscattered light collected” (Pet., 68-69 (citing Mendelson, 4:14-65; Anthony, ¶¶303-304)).¹¹ That Lisogurski, LeBoeuf, and Mendelson do not explicitly recite “angularly” from the Petition’s motivation to combine (i.e., capturing “angularly scattered light”) is irrelevant (POR, 33, 58-59)—Mendelson discusses “backscattered light,” reflected at a wide range of angles. Pet., 46-47, 68-69; Anthony, ¶¶209, 304. Anthony-Reply, ¶¶111-116.

Third, PO mischaracterizes Mendelson as lacking an LED arc arrangement, but claim 6 does not require one. POR, 56-57; ’475, Cl. 6. Regardless, Mendelson

¹⁰ That LeBoeuf’s and Lisogurski’s devices are capable of being worn on various body parts confirms motivation/expectation of success, as the Petition details. Pet., 68-69; POR, 57.

¹¹ Regardless of whether Dr. Anthony reviewed documents cited in Mendelson—Mendelson itself provides POSITA knowledge. *Contra* POR, 56-57 (citing Ex.2045, 198:19-201:12).

teaches “four R and four IR LEDs[] spaced at 90-degree intervals around the substrate and at an equal radial distance from the photodiode” (Mendelson, 4:36-44; Pet., 68-69), explicitly disclosing LEDs in arc to improve accuracy by “increasing the surface area of the subject’s tissue exposed to the emitted light” (Anthony, ¶314 (citing Anthony, §IX.C.2)). Thus, Mendelson teaches LEDs in an arc, further to photodetectors around LEDs in an arc (Pet., 68-69; Mendelson, 4:14-65), which PO does not challenge (POR, 59-60)—this is indeed LeBoeuf’s Fig. 8B configuration, confirming that LeBoeuf’s arc arrangement improves detection of backscattered light. *See Janssen Pharm., Inc. v. Teva Pharm. USA, Inc.*, 97 F.4th 915, 929 (Fed. Cir. 2024) (finding motivation “in many different places and forms”). With Lisogurski’s teaching that light intensity directly relates to light absorbance and/or reflectance, a POSITA would thus have been motivated to arrange the LEDs and detectors in arcs to increase light exposure on an area of interest and to improve detection of such light scattered from that area, as LeBoeuf teaches. Pet., 68-70; Anthony, ¶¶303-305 (citing Lisogurski, 11:9-27). Anthony-Reply, ¶¶117-121, 123.

The Petition is thus far from presupposing only linear and arc arrangements. POR, 57-59 (citing *Virtek*); Pet., 46-47, 68-70. Again, the question is whether the art and POSITA knowledge provided an articulated rationale for applying that modification to Lisogurski (*see Alza*, 464 F.3d at 1290-91)—they did. Anthony-Reply, ¶¶122.

Fourth, the above-discussed motivation is unaffected by LeBoeuf's other components. Petitioners do not argue that LeBoeuf's earbud is *physically* inserted into Lisogurski's sensor. Pet., 68-71; *In re Mouttet*, 686 F.3d 1322, 1332 (Fed. Cir. 2012) (obviousness "does not require...physical substitution of elements"); POR, 57-58. LeBoeuf's geometry—or different configurations—in LeBoeuf's other embodiments (POR, 57-58), therefore do not negate the motivation to apply LeBoeuf's LED/detector arc arrangement *teaching* to Lisogurski. Pet., 68-71. This is further supported by Lisogurski's disclosure that "[a]ny suitable configuration of light source 316 and detector 318 may be used" (Lisogurski, 17:42-45; Pet., 68), and the evidence showing a POSITA's motivation to implement LeBoeuf's teaching in multiple configurations, not dictated by the earbud structure. Exs.2045-2046, 205:6-25, 336:1-338:4 (confirming no wholesale copying of embodiment); Pet., 68-70 (citing Anthony, ¶¶303-306). PO's cites to Dr. Anthony's testimony confirm, at best, that LeBoeuf's embodiments include additional components, not that the arc arrangement requires those components. POR, 57-58. Indeed, PO does not argue that the arc arrangement of the LEDs/detectors are limited to earbuds (POR, 57-58), or provide any basis for such an argument (POR, 56-62). Anthony-Reply, ¶¶124-126.

VII. NO SECONDARY CONSIDERATIONS EXIST

A. No Evidence of Copying or a Nexus

PO wrongly accuses Samsung of copying [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] [REDACTED]

[REDACTED]

[REDACTED] POR, 69-71. That cannot show nexus or copying. *Enova Tech. Corp. v. Seagate Tech. (US) Holdings Inc.*, 706 F. App'x 987, 995 (Fed. Cir. 2017) (knowledge of the patent and products embodying patent are not “sufficient to establish copying”). Anthony-Reply, ¶¶128-144.

The Board already found each “SNR-improvement technique” known in the art. [REDACTED]

¹² PO's [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] are separate, independent entities not involved in this IPR or the co-pending litigation. POR, 69-70; Ex.2116, 1 (asserting infringement by Petitioners, not SDS or SSI); Ex.1134-1136.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]. Anthony-Reply, ¶¶129-131.

[REDACTED]

[REDACTED]

[REDACTED] [REDACTED] [REDACTED]

[REDACTED]

[REDACTED]. Anthony-Reply, ¶136.

No evidence shows Samsung’s copying “SNR-improvement techniques” [REDACTED]—PO’s reliance (POR, 71) on the infringement contentions (“PIC”) cannot establish copying. *Fleming v. Cirrus*

¹³ While alleging [REDACTED] technique, PO ties it to [REDACTED] [REDACTED] only. POR, 70-71.

Design Corp., 28 F.4th 1214, 1224 (Fed. Cir. 2022) (“Not every...product that arguably falls within the scope of a patent is evidence of copying. Otherwise[,] every infringement suit would automatically confirm the nonobviousness of [a] patent.”); *Iron Grip Barbell Co. v. USA Sports, Inc.*, 392 F.3d 1317, 1325 (Fed. Cir. 2004) (“copying requires the replication of a specific product”). Anthony-Reply, ¶¶135-137.

PO’s only remaining support for its copying assertion—Dr. Efimov’s declaration—likewise fails. POR, 71 (citing Ex.2043, ¶¶327-332). **First**, Dr. Efimov’s opinion is based on his misunderstanding that Dr. Islam’s “SNR-improving techniques” are proprietary solely for being “essentially covered by patents”—those “proprietary techniques” were public knowledge, as the Board confirmed. Ex.1127, 57:21-58:10. Anthony-Reply, ¶¶131-132.

Second, Dr. Efimov concludes copying based solely on PO’s PIC. Ex.2043, ¶¶328, 331 (citing Exs. 2106, 2116). The PIC shows neither Samsung’s copying nor infringement. *E.g.*, Ex.2116, 65-80, 80-88, 131-165. For example, for [REDACTED] [REDACTED] the PIC relies on documentation concerning third-party processors’ features (including programmable LED current), not meeting the limitation—nor does the PIC show whether or how such processors are implemented in a Samsung product. Ex.2116, 65-80. Dr. Efimov admitted not having examined any Samsung product—or Samsung’s internal documents—while

[REDACTED]

acknowledging the need to assess the products or their technical descriptions to confirm their features. Ex.1127, 71:11-98:7; Ex.1128, 34:6-50:19, 74:17-76:12, 78:9-79:12, 82:12-83:3, 88:2-89:3, 118:12-119:18 (acknowledging the same). PO's remaining, purported support likewise provides insufficient technical detail. Ex.2116, 80-88, 131-165; Ex.1127, 169:4-15 (confirming no Samsung document with technical details cited in PIC). This is in stark contrast with Lisogurski—which the Board previously found meets this limitation twice. Lisogurski, 6:3-6; '484-FWD, 27; '533-FWD, 26. Anthony-Reply, ¶¶132-134.

Third, Dr. Islam fails to identify any technique—other than those the Board already found to be met by the prior art—shared with Samsung. Ex.2100, ¶¶7-21. Likewise, Dr. Efimov notes that the presentation given to Samsung lists patents and publications, but they do not identify the '475. Ex.2106. Moreover, Dr. Efimov admitted no knowledge regarding most entities/individuals [REDACTED] [REDACTED], Samsung's corporate structure, or how any such entities/individuals relate to Samsung's wearable-device development. Ex.1127, 107:7-111:4, 126:2-139:7. He could not have opined on what information, if any, Samsung Electronics Co., Ltd. ("SEC")—i.e., developer of the accused product—received or how the information was used (if at all) in the accused products. Indeed, Dr. Efimov and Dr. Islam identifies [REDACTED]

[REDACTED].

Ex. 2100, ¶8; Ex. 2105 at OMS_SAM0031867. And whether Dr. Islam allegedly offered to help Samsung is irrelevant to whether the alleged techniques were incorporated in Samsung's devices, or whether Samsung had already developed any such techniques. Ex.2043, ¶329. No evidence ties the development or operation of Samsung's products to Dr. Islam's alleged disclosure of known SNR-improvement techniques. Anthony-Reply, ¶¶135-137.

B. No Evidence of Long-Felt Need or a Nexus to the Claims

Each of the '475 limitations that PO identifies as resolving alleged long-felt needs *was known in the art*, as the Board previously found (§VII.A). POR, 71-73 (“...increase the [SNR] by increasing light intensity...,” “...increase the [SNR] by comparing the first[] and the second signal[s],” “detection system...synchronized to the light source,” “...detectors...spatially separated from each other”); Ex.1128, 30:1-15, 48:8-49:3, 74:1-14, 85:7-87:22, 99:9-101:4, 104:4-105:26, 132:10-133:16, 139:8-15 (named inventor admitting these concepts were known in the field and not knowing about their use in wearable devices before his patents). Anthony-Reply, ¶¶131, 138-139.

Further, PO fails to establish that the '475 resolved any alleged needs to avoid “the patient [to] remain still” or “controlled clinical environments,” let alone that the '475 improved the art. POR, 71-72. Dr. Islam alleges that, although “premium wearable devices” used his “techniques” by 2017 (Ex.2103 at OMS_SAM0031785),

the “SNR...problem” was not “solved” in those devices (Ex.2100, ¶33)—his “techniques” thus did not resolve any alleged long-felt need. No nexus exists between PO’s hand-picked—already known—limitations (individually or collectively) and the alleged issues being resolved. POR. 71-74; *In re Huai-Hung Kao*, 639 F.3d 1057, 1068 (Fed. Cir. 2011) (requiring nexus); *In re Karpf*, 758 F. App’x 960, 965 (Fed. Cir. 2019) (finding no “evidence, other than attorney argument, that the claimed invention meets that [unresolved] need”). Anthony-Reply, ¶¶140-144.

VIII. CONCLUSION

PO’s arguments do not distinguish any Claim from the prior art. The Claims should be found unpatentable.

Respectfully submitted,

Dated: July 30, 2026

By: /James L. Davis, Jr./
Name: James L. Davis, Jr.
Registration No. 57,325
*Counsel for Petitioners Samsung
Electronics Co. Ltd. and Samsung
Electronics America Inc.*

CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. §42.24(c) and (d), the undersigned hereby certifies this Petitioner's Reply to Patent Owner's Response complies with the type-volume limitation of 37 CFR §42.24(c) because, exclusive of the exempted portions, it contains 5581 words as counted by the word processing program used to prepare the paper.

Dated: July 30, 2026

By: /James L. Davis, Jr./
Name: James L. Davis, Jr.
Registration No. 57,325
*Counsel for Petitioners Samsung
Electronics Co. Ltd. and Samsung
Electronics America Inc.*

CERTIFICATE OF SERVICE

The undersigned certifies that the foregoing PETITIONERS' REPLY TO PATENT OWNER'S RESPONSE was served by filing this document through the Patent Trial and Appeal Case Tracking System (P-TACTS) as well as providing a courtesy copy via electronic mail to the following attorneys of record for each party as listed below:

OMNI MEDSCI, INC.	
Lead Counsel	Back-Up Counsel
Jennifer Hayes Registration No. 50,845 Nixon Peabody LLP 300 South Grand Avenue, Suite 4100 Los Angeles, CA 90071-3151 Phone: 213-629-6179 Facsimile: 213-629-6001 jenhayes@nixonpeabody.com	Daniel Stringfield Registration No. 68,677 Phone: 312-977-4130 Facsimile: 833-923-0056 dstringfield@nixonpeabody.com Timothy Maloney Registration No. 38,233 Phone: 312-977-4451 Facsimile: 833-818-8070 tmaloney@nixonpeabody.com Angelo J. Christopher Registration No. 81,594 Phone: 312-977-4391 Facsimile: 312-977-4405 achristopher@nixonpeabody.com Benjamin R. Holt Registration No. 78,605 Phone: 202-585-8048 Facsimile: 833-824-1380 bholt@nixonpeabody.com Daniel Georgiev Registration No. 80,647

	Phone: 312-977-4412 Facsimile: 833-824-7710 dgeorgiev@nixonpeabody.com Corey Leggett Registration No. 70,017 (415) 984-8340 Facsimile: 415-984-8300 cleggett@nixonpeabody.com
FOSSIL GROUP, INC., FOSSIL STORES I, INC., AND FOSSIL PARTNERS, L.P.	
	Back-Up Counsel
	Jared A. Smith Reg. No. 73,749 FISH & RICHARDSON P.C. 12860 El Camino Real, Suite 400 San Diego, CA 92130 Phone: +1 858-678-4702 Fax: +1 858-678-5099 jasmith@fr.com Ricardo J. Bonilla Reg. No. 65,190 FISH & RICHARDSON P.C. 1717 Main Street, Suite 5000 Dallas, TX 75201 Phone: +1 214-760-6150 Fax: +1 214-747-2091 rbonilla@fr.com
OURA HEALTH OY	
	Back-Up Counsel
	Jasjit S. Vidwan Reg. No. 72,080 MAYER BROWN LLP 1999 K Street, NW Washington, DC 20006-1101

	Tel.: 202.263.3065 <u>JVidwan@mayerbrown.com</u> Robert G. Pluta Reg. No. 50,970 MAYER BROWN LLP 71 S. Wacker Drive Chicago, IL 60606 Tel.: 312.701.8641 <u>RPluta@mayerbrown.com</u>
ONEPLUS TECHNOLOGY (SHENZHEN) CO., LTD.	
	Back-Up Counsel Jack Shaw Reg. No. 72,262 CHERRY JOHNSON SIEGMUND JAMES PC 8140 Walnut Hill Lane, Suite 105 Dallas, Texas 75231 Tel: 254-732-2242 Fax: 866-627-3509 <u>jshaw@cjsjlaw.com</u>

Dated: July 30, 2026

By: /James L. Davis, Jr./
Name: James L. Davis, Jr.
Registration No. 57,325
*Counsel for Petitioners Samsung
Electronics Co. Ltd. and Samsung
Electronics America Inc.*