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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner,

v.

MASIMO CORPORATION,
Patent Owner.

Case IPR2024-00243
U.S. Patent 10,722,159

PATENT OWNER MASIMO CORPORATION'S SUR-REPLY

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2002	Expert Declaration of Vijay K. Madiseti in Support of Patent Owner's Preliminary Response
2003	Commission Opinion (Public), <i>Certain Light-Based Physiological Measurement Devices and Components Thereof</i> , Inv. No. 337-TA-1276, EDIS No. 808521 (ITC Oct. 26, 2023)
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2029	June 6–10, 2022 Public Hearing Transcript, ITC Inv. No. 337-TA-1276
2030	Emails dated August–September 2022 between Apple's and Masimo's Counsel re IPR2022-01291 and -01465
2031	Email chain regarding false statements in IPR Petitions
2032	November 17, 2023 Letter from U.S. Food & Drug Administration to Masimo Corp. re Masimo W1 510(k) Clearance
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2081	CONFIDENTIAL – ITC Exhibit CX-0299C – Designated Portions of February 18, 2022 Deposition of Dr. Stephen Waydo

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2083	CONFIDENTIAL – ITC Exhibit CX-0007C – Email from Brian Land to Paul Mannheimer et al.
2084	CONFIDENTIAL – ITC Exhibit CX-0175C – Apple Organization Chart
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2100	CONFIDENTIAL - Declaration of Vijay K. Madiseti, Ph.D. in Support of Patent Owner’s Response
2101	Document produced by Apple in related litigation bearing production numbers APL-MAS_00117783-877
2102	CONFIDENTIAL - Excerpt of document produced by Apple in related litigation bearing production numbers APL_DEL03985999-6078
2103	Document produced by Apple in related litigation bearing production numbers APL_MAS_ITC_00311268-73

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2106	“How to use the Blood Oxygen app on Apple Watch,” Apple Inc. (https://support.apple.com/en-us/120358)
2107	Transcript of October 28, 2024 Deposition of Brian Anthony, Ph.D. and Deposition Exhibit 1 Thereto
2108	Chris Stokel-Walker, “A Stand-Out Health Tracker: Masimo W1 Medical,” TIME, Oct. 30, 2024 (https://time.com/7094688/masimo-w1-medical)
2109	Declaration of Daniel C. Kiang in Response to Petitioner’s Objections to Evidence (Served Only)
2110	Email Chain Between Masimo and Apple re Cross-Use (Served Only)
2111	CONFIDENTIAL - Transcript of March 21, 2025 Deposition of Brian Anthony, Ph.D.

I. CLAIM CONSTRUCTION

Apple does not deny it is advocating that the Board adopt a claim construction it expressly told the district court was wrong. Instead, Apple incorrectly argues it can “rely[] on claim constructions that it believes are incorrect.” Reply, 2. As support, Apple relies on *Philip Morris*, where a petitioner proposed *alternative* constructions without expressing which was the correct construction. *Philip Morris Prods., S.A. v. RAI Strategic Holdings, Inc.*, IPR2020-00921, Paper 13 at 42-44 (Aug. 5, 2021). The Board’s rules permit such alternative pleadings. *See Hologic, Inc. v. Enzo Life Sciences, Inc.*, IPR2018-00019, Paper 21 at 6 (Nov. 28, 2018) (“Where a petitioner is concerned that the Board may not adopt what it believes is the proper claim construction, it may choose to offer alternative constructions and demonstrate unpatentability under each construction.”).

However, a petitioner fails to satisfy its obligations “by conducting unpatentability analysis *only* under a claim construction with which it expressly disagrees[.]” *Id.* at 2-3.¹ Thus, a petitioner “does not satisfy Rule 42.104(b)(3) when, in a proceeding applying the *Philips* claim-construction standard, it ‘expressly disagree[s] with its proffered constructions.’” *Id.* at 7 (alteration in original, internal citation omitted); *see also Samsung Elecs. of Am., Inc. v. Uniloc 2017 LLC*,

¹ All emphases added unless noted otherwise.

IPR2020-00046, Paper 6 at 10 (Apr. 1, 2020) (“We exercise our discretion and decline Petitioner’s invitation to adopt allegedly incorrect claim constructions and institute an *inter partes* review on the basis of those constructions.”); *Netflix, Inc. v. GoTV Streaming, LLC*, IPR2023-00757, Paper 18 at 9 (Dec. 21, 2023) (“In *Hologic*, the Board decided that a party in an Office proceeding may not ‘expressly disagree’ with a claim-construction position in the proceeding and still advance the disagreed-with position in the proceeding.”).

This principle applies when a party advances a construction directly contrary to the construction it advanced in district court. *Cambridge Mobile Telematics, Inc. v. Sfara, Inc.*, IPR2024-00952, Paper 12 at 5-9 (Dec. 13, 2024) (informative) (petition deficient when advocating unpatentability only under construction petitioner argued in district court was wrong); *Samsung Elecs. Am., Inc. v. Cobblestone Wireless*, IPR2024-00319, Paper 16 at 19-21 (June 24, 2024) (distinguishing situation where a petitioner proposes alternative constructions from a petitioner proposing construction contrary to what it argued was correct in district court).

That is exactly what Apple attempted to do here. Apple proposes that “opening” should be construed in a manner to include solid material like Iwamiya’s filter 17. Reply, 3. Apple took the opposite position in district court, arguing the “opening” *cannot* include solid materials. EX2098, ¶¶465, 479 (arguing “the

ordinary meaning of ‘opening’ is ‘empty space’”). Apple offers no unpatentability theories that are consistent with the claim construction arguments it advanced in district court. Thus, Apple advocates unpatentability only under a construction that it affirmatively told the district court was wrong. That alone defeats Apple’s Petition.²

II. THE CLAIMS ARE NOT OBVIOUS

A. Iwamiya Teaches Away from a Dark-Colored Coating (Claims 1, 14)

Apple’s motivation to combine Iwamiya with a dark-colored coating was premised on the wrong assumption that “Iwamiya lacks [] express disclosure of materials that would be suitable to achieve the desired ‘light shielding’ function of frame 18.” Reply, 4. The POR demonstrated that premise was faulty because Iwamiya does, in fact, disclose reflective materials for light shielding. POR, 13-15. Thus, a POSITA would have had no reason to turn to a different reference. *Id.* Apple largely ignores Masimo’s POR and raises two arguments.

First, Apple argues a POSITA would have turned to Sarantos because “absorptive material would *reduce* reflections and light scatter in the empty space

² Because Apple’s Petition fails as a procedural matter, the Board need not decide the correct construction. Masimo maintains the correct construction is the construction it offered in the district court, which encompasses both empty space and transparent material.

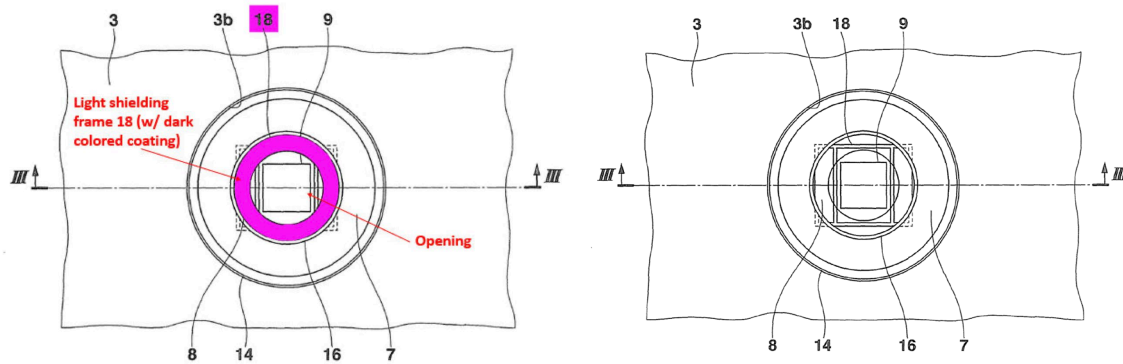
surrounding frame 18,” which reduce accuracy. Reply, 6 (Apple’s emphasis). But the POR already explained Apple’s argument was nonsensical considering Iwamiya’s design relies on numerous reflections. POR, 18-23. Indeed, Iwamiya relies on reflective materials to direct emitted light to the photodetector, thereby *increasing* signal strength. EX2100, ¶73. Given Iwamiya’s repeated concerns over signal strength, there would have been no motivation to absorb light.

Second, Apple argues a POSITA would not select a reflective material because the reflective components in Iwamiya “serve different functions” and the holder 43 is not used in the same embodiment. Reply, 6. Again, the POR already fully addressed this argument, explaining in detail why a POSITA would have viewed Iwamiya’s disclosures concerning the holder portion 43 as analogous and applicable to the light shielding frame 18. POR, 15-16. Indeed, Apple’s expert confirmed the purpose of holder portion 43 is to shield light. EX2111, 82:7-15.

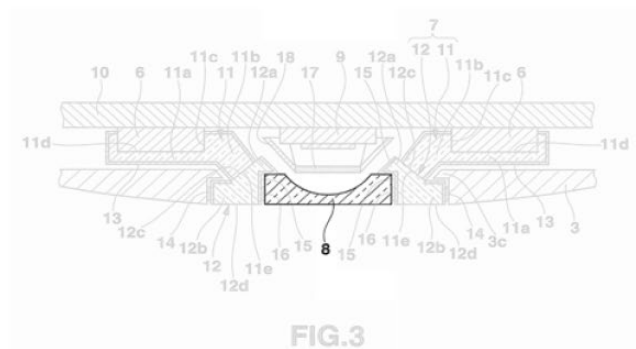
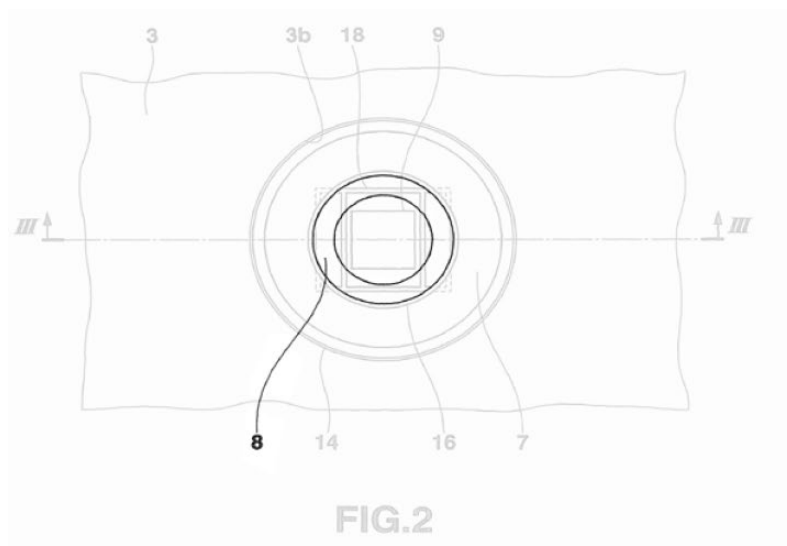
B. Iwamiya-Sarantos Does Not Render Obvious an Opening Defined in the Dark-Colored Coating

The claims require “*a surface comprising a dark-colored coating*,...wherein an *opening defined in the dark-colored coating* is configured to allow at least a portion of light reflected from the tissue to pass through the surface.” Thus, the claims require a surface that includes both a dark colored coating and an opening in the dark colored coating. Iwamiya-Sarantos discloses an entirely different structure. Apple argues “the combination of Iwamiya’s light shielding frame 18 and optical

filter 17 provides [] a surface”. Reply, 9. But Apple misunderstands Iwamiya by incorrectly arguing the pink ring below is Iwamiya’s light shielding frame 18:

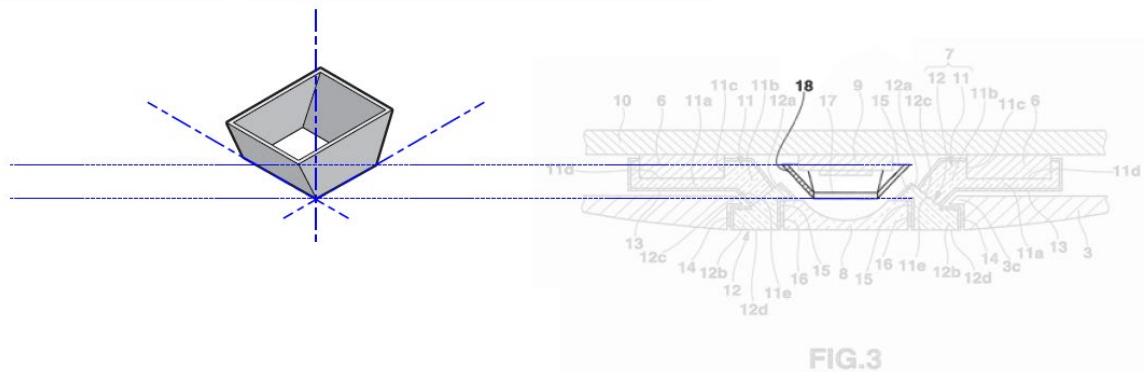
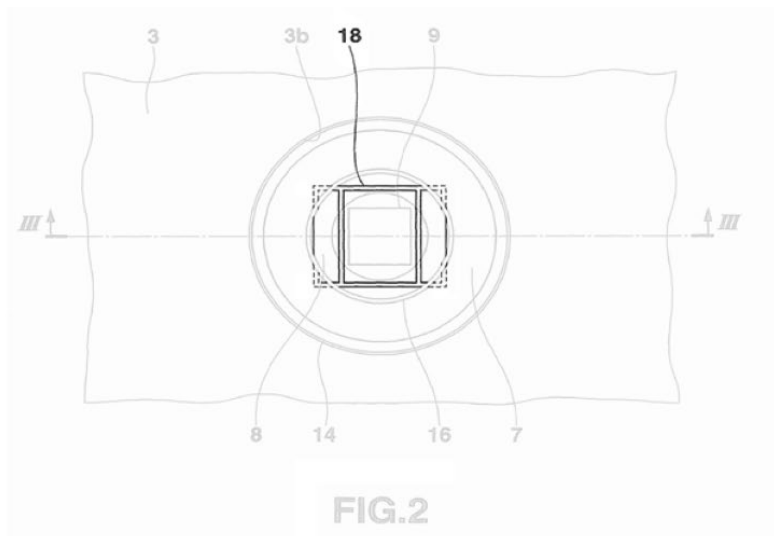


Reply, 8 (annotating Iwamiya Fig. 2); EX1004, Fig. 2. Apple’s pink shading conceals a portion of the callout line 18, which points to the rectangular structure. The pink ring Apple identified is actually part of the scattered light taking unit 8. Iwamiya explains “scattered light taking unit 8” is “formed in a shape of a concave lens to increase light reception sensitivity.” EX1004 7:55-61; EX2111 64:7-21; 65:15-17. Iwamiya’s Figures 2 and 3 illustrate the concave lens 8, which is also shown in the isometric drawing (based on Iwamiya).



EX1004, Figs. 2-3 (annotated); demonstrative isometric drawing.

In contrast, the light shielding frame 18 has four sides, each with their own surface. EX2111, 76:11-17. It is generally rectangular in shape, with a wider top and a narrower bottom, as shown in the annotated figures and isometric drawing below.



EX1004, Figs. 2-3 (annotated); demonstrative isometric drawing. Indeed, Apple's expert confirmed that the frame 18 is rectangular with four separate solid surfaces, contradicting his declaration and Apple's Reply. EX2111, 76:11-78:3, *see also id.*, 63:2-7; 70:4-71:8; 74:17-75:1; *contra* EX1079, ¶17. And none of the four side surfaces of the light shielding frame 18 include an opening.³

³ Apple has not suggested otherwise and such a modification would be inconsistent with Iwamiya's teachings. Iwamiya expresses the importance of light passing through the 900nm filter before reaching the light receiving unit 33. Allowing light to enter through an opening in any of the four side surfaces of the light shielding frame 18 would bypass the filter and defeat the teachings of Iwamiya.

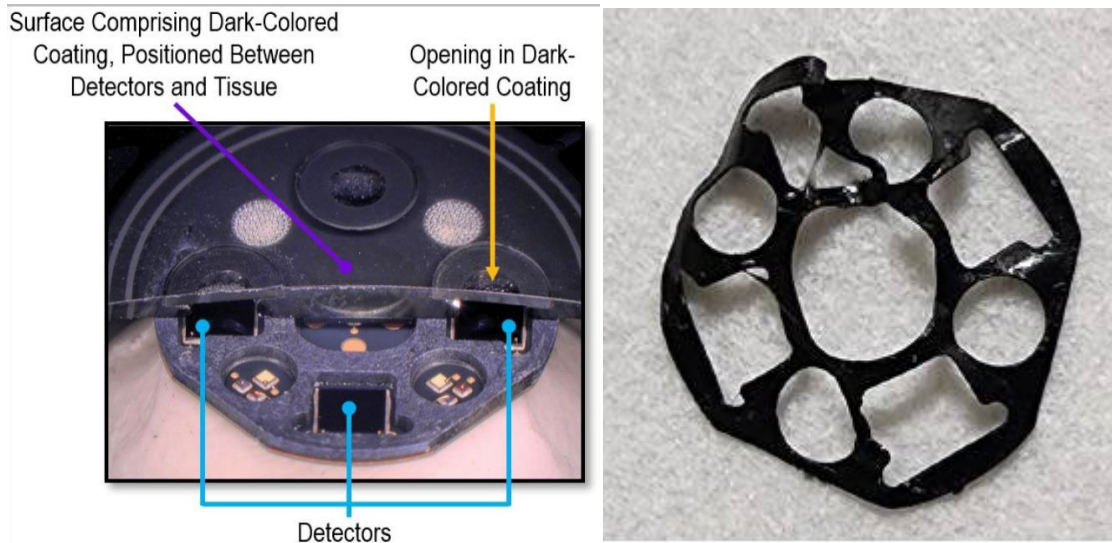
Apple thus points to four solid surfaces arranged in three-dimensional space to form what is essentially a box without a top. But a box without a top is not “a surface” with an “opening” in a “dark-colored coating.” Iwamiya simply discloses a structure that is fundamentally different than the claimed structure.

Indeed, Apple itself argues “the ’159 Patent describes ‘a *planar* surface having an opening 402 through which the emitted light may pass.’” Reply, 9 (quoting EX1001, 8:32-53, citing 9:31-10:3); *see also* EX1001, 3:14-17 (“a light-absorbing *surface that faces* the tissue measurement site”). Iwamiya’s light shielding frame 18 does not describe such a surface. Instead, the light shielding frame 18 holds the optical filter 17 at the bottom of the rectangular box, on a plane that is largely perpendicular to each of the four sides of the light shielding frame. EX1004, 8:38-42; Figs. 3-4. Thus, Iwamiya’s optical filter 17 sits on a different plane and has a surface that is different than the four sides of the light shielding frame 18.

Thus, Iwamiya-Sarantos does not meet the limitation in Claims 1 and 14 requiring “*a surface comprising a dark-colored coating*,...wherein an *opening defined in the dark-colored coating* is configured to allow at least a portion of light reflected from the tissue to pass *through the surface*.” This stands in stark contrast to the Apple Watch, which shows an example of the claimed structure. 



on the right) with openings in it that allow light to pass through the surface. EX2098, ¶¶463-464.



C. Measuring Oxygen Saturation at the Wrist Was Not Obvious (Claims 11, 18, 24)

1. Sarantos's Disclosure Is Not Sufficient

There is no dispute Iwamiya—a single-wavelength device—does not measure oxygen saturation. POR, 27; EX2099, 50:2-51:17. Thus, Apple had to turn to Sarantos. Apple “does not rely on Sarantos for specific structures, but rather for its reference to well-known techniques for measuring oxygen saturation (i.e., using red and infrared wavelengths).” Reply, 10. In other words, Apple incorrectly argues that the mere reference to red or infrared light in Sarantos would have been sufficient for a POSITA to modify Iwamiya to measure oxygen saturation at the wrist. Reply,

Nothing in Sarantos informs a POSITA how to overcome the “fundamental unsolved technical challenges.” EX2085, 13. Sarantos admitted its disclosures were “not tailored” for the wavelengths used for measuring oxygen saturation. EX1005, 18:42-51; EX2100, ¶84. At best, Sarantos contained a passing mention of oxygenation and guessed (wrongly) that it might use “an LED that predominantly emits light in the red *or* infrared spectrum.” EX1005, 13:47-49, 13:55-58. That

does not actually disclose an embodiment that determines oxygen saturation at the wrist. EX2100, ¶¶83-84. Indeed, there is no dispute that Sarantos’s assignee did not release such a device until *years* later and still described it as a “pretty hard technical problem.” EX2088, 4; POR, 39.

Apple argues that “Sarantos clearly contemplates embodiments where its device would measure blood oxygen levels using red and infrared light.” Reply, 10-11. But that is irrelevant because, as Apple represented, the Iwamiya-Sarantos combination is not based on any “specific structure[]” disclosed in Sarantos, but rather its mere reference to red/infrared light. *Id.* Moreover, Sarantos never disclosed an embodiment with red *and* infrared light. The only descriptions of multiple light sources was a green LED on the left side and a “red- *or* infrared-wavelength LED” on the right. EX1005, 13:53-58, 15:29-33 (green/red). Apple does not argue such combinations of green/red or green/infrared LEDs would be capable of measuring oxygen saturation.

Apple also argues the “ratios/dimensions” of Sarantos’s rectangular photodetectors could be “optimized for red/infrared light.” Reply, 12. But that is irrelevant because the Petition did not identify the Iwamiya-Sarantos combination as including Sarantos’s rectangular photodetectors. Pet., 20. Instead, it identified Iwamiya’s photodetectors. *Id.* Moreover, Sarantos never explained how to optimize

those ratios without undue experimentation. Neither Apple nor its expert ever shed light on such optimization.

Apple also argues that “[o]ptimizing sensitivity of the photodiodes ... adapting the optical filter to pass both red and infrared light (or implementing an oximeter without a filter), and performing signal processing” would have been obvious. Reply, 12-13. Apple’s argument concedes that modifying Iwamiya to measure oxygen saturation would have required significantly more changes (and new combinations with additional references EX1009, EX1037, EX1039, EX1041, and EX1028) than stated in the Petition. *Id.* Modifying Iwamiya’s filter to pass red light would also conflict with the filter’s purpose of avoiding sunlight (which includes red light). EX1004, 8:42-47. And Apple’s suggestion of creating an “oximeter without a filter” makes no sense because the purpose of the light shielding frame in Iwamiya is to hold the 900nm filter in front of the photodetector. *Id.*, 8:38-47. Without the filter, there would be no reason for the light shielding frame.

2. Iwamiya Teaches Away from Red Light

Iwamiya also discourages using its design to determine oxygen saturation. Iwamiya insists on the removal of visible wavelengths below 900nm, thereby excluding red light used to measure oxygen saturation. *See* POR, 29-34; EX1004 8:29-37 (detector not sensitive to red); 8:48-57 (optical filter eliminates red light); 6:31-39 (infrared LED); 13:12-23 (only light of the specific wavelength band

transmitted through the optical filter “can be accurately received”); 8:38-47 (shields light 900nm or less, alleviating influence from external light such as sunlight); EX2111, 59:20-60:5.

Apple incorrectly argues that Iwamiya never criticizes, discredits, or otherwise discourages red wavelengths “for the purpose of measuring oxygen saturation.” Reply, 13. To the contrary, Iwamiya repeatedly criticizes, discredits, and discourages all wavelengths below 900nm, including red wavelengths in the 640nm range. EX1004, 10:34-38, 6:31-34, 11:43-49, 15:26-29, 20:51-55; EX2100, ¶87. The POR and Madisetti already explained that Iwamiya’s teaching away from red in the context of pulse rate applies with greater force for oxygen saturation. As Apple itself recognized, oxygen saturation is a “more difficult measurement” than heart rate. POR, 34; EX2100, ¶¶87, 93; EX2081, 163:15-164:3. Apple never addressed that argument.

Apple argues that it would have been “suitable” to ignore Iwamiya’s teaching away from red light because, according to Apple, that teaching only applies to users with “a large amount of melanin[] pigment.” Reply, 14. But Iwamiya criticized using visible light because it caused signal problems with many users due to their skin color. POR, 33; EX2100, ¶92; EX1004, 1:57-2:5. Iwamiya was concerned with detecting pulse rate for *all* users and not just users with light skin. EX1004, 1:57-2:6. Apple’s suggestion to develop a device that works only for light skin is

fundamentally opposed to Iwamiya's teachings. *In re Wesslau*, 353 F.2d 238, 241 (C.C.P.A. 1965) (“[I]mpermissible ... to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art.”).

Further, Iwamiya's teachings that discourage wavelengths below 900nm are not limited to users with dark skin, as Apple argues. Reply, 14. Iwamiya is also concerned with ambient light in the visible spectrum. EX1004, 8:42-47 (“the optical filter 17 is configured to transmit light of a specific wavelength band of 900 nm or more and shield light of a wavelength band of 900 nm or less, such that the light receiving unit 9 alleviates an influence from a measurement change due to external light, such as sunlight.”); 13:17-21 (“the unnecessary light included in the external light such as the sunlight can be shielded by the optical filter 17”).

3. The Petition Presented Generic Motivations to Combine Iwamiya-Sarantos for Oxygen Saturation

The Petition's motivations to combine Iwamiya and Sarantos to add oxygen saturation boiled down to the generic tautology that adding oxygen saturation would have added a feature to Iwamiya. Pet., 39; POR, 34-36. And Apple's descriptions of people who might use oxygen saturation adds nothing beyond stating that oxygen saturation is useful. Pet., 39-40. As explained, those generic arguments are insufficient because they “bear[] no relation to any specific combination of prior art

elements.” POR, 34-35 (citing *ActiveVideo*). Indeed, Apple admits that it “does not rely on Sarantos for specific structure” for oxygen saturation. Reply, 10.

Apple also retracts the Petition’s argument that the combination would enable checking “oxygenation continuously, especially while jogging or exercising.” Pet., 39-40. Instead, Apple now argues that a person would “pause” their workout to measure oxygen saturation. Reply, 14. Indeed, Apple’s own engineers, who reviewed Masimo’s papers explaining measuring oxygen saturation through motion, still recognized the inordinate difficulty of measuring oxygen saturation at the wrist through motion and quickly abandoned that idea. EX2081, 169:20-171:11; 172:12-174:8; EX2078, 927:19-928:8. Only Masimo has released such a device. POR, 35.

4. A POSITA Would Not Have Had a Reasonable Expectation of Success in 2015

A POSITA also would not have reasonably expected success in modifying Iwamiya-Sarantos to determine oxygen saturation at the wrist in 2015. Apple quips that obviousness does not require “absolute predictability of success.” Reply, 19-20. “While absolute certainty is not necessary to establish a reasonable expectation of success ... *there can be little better evidence negating an expectation of success than actual reports of failure.*” *Boehringer Ingelheim Vetmedica, Inc. v. Schering-Plough Corp.*, 320 F.3d 1339, 1354 (Fed. Cir. 2003). Such is the case here.

a) **Apple's Engineers Did Not Know If Oxygen Saturation Could Be Measured from the Wrist in 2015**

Apple never seriously wrestles with the impact of its engineers' testimony and documents on a reasonable expectation of success. Apple never explains why, if there were a reasonable expectation of success in 2015, Apple needed to hire an industry expert, Dr. Mannheimer, to research its *feasibility*. Apple ignores that Mannheimer rolled his eyes at that assignment, thought "good luck with that," and told his boss he did not know if it could be done. POR, 38; EX2077, 1012:12-25; EX2080, 173:14-174:6. Apple also ignores that its engineers concluded after extensive research that there were [REDACTED] and that "Invention is required" to measure oxygen saturation at the wrist. EX2085, 13; POR, 42.

Instead, Apple recycled arguments that unfortunately misled the prior panel. For example, Apple argues its engineers were testifying from their personal perspective, not from the perspective of a POSITA as an expert witness would. Reply, 23. But Apple's Ph.D.-level engineers with decades of experience indisputably exceeded the level of ordinary skill. If they did not think they could succeed, less skilled individuals would have had lower expectations of success. Thus, their testimony evidences that a POSITA in 2015 would not have had a reasonable expectation of success. POR, 45-46. Apple cites no authority suggesting such evidence is irrelevant and that only experts may address this issue.

Apple incorrectly argues “there is ***no evidence*** that the engineers were even aware (as a POSITA would have been)” of the references Apple cited. Reply, 23. Masimo’s POR demonstrated—and Apple did not dispute—that Apple’s engineers were aware of Apple’s cited references and others like them. POR, 48-52; EX2100, ¶¶110-116; EX2101-EX2104. Apple recycled this argument from IPR2022-01291, where it successfully hid this evidence behind a protective order. In this IPR, Masimo negotiated for months to use that evidence here. Apple has no basis for repeating its prior false representation that such evidence does not exist.

Apple further argues that Apple’s engineers [REDACTED] [REDACTED] demonstrates a reasonable expectation of success. Reply, 22. Not so. The [REDACTED] demonstrates a ***lack*** of reasonable expectation of success. EX2085, 13. Apple’s engineers [REDACTED] after concluding conventional sensing methods did not work, that invention would be required, and [REDACTED]

[REDACTED] *Id.* Apple’s engineers [REDACTED] [REDACTED] [REDACTED] [REDACTED] because they did not know if they could succeed.

Moreover, [REDACTED] is a business decision. POR, 44-45. No evidence shows that Apple's engineers *actually* met with Apple's executives, what was discussed, or *why* approval was granted, if ever. Regardless, the question is whether a POSITA reviewing the cited references would have a reasonable expectation of success—*not* whether the largest company in the world could dedicate extensive resources to try to solve [REDACTED] [REDACTED] EX2085, 13.

Apple argues the challenges were due to small form factor and limited battery power. Reply, 23-24. But Apple cites no evidence that form factor or limited battery power had anything to do with its engineers' conclusion that oxygen saturation was not feasible on the wrist. In 2015, Apple's engineers were not constrained by form factor or battery power because they were working with [REDACTED] [REDACTED] EX2085, 12. Indeed, Apple's engineers highlighted problems due to wrist physiology—not battery life and form factor—as the “major challenges.” EX2085, 6; POR, 37-43. And Apple's documents showed battery life and form factor become relevant only at *later* stages of development. POR, 46. Apple's Reply effectively conceded these facts by not addressing them.

Apple argues “Unlike the [Apple] Watch, the claims do not require regulatory approval” or “measurement during all/most daily activities.” Reply, 24. Apple's argument is troubling because Apple knows the blood oxygen feature of its own

Apple Watch does not require or have regulatory approval and is not capable of measuring during all/most daily activities. EX2078, 926:23-927:5, 927:19-928:8

(Apple's engineers [REDACTED])

EX2106, 2-3 (directing users to “hold as still as you can” during measurement).

Apple argues the Apple Watch requires “small measurement error,” suggesting that Apple's engineers were merely struggling with accuracy. Reply, 24.

But in 2015, [REDACTED]

[REDACTED] an impossibility because oxygen saturation is limited to 0%-100%. EX2094, 28:3-29:19; POR, 65; EX2085, 7-9; EX2111, 156:1-15. That is not an accuracy problem—the prototypes were not working at all. And it explains why references detecting PPG signals or showing modulation ratios without calculating oxygen saturation do not demonstrate a reasonable expectation of success. EX2100, ¶110.

Apple introduces testimony from other engineers to suggest later development challenges were the reason they could not measure oxygen saturation at the wrist in 2015. Reply, 25 (Venugopal (EX1083), Mehra (EX1082), and Block (EX1084)). But Venugopal was not involved in researching whether oxygen saturation could be done at the wrist. [REDACTED]

[REDACTED] EX1083, 824, 13-23. Mehra also was not involved in the feasibility research. He “joined the team around mid-2018 after the

early prototyping feasibility had been established” and was tasked with “integrat[ing] this feature into a system in the Apple Watch.” EX2029, 852:1-6. Block worked on both feasibility and commercialization, but testified he was most proud of his “very hard work” on “figur[ing] out how to make [oxygen saturation] work on the wrist.” EX1084, 902:13-19. Block’s additional difficulty in integrating the feature into a final product is distinct from the earlier difficulties in calculating oxygen saturation at the wrist.

Finally, Apple incorrectly represents that Masimo’s expert “did not consider [Apple’s] design constraints when forming his opinions.” Reply, 24-25. Madisetti expressly stated that he did. EX1086, 260:20-262:13; EX2100, ¶¶106-108. In fact, Apple never acknowledges that Madisetti and the POR already addressed every issue concerning Apple’s engineers that Apple raised in Reply.

b) Sarantos, Pang, Li, Cai, Maattala, and Brady Do Not Demonstrate a Reasonable Expectation of Success

The Petition relied on Sarantos, Pang, Li, Cai, Maattala, and Brady for reasonable expectation of success. Pet., 41-42. None of those references disclosed an actual calculation of oxygen saturation from the wrist. POR, 48-54. Apple suggested the “evidence is equivocal concerning the *reason* why” no such device existed for years. Reply, 20. But Apple’s Reply offered no explanation. *Id.* All evidence demonstrates oxygen saturation at the wrist was still an unsolved challenge in 2015.

c) **Apple's Waived Arguments Fail to Demonstrate a Reasonable Expectation of Success**

As explained in Masimo's motion to strike, Apple's Reply improperly raises new exhibits and arguments regarding expectation of success. Masimo's POR argued—and Apple did not dispute—that Apple's Petition waived those arguments by improperly incorporating them by reference. POR, 53; *generally* Reply.

Apple's Reply now raises those waived arguments. Reply, 15 (referencing “APPLE-1014–APPLE-1018, APPLE-1028, APPLE-1036, APPLE-1038, APPLE-1042–APPLE-1048”), *id.* at 19 (string-citing EX1017, EX1043, EX1044, EX1036, EX1045, EX1046, EX1038, EX1047, EX1048); *id.* at 18 (discussing Fontaine (EX1042)). But those arguments *still* violate the rule against incorporation by reference because Apple provided only single-sentence conclusions followed by string-citations to exhibits and numerous pages of declarations. Reply, 15 (string-citing above references and EX1003, ¶¶100-109 and EX1079, ¶¶34-53); *id.* at 19 (string-citing above references and EX1003, ¶¶100-109 and EX1079, ¶¶35-38).

The Board rejected Apple's same tactic in IPR2022-01291. EX2035, 90-91; *see also Cisco Sys., Inc. v. C-Cation Techs., Inc.*, IPR2014-00454, Paper 12 at 7-10 (PTAB Aug. 29, 2014) (informative) (citing declaration to support conclusory statements not otherwise supported in the petition is improper); *Parus Holdings, Inc. v. Google LLC*, 70 F.4th 1365, 1371 (Fed. Cir. 2023) (improper to “throw[] mountains of evidence at the Board without explanation or identification of the

relevant portions of that evidence.”). The Board should likewise ignore those string-citations here.

Regardless, Apple’s string-citations do not withstand scrutiny. For example, Goldreich (EX1036) described a wrist-worn device where a user would place their *finger* on top to measure oxygen saturation. EX1036, [0126], Fig. 5 (SpO2 sensor 566 located on top of a watch-like device). Lindberg (EX1017) showed only PPG signals obtained from a single-wavelength device—which could not measure oxygen saturation. EX1017, 82 (showing PPG signals), 50 (explaining test device had six light sources all at 875 nm). Neither Apple nor its expert explain the relevance of any other string-cited exhibits.

Apple argues that Fontaine (EX1042) “demonstrates that in 2013, a group of undergraduates were able to accurately measure” oxygen saturation. Reply, 18. But Apple cites *no evidence* showing Fontaine was published in 2013 or reflects work in 2013. That document is completely undated. *See generally* EX1042; EX1087, 495:15-496:4. Moreover, Apple’s reliance on EX1042 to establish the truth of the matter asserted (*e.g.*, successful oxygen saturation measurements) is classic hearsay not subject to any exception. Fed. R. Evid. 801. On its face, EX1042 appears to be nothing more than undated, unsigned, and ungraded schoolwork that does not inform whether a POSITA would have had a reasonable expectation of success in

determining oxygen saturation at the wrist in 2015. EX1087, 495:15-496:4. That is especially true given the extensive contrary evidence of record.

d) **Apple's Enablement Arguments Are Irrelevant**

Apple erroneously conflated two distinct legal concepts: expectation of success for prior art and enablement for the patented claims. Reply, 19-22. Obviousness ***requires*** a reasonable expectation that the combination of prior art would successfully achieve the claimed invention. *Kinetic Concepts, Inc. v. Smith & Nephew, Inc.*, 688 F.3d 1342, 1360 (Fed. Cir. 2012). In contrast, a POSITA's expectation of whether a prior art combination would succeed plays ***no*** role in the enablement analysis. *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988). Apple thus improperly injected enablement issues into this IPR.

Apple argues the '159 Patent only makes "passing reference to pulse oximetry at the wrist." Reply, 20. But the '159 Patent need not reiterate known ***challenges*** before providing a solution. The patent describes multiple advances that work together to facilitate oxygen saturation determinations from difficult-to-measure locations like the wrist. *See* EX2002, ¶¶39-44.

Apple argues that the '159 Patent "assumes that a POSITA would have known how to implement such measurements at the wrist despite the weaker signal." Reply, 21. Apple cited testimony from Masimo's different expert in IPR2022-01291, but that expert never agreed to any such statement. Instead, that expert explained that

the '745 Patent disclosure enables the claimed inventions. EX1080, 17:19-22, 31:4-17, 48:17-22. Unlike every other reference that Apple cited, the '159 Patent and related patents resulted in an FDA-cleared device that measures oxygen saturation at the wrist. EX2093, 199-207 (ITC finding Masimo W1™ practiced Claim 18 of related '745 Patent by successfully measuring oxygen saturation at the wrist).

D. Apple Does Not Dispute the Objective Evidence Showing Non-Obviousness (Claims 8, 17)

Apple's Reply fails to address any of Masimo's arguments that industry skepticism, failure of others, and long-felt but unmet need support the patentability of Claims 8 and 17. POR, 54-59; *generally* Reply. Moreover, if the Board considers Apple's waived evidence (*supra* Section II.C.4.c), that evidence only further demonstrates a long-felt-but-unmet need for a device that measured oxygen saturation at the wrist. POR, 59.

E. Iwamiya-Sarantos Does Not Disclose an Opening with Different Length and Width (Claim 12)

The POR explained Apple's reliance on Sarantos's window regions 2226 being coextensive with Sarantos's HAR photodetectors was nonsensical because the Iwamiya-Sarantos combination does not include Sarantos's HAR photodetectors. POR, 59-61. In other words, Apple argued the limitations were taught by a feature in Sarantos that was not combined with Iwamiya. Apple's Reply still relies on the HAR photodetectors without addressing that they are not part of the Iwamiya-

Sarantos combination. Reply, 26. Apple has not identified how the alleged “opening” in Iwamiya-Sarantos has a different length and width.

F. Apple Fails to Show Iwamiya-Sarantos Renders Obvious Detectors Arranged in an Array (Claims 5, 14, 25)

Apple’s Petition suggested that an arrangement of photodetectors with empty space in the middle would “increas[e] detection area and light sensitivity.” Pet., 34. But as the Board previously found, Iwamiya uses a “scattered light taking unit 8, which is a transparent lens to focus the light on light receiving unit 9.” POR, 64 (citing EX2035, 17); EX1004, 6:14-21, 7:50-8:13, 10:62-11:3, 12:55-67; EX2100, ¶137. Masimo explained that a POSITA would not have understood Iwamiya’s description of an alternative embodiment to encompass a design where the transparent lens focused light on an area where there were no detectors. POR, 63-64. Apple ignores this glaring deficiency. Reply, 26-29. A POSITA would not adopt Apple’s modification that focuses light to where it cannot be detected. EX2100, ¶137.

G. Apple Fails to Show a Light Pattern with a Different Width and Length (Claim 24)

Apple previously did not address Claim 24 other than with a cross-reference to Claim 12. Pet., 74. Masimo explained that the limitations are different, with Claim 12 directed to the dark-colored coating and Claim 24 directed to emitted light.

POR 67. Apple now acknowledges the claim limitations are different, but Apple still fails to address the limitations in Claim 24 directed to emitted light.

III. APPLE’S CRITICISMS OF DR. MADISETTI LACK MERIT

Apple argues that Madisetti’s opinions are not sufficiently supported. Reply, 29. Yet, Apple does not identify a single opinion that Apple contends is not sufficiently supported.

Apple incorrectly argues Madisetti was non-responsive during cross-examination. Reply, 29-30. Apple questioned Madisetti for hours on topics its counsel admitted were far outside the scope of his declaration, including enablement and written description. EX1087, 384:12-385:11; 410:21-411:18. Madisetti answered counsel’s questions and explained that he had not formed opinions on topics outside of his declaration. Apple was not entitled to cross-examine Madisetti on topics outside the scope of his declaration. Fed. R. Evid. 611(b); 37 C.F.R. §42.53(d)(5)(ii).

Apple further incorrectly asserts Madisetti testified “that he was only required to answer questions ‘if asked by the court to do so.’” Reply, 30 (citing EX1086, 144:6-145:13; 158:6-159:8). Madisetti explained he had not offered an opinion on that enablement-related issue, but that he would do so if asked in the future.

Apple further misrepresents that Madisetti was unwilling to address the specification’s “opening 402” and identify examples of the “opening defined in the

dark-colored coating.” Reply, 31. Madisetti explained that the patent “clearly says here that the light-absorbing detector filter 306 is a planar surface having an opening 402. And it goes to continue and describe many different aspects and different embodiments...” EX1086 45:1-47:1. When asked about the “opening defined in the dark-colored coating,” Madisetti answered “the specification provides examples, for example, Figure 4A, where it says that there is a light-absorbing detector filter 306, which is depicted in Figure 4A, is a planar surface having an opening 402 to which the emitted light may pass after being attenuated by the tissue measurement site.” EX1086 62:21-19.

Apple’s complaints about its “light block” questions are also inappropriate because counsel admitted those questions were beyond the scope of Madisetti’s declaration. Reply, 31; EX1087, 384:12-385:11; 410:21-411:18.

Apple asserts Madisetti would not opine on the meaning of “annular” or “circumference.” Reply, 31-32. But Madisetti did precisely that. EX1087, 443:19-444:2 (explaining “annulus”); 461:4-463:8 (explaining “circumference”). Apple’s criticisms are baseless.

IPR2024-00243

Apple Inc. v. Masimo Corp.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: March 28, 2025

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CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. § 42.24(d), Counsel for Patent Owner Masimo Corporation hereby certifies that this document complies with the type-volume limitation of 37 C.F.R. § 42.24(c)(4). According to Microsoft Office Word 2010's word count, this document contains approximately 5,411 words, including any statement of material facts to be admitted or denied in support, and excluding the table of contents, table of authorities, mandatory notices under § 42.8, exhibit list, certificate of service or word count, or appendix of exhibits or claim listing.

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: March 28, 2025

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CERTIFICATE OF SERVICE

I hereby certify that, pursuant to 37 C.F.R. § 42.6(e) and with the agreement of counsel for Petitioner, a true and correct copy of **PATENT OWNER MASIMO CORPORATION'S SUR-REPLY** is being served electronically on March 28, 2025 to the e-mail addresses shown below:

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