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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner,

v.

WILLOW LABORATORIES, INC.,
Patent Owner.

Case IPR2024-00296
U.S. Patent 10,984,911

**PATENT OWNER WILLOW LABORATORIES, INC.'S
SUR-REPLY**

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Claims 1, 19, and their dependents require a light block with “only one opening” through which light passes to reach the detector. Apple argues Abdul-Hafiz’s “aperture” is the “only one opening.” But Apple is wrong because within that aperture is a light-blocking EMI shield with four openings—not “only one.”

Claims 1 and 10, their dependents, and Claim 20 require an “opening”/“window” with an area smaller than the detector’s detection surface area. The Board correctly held Abdul-Hafiz lacks these limitations because it does not disclose the dimensions or area of its aperture (the alleged “opening”/“window”) relative to its detection surface area. Apple’s Reply shows no reason to depart from that well-founded holding. The Reply also raises the new argument that a POSITA would have made Abdul-Hafiz’s aperture “smaller.” But even if considered, Apple’s new modification argument fails to show obviousness for several reasons.

The Board instituted this IPR because a handful of claims (Claim 19 and some dependents) do not require the smaller “opening”/“window.” But those claims, like all challenged claims, require at least three LEDs of different wavelengths. Based on Raley, Apple argues measuring at least oxygen saturation, carboxyhemoglobin, and methemoglobin would have motivated adding four LEDs of different wavelengths to Abdul-Hafiz. But doing what Apple proposes—measuring those analytes with only four wavelengths—was not enabled in the prior art, reasonably expected to succeed, or something a POSITA would have been motivated to do.

I. GROUND 1A FAILS TO DEMONSTRATE OBVIOUSNESS**A. Apple's Combination Lacks the Claimed Light Block****1. Apple Fails to Establish Any Reference Discloses a Light Block with "Only One Opening" (Claims 1-4, 6, 8, 19-21, 23-26, 28)**

Apple's grounds undisputedly rely on Abdul-Hafiz's shielded detector assembly (1000). Reply, 3-4; EX2080, 107:8-14; POR, 23. Apple also does not dispute that shielded detector assembly (1000) encloses the detector (820) with an EMI shield (1005/1010) and an optical housing (400). Reply, 3-4; POR, 22-23.

Apple argues Abdul-Hafiz discloses a light block with "only one opening" because "light passes through [Abdul-Hafiz's] single aperture 470 in [] optical housing 400 to detector 820." Reply, 3. But Apple improperly ignores the EMI shield (1005) in Abdul-Hafiz's aperture (470). *Id.*, 3, 8 (Apple admitting "Abdul-Hafiz's aperture (470) includes a fixed shield (1005)"). The EMI shield (1005) blocks light other than through its **four** holes (shown below). POR, 23-25; EX1004, FIG. 11B, ¶¶39, 46-47; EX2080; 108:17-113:15, 115:8-17; EX2079 ¶¶74-79.

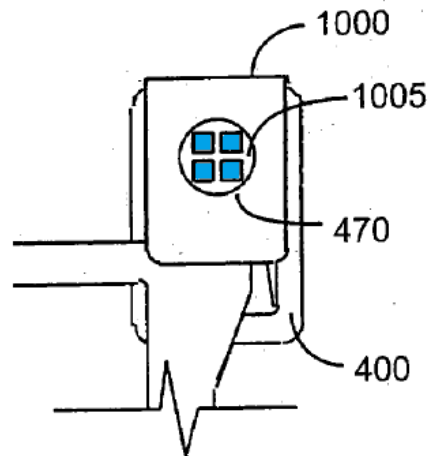


FIG. 11B

Light passes through aperture (470) and these **four** holes to the detector (820) within the assembly (1000). POR, 24-25; EX1004, FIGS. 11B, 6A, ¶¶39, 46-47; EX2079 ¶¶77-79. Because of the EMI shield (1005), light passes through **four** openings—**not one**—before reaching Abdul-Hafiz’s detector (820). *Id.*

Apple now argues EMI shield (1005) is not a light block because Abdul-Hafiz never expressly says its EMI shield blocks light and Apple’s expert described “examples of EMI shields” that may not block light. Reply, 3. But Apple ignores its expert’s repeated admissions that Abdul-Hafiz’s EMI shield (1005) would block light from reaching the detector (820) other than through the **four** holes shown above. EX2080, 109:13-113:15, 115:8-17. And Apple ignores the evidence, including its expert’s admissions, that a POSITA would have known the EMI shield (1005) is made of opaque material that blocks light other than through its **four** holes. *Id.*, 105:8-106:21, 112:9-21; EX1004 ¶¶46-47, FIGS. 10-11; EX2079 ¶77; EX1080

¶73. That EMI shield (1005) is the relevant inquiry, not speculative “examples” of other EMI shields (Reply, 3) that Apple’s expert could imagine.

Apple also argues that if Abdul-Hafiz’s EMI shield (1005) is a light block, the ’911 Patent “provides no support” for a light block with only one opening because the ’911 patent’s EMI shield has a grid [2444] with multiple openings.” Reply, 4. But Apple cannot challenge “support” (§112) for the claims. 35 U.S.C. §311(b). Apple’s argument also wrongly assumes Abdul-Hafiz and the ’911 Patent have “the same” or “similar” EMI shields. EX1079 ¶15; Reply, 4. But Abdul-Hafiz’s EMI shield (1005) only allows light to pass through the **four discrete areas** shown above. POR, 24-25, 30-31. Conversely, the ’911 Patent’s EMI shield has a mesh “grid” (2444) that “allows light to reach the detector” through its entire area. EX1001, FIGS. 24, 46, 13:38-53, 19:5-15; EX1082 ¶933.

Apple also concedes it does not propose “remov[ing] the EMI shield” of Abdul-Hafiz. Reply, 3. And Apple does not dispute the EMI shield (1005) is attached to the detector (820) and enclosed by the optical housing (400). *Id.* Because that EMI shield results in Abdul-Hafiz having more than “only one opening,” and Apple provides no reason to remove it, Abdul-Hafiz does not include “only one opening.” POR, 24-25; EX2079 ¶¶78-79.

Further, Apple attempts to show obviousness based on the optical housing’s aperture (470) and detector (820) while ignoring the above-described EMI shield

(1005) in that aperture. Pet., 41-44; Reply, 3. But as Apple admits, “Abdul-Hafiz’s aperture (470) includes a fixed shield (1005).” Reply, 8; POR, 22-25. Thus, Apple’s theory requires “selectively” reading Abdul-Hafiz to ignore the EMI shield (1005) within its aperture (470), which is improper. POR, 23-25; *Henny Penny Corp. v. Frymaster LLC*, 938 F.3d 1324, 1332 (Fed. Cir. 2019). And Apple identifies no authority for its assumption that ignoring Abdul-Hafiz’s disclosure is prohibited for the motivation-to-combine analysis only. Reply, 3-4.

2. As the Board Correctly Found, Apple Fails to Establish Any Reference Discloses an Opening/Window with an Area “Smaller Than” the Detector’s Detection Surface Area (Claims 1-4, 6, 8, 10-13, 15, 17, 20)

Most challenged claims require an “opening”/“window” with an area smaller than a detection surface area of the at least one detector. The Board correctly found that Apple failed to show obviousness for these claims because Abdul-Hafiz does not disclose such an “opening”/“window.” Paper 8, 44-47. Apple does not challenge, or even mention, the Board’s well-reasoned decision. Reply, 5-11. Instead, Apple now argues Abdul-Hafiz must disclose the missing limitation because “[its] specification and figures are at least as, if not more, detailed than the ’911 patent’s specification and figures supporting this element.” *Id.* Apple’s new comparison argument fails for many reasons.

First, Apple merely repeats its Petition argument that the precise dimensions and sizes it infers from Abdul-Hafiz’s figures somehow disclose this limitation. *Id.*,

6 (“Abdul-Hafiz satisfies this element...from its figures.”), 5-11; Pet., 46-51, 69. But Masimo has already shown that Apple’s reliance on Abdul-Hafiz’s figures is legally erroneous and fails to show disclosure of the claimed “opening”/“window.” POR, 27-30; EX2079 ¶¶83-86. Abdul-Hafiz’s figures are not described as defining precise proportions or drawn to scale. *Id.* And the law prohibits Apple’s reliance on Abdul-Hafiz’s drawings to show particular sizes of features where, as here, the reference is silent on that issue. POR, 28-29 (citing *Hockerson-Halberstadt, Inc. v. Avia Grp. Int’l, Inc.*, 222 F.3d 951, 956 (Fed. Cir. 2000)). Thus, Apple’s arguments based on Abdul-Hafiz’s undisputedly not-to-scale drawings fail as a matter of law. *Id.*, 27-30; *see, e.g., Nystrom v. TREX Co.*, 424 F.3d 1136, 1149 (Fed. Cir. 2005).

Consistent with this precedent, the Board correctly found Apple fails to show obviousness because the “shape and dimensions of photodiode chip 821 and detector 820 remain unclear from Abdul-Hafiz’s disclosure.” Paper 8, 44-47. And rather than address this precedent, Apple ignores it. Thus, Apple presents no reason for the Board to depart from its well-reasoned, legally sound conclusion.

Second, citing a patent prosecution case (*In re Epstein*), Apple argues Masimo “should not be able to rely on the ’911 patent’s figures as providing support for this element while complaining that Apple cannot rely on Abdul-Hafiz’s figures.” Reply, 5. But §112 “support” is not at issue here, where Apple cannot raise such a challenge. 35 U.S.C. §311(b).

Apple's reliance on *In re Epstein* is also misplaced. Reply, 5-11. That patent prosecution case does not permit, much less require, the Board in an IPR to compare the disclosures of the '911 Patent and Abdul-Hafiz before finding Abdul-Hafiz fails to disclose this limitation. *In re Epstein*, 32 F.3d 1559, 1568 (Fed. Cir. 1994). Indeed, the Board correctly found Abdul-Hafiz does not disclose this limitation, and did so without the improper, hindsight-driven comparison Apple now advocates. Paper 8, 44-47.

Third, Apple's comparison argument relies heavily on the '911 Patent to argue Abdul-Hafiz renders this limitation obvious. Reply, 5-11. But this is "the impermissible *ex post* reasoning and hindsight bias that *KSR* warned against." *TQ Delta, LLC v. CISCO Sys., Inc.*, 942 F.3d 1352, 1361 (Fed. Cir. 2019). Apple cannot use the '911 Patent as its guide for arguing obviousness. *See, e.g., In re NTP, Inc.*, 654 F.3d 1279, 1299 (Fed. Cir. 2011).

Fourth, Apple ignores '911 Patent disclosures that are absent in Abdul-Hafiz. FIG. 24 of the '911 Patent shows that the detector's (2410) detection surface area is the same size as the EMI shield grid (2444, of assembly 2400) to which it is attached. EX1082 ¶933. Conversely, Abdul-Hafiz never discloses its detector's (820) detection surface area relative to the EMI shield (1005) to which it is attached. POR, 28-29. Further, FIG. 46 of the '911 Patent is drawn relative to scale and shows an opening in the light block (3200) smaller than the area of the grid in assembly 2400.

EX1082 ¶¶930-36. That light block opening is thus smaller than the detection surface area commensurate with the area of the grid. *Id.* Conversely, Abdul-Hafiz never shows the area of its aperture (470) relative to the detector's (820) detection surface area. POR, 28-29; EX2079 ¶¶82-86; EX1004.

Apple also argues Abdul-Hafiz's FIGS. 3, 6, 10, and 11B somehow disclose the "opening"/"window" smaller than the detection surface area. Reply, 6-10. Apple even fabricates a "boundary of detection surface area" for Abdul-Hafiz. *Id.*, 8-10. But Apple is wrong, as Masimo has explained. POR, 28-34. Indeed, Abdul-Hafiz *never* shows or describes the size of its detector/detection surface area relative to the size of its aperture. *Id.* Further, Apple vaguely speculates: "the surface area of the EMI shield (1005) is representative of the surface area of Abdul-Hafiz's detector, just like the '911 patent FIG. 46." Reply, 8. But Apple cites nothing to support its speculation. *Id.* Such hindsight attorney argument fails to show any actual disclosure of Abdul-Hafiz, much less a POSITA's understanding.

Apple also argues the detection surface area "must be bigger than [Abdul-Hafiz's] circle [i.e., aperture (470)] otherwise the boundary of the detector would be visible" in that aperture in FIG. 11B. Reply, 8. But Apple ignores Abdul-Hafiz's explanation that its detector's (820) outer boundaries are "not visible in FIG. 11B" because they are "*behind the [EMI] shield 1005.*" EX1004 ¶47, FIG. 11B. Indeed, a POSITA would have known *EMI shield (1005) is made of opaque material* that

blocks light other than through its four holes. EX2079 ¶¶77; EX2080, 105:8-106:21, 109:13-115:17; EX1083, 40:21-43:10. Because they are behind the opaque EMI shield (1005), Apple’s expert admitted “the outer boundaries of the detector are not shown in [FIG. 11B].” EX2080, 114:8-115:14.

By ignoring this disclosure of Abdul-Hafiz and the understanding of a POSITA, Apple argues FIG. 11B would somehow “reveal that the [detector’s] width is at least as wide as or wider than the diameter of the circular aperture.” Reply, 9-10. But Abdul-Hafiz and the parties’ experts confirm FIG. 11B **does not** show the detector’s outer boundaries and thus **does not** show any dimension of the detection surface area. EX1004 ¶47, FIG. 11B; EX2080, 114:8-115:14; EX2079 ¶¶87-88.

Apple also argues Masimo did not support its argument that Abdul-Hafiz’s detection surface area is the annotated “four blue areas” where light hits the detector. Reply, 9. But Masimo explained, based on expert testimony (EX2079 ¶¶87-89), that a POSITA would have understood the EMI shield’s (1005) four openings were coextensive with the detection surface area because the EMI shield is applied directly onto the detector. POR, 30-32. Apple’s expert did not disagree. He opined the detection surface area may be “slightly” larger than the four square areas in FIG. 11B if light hit the detector at “slightly oblique angles.” EX2080, 114:8-115:2.

Finally, Apple argues Masimo’s LNOP sensor should be ignored because “there are differences between the LNOP sensor and Abdul-Hafiz.” Reply, 10-11.

But Apple identifies no differences. *Id.* Apple merely notes the LNOP sensor is covered by several additional patents. *Id.* But that does not change that Abdul-Hafiz, or the LNOP sensor, fails to disclose this limitation. POR, 33-36.

B. Apple Fails to Establish a POSITA Would Have Been Motivated to Modify Abdul-Hafiz with a Reasonable Expectation of Success

1. No Reason to Modify Abdul-Hafiz to have “Only One Opening” (Claims 1-4, 6, 8, 19-21, 23-26, 28)

Abdul-Hafiz does not have a light block with “only one opening.” *Supra* §I.A.1; POR, 22-25. And Apple does not argue a POSITA would have modified Abdul-Hafiz to have “only one opening.” Reply; Pet., 44-51. Thus, Apple fails to show obviousness for these claims.

2. No Reason to Modify Abdul-Hafiz to have a Smaller Opening/Window (Claims 1-4, 6, 8, 10-13, 15, 17, 20)

Apple’s Petition relies solely “on Abdul-Hafiz’s disclosure” and argues Abdul-Hafiz already discloses an “opening”/“window” with an area smaller than the detection surface area. Pet., 50-51. Because Apple alleged this feature was disclosed, Apple did not propose modifying Abdul-Hafiz to include it. *Id.* Thus, as Masimo showed and the Board correctly held, Apple’s ground fails because Abdul-Hafiz does not disclose this feature. Paper 8, 44-47.

On Reply, Apple presents a new theory. Apple now argues “a POSITA would have been *motivated to modify* Abdul-Hafiz to have a smaller ‘opening’/‘window’” in view of Webster, Schulz, and Kimura. Reply, 11. Apple argues this theory was

“proposed” and “explained” in pages 50-51 of its Petition. *Id.* But those pages never mention “modifying” Abdul-Hafiz, any “motivation,” or Apple’s three new references. Pet., 50-51. Instead, Apple’s Petition argument is “based on Abdul-Hafiz’s disclosure” only, and describes benefits Abdul-Hafiz allegedly already provides. *Id.* Thus, Masimo’s POR addressed Abdul-Hafiz’s disclosure only. POR, 25-38. Because Apple’s new modification theory is not in the Petition or responsive to Masimo’s POR, the Board should not consider it. 37 C.F.R. §42.23(b); *Yita LLC v. MacNeil IP LLC*, 69 F.4th 1356, 1365-67 (Fed. Cir. 2023) (affirming Board’s refusal to consider new motivation theory raised on reply); *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369-70 (Fed. Cir. 2016) (same).

Even if considered, Apple’s new modification theory fails for several reasons.

First, Apple argues blocking light with a “large angle of incidence” from reaching the detector would have motivated modifying Abdul-Hafiz “to have a smaller aperture (470).” Reply, 11-12. But again, Apple improperly ignores the EMI shield (1005) in Abdul-Hafiz’s aperture. *Id.*; *id.*, 8 (admitting “aperture (470) includes a fixed EMI shield (1005)”; POR, 30-32. That EMI shield (1005) blocks light from reaching the detector except through **four small holes** (shown below).

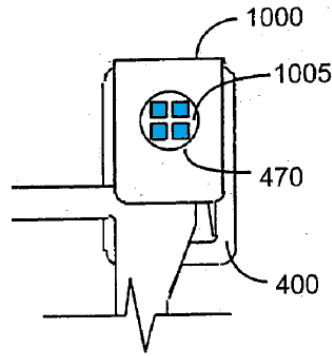


FIG. 11B

Supra §I.A.1. And as Apple’s expert admitted, the EMI shield’s (1005) **four small holes** only allow up to “*slightly* oblique angles” of incident light to reach the detector. EX2080, 114:15-115:2. Thus, there is no dispute that a POSITA would have understood the EMI shield’s (1005) small holes control the angle of incident light and already block light at large angles of incidence. *Id.*; POR, 30-32. Accordingly, blocking light with a large angle of incidence could not have motivated a POSITA to make Abdul-Hafiz’s aperture (470) smaller. *Id.*

Second, even if Apple could pretend Abdul-Hafiz’s aperture (470) does not include the EMI shield (1005), Apple fails to show obviousness. Apple’s expert testified “the pathways for ambient light have already pretty much been entirely dealt with” by Abdul-Hafiz’s existing optical housing (400) design. EX2080, 137:13-138:1; *id.*, 138:4-19, 140:8-12 (also admitting Abdul-Hafiz’s existing design “illustrated here” in FIG. 11B “substantially eliminated” light of larger angles of incidence). Because a POSITA would have known Abdul-Hafiz’s optical housing

(400) entirely dealt with any issue with extraneous light, there would be no need to further resolve that same issue. *Id.* Thus, Apple’s reasoning would not have motivated a POSITA to make the housing’s aperture (470) smaller.

Third, Apple was required to put forth at least one reference disclosing an “opening”/“window” smaller than the detection surface area. *Par Pharm., Inc. v. TWi Pharms., Inc.*, 773 F.3d 1186, 1194 (Fed. Cir. 2014) (challenger has “burden to prove that all claimed limitations are disclosed in the prior art”). But none of Apple’s references disclose it. It is not disclosed by Abdul-Hafiz. *Supra* §I.A.2; POR, 25-36. It is also not disclosed by Apple’s new references because: (1) Webster merely mentions decreasing the angle of incident light with “thoughtful LED/photodiode placement” (EX1011, 95-97); (2) Schulz merely mentions a window in opaque material can be “sized as needed” (EX1080 ¶73); and (3) Kimura merely describes adjusting one dimension (“width”) of a window (EX1081, 12:51-63, 14:19-47, FIG. 22; EX2082 ¶186 (Apple’s expert admitting “Kimura is silent on the shape of both the window and the photodiode.”)). These not-drawn-to-scale references do not disclose an opening/window smaller than the detection surface area, for any reason. *Id.* Because none of Apple’s references disclose this limitation, Apple fails to show obviousness. *Par*, 773 F.3d at 1194.

Fourth, Apple proposes making Abdul-Hafiz’s alleged opening/window “smaller” without comparison to another component. Reply, 11-12. But Apple

never explains why a POSITA would have made the alleged opening/window ***smaller than the detection surface area***, which the claims require. *Id.* Because of this unexplained gap between Apple’s motivation theory and the full scope of the claimed requirement, Apple fails to show obviousness. *See, e.g., In re Magnum Oil Tools, Int’l, Ltd.*, 829 F.3d 1364, 1381 (Fed. Cir. 2016) (rejecting obviousness theory for failing to explain motivation to “achieve the claimed invention”).

Fifth, relying on *Elekta*, Apple argues “the reasonable expectation of success is implicit.” Reply, 12. But in *Elekta*, the court affirmed an “implicit” reasonable expectation of success based on the Board’s rejection of the patentee’s reasons not to combine prior art. 81 F.4th 1368, 1376-77 (Fed. Cir. 2023). Because those circumstances do not exist here, *Elekta* is inapplicable. Apple merely assumes its proposed modification is simple and thus would be reasonably expected to succeed (Reply, 12), which fails to show obviousness. *Juniper Networks, Inc. v. Correct Transmission, LLC*, 2024 WL 3517862, at *1 (Fed. Cir. July 24, 2024).

C. The Proposed Modification of Abdul-Hafiz Based On Raley Does Not Render Obvious Any Challenged Claim

1. Raley Does Not Enable The Disclosures Apple Relies On For Obviousness

To rebut any presumption of prior art enablement, Masimo bore the burden to show the prior art did not enable the specific disclosures relied on for obviousness. *Raytheon Techs. Corp. v. Gen. Elec. Co.*, 993 F.3d 1374, 1380-81 (Fed. Cir. 2021).

Apple’s obviousness theory relies on Raley’s disclosures about measuring four parameters using only four wavelengths of light. Pet., 15-20, 55-59. Accordingly, Masimo showed those disclosures were not enabled. POR, 39-46. Apple incorrectly argues that rebutting the presumption of prior art enablement requires showing “the practice of the invention would have required undue experimentation” using the *Wands* factors. Reply, 13. But Apple is wrong—the *Wands* factors are “not mandatory.” *Amgen, Inc. v. Chugai Pharm. Co.*, 927 F.2d 1200, 1213 (Fed. Cir. 1991); see, e.g., *ActiveVideo Networks, Inc. v. Verizon Commc’ns, Inc.*, 694 F.3d 1312, 1330 (Fed. Cir. 2012) (affirming prior art non-enabled without *Wands*).

Apple also argues Masimo “focuses on the absence of commercial devices” as if there were a salient non-commercial device. Reply, 14. But Apple ignores Masimo explanation why the prior art did not enable a POSITA to measure the Apple-identified analytes with four wavelengths of light (i.e., do what Apple proposes). POR, 42-46. And regardless of whether the devices were “commercial,” Apple did not show **any** device or method that could measure the Apple-identified analytes with four wavelengths of light. *Id.*

Apple also argues references need not have been “made” to be enabled. Reply, 14. But Apple ignores that only Masimo was able to measure the Apple-identified analytes, and Masimo used eight wavelengths—not four—to do so. POR, 41-42. This is “strong evidence that the [prior art] was nonenabling” of measuring

the Apple-identified analytes with four wavelengths of light. *In re Donohue*, 766 F.2d 531, 533 (Fed. Cir. 1985).

Additionally, Apple argues Masimo does not “engage in the contents of the cited printed publications” by providing evidence of non-enablement. Reply, 14-15. But Masimo substantively addressed Apple’s references and showed, with evidence, why they fail to enable what Apple relies on for obviousness. POR, 42-46.

Moreover, Masimo showed Apple’s measuring-four-analytes-with-four-wavelengths proposal is not as simple as solving four equations with four unknowns because of additional unknowns like differing path lengths. POR, 45. Apple relies on Secker to argue differing path lengths “does not apply” to transmittance sensors like Abdul-Hafiz+Raley. Reply, 15. But Secker addresses a separate issue—“***depth of penetration***” of light. EX1006, 3:28-45. Light’s depth penetration is known in transmittance sensors because emitted light passes completely through the tissue before being detected. POR, 63-64; EX1004, FIG. 2; EX2079 ¶144. However, light’s path length is an unknown in transmittance sensors because it readily changes for many reasons and thus cannot be assumed to “cancel out.” POR, 45.

2. No Reasonable Expectation of Success

For reasonable expectation of success, Apple merely repeats its enablement arguments. Reply, 16-17. Thus, Apple’s arguments fail for at least the reasons explained above. *Supra* §I.C.1; POR, 46-48.

3. **A POSITA Would Not Have Been Motivated to Modify Abdul-Hafiz As Proposed**

a. **Measuring More Analytes Would Not Have Motivated Apple's Modification of Abdul-Hafiz**

Masimo showed a POSITA would not have been motivated to modify Abdul-Hafiz as Apple proposes because doing so would contradict Abdul-Hafiz's intention of being a low-cost, disposable sensor. POR, 48-51. Apple's responses lack merit.

First, Apple argues low cost and disposability are irrelevant because “the claims do not require” either. Reply, 17. But Apple ignores a proposed modification's benefits and costs “should be weighed against one another.” *Winner Int'l Royalty Corp. v. Wang*, 202 F.3d 1340, 1349 n.8 (Fed. Cir. 2000). Apple's suggestion that a modification's consequences are relevant only if claimed is both wrong (*id.*) and unsupported (Reply, 17).

Apple also argues Masimo “superimpos[es] the purported goals and purpose of Abdul-Hafiz onto the POSITA.” Reply, 17. But Masimo showed a POSITA would have understood Abdul-Hafiz's intended purpose was low-cost and convenience (i.e., disposability). POR, 48-51. And courts routinely find no motivation to modify where, as here, the modification would frustrate or defeat the intended purpose of the petitioner's reference. *See, e.g., Adidas AG v. Nike, Inc.*, 963 F.3d 1355, 1359 (Fed. Cir. 2020); *Pollard Banknote Ltd. v. Nanografix Corp.*, 2020 WL 96682, at *6-8 (PTAB Jan. 8, 2020).

Further, Apple relies on a “teaching away” case (*DePuy*) in arguing Masimo does not identify disclosure “*disparag[ing]* Apple’s articulated combination.” Reply, 17. Apple also argues the “existence of better alternatives does not obviate the motivation.” But Apple’s criticisms are misplaced—Masimo never argued teaching away or that a motivation had to the best option. POR, 48-51. Rather, Masimo showed major disadvantages of Apple’s proposed modification (cost, inconvenience) that were not outweighed by a countervailing benefit. *Id.* Those disadvantages show a POSITA would not have been motivated to modify Abdul-Hafiz as Apple proposes. *Id.*

Additionally, Apple speculates “the additional benefit of measuring more analytes would outweigh the alleged costs/inconvenience.” Reply, 18. Apple also cites the Petition to argue measuring more analytes “offsets a more complex and more expensive device.” *Id.* But Apple *never* provided any evidence that measuring more analytes “outweighed”/“offset” the disadvantages resulting from its proposed modification. Apple’s conclusory cost-benefit argument fails to show obviousness. *Magnum*, 829 F.3d at 1381.

Moreover, Apple argues Masimo never asserted “a POSITA would definitively NOT incur the additional costs for the benefit of having more blood analytes being measured.” Reply, 18. This is improper burden shifting. Regardless, Masimo explained why a POSITA definitively “*would not have been motivated* to

modify Abdul-Hafiz as Apple proposes.” POR, 48-51. Apple also asserts “Masimo fails to provide evidence on this point” (Reply, 19), but Masimo’s POR is replete with such evidence. POR, 48-51.

Lastly, Apple relies on generic language from a legal treatise (Reply, 19-20), none of which rebuts Masimo’s arguments. Indeed, Masimo does not argue “bodily incorporation” or dispute that a POSITA is “not an automaton.” Citing nothing, Apple also argues a POSITA could have combined Abdul-Hafiz+Raley in a disposable component. *Id.* Again, such conclusory statements fail to show obviousness. *Magnum*, 829 F.3d at 1381. Apple also relies on its expert in vaguely suggesting its combination would preserve “the various low cost attributes of Abdul-Hafiz’s device.” *Id.* (citing EX1079 ¶37). But such “conclusory and unsupported expert testimony” fails to show obviousness. *TQ Delta*, 942 F.3d at 1360-61.

b. Improving Oxygen Saturation Accuracy Would Not Have Motivated Apple’s Modification of Abdul-Hafiz

Apple repeats several arguments about the alleged motivation to measure more analytes. Reply, 20. Those arguments fail for at least the reasons explained above. *Supra* §I.C.3.a; POR, 48-51.

Masimo also explained that Apple failed to identify a single example where carboxyhemoglobin and methemoglobin were used to somehow improve the accuracy of oxygen saturation measurements. POR, 52-53. Even now, Apple fails to identify any such examples, because none exist. Reply, 20-22. Masimo also

showed Apple's expert's testimony about using these complex measurements to improve oxygen saturation measurements was conclusory and speculative. POR, 53 (citing EX2080, 87:11-88:8). Apple does not dispute these points. Reply, 20-22.

Masimo also showed Abdul-Hafiz covers the Masimo LNOP sensor, and the accuracy of the Abdul-Hafiz design was well-regarded in the industry for providing highly accurate oxygen saturation measurements. POR, 53-54. Apple now alleges the LNOP sensor's accuracy does "not necessarily follow" from Abdul-Hafiz's design because there are "differences between the LNOP sensor and Abdul-Hafiz." Reply, 20-21. But Apple does not identify any differences, much less explain why those differences would result in Abdul-Hafiz's sensor being less accurate than the LNOP sensors it covers. *Id.* Indeed, Abdul-Hafiz's sensor has no oxygen saturation accuracy problem, as Apple's expert conceded. EX2080, 154:13-155:4.

Because Abdul-Hafiz had no oxygen saturation inaccuracy, Apple argues there was a need to compensate for inaccuracy caused by carboxy- and met-hemoglobin. Reply, 21-22. Apple merely repeats the Petition's need argument. Pet., 18-19. But that fails for the reasons Masimo explained. POR, 55-56.

Further, Apple argues its motivation is more than "build something better." Reply, 21-22. But Apple admits its motivation is "to improve oxygen saturation accuracy," which is merely to build something better. *Id.* Apple also vaguely argues there are "a number of circumstances that would inspire the motivation," but

explains none. *Id.* Instead, Apple cites five different documents and requests that the Board divine Apple's argument (*id.*), which is improper and should not be considered. *See, e.g.,* 37 C.F.R. §42.6(a)(3); *Clim-A-Tech Indus., Inc. v. Ebert*, 2018 WL 851888, at *11 (PTAB Feb. 12, 2018).

Apple also alleges the insensitivity of Datex-Ohmeda's pulse oximeters to carboxy- and met-hemoglobin does "not necessarily follow" from Raley's design because there are "differences between Datex-Ohmeda's pulse oximeters and Raley's disclosure." Reply, 22. But Apple fails to identify any differences, much less explain why they would result in Raley's sensor being more sensitive to carboxy- and met-hemoglobin than Datex-Ohmeda's other sensors. *Id.* Rather than identify differences, Apple's argument is again improperly incorporated-by-reference to various other documents. *Id.*; 37 C.F.R. §42.6(a)(3).

Finally, Masimo explained the hindsight in Apple's obviousness grounds. POR, 57-58. Apple's Reply has no response.

II. GROUND 1B FAILS TO DEMONSTRATE OBVIOUSNESS

Ground 1B fails to demonstrate obviousness for at least the reasons discussed above and the additional reasons explained below.

**A. No Reference Discloses At Least “Eight”/“Twelve” LEDs
Comprising “At Least Three” Different Wavelengths
(Claims 2-4, 11-13, 23-25)**

The challenged dependent claims require at least “eight”/“twelve” LEDs comprising “at least three” different wavelengths. The Petition argues a POSITA would have modified the Abdul-Hafiz+Raley sensor based on Secker to arrive at these features. Pet. 76-90. Thus, Masimo evaluated Abdul-Hafiz, Raley, and Secker and showed they lack these features. POR, 61-62. Secker describes pulse oximeters with numerous LEDs but only two wavelengths; Abdul-Hafiz describes pulse oximeters with only two LEDs and two wavelengths; and Raley has four wavelengths but only four LEDs. *Id.* Thus, none of Apple’s references have at least eight/twelve LEDs comprising at least three wavelengths (*id.*), which Apple does not dispute. Reply, 22-23. Because the combination references fail to show “*all* claimed limitations are disclosed in the prior art,” Apple fails to show obviousness. *Par*, 773 F.3d at 1194; POR, 62.

Apple argues Masimo did not “evaluate the references’ combined teachings.” Reply, 22-23. Apple implies Masimo did not address that Raley’s four-wavelength device combined with Secker’s “four LEDs for each wavelength...result[s] in sixteen LEDs.” *Id.* But Masimo showed Raley never suggests using more than four LEDs, and that Secker is limited to LEDs of two wavelengths and never suggests a third or fourth wavelength. POR, 61-62. Thus, Apple never identifies any

“combined teaching” Masimo did not address. *Id.* Apple’s references, including Raley and Secker, do not disclose or suggest eight/twelve LEDs of at least three different wavelengths. *Id.*

B. Apple Fails to Establish a POSITA Would Have Been Motivated to Add More LEDs to Abdul-Hafiz+Raley Based On Secker (Claims 2-4, 11-13, 23-25)

Apple proposes adding many more LEDs to the Abdul-Hafiz+Raley combination sensor based on Secker. Pet., 76-90. Masimo explained this ground fails to show obviousness. POR, 63-67. Masimo explained, and Apple does not dispute, that Secker describes using more LEDs to resolve a reflectance-sensor problem inapplicable to transmittance sensors. *Id.*; Reply, 24-27. Because Abdul-Hafiz+Raley is a transmittance sensor, Secker is inapplicable and would not have motivated adding LEDs. POR, 63-67.

Apple now argues Secker’s being limited to reflectance sensors “does not preclude a POSITA from utilizing Secker’s teachings *in combination with prior art transmission sensors.*” Reply, 24. Apple then argues obviousness over Abdul-Hafiz+Raley combined with “Secker’s *and Webster’s* teachings.” Reply, 24-27. But Webster is not part of Apple’s ground (1B), which asserts Abdul-Hafiz+Raley combined with Secker only. Pet., 1, 76-90. Thus, the Board should not consider Apple’s new and improper Webster-based arguments. *Yita*, 69 F.4th at 1365-67; *Intelligent*, 821 F.3d at 1369-70. Even if considered, Apple’s arguments fail.

First, Apple argues Abdul-Hafiz discloses accommodating different patient sizes/tissue thicknesses and suggests looking to other structures that allow detector-emitter spacing adjustment. Reply, 24-26. But Apple is wrong. As Masimo showed, Abdul-Hafiz describes sensors for ***one patient size/tissue thickness only*** and never suggests using one sensor for different patient sizes/tissue thicknesses. POR, 68-69.

Apple also argues “a POSITA would have recognized that Secker’s teachings allow detector-emitter spacing adjustment.” Reply, 25. Even if true, Masimo explained why Secker, which uses LEDs to fix a problem inapplicable to transmittance sensors, would not have motivated a POSITA to add LEDs to the transmittance sensor (Abdul-Hafiz+Raley) Apple relies on. POR, 63-67.

Second, Apple argues Abdul-Hafiz “need not” motivate or suggest the combination with Secker because the Petition did not rely on “Abdul-Hafiz alone.” Reply, 25-26. Apple then includes a page of case law to suggest motivations can come from almost anywhere. *Id.* But Apple is limited to the Petition’s obviousness theory. *Intelligent*, 821 F.3d at 1369-70. And Masimo showed that obviousness theory fails because the references Apple relies on (Secker and Abdul-Hafiz) would not have motivated a POSITA to add the claimed LEDs to the Abdul-Hafiz+Raley transmittance sensor. POR, 63-70.

Third, citing nothing, Apple presents the new theory that a POSITA would have been motivated to make a transmittance sensor that accommodates different

sized patients or tissue thicknesses because doing so would “obviate the need for the physician...to select the appropriately sized sensor for the patient’s finger.” Reply, 26. Because this new theory is not in the Petition (Pet., 76-90), it should not be considered. *Intelligent*, 821 F.3d at 1369-70.

Even if considered, Apple’s new theory fails to show obviousness because it is conclusory. *Magnum*, 829 F.3d at 1381. None of Apple’s references support its new theory. Abdul-Hafiz and Secker do not motivate the combination. POR, 63-70. And Apple never explains its reliance on Webster or shows that Webster motivates adding LEDs to the Abdul-Hafiz+Raley transmittance sensor to accommodate different sized patients/tissue thicknesses. Reply, 24-27.

Apple also asserts “Masimo does not dispute” that having a single sensor that fits multiple patients “would be beneficial.” Reply, 26. This assertion is nonsensical—Apple’s first raised this theory on Reply. Even if Masimo agreed Apple’s new theory were “beneficial,” that is not the relevant inquiry and ignores Apple’s burden. It was Apple’s burden to prove a POSITA would have been motivated to combine Abdul-Hafiz+Raley’s sensor with Secker in a manner achieving the claimed LEDs, which Apple failed to do. POR, 63-70.

Finally, Apple argues the Petition “never stated that Secker describes or suggests using its approach of automatically selecting LEDs to accommodate different sized patients.” Reply, 26-27. But the Petition repeatedly argues this

functionality is “***described by Secker.***” Pet., 78-80. And Masimo showed Apple is wrong. POR, 69-70. Masimo also explained the two use cases of Secker’s approach to automatically selecting LEDs are inapplicable to the Abdul-Hafiz+Raley transmittance sensor Apple relies on (*id.*), which Apple does not dispute. Reply, 26-27. Further, Apple’s reliance on Webster should be rejected as explained above. And Apple’s teaching away argument is inapposite because that was not Masimo’s argument. Reply, 27. Instead, Masimo showed Secker is limited to reflectance sensors and would not have motivated Apple’s proposed modification of the Abdul-Hafiz+Raley transmittance sensor. POR, 69-70.

III. CONCLUSION

For the above reasons and those in the POR, Petitioner has not shown by a preponderance of the evidence that the challenged claims are unpatentable.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: February 18, 2025

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CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. § 42.24(d), Counsel for Patent Owner Willow Laboratories, Inc. 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 5,546 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: February 18, 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 Apple, a true and correct copy of the foregoing **PATENT OWNER WILLOW LABORATORIES, INC.'S SUR-REPLY** is being served electronically on February 18, 2025, to the e-mail addresses shown below:

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