

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE**

APPLE INC., <i>Plaintiff,</i> v. MASIMO CORPORATION and SOUND UNITED, LLC, <i>Defendants.</i>	C.A. No. 22-1377-MN-JLH JURY TRIAL DEMANDED
MASIMO CORPORATION, <i>Counter-Claimant,</i> v. APPLE INC. <i>Counter-Defendant.</i>	
APPLE INC., <i>Plaintiff,</i> v. MASIMO CORPORATION and SOUND UNITED, LLC, <i>Defendants.</i>	C.A. No. 22-1378-MN-JLH JURY TRIAL DEMANDED
MASIMO CORPORATION and CERCACOR LABORATORIES, INC., <i>Counter-Claimants,</i> v. APPLE INC. <i>Counter-Defendant.</i>	

REBUTTAL EXPERT REPORT OF VIJAY K. MADISETTI, PH.D.

[REDACTED]

I declare that all statements made herein on my own knowledge are true and that all statements made on information and belief are believed to be true, and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine and imprisonment, or both, under 18 U.S.C. §1001.

I reserve the right to supplement my opinions in the future to respond to any information, arguments, or positions Apple may raise, taking account of new information as it becomes available to me.

Executed on December 15, 2023 at Atlanta, Georgia.



Vijay K. Madisetti, Ph.D.
12/15/2023



EXHIBIT D

**REBUTTAL EXPERT REPORT OF VIJAY K. MADISETTI, PH.D.
REGARDING VALIDITY OF U.S. PATENT NO. 10,984,911**

[REDACTED]

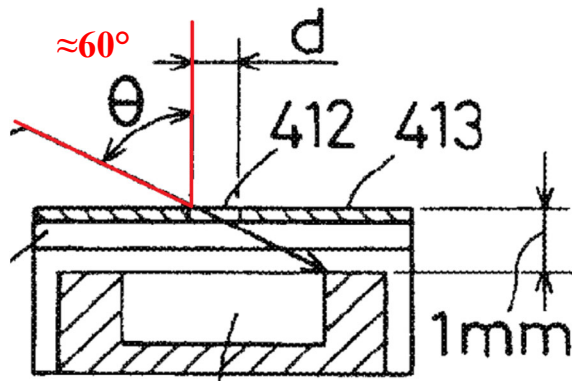
proposed construction of ‘a top of the [shoebox structure/light block],’ and at least under Masimo’s proposed construction of ‘opening,’ Kimura meets this limitation.”).

182. Accordingly, Dr. Warren fails to show that claim limitation [1C-3] is disclosed or rendered obvious by Kimura.

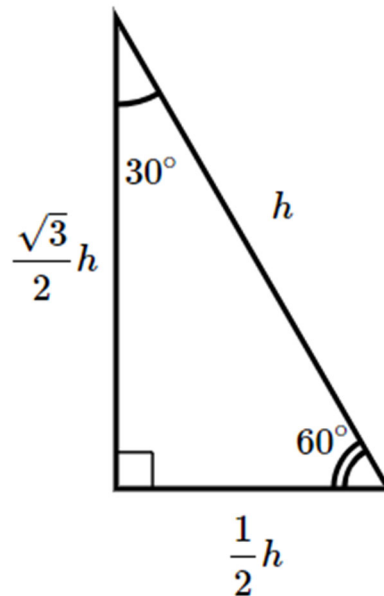
(4) **[1C-4] “the opening comprising an area smaller than a detection surface area of the at least one detector”**

183. Dr. Warren opines that “at least under Masimo’s construction and apparent view of ‘opening,’ Kimura’s window 412 comprises an ‘opening.’ That opening comprises “an area smaller than a detection surface area of the at least one detector.”” Warren Opn. Rpt. ¶ 2018. I disagree.

184. *First*, without analysis, Dr. Warren assumes “the relevant scale of the window 412 and light receiving device 404.” *Id.* ¶¶ 2020-2021. As Dr. Warren acknowledges, Kimura expressly provides three relevant measurements, the width of the window (412) “d,” the angle of incidence “ θ ,” and the difference between the top of light receiving device (404) and the light transmitting plate (405)-skin interface. *Id.* ¶ 2020. However, without providing any substantive analysis, Dr. Warren concludes from this that these three measurements “suggest[] that Figure 22 is drawn to scale. And if Figure 22 is drawn to scale, then it is clear from merely looking at the figure that window 412 is smaller in area than the detection surface area of light receiving device 404.” *Id.* ¶ 2021. I disagree with this conclusory and unsupported analysis. Additionally, even by its own terms, Dr. Warren “merely looking at” FIG. 22 should have made “clear” that it is not drawn to scale. For example, the θ in FIG. 22 is drawn at an approximately 60° angle.



Kimura at FIG. 22 (excerpted and annotations added)



<https://www.khanacademy.org/math/geometry/hs-geo-trig/hs-geo-special-right-triangles/a/special-right-triangles-review>

However, Kimura states that θ is 30° . *Id.* at 14:32-34; *see also* Warren Opn. Rpt. ¶ 2022 (“the geometrical information in Figure 22 is sufficient to quantify the physical width of the detector.

In particular, for $\theta = 30^\circ$, $d = 0.5$ mm, and a detector depth of 1 mm”).

185. Moreover, Dr. Warren’s assumptions are surprising in view of, and in contrast to, his reluctance to accept evidence that the ’911 Patent’s drawings were drawn to scale. Dr. Warren recognizes that Masimo witnesses characterize the ’911 Patent’s Figure 46 as drawn to scale, but Dr. Warren nonetheless concludes “I disagree that the figures of the ’911 patent are drawn to scale or provide adequate written description of this element, as described below.” Warren Opn. Rpt. ¶ 2023. The testimony that Dr. Warren dismisses is reproduced below:

Q. Okay. Is it your understanding that figures in a patent are drawn to scale?

A. Sometimes they are drawn to scale; sometimes they are not. For example, let’s take one figure, the array, this one. That’s not done to scale because the whole sensor is a very small piece of it.

[REDACTED]

So in Figure 46, for example, as I mentioned, yes, these are drawn relative to scale, relative to scale, Figure 46. And these are actually taken from probably AutoCAD, the mechanical drawing software that was done. So in this Figure 46, the relative scale, yes. The absolute scale, it may not be. But in Figure 25, that's -- I mean, it may not be drawn to scale at all because it's more like showing you the function of progress of where the light goes in and where the lights get detected.

Q. If we assumed that the figures in the '911 patent are not drawn to scale, can you point to anything that shows an opening that is smaller than the detection surface area of the detector?

A. If it is not drawn to scale -- I really don't understand the question. If the figures are not drawn to scale. So I pointed to a figure that is drawn to scale. It's 46. So you can see from Figure 46 in 3200 that the opening in the light block is smaller than the photodetector. So that's drawn to relative scale. Okay. So that's one. If you look at Figure 32B, this figure is not necessarily drawn to scale in terms of the size, but in terms of the relative, it also shows that the opening is smaller because the detector fits this -- inside this light block completely, and the opening is smaller than the photodetector. So maybe that's the example you are looking for.

Q. So you are pointing to Figures 46 and 32 in that answer; right?

A. Yes.

Diab Depo. Tr. at 158:23-160:18 (objections omitted). Relatedly, I disagree with Dr. Warren's attempt to equate the '911 Patent's disclosure and that of Kimura. *See* Warren Opn. Rpt. ¶ 2023 ("at least to the extent that the '911 patent discloses 'the opening comprises an area smaller than a detection surface area of the at least one detector,' then so too does Kimura disclose 'the opening comprises an area smaller than a detection surface area of the at least one detector.'"). A POSITA would have understood that these two patents are separate documents and would have considered them independently of one another.

186. **Second**, Kimura disclose not disclose the area of the window (412) or light receiving device (404) of its FIG. 22 embodiment because it shows and describes only one dimension of those features—the width. Kimura at FIG. 22, 14:19-47. Kimura does not disclose or suggest the other dimension, which I refer to as the depth (the dimension into the page of FIG. 22), that would define the shape or area of either feature. *Id.* Indeed, as Dr. Warren concedes,



“Kimura is silent on the shape of both the window and the photodiode.” Warren Opn. Rpt. ¶ 2022. Accordingly, Kimura does not disclose an “opening” with the claimed area.

187. Because Kimura does not disclose the area of its window (412) or light receiving device (404) or the dimension (depth) allowing the area of those features to be calculated, Dr. Warren’s arguments based on Kimura rely on two assumptions. Specifically, Dr. Warren “[a]ssum[es] that both the window 412 and the active region of the light receiving device are square-shaped.” *Id.* However, Dr. Warren’s assumptions are unsupported, and a POSITA would not have made either assumption.

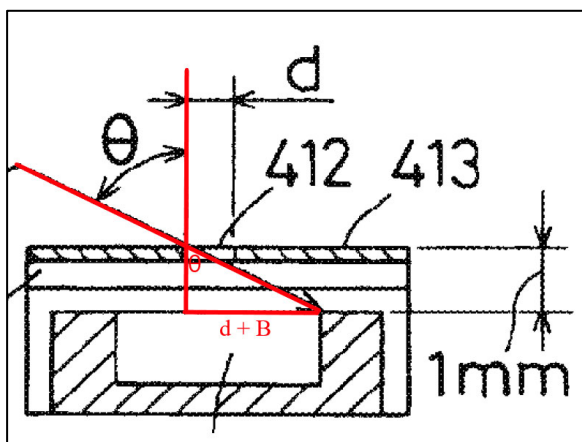
188. Dr. Warren’s assumption that Kimura’s light receiving device (404) has a square shape is based on his unsupported assertion that “photodiodes typically have a square active region.” *Id.* However, a POSITA would have understood that photodiodes could have a rectangular (i.e., non-square) shape and thus a rectangular (i.e., non-square) detection area. *See, e.g.,* Mendelson at FIG. 7 (showing rectangular detectors 16 and 18); Nierlich at FIGS. 3-4 (showing rectangular photodiode 94). Because non-square photodiodes were common, so a POSITA would not have assumed, much less understood, that Kimura’s light receiving device (404) had a square shape.

189. Further, Dr. Warren never explains or supports his assumption that Kimura’s window (412) would also have a square shape or otherwise have a shape symmetrical to that of the light receiving device (404). Warren Opn. Rpt. ¶ 2022; *see id.* ¶¶ 2018-2024. Kimura provides no basis to assume the window (412) of FIG. 22 has a square shape. Kimura at FIG. 22, 14:19-47. Rather, Kimura describes using one dimension (the width “d”) of its window (412) to adjust the angle of incidence of light that is able to reach its light receiving device (404). *Id.* Because Kimura explains that the angle of incidence can be controlled based solely on the width of the

window (412), a POSITA would not have understood or assumed that Kimura's window (412) had any particular other dimension (depth) defining any particular shape. Accordingly, because neither of the assumptions underlying Dr. Warren's arguments based on Kimura are correct, I disagree that Kimura discloses or renders obvious a particular shape or area for its window (412) or light receiving device 404.

190. Relatedly, Dr. Warren argues that "regardless of the shape of the window and the shape of the photodiode, the area of the window is quantifiably smaller than the detection surface area." Warren Opn. Rpt. ¶ 2022. However, this argument again depends on Dr. Warren's assumptions that Kimura's window (412) and light receiving device (404) have the same shape, which are incorrect assumptions for the reasons explained above.

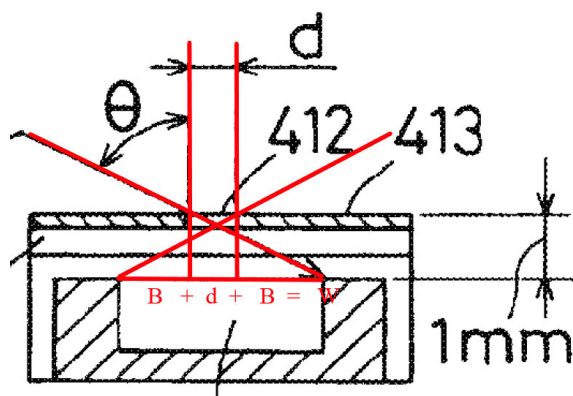
191. **Third**, Dr. Warren's calculations are incorrect, which belies his conclusions regarding Kimura's FIG. 22 embodiment's disclosure and his statements regarding scale. Opposite or vertical angles have the same value. The opposite angle of the angle of incidence θ is also θ . The length of the bottom side of the right triangle formed by the height between the light receiving device (404) and the window (412) and the angle θ can be expressed as $d + B$.



Kimura at FIG. 22 (excerpted, annotations added)

$$\begin{aligned}\tan(\theta) &= \frac{(d + B)}{h} \\ \tan(30^\circ) &= \frac{(0.5 \text{ mm} + B)}{1.0 \text{ mm}} \\ 0.577 &= \frac{(0.5 \text{ mm} + B)}{1.0 \text{ mm}} \\ 0.577 \text{ mm} &= (0.5 \text{ mm} + B) \\ \mathbf{0.077 \text{ mm} = B}\end{aligned}$$

192. In order for Kimura's FIG. 22 embodiment to not be biased with respect to light from any side, Kimura's FIG. 22 embodiment's window (412) must be centered over the light receiving device (404). Thus, the light receiving device (404) extends beyond the window (412) on either side by B.



$$\begin{aligned}
 W &= 2 * B + 0.5 \text{ mm} \\
 W &= 2 * 0.077 \text{ mm} + 0.5 \text{ mm} \\
 W &= 2 * 0.077 \text{ mm} + 0.5 \text{ mm} \\
 \mathbf{W} &= \mathbf{0.654 \text{ mm}}
 \end{aligned}$$

Kimura at FIG. 22 (excerpted and annotations added)

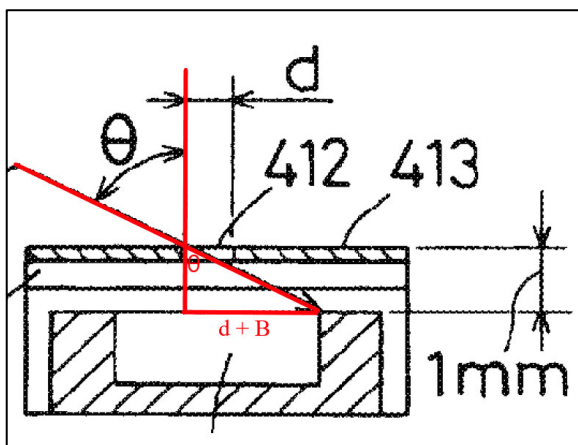
193. If, as Dr. Warren assumes, Kimura's light receiving device (404) and window (412) were "square-shaped" (which is an incorrect assumption for the reasons explained above), the area of the window (412) would be $(0.5 \text{ mm})^2 = 0.25 \text{ mm}^2$. The area of the light receiving device (404) would be $(0.654 \text{ mm})^2 = 0.428 \text{ mm}^2$. This is a very different result than Dr. Warren reaches, because Dr. Warren made a significant error in his calculation.

194. Specifically, Dr. Warren miscalculated B and thus calculated the detection surface area of the light receiving device (404) incorrectly. Dr. Warren states:

In particular, for $\theta = 30^\circ$, $d = 0.5 \text{ mm}$, and a detector depth of 1 mm , the hypotenuse of the triangle formed between the outer edge of the window and the outer edge of the detector is $H = (1 \text{ mm})/(\cos(30^\circ)) = 1.155 \text{ mm}$. The dimension, B, by which the detector width exceeds the window width is $B = \sin(30^\circ) * 1.155 \text{ mm} = 0.577 \text{ mm}$.

Warren Opn. Rpt. ¶ 2022. Dr. Warren solved for the bottom side of the right triangle ($d + B$) when he multiplies $\sin(30)$ by the hypotenuse he previously calculated. However, Dr. Warren

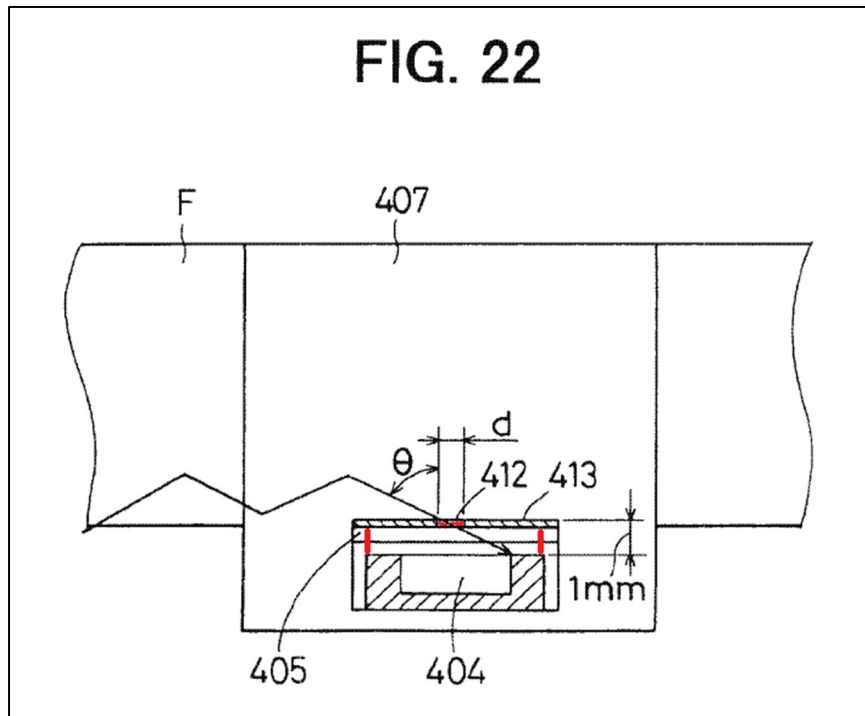
erroneously believed he was solving for “[t]he dimension B, by which the detector width exceeds the window width. *Id.* Thus, when solving for W, Dr. Warren mistakenly triple counted d, essentially calculating $W^{\text{error}} = 2*(d + B) + d$. Dr. Warren thus mistakenly calculates a W of 1.654 mm (incorrect) instead of 0.654 mm (correct, as explained above). The result of Dr. Warren’s error is that he overstates the area of detection surface area of the light receiving device (404) by **639.3%**.



Kimura at FIG. 22 (excerpted and annotations added)

$$\begin{aligned} \text{Error} &= \frac{W^{\text{error}^2}}{W^2} \\ \text{Error} &= \frac{(1.654 \text{ mm})^2}{(0.654 \text{ mm})^2} \\ \text{Error} &= \frac{2.736 \text{ mm}^2}{0.428 \text{ mm}^2} \\ \text{Error} &= 6.393 \\ \text{Error} &= \mathbf{639.3 \%} \end{aligned}$$

195. **Third**, as explained above in this ground for claim limitation [1C-3], Dr. Warren also neither opines nor supports that Kimura’s FIG. 22 embodiment includes “only one opening through which light is configured to pass.” Kimura’s FIG. 22 embodiment appears to disclose at least three openings, colored in red.



Kimura at FIG. 22 (annotations added). Thus Kimura's FIG. 22 embodiment does not disclose or render obvious this limitation regarding "the opening's" area.

196. Further, I note that Dr. Warren concedes with respect to his arguments about Kimura's FIG. 22 embodiment that "the window 412 do[es] not meet Apple's proposed construction of opening." Warren Opn. Rpt. ¶ 2016 n.38.

197. Accordingly, Dr. Warren fails to show that claim limitation [1C-4] is disclosed or rendered obvious by Kimura.

iii. **Claim Limitation [1C] Is Not Rendered Obvious by Nierlich Combined With Kimura**

(1) **A POSITA Would Not Have Been Motivated to Combine Nierlich with Kimura to Provide the Claimed Opening**

198. For the reasons explained below in discussing the combination based on Takatani and Kimura with respect to claim limitation [1C], a POSITA would not have been motivated to