NOTE: This disposition is nonprecedential.

United States Court of Appeals for the Federal Circuit

APPLE INC.,
Appellant

v.

MASIMO CORPORATION,
Appellee

2022-1891

Appeal from the United States Patent and Trademark Office, Patent Trial and Appeal Board in No. IPR2020-01524.

Decided: January 12, 2024

BRITTANY BLUEITT AMADI, Wilmer Cutler Pickering Hale and Dorr LLP, Washington, DC, argued for appellant. Also represented by MICHAEL JOHN BALLANCO, LAUREN ANN DEGNAN, CHRISTOPHER DRYER, WALTER KARL RENNER Fish & Richardson P.C., Washington, DC.

JOSHUA STOWELL, Knobbe, Martens, Olson & Bear, LLP, Irvine, CA, argued for appellee. Also represented by STEPHEN C. JENSEN, JAROM D. KESLER, JOSEPH R. RE.

Before LOURIE, PROST, and REYNA, *Circuit Judges*.

LOURIE, *Circuit Judge*.

Apple Inc. ("Apple") appeals from a decision of the U.S. Patent and Trademark Office Patent Trial and Appeal Board ("the Board") holding that claims 1–16 of Masimo's U.S. Patent 10,433,776 (the "'776 patent") were not unpatentable as obvious in view of the asserted prior art. *Apple Inc. v. Masimo Corp.*, No. IPR2020-01524 (P.T.A.B. Apr. 29, 2022), J.A. 1–52 ("*Decision*"). For the following reasons, we *affirm*.

BACKGROUND

Masimo's '776 patent is directed to a pulse oximeter that operates by reducing or increasing power consumption after comparing various processing characteristics, like pulse rate or signal-to-noise ratios, to predetermined thresholds. *See* '776 patent, col. 2 ll. 25–33, col. 3 ll. 14–25. Alterations to power consumption levels are achieved using sampling mechanisms that process incoming signal samples to determine whether subsequent sampling processing should be reduced during high-signal-quality periods or increased during low-signal-quality periods or when critical physiological measurements are necessary. *Id.* at col. 2 ll. 25–44. Sampling thus modifies the oximeter's power consumption by modifying the number of input samples received and processed.

One exemplary sampling mechanism involves "an emitter duty cycle control" that "determines the duty cycle of the current supplied by the emitter drive outputs . . . to both red and IR sensor emitters." '776 patent, col. 5 l. 64–col. 6 l. 2; *see* col. 2 ll. 34–44 (noting that the associated duty cycle "may be in the range of about 3.125% to about 25%"). A duty cycle is, essentially, the fraction of time during which a signal is active. Thus, a 25% duty cycle means

that the signal is on 25% of the time and off for the other 75% of the time.

The '776 patent specification also notes that, "[i]n conjunction with an intermittently reduced duty cycle or as an independent sampling mechanism, there may be a 'data off' time period longer than one drive current cycle where the emitter drivers . . . are turned off." *Id.* at col. 7 ll. 11–15.

Independent claim 1 of the '776 patent recites:

> 1. A method of operating a patient monitor configured to monitor at least a pulse rate of a patient by processing signals responsive to light attenuated by body tissue, the method comprising:
>
> operating the patient monitor according to a first control protocol, wherein said operating includes activating a first control protocol light source in accordance with the first control protocol, the first control protocol light source including one or more of a plurality of light sources;
>
> when operating according to the first control protocol, calculating, by the patient monitor, measurement values of the pulse rate, the measurement values responsive to light from the first control protocol light source, detected by a detector of an optical sensor after attenuation by body tissue of the patient using the patient monitor;
>
> generating a trigger signal, wherein generating said trigger signal is responsive to at least one of: a comparison of processing characteristics to a predetermined threshold, a physiological event, or signal quality characteristics of signals received from the detector;
>
> in response to receiving the trigger signal, operating the patient monitor according to a second control protocol different from the first control

> protocol, wherein said operating includes activating a second control protocol light source in accordance with the second control protocol, the second control protocol light source including one or more of the plurality of light sources; and
>
> when operating the patient monitor according to the second control protocol, calculating the measurement values of the pulse rate, the measurement values responsive to light from the second control protocol light source, detected by the detector after attenuation by the body tissue of the patient using the patient monitor,
>
> wherein said operating of the patient monitor according to the first control protocol operates the first control protocol light source according to a first duty cycle and said operating of the patient monitor according to the second control protocol operates the second control protocol light source according to a second duty cycle, wherein power consumption of the first control protocol light source according to the first duty cycle is different than power consumption of the second control protocol light source according to the second duty cycle.

'776 patent, col. 11 l. 41–col. 12 l. 21 (emphases added). Independent claim 11 recites similar limitations for the purposes of this appeal. *See id.* at col. 12 l. 60–col. 14 l. 9.

In its final written decision, the Board held that neither the first nor the second duty cycle recited in the claims could be 0%. *Decision* at 11–21. In particular, the Board construed "duty cycle" to mean "the ratio of operating time (or on time) of a light source to the total time period during which the light source is intermittently operated, expressed as a percentage" in view of a similar disclosure in the specification. *Id.* at 16–17 (citing the '776 patent, col. 2 ll. 43–44). The Board then held that neither the first nor

the second duty cycle can be 0%, given that both of the associated first and second control protocol light sources must generate light. *Decision* at 17–18. The Board subsequently held that, based on its construction of "duty cycle," Apple had not established that any of the challenged claims would have been unpatentable as obvious, as Apple only asserted prior art that taught devices operating with a 0% duty cycle. *Id.* at 28–33, 41–50.

Apple timely appealed. We have jurisdiction under 28 U.S.C. § 1295(a)(4)(A) and 35 U.S.C. § 141(c).

DISCUSSION

We review the Board's legal determinations *de novo*, *In re Elsner*, 381 F.3d 1125, 1127 (Fed. Cir. 2004), and the Board's factual findings for substantial evidence, *In re Gartside*, 203 F.3d 1305, 1316 (Fed. Cir. 2000). A finding is supported by substantial evidence if a reasonable mind might accept the evidence as adequate to support the finding. *Consol. Edison Co. v. NLRB*, 305 U.S. 197, 229 (1938).

Apple contends that the Board erred in holding that the claims prohibit a 0% duty cycle. Although Apple does not challenge the Board's construction of "duty cycle," it asserts that the claims provide no restriction on specific ratios necessary for each duty cycle. Appellant's Br. at 13–17. We disagree.

As the Board held, a 0% duty cycle would mean that the associated light source in the device is turned off. However, the claims require a light source to remain on during both the first and second duty cycles because the claims also require calculating pulse rate in each cycle based upon light from a light source. *See Decision* at 17–18. If the light source were turned off, the device could not calculate the heart rate as required. *Id.*

Apple further contends that intrinsic evidence supports a conclusion that a duty cycle may be 0%. For example, claim 6, which depends from claim 1, recites that the first

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