Trials@uspto.gov
571-272-7822

Paper 29
Entered: April 29, 2022

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner,

v.

MASIMO CORPORATION,
Patent Owner.

IPR2020-01524
Patent 10,433,776 B2

Before JOSIAH C. COCKS, ROBERT L. KINDER, and AMANDA F. WIEKER, *Administrative Patent Judges.*

KINDER, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining No Challenged Claims Unpatentable
35 U.S.C. § 318(a)

I. INTRODUCTION

A. Background

Apple Inc. ("Petitioner") filed a Petition requesting an *inter partes* review of claims 1–16 ("challenged claims") of U.S. Patent No. 10,433,776 B2 (Ex. 1001, "the '776 patent"). Paper 2 ("Pet."). Masimo Corporation ("Patent Owner") waived filing a Preliminary Response. Paper 6. We instituted an *inter partes* review of all challenged claims on all asserted grounds of unpatentability, pursuant to 35 U.S.C. § 314. Paper 7 ("Inst. Dec.").

After institution, Patent Owner filed a Response (Paper 15, "PO Resp.") to the Petition, Petitioner filed a Reply (Paper 18, "Pet. Reply"), and Patent Owner filed a Sur-reply (Paper 20, "Sur-reply"). An oral hearing was held on January 19, 2022, and a transcript of the hearing is included in the record. Paper 28 ("Tr.").

We issue this Final Written Decision pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. Based on the record before us and for the reasons set forth below, Petitioner has not met its burden of showing, by a preponderance of the evidence, that any challenged claim of the '776 patent is unpatentable.

B. Related Matters

The parties identify the following matters related to the '776 patent:

Masimo Corporation v. Apple Inc., Civil Action No. 8:20-cv-00048 (C.D. Cal.) (filed Jan. 9, 2020);

Apple Inc. v. Masimo Corporation, IPR2020-01520 (PTAB Aug. 31, 2020) (challenging claims of U.S. Patent No. 10,258,265 B1);

Apple Inc. v. Masimo Corporation, IPR2020-01521 (PTAB Sept. 2, 2020) (challenging claims of U.S. Patent No. 10,292,628 B1);

Apple Inc. v. Masimo Corporation, IPR2020-01523 (PTAB Sept. 9, 2020) (challenging claims of U.S. Patent No. 8,457,703 B2);

Apple Inc. v. Masimo Corporation, IPR2020-01526 (PTAB Aug. 31, 2020) (challenging claims of U.S. Patent No. 6,771,994 B2);

Apple Inc. v. Masimo Corporation, IPR2020-01536 (PTAB Aug. 31, 2020) (challenging claims of U.S. Patent No. 10,588,553);

Apple Inc. v. Masimo Corporation, IPR2020-01537 (PTAB Aug. 31, 2020) (challenging claims of U.S. Patent No. 10,588,553);

Apple Inc. v. Masimo Corporation, IPR2020-01538 (PTAB Sept. 2, 2020) (challenging claims of U.S. Patent No. 10,588,554 B2); and

Apple Inc. v. Masimo Corporation, IPR2020-01539 (PTAB Sept. 2, 2020) (challenging claims of U.S. Patent No. 10,588,554 B2).

Pet. 68; Paper 3, 2–3.

The parties further identify certain pending patent applications, as well as other issued applications, that claim priority to, or share a priority claim with, the '776 patent. Pet. 68; Paper 3, 1.

C. The '776 Patent

The '776 patent is titled "Low Power Pulse Oximeter," and issued on October 8, 2019, from U.S. Patent Application No. 16/174,144, filed October 29, 2018. Ex. 1001, codes (21), (22), (45), (54). The '776 patent claims priority through a series of continuation applications to Provisional Application No. 60/302,564, filed July 2, 2001. *Id.* at codes (60), (63).

The '776 patent relates to a pulse oximeter that may reduce power consumption in the absence of certain parameters that may be monitored to

trigger or override the reduced power consumption state. *Id*. at code (57). "In this manner, a pulse oximeter can lower power consumption without sacrificing performance during, for example, high noise conditions or oxygen desaturations." *Id.*

As depicted below, the low power pulse oximeter has signal processor (340) that derives physiological measurements (342), including oxygen saturation, pulse rate, and plethysmograph, from input sensor signal (322). Ex.1001, 4:65–5:16, Figs. 3, 4.

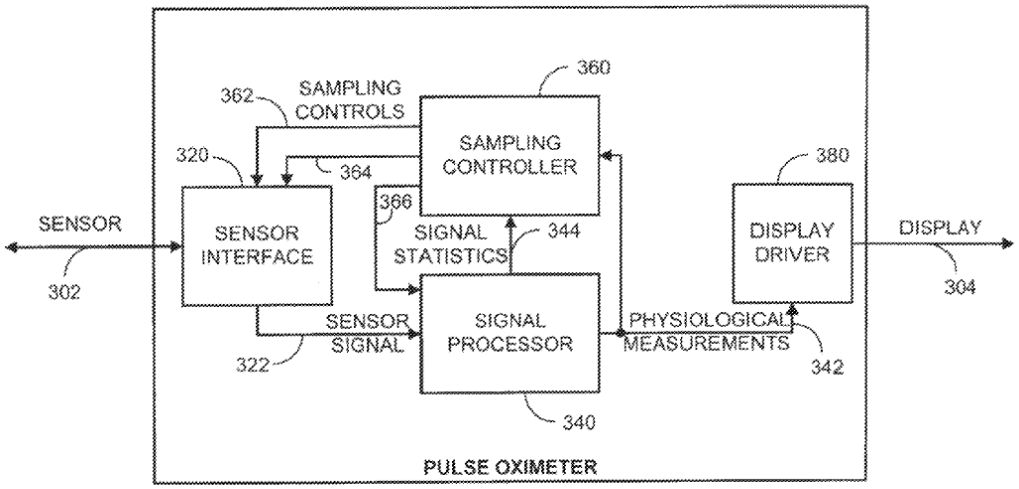

FIG. 3

Figure 3 illustrates a top-level block diagram of a low power pulse oximeter. *Id.* at 4:41–42. Signal processor (340) may also derive signal statistics (344), such as signal strength, noise, and motion artifact. *Id.* at 5:16–17, Figs. 3, 4. Physiological measurements (342) and signal statistics (344) may be input into sampling controller (360), which outputs sampling controls (362) that in turn are used to regulate pulse oximeter power dissipation by causing sensor interface (320) to vary the sampling characteristics of sensor port (302) and by causing signal processor (340) to

vary its sample processing characteristics. *Id.* at 5:17–26, Figs. 3, 4. According to the '776 patent, power dissipation "is responsive not only to output parameters, such as the physiological measurements 342, but also to internal parameters, such as the signal statistics 344." *Id.* at 5:26–29.

The pulse oximeter uses the physiological measurements and signal statistics to determine "the occurrence of an event or low signal quality condition." Ex. 1001, 6:28–31. An event determination is based upon the physiological measurements and "may be any physiological-related indication that justifies the processing of more sensor samples and an associated higher power consumption level, such as oxygen desaturation, a fast or irregular pulse rate or an unusual plethysmograph waveform." *Id.* at 6:31–37. A low signal quality condition is based upon the signal statistics and "may be any signal-related indication that justifies the processing or more sensor samples and an associated higher power consumption level, such as a low signal level, a high noise level or motion artifact." *Id.* at 6:37–42.

The pulse oximeter "utilizes multiple sampling mechanisms to alter power consumption." Ex. 1001, 5:62–64. One sampling mechanism is "an emitter duty cycle control" that "determines the duty cycle of the current supplied by the emitter drive outputs 482 to both red and IR sensor emitters." *Id.* at 5:64–6:2. The sampling mechanisms "modify power consumption by, in effect, increasing or decreasing the number of input samples received and processed." *Id.* at 6:12–14. "Sampling, including acquiring input signal samples and subsequent sample processing, can be reduced during high signal quality periods and increased during low signal quality periods or when critical measurements are necessary." *Id.* at 6:14–

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