

Filed on behalf of: ResMed Corp.

Filed: August 6, 2026

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

RESMED CORP.,

Petitioner,

v.

CLEVELAND MEDICAL DEVICES INC.,

Patent Owner.

Case No. IPR2025-00158
U.S. Patent No. 11,690,512

PETITIONER'S NOTICE OF APPEAL

Pursuant to 37 C.F.R. § 90.2(a), notice is hereby given that Petitioner Resmed Corp. ("Petitioner") appeals to the United States Court of Appeals for the Federal Circuit from the Final Written Decision entered on June 4, 2026 (Paper 46) by the United States Patent and Trademark Office, Patent Trial and Appeal Board (the "Board") in Case No. IPR2025-00158, and from all underlying orders, decisions, rulings, and opinions. A copy of the Final Written Decision is attached as Exhibit A.

This appeal is timely under 35 U.S.C. § 142, 37 C.F.R. § 90.3, Federal Rule of Appellate Procedure 15(a)(1), and Federal Circuit Rule 15(a)(1).

In accordance with 37 C.F.R. § 90.2(a)(3)(ii), the expected issues on appeal include, but are not limited to, the Board's ruling that Petitioner has not demonstrated, by a preponderance of the evidence, that the claims of U.S. Patent No. 11,690,512 are unpatentable over Ciulla and Orbach (claims 1–6, 8–17, 19, and 20), Ciulla, Orbach, and Nagai (claims 1–6, 8–17, 19, and 20), Ciulla, Orbach, and Truschel (claims 7 and 18), Ciulla, Orbach, and Kumar (claims 6, 8, 13, 14, 17, and 19), Ciulla, Orbach, Kumar, and Truschel (claims 7 and 18), Ciulla, Orbach, Nagai and Kumar (claims 6, 8, 13, 14, 17, and 19), Ciulla, Orbach, Nagai and Truschel (claims 7 and 18), Ciulla, Orbach, Nagai, Kumar, and Truschel (claims 7 and 18), and any findings of the Board's determination supporting or related to its Final Written Decision including, without limitation, the Board's construction and application of the claim language, the Board's interpretation of the evidence, and the

Board's consideration of the arguments. Simultaneous with this submission, a copy of this Notice of Appeal is being filed with the Board. In addition, the Notice of Appeal and the required fee are being filed electronically with the Clerk of Court for the United States Court of Appeals for the Federal Circuit.

Dated: August 6, 2026

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that on August 6, 2026, a true and correct copy of the foregoing **PETITIONER'S NOTICE OF APPEAL** is being filed through P-TACTS and filed with the Director of the United States Patent and Trademark Office via overnight express mail to the address below:

Director of the United States Patent and Trademark Office
c/o Office of the Solicitor, Mail Stop 8
P.O. Box 1450
Alexandria, Virginia 22313-1450

The undersigned also certifies that a true and correct copy of this Notice of Appeal and the required fee were filed electronically via CM/ECF on August 6, 2026, with the Clerk of Court for the United States Court of Appeals for the Federal Circuit.

The undersigned further certifies that a true and correct copy of this Notice of Appeal was served by electronic mail on Patent Owner's counsel of record, pursuant to its Mandatory Notices:

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EXHIBIT A

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

RESMED CORP.,
Petitioner,

v.

CLEVELAND MEDICAL DEVICES, INC.,
Patent Owner.

IPR2025-00158
Patent 11,690,512 B1

Before SHERIDAN K. SNEDDEN, NEIL T. POWELL, and
CYNTHIA M. HARDMAN, *Administrative Patent Judges*.

SNEDDEN, *Administrative Patent Judge*.

JUDGMENT

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

I. INTRODUCTION

This is a Final Written Decision in an *inter partes* review challenging the patentability of claims 1–20 of U.S. Patent No. 11,690,512 B1 (“the ’512 patent,” Ex. 1001). 35 U.S.C. § 318(a). We have jurisdiction under 35 U.S.C. § 6. For the reasons discussed below, after considering the entirety of the record, we find that Petitioner failed to show by a preponderance of the evidence that claims 1–20 are unpatentable.

A. Background and Summary

ResMed Corp. (“Petitioner”) filed a Petition requesting an *inter partes* review of claims 1–20 the ’512 patent. Paper 1 (“Pet.”). Cleveland Medical Devices, Inc. (“Patent Owner”) filed a Preliminary Response to the Petition. Paper 7. With our authorization, Petitioner filed a Preliminary Reply, and Patent Owner filed a Preliminary Sur-reply, addressing discretionary denial issues. Paper 8; Paper 9. Following institution, Patent Owner filed a Response to the Petition (Paper 24, “PO Resp.”), Petitioner filed a Reply to Patent Owner’s Response (Paper 28, “Reply”), and Patent Owner filed a Sur-Reply (Paper 30, “Sur-Reply”).

On March 19, 2026, the parties presented arguments at an oral hearing. The transcript of the hearing has been entered into the record. Paper 41.

B. Real Parties in Interest

Petitioner identifies ResMed Corp. as the real party in interest for Petitioner. Pet. 79. Patent Owner identifies Cleveland Medical Devices, Inc. as the real party in interest for Patent Owner. Paper 5, 1.

C. Related Matters

The parties indicate that the '512 patent is involved in *ResMed Corp. v. Cleveland Medical Devices, Inc.*, Case No. 1:23-cv-02221-BMB (N.D. Ohio) (the “Ohio case”). Pet. 79; Paper 5, 1.

Petitioner has also filed petitions for *inter partes* review of the following patents owned by Patent Owner: IPR2025-00157 against U.S. Patent No. 11,602,284; IPR2025-00159 against U.S. Patent No. 11,375,921; IPR2025-00160 against U.S. Patent No. 11,786,680; IPR2025-00246 against U.S. Patent No. 11,857,333; and IPR2025-00247 against U.S. Patent No. 11,872,029. Pet. 79.

Petitioner has filed requests for *ex parte* reexamination of U.S. Patent No. 11,375,921 (90/019,700) and U.S. Patent No. 11,786,680 (90/019,705). Pet. 80.

D. The '512 patent (Ex. 1001)

The '512 patent is titled “Sleep Diagnostics Using Cellular Data Transfer from Remote Testing Locations.” Ex. 1001, code (54). The '512 patent describes “a data acquisition system for EEG [(“electroencephalogram”)] and other physiological conditions, preferably wireless, and method[s] of using such system.” *Id.* at 2:3–5.

According to the '512 patent, its system includes a number of enhancements over other systems presently in the marketplace including

having multiple channels for looking at a number of physiological features of the subject or patient, a built in accelerometer for looking at a subject's or patient's body motion, a removable memory for data buffering and storage, capability of operating below 2.0 GHz, which among other things allows for increased operational range, movement artifact correction including video, EOG artifact correction, pressure sensors capable of measuring or determining airflow, tidal volume,

ventilation rate, and snore detection and capability of manual and automatic RF sweep.

Ex. 1001, 2:14–24. The system described in the '512 patent preferably includes “a receiver or transceiver for receiving wireless signals from a wireless data acquisition interface box with the additional features of the receiver or transceiver being powered through a computer[']s USB port, and can receive data from multiple wireless data acquisition interface boxes concurrently preferably with little or no interference.” *Id.* at 2:24–30.

Figure 1 of the '512 patent is reproduced below.

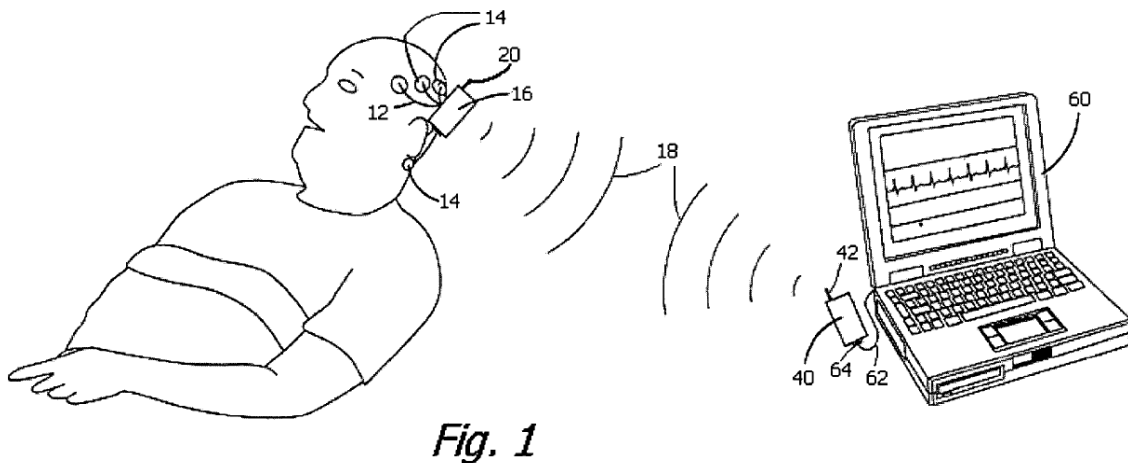


Figure 1 depicts a “[s]chematic representation of one embodiment of the EEG data acquisition system of the present invention in use with a subject to acquire EEG and/or other signals from the subject and then transmit them to the receiver and attached computer.” Ex. 1001, 6:54–59. The EEG data acquisition system shown in Figure 1 includes signal processing module 16, which “receives input 12 from an external sensor 14”, such as an EEG electrode or any of the other sensors described in the '512 patent or known in the art. *Id.* at 16:8–13. “[T]he signal processing module 16 generates a signal 18 encoded with data corresponding to the external input 12” and transmits the signal 18 through module antenna 20 to base station 40 by

wireless means, such as radio frequency. *Id.* at 16:16–22. “The base station 40 receives the radio frequency signal 18 through base antenna 42, demodulates the radio frequency signal 18, and decodes the data.” *Id.* at 16:25–28.

The EEG data acquisition system shown in Figure 1 also includes external programming means 60, which may be a personal computer. Ex. 1001, 16:34–38. External programming means 60 “contains software which is used to program the signal processing module 16 and the base station 40 through data interface cable 62.” *Id.* “If a personal computer is the external programming means 60, it can monitor, analyze and display the data in addition to its programming functions.” *Id.* at 16:51–54.

E. The Challenged Claims

Petitioner challenges claims 1–20 of the ’512 patent. Claim 1, the only independent claim, is reproduced below with bracketed notations added:¹

1. A sleep diagnostic data acquisition system comprising:
 - [1.a] a) a first software stored on a non-transitory computer readable medium and executable by a first processor, the software configured to be loaded on a cell phone or Personal Digital Assistant (“PDA”) comprising at least one first wireless transceiver and the first processor;
 - [1.b] b) a portable, wearable patient interface box adapted to be secured to a subject at a first location and providing a single device for measuring and then wirelessly transferring sleep data from at least two sensors used for diagnosing sleep disorders, the portable, wearable patient interface box comprising:

¹ For ease of reference, we use the same bracketed notations Petitioner uses in the Petition. *See, e.g.*, Pet. 83–80.

- [1.b.i] i) an enclosure of a rigid material;
- [1.b.ii] ii) a battery;
- [1.b.iii.A] iii) one or more electrical components within the portable, wearable patient interface box for receiving electrical signals from the at least two sensors, the one or more electrical components include a signal processing unit for receiving the electrical signals from the sensors,
- [1.b.iii.B] the at least two sensors which are attached to the subject and/or within the portable, wearable patient interface box that is secured to the subject,
- [1.b.iii.C] the at least two sensors further which are hardwired to connect through at least one connector of the portable, wearable patient interface box and/or are built within the portable, wearable patient interface box,
- [1.b.iii.D] the signal processing unit configured for receiving and processing the sleep data from one or more input channels; and
- [1.b.iv.A] iv) a second wireless transceiver or transmitter is adapted for operating at frequencies above 2 GHz and
- [1.b.iv.B] transmitting the sleep data collected with the portable, wearable patient interface box wirelessly to the at least one first wireless transceiver of the cell phone or PDA with the first software loaded;
- [1.c] c) the at least two sensors are selected from a group consisting of: accelerometer(s), pulse oximeter(s) including fingertip pulse oximeter(s) and those built into the portable, wearable patient interface box, RIP belt(s), respiratory effort belt(s), pressure sensor(s), microphone(s), strain gauge(s), pressure transducer(s), and transducer(s), the at least two sensors adapted:
 - [1.c.i.A] i) to be applied to the subject,

- [1.c.i.B] a first and a second of the at least two sensors of the portable, wearable patient interface box when the one or more of the sensors are built into the portable, wearable patient interface box are adapted to be applied to a finger, arm and/or torso of the subject;
- [1.c.ii] ii) to measure or derive respiratory ventilation directly or indirectly, blood oxygenation and body position of the subject during testing; and
- [1.c.iii] iii) to be releasably connected and/or electrically hardwired to or within the portable, wearable patient interface box adapted to be worn by the subject;
- [1.d] d) an at least second software stored on a non-transitory computer readable medium and executable by a computer or a second processor at one or more sites remote to the first location;
- [1.e] e) the first software, when executed by the first processor of the cell phone or PDA, configured to wirelessly receive and re-transmit the sleep data, or optionally send the sleep data further processed with the first processor of the cell phone or the PDA, with the at least one first wireless transceiver over cell towers to the computer or the second processor for analysis;
- [1.f] f) the second software when executed by the computer or the second processor configured to analyze, output and/or format the sleep data at the one or more sites remote from the first location where the sleep data was collected; and
- [1.g] g) the at least second software, when executed by the second processor or the computer, configured to display both, in part, the sleep data and/or analyzed sleep data to allow for diagnosis of a sleep disorder and, if necessary, provide a basis to modify a sleep treatment of the subject.

Ex. 1001, 20:17–21:25. Challenged claims 2–20 depend from claim 1, either directly or indirectly, and recite additional features of the sleep diagnostic data acquisition systems. *Id.* at 21:26–22:51.

F. Evidence

Petitioner relies upon information that includes the following.

Ex. 1007, Ciulla, US 2003/0199945 A1, published October 23, 2003 (“Ciulla”).

Ex. 1008, Orbach, WO 2006/090371 A2, published August 31, 2006 (“Orbach”).

Ex. 1009, Kumar et al., US 2002/0198473 A1, published December 26, 2002 (“Kumar”).

Ex. 1010, Nagai et al., US 2006/0173257 A1, published August 3, 2006 (“Nagai”).

Ex. 1011, Truschel et al., US 2003/0066529 A1, published April 10, 2003 (“Truschel”).

Petitioner also relies on the Declaration of Jason Kirkness, Ph.D. (Ex. 1003) and the Declaration of Dr. Sandeep Chatterjee (Ex. 1005) to support its contentions.

Patent Owner supports its contentions with the Declarations of Michael T. Goodrich (Ex. 2014) and David A. Borkholder (Ex. 2015), among other evidence.

G. Asserted Grounds of Unpatentability

Petitioner asserts that claims 1–20 would have been unpatentable on the following grounds. Pet. 2–3.

Ground	Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1	1–6, 8–17, 19, 20	103(a)	Ciulla, Orbach
2	1–6, 8–17, 19, 20	103(a)	Ciulla, Orbach, Nagai
3	7, 18	103(a)	Ciulla, Orbach, Truschel
4	6, 8, 13, 14, 17, 19	103(a)	Ciulla, Orbach, Kumar
5	7, 18	103(a)	Ciulla, Orbach, Kumar, Truschel
6	6, 8, 13, 14, 17, 19	103(a)	Ciulla, Orbach, Nagai, Kumar

Ground	Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
7	7, 18	103(a)	Ciulla, Orbach, Nagai, Truschel
8	7, 18	103(a)	Ciulla, Orbach, Nagai, Kumar, Truschel

II. UNPATENTABILITY ARGUMENTS

A. Principles of Law

“In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)). This burden of persuasion never shifts to the patent owner. *See Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). Moreover, a petitioner should not “place the burden on [the Board] to sift through information presented by the Petitioners, determine where each element [of the challenged claims] is found in [the cited references], and identify any differences between the claimed subject matter and the teachings of [the cited references.]” *Google Inc. v. EveryMD.com LLC*, IPR2014-00347, Paper 9 at 25 (PTAB May 22, 2014).

A patent claim is unpatentable for obviousness under pre-AIA 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). In *Graham v. John Deere Co. of Kan. City*,

383 U.S. 1 (1966), the Supreme Court set out a framework for assessing obviousness that requires consideration of four factors: (1) the “level of ordinary skill in the pertinent art,” (2) the “scope and content of the prior art,” (3) the “differences between the prior art and the claims at issue,” and (4) “secondary considerations” of nonobviousness such as “commercial success, long felt but unsolved needs, failure of others, etc.” *Id.* at 17–18; *KSR*, 550 U.S. at 407. An obviousness determination requires finding a reason to combine accompanied by a reasonable expectation of achieving what is claimed in the challenged patent. *See Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1367 (Fed. Cir. 2016). “[A]ny need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed.” *KSR*, 550 U.S. at 419–20.

We analyze the asserted grounds of unpatentability in accordance with these principles.

B. Claim Construction

The challenged claims should be read in light of the Specification, as it would be interpreted by one of ordinary skill in the art. *In re Suitco Surface, Inc.*, 603 F.3d 1255, 1260 (Fed. Cir. 2010). Thus, we generally give claim terms their ordinary and customary meaning. *See In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007) (“The ordinary and customary meaning is the meaning that the term would have to a person of ordinary skill in the art in question.” (internal quotation marks omitted)); *see also* 37 C.F.R. § 42.100(b) (stating that claims are construed in IPRs according to the same standard as used in federal court).

Petitioner does not propose construction of any terms and asserts that the Board need not construe any terms. Pet. 9. Patent Owner agrees. PO Resp. 4.

We determine that no express construction of any claim term is necessary to resolve the dispute between the parties. *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (“[W]e need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy.’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))). Nevertheless, in our analysis of the asserted grounds of unpatentability below, we discuss the scope of certain claim terms, e.g., “the computer” and “the processor.”

C. Level of Ordinary Skill in the Art

Petitioner proposes that a person of ordinary skill in the art (“POSITA”) at the time of the invention

would have had at least a bachelor’s degree in mechanical engineering, electrical engineering, computer science, biomedical engineering, or a similar technical field, with at least two years of relevant product design experience working with diagnostic sensor systems and network data systems. Additional experience could substitute for less education, and additional education could likewise substitute for less experience.

Pet. 8. Patent Owner agrees to apply Petitioner’s proposed definition of POSITA. PO Resp. 4.

We adopt Petitioner’s proposed definition of a POSITA because the proposed level of ordinary skill in the art appears to be consistent with the cited prior art and is undisputed on this record. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (indicating that the prior art itself may reflect an appropriate skill level).

D. Summary of the Asserted Prior Art

1. *Ciulla (Ex. 1007)*

Ciulla is titled “Device and Method for Treating Disordered Breathing.” Ex. 1007, code (54). Ciulla “relates to medical devices, and more particularly to an improved method and device for detecting and treating and sleep disorders and most particularly to treating sleep disordered breathing type sleep disorders [(“SDB”)] such as sleep apnea.” *Id.* ¶ 2.

Ciulla describes a device that includes “a processor for receiving sensor inputs, processing the received sensor inputs, and generating commands through output devices”; a first sensor that “is positionable for receiving breathing sound information emitted from one of the mouth and nose of a patient”; a second sensor that “is positionable on a patient for receiving breathing sounds information from a patient’s chest cavity”; a third sensor that “is positionable for receiving information relating to the amount of chest expansion of a patient”; a first output device “capable of providing an auditory signal to a patient”; and a second output device “capable of providing an electrical signal to a muscle group of a patient that simulates a human touching event.” Ex. 1007 ¶ 60. According to Ciulla,

The first, second and third sensors, and the first and second output devices are operatively coupled to the processor to permit the processor to receive information input from the sensors, process the input information to [] detect the existence of a sleep-breathing disorder event, and to generate command to at least one of the first and second output devices. The command is capable of directing the at least one output device to provide a series of progressively intrusive stimuli designed to condition the patient to terminate the sleep breathing disorder event, and ultimately, return to a more normal sleep pattern.

Id. Stimuli may include “humanoid-like interventions” such as verbal commands using the patient’s name, motivational statements whispered to

the patient, or induction of electronic current into the patient that simulates the patient's shoulder being shaken. *Id.* ¶¶ 65–66, 68, 70.

Ciulla's Figures 1a and 1b are reproduced below.

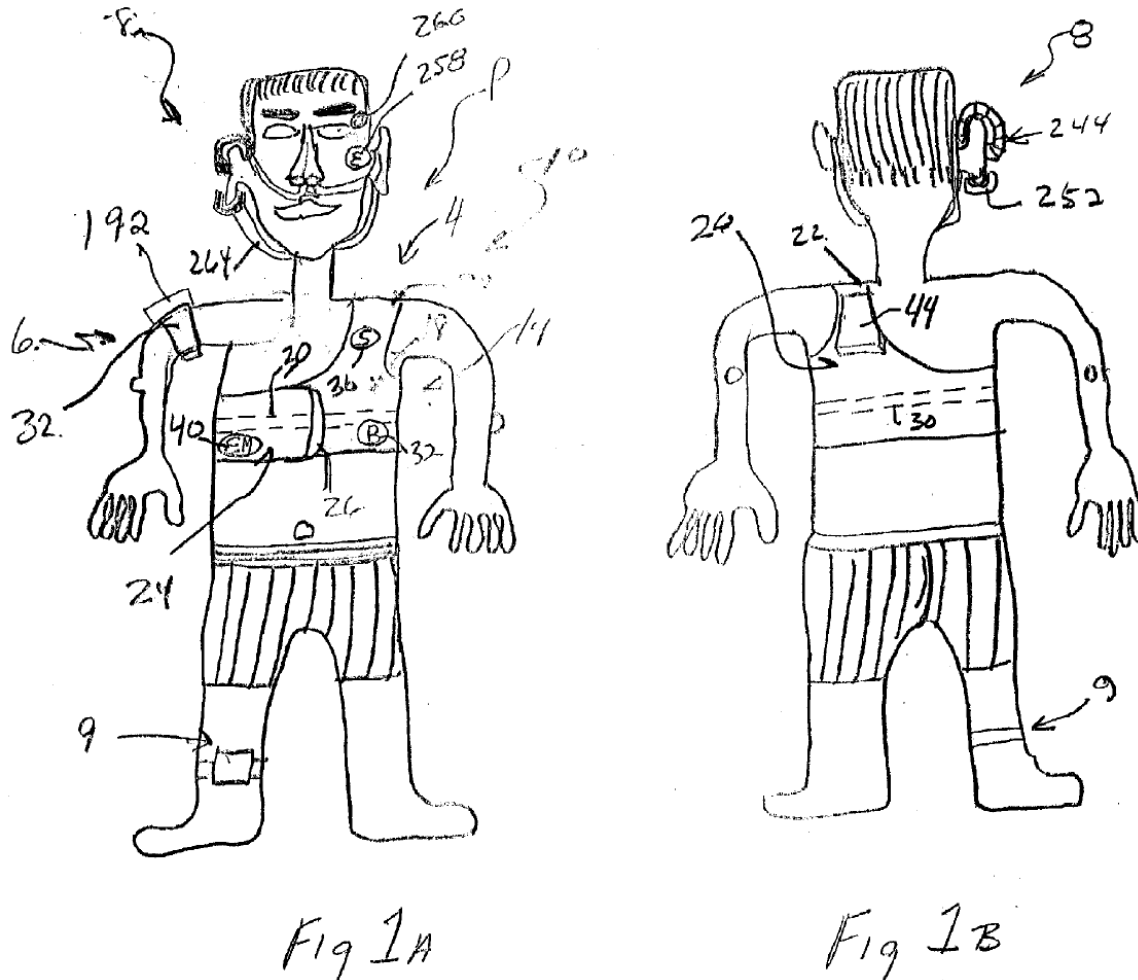
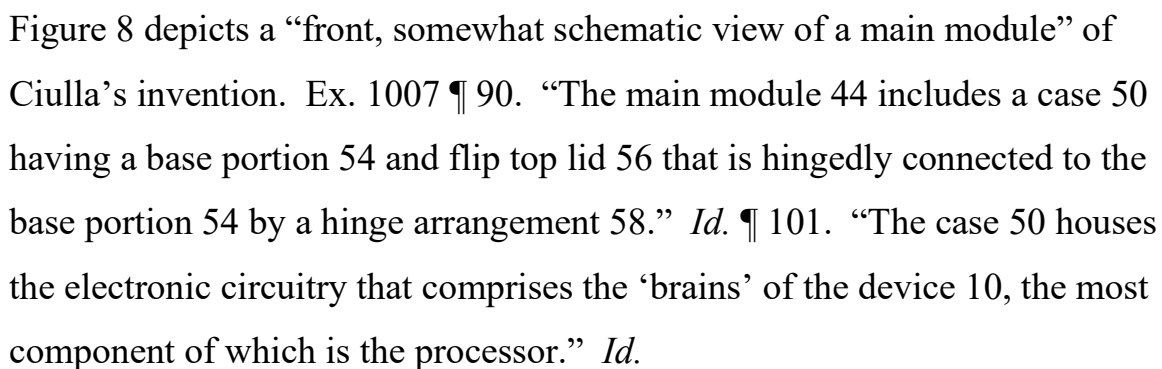


Figure 1a depicts “a frontal, somewhat schematic view showing a patient wearing the sleep disordered breathing treatment device” of Ciulla’s invention, and Figure 1b depicts “a rear-view of a patient wearing the sleeping device.” Ex. 1007 ¶¶ 78–79. The SDB treatment device (10) shown in Figure 1a and Figure 1b includes chest module 4, arm module 6, head module 8, and leg-mounted actimeter 9. *Id.* ¶ 95.

The chest module includes chest-engaging shoulder wrap 14 that includes chest-engaging portion 18, back-engaging portion 20, and shoulder-

Ciulla's Figure 8 is reproduced below.



The main module also includes “[a] power source, such as a plurality of batteries” (Ex. 1007 ¶ 102), “[a]n internal, transmitter/receiver/antenna 92” (*id.* ¶ 106), “a plurality of jacks and/or plug receivers and/or ports” (*id.*), external speaker 84, microphone 88, input device 66, and LCD display screen 62, which may also function as an input device (*see id.* ¶¶ 103–106). The main module may additionally include “a voice chip, a non-volatile memory, such as a smart card, and various cableing and wires to provide communication, along with a radio frequency transmitter and receiver for wireless communication.” *Id.* ¶ 102. The main module may communicate with the arm module and head module of Ciulla’s device to transmit commands and receive information. *Id.* ¶¶ 112, 116.

2. Orbach (Ex. 1008)

Orbach is titled “Methods and Systems for Physiological and Psycho-Physiological Monitoring and Uses Thereof.” Ex. 1008, code (54). Orbach relates to “the field of physiologically monitoring and bio interactive applications.” *Id.* at 1:7–8. Orbach describes “a system and method for monitoring one or more physiological parameters of a user.” *Id.* at code (57). According to Orbach, its “invention provides portable, cordless, and wearable sensors, for monitoring queries emotional and physiological responses to events as they occur. . . . The new sensors may utilize mobile phones and other technology to display the user’s physiology and emotional state, real-time coaching based on expert knowledge, and to train the user to modify negative behavior patterns.” *Id.* at 2:18–24. Examples of physiological parameters include electrodermal activity (“EDA”), heart rate (“HR”), EDA variability, and HR variability. *Id.* at 6:20–23. More specifically, Orbach’s system “may be used to record physiological reading

while the user is sleeping in order to help identify and possibly correct sleep disorders.” *Id.* at 41:25–27.

Orbach discloses that its system includes “one or more wearable sensor modules sensing the one or more physiological parameters”; “one or more transmitters wirelessly transmitting first signals indicative of values of the one or more physiological parameters to a mobile monitor”; and a mobile monitor comprising “a first processor processing the first signals received from the transmitter in real time using expert knowledge” and “a device providing one or more indications of results of the processing.”

Ex. 1008, 3:7–18. Orbach’s system may further comprise a remote server that is capable of communication with the mobile monitor such that the remote server receives second signals from the mobile monitor, and is associated with a viewing station (e.g., a remote call center or interactive expert system) having a second processor. *Id.* at 3:19–22. The remote server is configured to transmit the second signals to the viewing station for analysis, access historical data relating to the subject, transmit the historical data to the viewing station, receive results of the analysis from the viewing station, and/or transmit the results of the analysis to the mobile unit, “the analysis being based upon the second signals, and one or more of the historical data, expert knowledge and computerised protocols.” *Id.* at 3:19–4:3, 8:13–15.

Orbach’s Figure 1 is reproduced below.

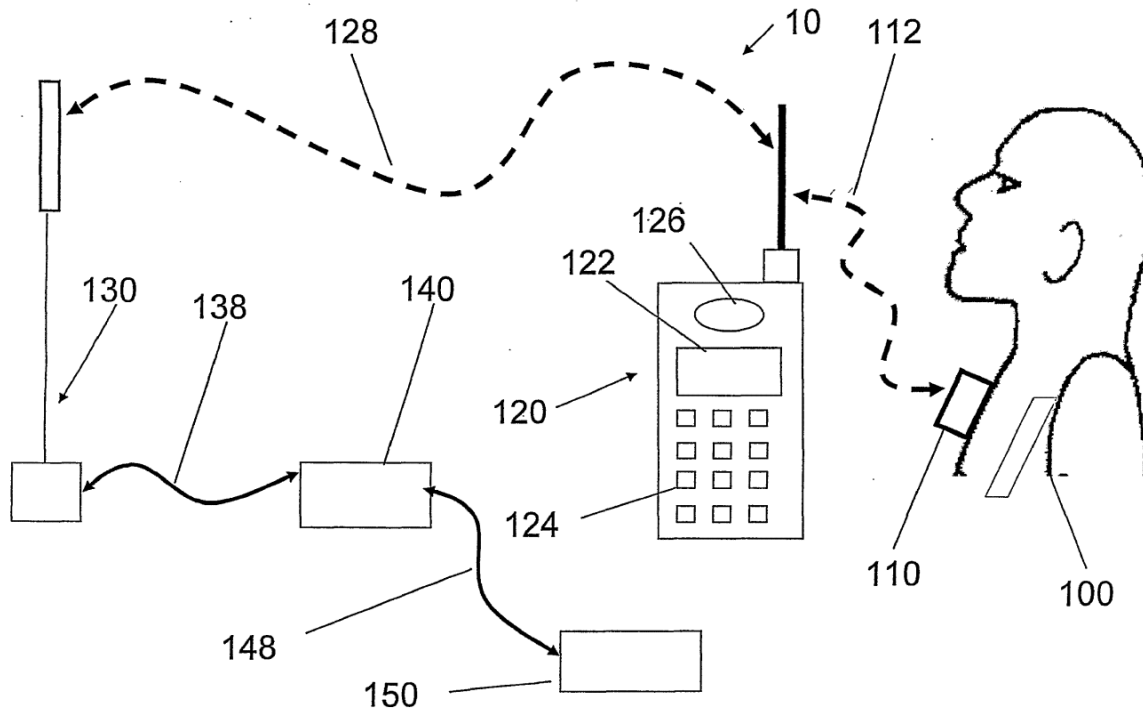


Fig. 1

Figure 1 depicts “a physiology monitoring system, according to an exemplary embodiment” of Orbach’s invention. Ex. 1008, 11:29–30.

Physiology monitoring system 10 includes sensor module 110 attached to user 100, communication link 112, mobile monitor 120, display 122, speaker 126, keypad 124, communication link 128, remote server 140, base station 130, data link 148, and viewing station 150. *Id.* at 13:12–14:2.

Communication link 112 transfers data from sensor module 110 to mobile monitor 120, and mobile monitor 120 “provides visual biofeedback to the user by means of a display 122 and optionally an audio biofeedback to the user by means of speaker 126.” Ex. 1008, 13:14–18. Keypad 124 controls the operation of mobile monitor 120, sensor module 110, or both, but the user may optionally control the operation using voice recognition methods. *Id.* at 13:18–20. Mobile monitor 120 connects to remote server

140 via communication link 128. *Id.* at 13:21–23. In-depth analysis of data obtained by sensor unit 110 may be performed in remote server 140 “and, optionally, data can be transmitted to an expert or another user.” *Id.*

Remote server 140 may also be connected to viewing station 150 via data link 148 to allow a human expert to “provide interpretation of the data and transmit recommendations to the user.” *Id.* at 13:28–14:2.

3. *Kumar (Ex. 1009)*

Kumar, titled “System and Method for Real-Time Monitoring, Assessment, Analysis, Retrieval, and Storage of Physiological Data Over a Wide Area Network,” is the December 26, 2002 publication of U.S. Application 10/109,958. Ex. 1008, codes (21), (43), (54).

Kumar “relates to remote monitoring of device over a wide area network,” and “to network-based transmission of data from a physiological collecting device.” *Id.* ¶ 2. We reproduce Kumar’s Figure 1A below.

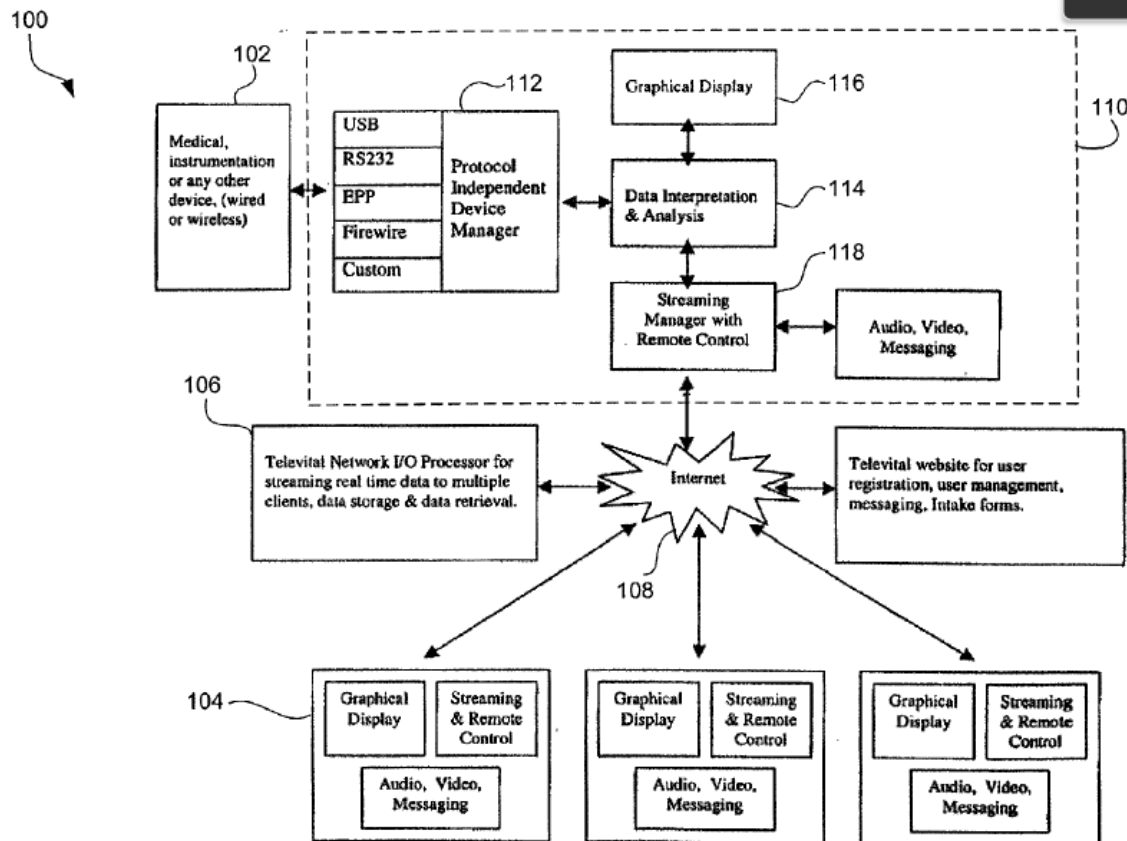


Fig. 1A

Figure 1A shows “a diagram of an exemplary system architecture for network-based monitoring of data from a patient-side physiological collecting device.” *Id.* ¶ 22. Architecture 100 includes patient-side devices 102 for collecting data from a patient/client, provider-side devices 104, and central server 106 that implements an engine. *Id.* ¶ 67. “The devices and engine are connected to a wide area network (WAN) 108 such as the Internet, intranet, or extranet,” and “[t]he system allows for the real-time Streaming of raw, interpreted, and/or processed physiological data as well as textual/audio/video data from a patient to a health care provider.” *Id.*

Patient-side devices 102 may “be connected via a computing device 110, such as a computer, handheld devices such as personal digital

assistants (PDAs) and pocket PCs such as IPAQ with Windows CE operating System and Palm devices based on Palm OS[], wireless telephone, or any other computing device, to the WAN.” *Id.* ¶ 72. “A protocol independent device manager 112 running on the computing device establishes a two-way communication with a vast array of client-side devices.” *Id.*

Kumar teaches “a modular architecture in which the patient-side device and/or the computing device coupled to the patient-side device can send a request to the engine with an identifier of the patient-side device, and the engine will send the appropriate plug-in which allows the computing device to communicate with the patient-side device.” *Id.* ¶ 74. Therefore, Kumar’s system “may support both plug-and-play web device drivers and customized graphical user interfaces (GUIs) for the various devices.” *Id.*

“The system may be implemented using Apache [W]eb Server, MySQL on Linux, Oracle on Linux, Java servlets, Applets, HTML, JavaScript, Java, C#, Microsoft’s .NET etc.” and “the server may be implemented on the Internet, intranet, or an extranet.” *Id.* ¶ 87.

4. *Nagai (Ex. 1010)*

Nagai is titled “Sleep Evaluation Method, Sleep Evaluation System, Operation Program for Sleep Evaluation System, Pulse Oximeter, and Sleep Support System.” Ex. 1010, code (54). Nagai relates generally to “a method and a system for evaluating sleep of subjects in diagnosing sleep apnea syndrome (hereinafter, called as ‘SAS’), and more particularly to a sleep evaluation method and a sleep evaluation system capable of accurately obtaining a correlation between apnea and body position of a subject in sleep.” *Id.* ¶ 3.

Nagai’s Figure 2 is reproduced below.

FIG.2

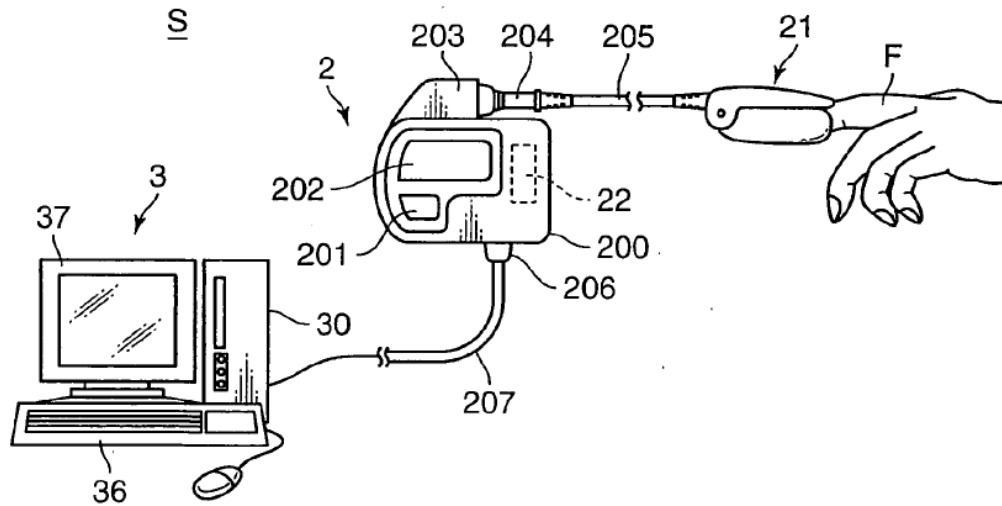


Figure 2 “is an illustration showing an example of a sleep evaluation system.” Ex. 1010 ¶ 15. Figure 2’s

sleep evaluation system S includes a pulse oximeter 2 for concurrently or simultaneously measuring a blood oxygen saturation and a body angle of a subject for storing the measurement data, a PC 3 for reading out the measurement data concerning the blood oxygen saturation and the body angle from the pulse oximeter 2 to analyze a correlation between apnea and body angle of the subject, and a USB cable 207 for connecting the pulse oximeter 2 and the PC 3 for communication according to needs.

Id. ¶ 57.

Pulse oximeter 2 includes main body 200 and probe 21. Ex. 1010 ¶ 58. Probe cable 205 equipped with connector 204 electrically connects oximeter main body 200 and probe 21. *Id.* Externally, oximeter main body 200 includes power switch 201, oximeter display 202 with a liquid crystal display, “connecting portion 203 for connecting the oximeter main body 200 to the probe cable 205, and a connecting portion 206 for connecting the oximeter main body 200 to the USB cable 207.” *Id.* Internally, oximeter

main body 200 has “a memory serving as the storage 13, a microprocessor i.e. a central processing unit (CPU) serving as the system controller 14, a power battery, and a three-axis acceleration sensor 22 serving as the body position detector 12.” *Id.* Oximeter main body 200 is detachably attached to a body trunk portion of a subject via a body belt, and probe 21 is attached to the finger F of the subject. *Id.* ¶ 60.

5. *Truschel (Ex. 1011)*

Truschel is titled “Snore Detecting Method and Apparatus.”

Ex. 1011, code (54). Truschel

relates to a method and apparatus for detecting disordered breathing in a patient and, in particular, to a method and apparatus for detecting patient snoring and/or for dynamically adjusting a snore detection threshold, and to a pressure support system and method of providing pressure support that uses this unique snore detection and/or dynamic adjustment technique to control the pressure provided to a patient.

Id. ¶ 3. According to Truschel, it is important to detect patient snoring because it may be a symptom of a constricted or collapsed airway that “can be opened by the appropriate application of a positive pressure to the airway of the patient.” *Id.* ¶ 45.

Truschel’s Figure 2 is reproduced below.

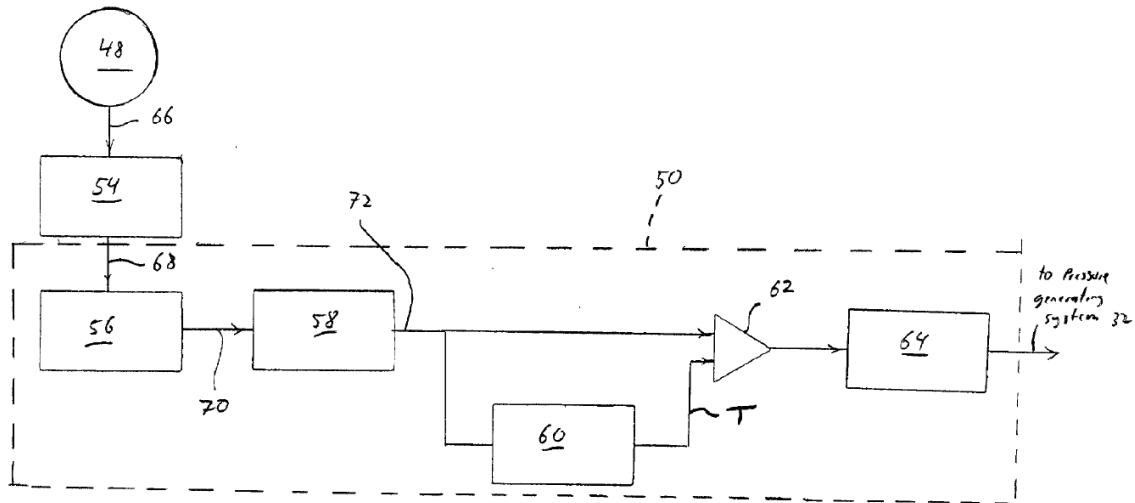


FIG. 2

Figure 2 depicts a schematic view of a snore detector in a pressure support system capable of implementing Truschel's snore detecting method.

Ex. 1011 ¶¶ 17–18. The snore detector shown in Figure 2 includes “an audio receiver, such as a microphone or pressure sensor 48, an analog filter 54, an analog-to-digital converter 56, a digital band pass filter 58, a comparator 62, and a snore analysis device 64.” *Id.* ¶ 43. “[A]nalog-to-digital converter 56, digital band pass filter 58, comparator 62, and snore analysis device 64 are preferably implemented within controller 50 by suitable programming.” *Id.* Controller 50 functions as “a snore detection device that, in essence, ‘listens’ for snores imposed on the pressure signal from pressure sensor 48.” *Id.* ¶ 46.

E. Ground 1: Obviousness over Ciulla and Orbach

Petitioner contends that claims 1–6, 8–17, 19, and 20 are unpatentable under 35 U.S.C. § 103 as obvious over Ciulla and Orbach. Pet. 9–64. In support of its assertion, Petitioner provides a detailed discussion asserting

how each claim limitation of claims 1–6, 8–17, 19, and 20 is disclosed by Ciulla and Orbach. *Id.* Petitioner’s contentions are supported by the declarations of Dr. Kirkness and Dr. Chatterjee. Ex. 1003 ¶¶ 64–203; Ex. 1005 ¶¶ 24–206.

Patent Owner disputes 1) whether Orbach discloses a computer that both receives sleep data over cell towers from a cell phone/PDA and executes second software that analyzes and displays the sleep data for diagnosing and providing the basis for treatment modification as recited in independent claim 1 (claim limitations [1.d], [1.f], and [1.g]) and 2) whether a POSITA would have been motivated to combine Ciulla’s wearable sleep data acquisition system with Orbach’s communication technique. PO Resp. 5–14.

After considering all of the arguments and evidence presented on the full trial record, we determine that Petitioner has not demonstrated by a preponderance of the evidence that claims 1–6, 8–17, 19, and 20 are unpatentable as obvious over the combination of Ciulla and Orbach. We find that the deficiencies in Petitioner’s arguments regarding claim limitations [1.d], [1.f], and [1.g] are dispositive and we address the parties’ arguments concerning those limitations below.

1. *Petitioner’s Contentions*

Petitioner contends that it would have been obvious to a person of ordinary skill in the art to combine Ciulla’s wearable sleep data acquisition system to transmit its sensor data via a cell phone to a remote computer for sleep disorder diagnosis like in Orbach. Pet. 9–12. Petitioner contends that, “[w]hile Ciulla does not explicitly disclose that its main module 44 wirelessly transmits sensor data to a cell phone or from the cell phone to a remote site, this would have been obvious in view of Orbach.” *Id.* at 11

(citing Ex. 1003 ¶ 107). For example, Petitioner notes that Ciulla’s system includes “a radio frequency transmitter and receiver for wireless communication,” and Orbach discloses the use of a Bluetooth link to establish a communication link between sensor modules and a cell phone, and the use of a cellular communication link to establish a communication link between a cell phone and a cellular base station. *Id.* (citing Ex. 1007 ¶¶ 102, 106, FIGs. 1A–1B, 8; Ex. 1008, FIG. 1, 13:21–27, 22:4–13, 22:20–23:4); *see also* Ex. 1007 ¶ 213 (disclosing the wireless transmission of outputs from multiple sensors).

With regard to the disputed element [1.d], Petitioner contends that Orbach’s cell phone forwards sensor data to a “remote server” 140 connected to a viewing station 150 (either being the recited “computer”), and that the remote server has a “second processor” that “provide[s] additional processing” of received “sensor[] data.” *Id.* at 48 (citing Ex. 1008, 3:19–23, 5:3–5, 8:11–15, 13:21–14:2, 22:20–27, 22:28–23:4, 33:27–34:2).

For element [1.f], Petitioner contends that Orbach’s remote server with a processor (“computer or the second processor”) executes the second software to receive and process sleep data from the sensors. *Id.* at 52. For example, Petitioner cites Orbach’s teaching that the remote servers “provide additional processing of the sensor’s data.” *Id.* (citing Ex. 1008, 16:8–12, 22:4–13, 22:20–23:4, 41:25–27). Petitioner contends that this “additional processing” at the remote server constitutes the recited element of analyzing sleep data. Ex. 1003 ¶ 183. For the “output” and “format” functions, Petitioner contends that Orbach “output[s] the sleep data to the ‘viewing station’ or format[s] it for an expert to review at the one or more sites remote from the first location where the sleep data was collected.” *Id.*; Ex. 1003

¶ 183. Petitioner explains that the remote server outputs the processed data to the viewing station, and that this output necessarily involves formatting data. *Id.* (citing Ex. 1008, 3:19–4:4, 5:3–5, 8:11–15, 13:21–14:2, 16:8–12, 22:4–13, 22:20–23:4, 41:25–27).

Regarding element [1.g], Petitioner contends that the “display” function is performed by Orbach’s remote server, viewing station, and processor executing the second software to display the sleep data on a “viewing station” at the remote site. *Id.* at 53 (citing Ex. 1008, 3:19–4:4, 5:3–5, 8:11–15, 13:21–14:2, 16:8–12, 22:4–13, 22:20–23:4, 41:25–27); Ex. 1005 ¶¶ 176–177. Petitioner argues that a POSITA would have understood that analyzing the sleep data at the remote site means the viewing station would have also displayed the analyzed sleep data. *Id.*; Ex. 1003 ¶184.

Petitioner contends that a person of ordinary skill in the art would have been motivated to add Orbach’s communication techniques to Ciulla’s systems for three reasons. Pet. 12. First, Petitioner contends that its proposed combination “would have enabled continuous, real-time data communication, allowing more personalized and timely interventions for users.” *Id.* (citing Ex. 1003 ¶ 108; Ex. 1005 ¶¶ 70–81; Ex. 1008, 13:28–14:2, 17:19–20, 38:24–27 (raising alerts “when certain conditions occur”), 25:27–26:2 (receiving “feedback in real time” which is “relevant for health issues”)). Second, Petitioner contends that its proposed combination would have “allow[ed] patients to use a common portable device (cell phone) to track and report health data” so as to improve early detection of health issues and reduce doctor visits, hospital stays, and healthcare costs. *Id.* (citing Ex. 1003 ¶ 109; Ex. 1005 ¶¶ 70–81; Ex. 1008, FIG. 1). Third, Petitioner contends that its proposed combination would have “promoted greater patient engagement, leading to better outcomes and increased satisfaction

with care as individuals became more actively involved in managing their health.” *Id.* (citing Ex. 1003 ¶ 111; Ex. 1008, FIGs. 7a–7d (user interfaces for managing health information)).

Finally, Petitioner contends that a person of ordinary skill in the art would have had a reasonable expectation of success in combining Ciulla with Orbach to wirelessly transmit data to a remote computer via a cell phone because “[t]he Ciulla-Orbach system would have been a predictable combination of known components according to known methods (e.g., communication and data processing methods), and would have produced the predictable result of wireless/wired transmissions and software as described.” Pet. 18 (citing Ex. 1003 ¶ 121).

2. Patent Owner’s Response

Patent Owner contends that Orbach does not teach a single computer (or processor) that both receives sleep data over cell towers from a cell phone/PDA and executes software to analyze and display that data for diagnosis and treatment modification. PO Resp. 5–9 (citing claim limitations [1.d]–[1.g]). Instead, Patent Owner contends that, to the extent Orbach teaches these features at all, the functionalities are split across a remote server and a viewing station computer, two completely different devices. *Id.* at 5–6 (citing Ex. 2005 ¶ 138). Specifically, Patent Owner contends that “Orbach does not teach or suggest these limitations at least because two different computers execute their own distinct software, and Petitioner fails to demonstrate why a POSITA would have combined different server and viewing station embodiment components into one to arrive at the claimed invention.” PO Resp. 6.

Patent Owner further contends that there would have been no motivation to combine Ciulla’s wearable sleep data acquisition system with

Orbach's cell phone communication techniques. PO Resp. 10–14. Patent Owner directs our attention to Petitioner's argument that combining the systems solve a need for continuous, real-time data tracking and patient engagement, and contends that is a problem that does not actually exist in Ciulla. *Id.* at 10–11. Patent Owner contends that Ciulla's system already provides real-time, continuous health data without needing a cell phone because it has a built in LCD screen it can directly transmit reports to health care providers over a wide area network (WAN). *Id.* at 2 (citing Ex. 1007 ¶¶ 76, 103, 125, 214). Because Ciulla already addresses these issues, Patent Owner contends that adding a cell phone or PDA to the system would be unnecessary and would only introduce unwanted cost and complexity. *Id.* at 13–14.

3. *Petitioner's Reply*

Petitioner argues that Patent Owner is narrowly construing claim 1's recitation for "a computer or a second processor at one or more sites remote to the first location." Reply 1–6 (citing Ex. 1001, 21:4–7 (limitation 1.d)). Petitioner then provides four arguments supporting its contention that Orbach's remote server 140 and viewing station 150, both individually and in combination, satisfy the "computer" and "second processor" limitations of Claim 1 when properly construed, specifically, claim 1's requirements for a cell phone that transmits the sleep data "over cell towers to the computer or the second processor for analysis" (Ex. 1001, 21:8–14 (limitation 1.e)) and "second software" of the computer or second processor is configured to "analyze, output and/or format the sleep data" and "display . . . the sleep data" (*id.* at 21:15–25 (limitation 1.f–1.g)). Reply 11–22.

First, Petitioner argues that "Orbach's remote server 140 and viewing station 150 together constitute 'a computer or a second processor at one or

more sites.”” *Id.* at 14. Petitioner contends that Patent Owner “incorrectly limits the claimed ‘computer . . . at one or more sites’ to only Orbach’s viewing station 150 or remote server 140,” emphasizing that “[a] computer,’ as claimed, refers to one or more computers at one or more sites.” *Id.* at 13–14. Petitioner further contends that Patent Owner “admits that 140 and 150 are computers, which falls within the scope of the claim,” and that Patent Owner’s argument to the contrary “premises itself on an incorrect construction of ‘a computer’ as a single computer, which cannot be the case.”” *Id.* at 14–15.

Second, Petitioner asserts that “Orbach discloses transmitting sleep data to a remote server 140 computer and analyzing and displaying that data at the processor of viewing station 150 as claimed.” *Id.* at 16–17. Rebutting Patent Owner’s arguments, Petitioner states that “Claim 1 specifies, among other configurations, that software of a ‘second processor’ can ‘analyze’ and ‘display’ sleep data as claimed if a ‘computer’ re-transmits the sleep data sent via cell towers for analysis by the ‘second processor.’” *Id.* at 16. Under this configuration, “[r]emote server 140 . . . transmits sleep data received over cell towers for analysis,” while “[v]iewing station 150 analyzes and displays the transmitted data” because it “includes a ‘second processor’ for performing the claimed analysis and display functions.” *Id.* (citing Pet. 48–54; Ex. 1008, 3:19–4:4).

Third, focusing on the viewing station, Petitioner contends that Patent Owner “incorrectly contends that a system only transmits sleep data ‘over cell towers to the computer’ if the computer and cell towers have a direct connection.” *Id.* at 17 (emphasis omitted). Petitioner emphasizes that claim 1 is not limited to a direct cell phone-computer communication and that “communicating ‘over cell towers to the computer’ includes from cell

towers to the remote computer destination, with or without an intervening router, etc.” *Id.* at 17–18. Consequently, Petitioner concludes that “Orbach discloses a cell phone that sends sleep data ‘over cell towers to the’ viewing station 150 ‘computer’ using a relaying device (remote server 140) as claimed.” *Id.* at 18.

Finally, Petitioner argues that “Orbach’s remote server 140 alone also performs the computer and second processor limitations of Claim 1.” *Id.* at 21. Addressing Patent Owner’s argument that the server’s software does not display the data, Petitioner counters that “Claim 1 specifies that ‘second software’ on the device is ‘configured to analyze, output and/or format sleep data’ and ‘display’ it—a configuration that encompasses software that drives, transmits, or otherwise outputs data for display on the device’s screen or a connected viewing station.” *Id.* at 19–20. Petitioner explains that “software does not itself ‘display’ data, but is configured to display data by driving appropriate display hardware,” meaning that Orbach’s server software is “‘configured to display the sleep data’ by providing the data and appropriate control to the viewing station 150.” *Id.* at 20.

4. *Patent Owner’s Sur-reply*

In its Sur-reply, Patent Owner rebuts the Petitioner’s four arguments regarding the Orbach reference. First, Patent Owner argues that Orbach’s remote server and viewing station cannot collectively constitute “a computer,” asserting that Federal Circuit precedent requires a single computer or processor to execute the “second software” and perform all recited functions, rather than splitting functionalities across multiple devices. Sur-reply 3–6. Specifically, in response to Petitioner’s argument that the claim’s recitation of “the computer” or “the processor” can read on multiple computers (Reply 2–4 (citing *Baldwin Graphics Systems, Inc. v. Siebert*,

Inc., 512 F.3d 1338 (Fed. Cir. 2008)), Patent Owner argues that Petitioner does not adequately account for the claim’s requirement for “the computer” or “the processor” to perform multiple functions (i.e. analyze, output, and display limitations) on the same machine (Sur-reply 3–4 (citing *Salazar v. AT&T Mobility LLC*, 64 F.4th 1311, 1315 (Fed. Cir. 2023))). Thus, according to Patent Owner, Orbach’s remote server 140 and viewing station 150 do not constitute “a computer or a second processor at one or more sites” because “[t]he claims are not amenable to construction that splits the functionalities of the second software over two different devices.” Sur-reply 10.

Second, Patent Owner contends that Orbach fails to teach transmitting data to the same device that both analyzes and displays it. *Id.* at 10–11. In Orbach, the remote server analyzes the data but does not display it, while the viewing station displays the data for human interpretation but does not analyze it. *Id.*

Third, Patent Owner clarifies that, while a “direct” connection to cell towers is not required, Orbach’s remote server is the actual, intended destination for the cellular transmission, not merely an intervening router or relay forwarding data to the viewing station, as evidenced by the fact that transmission to the viewing station is optional. *Id.* at 11–13.

Finally, Patent Owner rejects Petitioner’s assertion that the remote server itself “displays” the data by driving a monitor, pointing out that Petitioner argued in the Petition that the viewing station is a distinct computer with its own processor that provides additional processing, rather than a simple monitor driven by the remote server. Sur-reply 14 (citing Pet. 48). “Indeed, the viewing station 150 could not merely be a ‘monitor’

and also act as ‘a remote call center [or] an interactive expert system,’ as disclosed in Orbach.” *Id.* (citing PO Resp. 7; Ex. 1008, 8:13–15).

5. *Analysis*

Having considered the parties’ positions and evidence of record, summarized above, we are persuaded that claim 1’s recitation of “the computer” or “the processor” performing multiple functions aligns to the facts before us more closely to *Salazar* than to *Baldwin*. See Reply 2–4 (relying on *Baldwin* for the premise that “[b]ecause the initial indefinite article (‘a’) carries either a singular or plural meaning, any later reference to that same claim element merely reflects the same potential plurality”). In *Salazar*, the claim introduced “a microprocessor” and subsequently referred to “said microprocessor” performing three discrete functions (generating, creating, and retrieving). 64 F.4th at 1315 (“We have explained that the indefinite article ‘a’ means ‘one or more’ in open-ended claims containing the transitional phrase ‘comprising.’ An exception to the general rule that ‘a’ . . . means more than one only arises where the language of the claims themselves, the specification, or the prosecution history necessitate a departure from the rule.” (citations omitted)). The court held that “said microprocessor” required a single processor capable of all three recited functions. *Id.* at 1317.

As was the case in *Salazar*, although claim 1 may encompass a plurality of computers, each computer must be capable of performing the recited functionality. *Cf. id.* at 1316–18. That is, the plain meaning of limitation 1.d introduces the device with the qualifying phrase “at one or more sites remote to the first location.” The recitation of “one or more sites” expressly contemplates that the claimed “computer or second processor” may be distributed across multiple locations, suggesting that limitation 1.d

encompasses architectures where computing resources span more than one physical site. Although the indefinite article “a” in “a computer or a second processor” (limitation 1.d) may encompass “one or more” devices, the subsequent definite references to “the computer” and “the second processor” in limitations 1.f and 1.g require that at least one single device be capable of performing all functions attributed to the “second software,” namely, analyzing, outputting and/or formatting, and displaying the sleep data. Consequently, as argued by Patent Owner, the claimed functionalities cannot be split between two different computers/processors or between two different software programs, because the definite article “the” creates antecedent basis back to the single introduced element, requiring that element to satisfy each subsequently recited function. Sur-reply 3–(citing *Salazar*, 64 F.4th at 1317).

Accordingly, to show obviousness, Petitioner must show in Orbach that either (a) remote server 140’s output to viewing station 150 constitutes “display” within the meaning of the claim, or (b) viewing station 150 receives data “over cell towers” notwithstanding the intervening server. We determine that Petitioner has failed to do so on this record. Our analysis follows.

Regarding whether remote server 140’s output to viewing station 150 constitutes “display,” Petitioner argues in its Reply that software does not itself “display” data but rather is “configured to display data by driving appropriate display hardware,” analogizing Orbach’s viewing station 150 to an external monitor connected to a computer. Reply, 19–21; Ex. 1005 ¶¶ 176–178). Petitioner further points to the ’512 patent’s own Figure 4, in which computer 138 outputs data to an external monitor 140, as support for the proposition that software on one device can be “configured to display”

by outputting to a connected screen. However, this argument is substantially undermined by Petitioner's own characterizations elsewhere in the record. In the Petition, Petitioner characterized viewing station 150 as having a "second processor" that "provide[s] additional processing" of sensor data (Pet. at 48), and Orbach independently describes the viewing station as encompassing "a remote call center and an interactive expert system" with its own processor executing "computerised protocols" (Ex. 1008, 3:19–4:3, 8:13–15). In other words, viewing station 150 is not merely a passive monitor, but is itself a separate computer. As noted by Patent Owner in its Sur-reply, viewing station 150 cannot simultaneously be a mere passive monitor that server 140 "drives" and an independent computing device with its own processor and expert-system software. Sur-reply at 13–14. We thus find Petitioner's argument textually strained because Orbach's viewing station is far more functionally independent than a simple display peripheral because it performs its own data processing, hosts an expert system, and communicates recommendations back to the user, making the analogy to an external monitor unpersuasive.

Regarding whether viewing station 150 receives data "over cell towers" notwithstanding the intervening remote server 140, Petitioner argues that the claim language "over cell towers to the computer or the second processor" specifies a communication medium (cell towers) and an eventual destination (the computer), but does not require a direct, uninterrupted connection between the two. Reply at 9–11. Petitioner points to the '512 patent's disclosure of a "communications device for relaying the transmission" as an intermediary between the cell towers and the destination computer (Ex. 1001, 15:16–48), arguing that Orbach's remote server 140 functions as precisely this type of relay. As noted by Patent Owner,

however, Orbach's remote server 140 is not a mere relay or router but is the express "destination" of the cell phone's transmission. That is, it performs "in-depth analysis" of the data and only "optionally" forwards data to viewing station 150. Sur-reply at 12–13 (citing Ex. 1008, 13–14 ("Optionally, an additional data link 148 such as Local Area Network (LAN) or Internet networking or RF cellular link connects the remote server 140 to a viewing station 150 where a human expert may provide interpretation of the data and transmit recommendations to the user.")). Patent Owner persuasively argues that the word "optionally" in Orbach's description of the data link between server 140 and viewing station 150 shows that if forwarding to viewing station 150 is optional, then viewing station 150 cannot be characterized as the "eventual destination" of the cell phone's transmission. *Id.* Rather, the "eventual destination" is Orbach's remote server. *Id.* at 13. Thus, Orbach's architecture is explicitly designed with the remote server as the endpoint of the cellular link, with any further forwarding being a discretionary, secondary step rather than an inherent continuation of the original transmission path.

In view of the above, we determine that Orbach's architecture, in which a remote server 140 receives and analyzes data while viewing station 150 separately displays it, fails to disclose a single "computer or second processor" executing "second software" that performs all of the claimed functions. Accordingly, we find that Petitioner has not carried its burden of demonstrating that a person of ordinary skill in the art would have modified Ciulla and Orbach in the manner proposed by Petitioner to result in a system that teaches or suggests claim limitations [1.d], [1.f], and [1.g].

F. Grounds 2–8: Obviousness over Ciulla, Orbach, Nagai, Truschel, and Kumar

In Grounds 2–8, Petitioner asserts that all challenged claims are unpatentable as obvious over the Ciulla-Orbach combination, discussed in Ground 1, further in view of Nagai, Truschel, and Kumar. Pet. 65– 77. Nagai is added to the Ciulla-Orbach combination in Ground 2 (and incorporated into Grounds 6, 7, and 8) to address potential gaps regarding 1) hardwiring/releasably connecting a pulse oximeter (limitations [1.b.iii.C], [1.c.iii]); 2) explicit disclosure of a “pulse oximeter” and “accelerometer” ([1.c], claim 10); and 3) claim 10’s “consist of” limitation should that claim be construed to be limited to only two sensors. *Id.* at 65. Truschel is added to the Ciulla-Orbach combination in Ground 3 (and incorporated into Grounds 5, 7, and 8) to address claims 7 and 18 (software filter that extracts high frequency to obtain a snore signal). *Id.* at 71. Kumar is added to the Ciulla-Orbach combination in Ground 4 (and incorporated into Grounds 5, 6, and 8) to address the remote control limitations of claims 6, 13, and 17, and to further support Claims 8, 14, and 19 (software filter). *Id.* at 73.

Patent Owner’s position is that all eight grounds fail for the same reason addressed in Ground 1. PO Resp. 5 n2.

We agree with Patent Owner. Petitioner’s arguments for Ground 2–8 do not address the deficiencies discussed above for Ground 1. None of Nagai, Truschel, and Kumar cures the deficiencies identified in Ground 1 as Petitioner did not rely upon these references for the disputed limitations. Accordingly, considering all of the arguments and evidence presented on the full trial record, we determine that Petitioner has not demonstrated by a preponderance of the evidence that claims 1–20 are unpatentable as obvious over the combination of Ciulla, Orbach, Nagai, Truschel, and Kumar.

III. CONCLUSION

For the foregoing reasons, we determine that Petitioner has not demonstrated by a preponderance of the evidence that claims 1–20 of the ’521 patent are unpatentable. In summary:

Claims	35 U.S.C. §	Reference(s)/Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1–6, 8–17, 19, 20	103(a)	Ciulla, Orbach		1–6, 8–17, 19, 20
1–6, 8–17, 19, 20	103(a)	Ciulla, Orbach, Nagai		1–6, 8–17, 19, 20
7, 18	103(a)	Ciulla, Orbach, Truschel		7, 18
6, 8, 13, 14, 17, 19	103(a)	Ciulla, Orbach, Kumar		6, 8, 13, 14, 17, 19
7, 18	103(a)	Ciulla, Orbach, Kumar, Truschel		7, 18
6, 8, 13, 14, 17, 19	103(a)	Ciulla, Orbach, Nagai, Kumar		6, 8, 13, 14, 17, 19
7, 18	103(a)	Ciulla, Orbach, Nagai, Truschel		7, 18
7, 18	103(a)	Ciulla, Orbach, Nagai, Kumar, Truschel		7, 18
Overall Outcome				1–20

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that Petitioner has not demonstrated by a preponderance of the evidence that claims 1–20 of U.S. Patent No. 11,690,512 B1 are unpatentable; and

FURTHER ORDERED that, because this is a final written decision, parties to this proceeding seeking judicial review of our Decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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