

Filed on behalf of: ResMed Corp.

Filed: January 14, 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. IPR2025-00247
U.S. Patent No. 11,872,029

**PETITIONER'S REPLY TO
PATENT OWNER'S RESPONSE**

TABLE OF CONTENTS

I.	INTRODUCTION	1
II.	GROUND I: THE CHALLENGED CLAIMS ARE UNPATENTABLE OVER TRUITT IN VIEW OF KUMAR.....	1
A.	Truitt discloses a PAP device with an airflow sensor “adapted for measuring or deriving the respiratory airflow of a subject”	1
B.	Truitt in view of Kumar renders obvious “calculating the data of a severity of the sleep disorder symptoms of the subject”	3
1.	The apneas, hypopneas, and snores Truitt detects represent “data of a severity”	3
2.	The phrase “calculating the data of a severity of the sleep disorder symptoms” should not be limited to “quantitatively”	5
3.	Calculating the “data of a severity of the sleep disorder symptoms of the subject” does not indicate “the degree of deviation from the baseline characteristics of a patient without sleep disorder symptoms.”	9
4.	PO’s other arguments attempting to limit the claims to embodiments in the specification related to “calculating the data of a severity” to evade the prior art should be rejected	10
C.	A POSITA would have been motivated to combine Truitt with Kumar	13
D.	Truitt in view of Kumar renders obvious “wherein the airflow sensor data is processed by the second processor, at least in part using one or more of the signal processing techniques” (Claims 8 and 11)	17
E.	Truitt in view of Kumar renders obvious “wherein the remote internet site is adapted to retransmit to the first radio frequency wireless transceiver on the cell phone” (Claims 9 and 13)	18
III.	GROUND IV-XI: THE CHALLENGED CLAIMS ARE UNPATENTABLE OVER TRUITT IN VIEW OF KUMAR AND MUMFORD.....	20

A.	Truitt and Kumar in further view of Mumford render obvious the challenged claims	20
B.	A POSITA would have been motivated to combine Truitt with Kumar and Mumford.....	22
IV.	CONCLUSION.....	24

TABLE OF AUTHORITIES**Page(s)****Cases**

<i>Cordis Corp. v. Medtronic AVE, Inc.</i> , 339 F.3d 1352 (Fed. Cir. 2003)	6, 8
<i>CyWee Group Ltd. v. ZTE (USA), Inc.</i> , 90 F.4th 1358 (Fed. Cir. 2024)	15
<i>Game and Tech. Co., Ltd. v. Wargaming Grp. Ltd.</i> , 942 F.3d 1343 (Fed. Cir. 2019)	23
<i>GE Lighting Sols., LLC v. AgiLight, Inc.</i> , 750 F.3d 1304 (Fed. Cir. 2014)	5
<i>In re Mayne</i> , 104 F.3d 1339 (Fed. Cir. 1997)	16
<i>Phillips v. AWH Corp.</i> , 415 F.3d 1303 (Fed. Cir. 2005) (en banc)	5
<i>Resmed Corp. v. Cleveland Medical Devices, Inc.</i> , Case No. 1:23-cv-02221-BMB (N.D. Ohio Nov. 16, 2023)	4, 6
<i>Resmed Corp. v. Cleveland Medical Devices, Inc.</i> , Case PGR2024-00012.....	4
<i>Thorner v. Sony Comput. Entm't Am. LLC</i> , 669 F.3d 1362 (Fed. Cir. 2012)	5

Other Authorities

37 C.F.R. § 42.24	27
37 C.F.R. § 42.24(a)(1).....	27
37 C.F.R. § § 42.24(a)(1)(i)	27

TABLE OF EXHIBITS

Exhibit No.	Description
1001	U.S. Patent No. 11,872,029 to Kayyali (“the ’029 Patent”)
1002	File History of U.S. Patent No. 11,872,029
1003	Declaration of Jason Kirkness, Ph.D. (“Kirkness”)
1004	Curriculum Vitae of Jason Kirkness, Ph.D.
1005	Declaration of Sandeep Chatterjee, Ph.D. (“Chatterjee”)
1006	Curriculum Vitae of Sandeep Chatterjee, Ph.D.
1007	U.S. Patent No. 6,644,311 to Truitt et al. (“Truitt”)
1008	U.S. Patent Pub. No. 2002/0198473 to Kumar et al. (“Kumar”)
1009	U.S. Patent No. 7,575,005 to Mumford et al. (“Mumford”)
1010	<i>ResMed Corp. v. Cleveland Medical Devices, Inc.</i> , PTAB-PGR2024-00012-6, PO’s Preliminary Response
1011	“ <i>T-Mobile USA and HP Launch the First Truly Integrated Wireless iPAQ Handheld - T-Mobile Newsroom</i> ” (July 2004) available at https://www.t-mobile.com/news/press/t-mobile-usa-and-hp-launch-the-first-truly-integrated-wireless
1012	WIPO Publication No. WO2005096737A2 to Farrell et al. (“Farrell”)
1013	U.S. Patent Pub. No. 2002/0185130 to Wright et al. (“Wright”)
1014	U.S. Patent No. 5,424,942 to Dong et al. (“Dong”)

Exhibit No.	Description
1015	M. Berthon-Jones, "Feasibility of a Self-Setting CPAP Machine," <i>Sleep</i> 16:S120-123 (1993) ("Berthon-Jones 1993")
1016	D. Rapoport, "Methods to Stabilize the Upper Airway Using Positive Pressure," <i>Sleep</i> 19(9):S123-S130 ("Rapoport 1996")
1017	File History for U.S. Patent No. 8,172,766
1018	U.S. Patent No. 7,591,265 to Lee et al. ("Lee")
1019	S. Thompson et al., "Sleep as a Teaching Tool for Integrating Physiology and Motor Control," <i>Advances in Physiology Education</i> (2001)
1020	U.S. Patent No. 5,704,345 to Berthon-Jones ("Berthon-Jones345")
1021	U.S. Patent No. 7,168,429 to Matthews et al. ("Matthews")
1022	U.S. Patent No. 6,342,039 to Lynn et al. ("Lynn")
1023	C. Sullivan, "Reversal of Obstructive Sleep Apnoea by Continuous Positive Airway Pressure Applied through the Nares," <i>Lancet</i> 1981:1862-5 ("Sullivan 1981")
1024	U.S. Patent No. 6,484,719 to Berthon-Jones ("Berthon-Jones719")
1025	Teschler, H., et al., "Automated Continuous Positive Airway Pressure Titration for Obstructive Sleep Apnea Syndrome," <i>Am. J. Respir. Crit. Care Med.</i> 54:734-740 (1996)
1026	ResMed, "AutoSet Portable II Plus Overview & Interpretation Guide, Rev. 1," (1999)
1027	ResMed, "AutoSet T, Optimal Therapy for your OSA Patients," (2000)

Exhibit No.	Description
1028	Sunrise Medical, “DeVillibis® AutoAdjust™ LT Nasal CPAP System Instructions Guide Model 8054,” (1999)
1029	Respironics, “Introducing the REMstar Auto. A simply smarter Smart CPAP” (2002)
1030	ResMed Origins, downloaded from https://document.resmed.com/en-us/documents/articles/resmed-origins.pdf on May 3, 2022.
1031	RESERVED
1032	F. Roux, et al., “Continuous Positive Airway Pressure: New Generations,” Clinics in Chest Medicine (2003)
1033	Loube, D., “Technologic Advances in the Treatment of Obstructive Sleep Apnea Syndrome,” CHEST 116:1426-1433 (1999)
1034	American Academy of Sleep Medicine Task Force. (1999). <i>Sleep-related breathing disorders in adults: recommendations for syndrome definition and measurement techniques in clinical research. Sleep</i> , 22(5), 667-689
1035	J. Meurice, et al., “Efficacy of Auto-CPAP in the Treatment of Obstructive Sleep Apnea/Hypopnea Syndrome,” Am. J. Respir. Crit. Care Med. 153:794-8 (1996)
1036	S. Wilber, et. al., “Patient Monitoring and Anesthetic Management: A Physiological Communications Network,” JAMA 191:893-898) (1965)
1037	M. Weil, et. al., “Experience With a Digital Computer for Study and Improved Management of the Critically Ill,” JAMA 198:1011-1016 (1966)

Exhibit No.	Description
1038	C. Lilly, et. al., "Critical Care Telemedicine: Evolution and State of the Art," Critical Care Medicine 42:2429-2436 (2014)
1039	M. Breslow, et. al., "Effect of a multiple-site intensive care unit telemedicine program on clinical and economic outcomes: An alternative paradigm for intensivist staffing," Critical Care Medicine 32:31-38 (2004)
1040	K. Zundel, "Telemedicine: history, applications, and impact on librarianship," Bull Med Libr. Assoc. 84:71-79 (1996)
1041	RESERVED
1042	A. Boudewyns, et. al., "Two months follow up of auto-CPAP treatment in patients with obstructive sleep apnoea," Thorax 54:147-149 (1999)
1043	D. Lankford, "Wireless CPAP Patient Monitoring: Accuracy Study," Telemedicine Journal and e-Health 10:162-169 (2004)
1044	Japan Patent Office Patent Application Pub. No. P2002-291889A to Toge ("Toge")
1045	U.S. Pat. Pub. No. 2008/0214903 to Orbach ("Orbach")
1046	D. Gourley, et. al., HTTP The Definitive Guide (2002)
1047	D. Mauro, et. al., Essential SNMP (2001)
1048	F. Adelstein, et. al., Fundamentals of Mobile and Pervasive Computing (2005)
1049	WIPO Publication No. WO0145014A1 to Quay ("Quay")

Exhibit No.	Description
1050	RESERVED
1051	RESERVED
1052	Toge Certification of Translation
1053	RESERVED
1054	CleveMed Opening Claim Construction Brief
1055-1061	RESERVED
1062	U.S. Pat. No. 11,602,284
1063	DocketNavigator: Ohio Northern District Profile
1064	Letter from T. Miller to J. Hannah et al. (May 8, 2025) (“Sotera Stipulation”)
1065	H.R. Rep. No. 112-98, pt. 1 (2011)
1066	Declaration of Eric Lancaster in Support of Motion for <i>Pro Hac Vice</i>
1067	Declaration of Howard Herr in Support of Motion for <i>Pro Hac Vice</i>
1068	Declaration of Rachel Wu-Hankinson in Support of Motion for <i>Pro Hac Vice</i>
1069	<i>ResMed Corp. v. Cleveland Medical Devices, Inc.</i> , PTAB-PGR2024-00012-7, Decision Denying Institution of Post-Grant Review

Exhibit No.	Description
1070	The AASM Manual for the Scoring of Sleep and Associated Event
1071	Declaration of Jason Kirkness, Ph.D. in Support of Petitioner's Reply to Patent Owner's Response

I. INTRODUCTION

The Petition established that the challenged claims of the '029 Patent (directed to a networked PAP device) would have been obvious over Truitt in view of the knowledge of a POSITA or in view of Kumar and, further, Mumford. The POR confirms this. Indeed, PO primarily argues that Truitt does not disclose “calculating the data of a severity of the sleep disorder symptoms of a subject.” POR, 14 But PO's arguments are unsupported, ignore disclosures in Truitt and Kumar, and overlook the law.

II. GROUND I: THE CHALLENGED CLAIMS ARE UNPATENTABLE OVER TRUITT IN VIEW OF KUMAR

A. Truitt discloses a PAP device with an airflow sensor “adapted for measuring or deriving the respiratory airflow of a subject”

The Petition details Truitt's disclosure of an airflow sensor “adapted for measuring or deriving the respiratory airflow of a subject,” where Truitt discloses an air flow sensing system that can calculate the gas flow or volume “passing through conduit 56 and controlling operations of the PAP device,” where controller 38 receives flow signals and pressure signals from flow/volume sensing assembly 72 and pressure sensor 22, respectively, to distinguish between the inspiratory and expiratory phase of the patient's breathing cycle.” Pet., 28; Kirkness ¶19; Chatterjee ¶106 (emphasis omitted); *see also* DI, 24-25. Indeed, Truitt explicitly discloses a PAP/CPAP that can measure or derive a patient's respiratory airflow.

Kirkness Reply ¶¶4-7. For instance, Truitt describes a pressure sensor that “measur[es] the pressure *at the patient*” (i.e., measure the patient’s “respiratory airflow”) or whose signal can be “used to estimate the pressure at the patient” (i.e., derive the patient’s “respiratory airflow.” *See* EX1007, 6:1-5; Kirkness Reply ¶5.

In addition, it was well-known to the POSITA at the time how to “derive the respiratory airflow” of a patient based on the “flow and/or volume of gas” through a PAP/CPAP like that of Truitt’s. Kirkness Reply ¶6; Kirkness ¶219; Chatterjee ¶106. And the ’029 patent itself details how a patient’s respiratory airflow can be derived based on system airflow measurements using methods that were known to a POSITA at the time. *See* EX1001, 8:12-22; 8:25-28; *see also* DI, 25.

PO, however, argues that “[n]either Petitioner nor its experts explain how measuring the airflow provided to the patient is either a measurement or derivation of the patient’s respiratory airflow.” POR, 12. But as discussed above, not only does Truitt explicitly disclose measuring and deriving a patient’s respiratory airflow, the ’029 patent confirms methods to derive it using airflow measurements like those described in Truitt, methods well-known to a POSITA at the time. Kirkness Reply ¶¶4-7.

PO also contends that Truitt does not disclose detecting “snore, apnea, and hypopnea” “as a function of the patient’s respiratory airflow” (POR, 14), but this is incorrect. Truitt describes what was already known in the art- that airflow

measurements could be used to detect snores, apneas, and hypopneas. *See* EX1007, 3:7-10 (“[P]ressure and flow sensors, or other sensors, such as a microphone, are used to detect snoring, apneas, hypopneas, etc.”). No more is required by the claims.

Accordingly, Truitt in view of Kumar discloses an airflow sensor “adapted for measuring or deriving the respiratory airflow of a subject.”

B. Truitt in view of Kumar renders obvious “calculating the data of a severity of the sleep disorder symptoms of the subject”

The Petition describes “calculating the data of a severity of the sleep disorder symptoms of the subject” where it “discloses monitoring the patient’s condition, and specifically detecting snoring, apneas, and hypopneas.” Pet., 17; Kirkness ¶¶172-178; Chatterjee ¶98; *see also* DI, 27.

1. The apneas, hypopneas, and snores Truitt detects represent “data of a severity”

The Petition explains that PAP devices, including those of Truitt, are generally designed to calculate data in order to adjust air flow and treat patients. Pet., 16-17; Kirkness ¶172 (“[D]ata calculation is a common feature for PAP devices.”). Truitt discloses that the “output of flow sensor 32 is provided to controller 38 for *calculating* the flow and/or volume of gas passing through conduit 56.” EX1007,

6:46-48. PO's expert in a parallel district court litigation¹ agrees. EX2020 (Jafari) ¶46 ("A POSITA would understand the purpose of the integrated diagnostic and treatment device [is] to calculate data").

As the Petition also indicates, PAP devices, by design, assess symptom severity in order to treat sleep apnea symptoms. Specifically, the Petition details that the sensors of Truitt (e.g., pressure, flow, and other sensors) "are used to detect snoring, apneas, [and] hypopneas," which represent different levels of severity of sleep disorder symptoms. Pet., 18; Kirkness ¶174; *see also* EX1007, 3:7-10. PO again agrees. *See* Pet., 18 (citing EX1010, 27,² which states that "a skilled artisan would know that apnea and hypopnea events, which are indicated based on breathing metrics, represent data of severity of the patient's sleep disorder symptoms"). "A POSITA would have understood that the patient's conditions, such as snoring, apneas, and hypopneas, reflect the different levels of severity of sleep disorder symptoms." Kirkness ¶175; *see also* Kirkness Reply ¶¶8-9; Pet., 18.

¹ *Resmed Corp. v. Cleveland Medical Devices, Inc.*, Case No. 1:23-cv-02221-BMB (N.D. Ohio Nov. 16, 2023).

² *Resmed Corp. v. Cleveland Medical Devices, Inc.*, Case PGR2024-00012, Patent Owner's Preliminary Response, Paper 6 (PTAB Mar. 29, 2024).

2. The phrase “calculating the data of a severity of the sleep disorder symptoms” should not be limited to “quantitatively”

In an effort to evade the prior art combinations, PO engages in a narrowing construction for “calculating the data of a severity of the sleep disorder symptoms,” insisting that it must be done “quantitatively.” POR, 14-16. PO’s construction is wrong for a number of reasons as detailed below. Regardless, the asserted prior art combinations still meet the “calculating the data of a severity” limitation even under PO’s incorrect construction.

First, the specification does not define “data of a severity of the symptoms of the subject,” let alone “clearly set forth a definition of the [] claim term’ other than its plain and ordinary meaning.” *See Thorner v. Sony Comput. Entm’t Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012); *see also* DI, 28. Thus, PO’s attempt to import an embodiment from the specification into the claims, limiting “calculating the data of a severity” to a “quantitative” assessment, is legally improper. *See, e.g., GE Lighting Sols., LLC v. AgiLight, Inc.*, 750 F.3d 1304, 1309 (Fed. Cir. 2014) (“It is improper to read limitations from a preferred embodiment described in the specification ... into the claims absent a clear indication in the intrinsic record that the patentee intended the claims to be so limited.”); *Phillips v. AWH Corp.*, 415 F.3d 1303, 1323 (Fed. Cir. 2005) (en banc).

Second, PO’s construction is contrary to the claim language itself, which is

broader. Claim 1 does not recite the term “quantitative”; it simply recites “calculating.” *See* EX1001, claim 1; *see also* DI, 28. “Quantitatively” determining the “severity of a subject’s sleeping disorder or symptoms” is but one embodiment in the ’029 patent. *See, e.g.*, EX1001, 4:3-59 (listing numerous embodiments where only one of seven include a quantitative assessment); *see also id.*, 3:41-43. A “quantitative” assessment is optional, the term “preferably” signaling it is not required. *See, e.g., Cordis Corp. v. Medtronic AVE, Inc.*, 339 F.3d 1352, 1357 (Fed. Cir. 2003) (The “use of the term ‘**preferably**’ makes clear that the language describes a **preferred** embodiment, not the invention as a whole.”) (emphasis in original); EX1001, 19:8-12; *see also* DI, 28-29.

Third, PO tries to buttress its interpretation by relying on the statements its expert, Dr. Roozbeh Jafari, made in support of its claim construction brief in parallel district court litigation³ (EX2020). PO points to paragraphs 41-42 of Dr. Jafari’s declaration, but Dr. Jafari was discussing the indefiniteness of the term “calculating the data of a severity of the sleep disorder symptoms” in the ’029 patent in those paragraphs. Moreover, Dr. Jafari was discussing phrases in a different patent (US

³ *Resmed Corp. v. Cleveland Medical Devices, Inc.*, Case No. 1:23-cv-02221-BMB (N.D. Ohio Nov. 16, 2023). Dr. Jafari did not submit a Declaration in this proceeding.

11,375,921, “the ’921 patent”) that explicitly included the quantify terms: “calculating [] *the quantified* symptom data of the severity of the sleeping disorder symptoms” (“Term 3”) and “measuring and calculating a data of *a quantitative* output of the severity of a subject's sleeping disorder symptoms....” (“Term 4”). See EX2020, ¶¶34, 41-42 (emphasis added). In contrast, as discussed above, the ’029 patent claims do not recite “quantified” or “quantitative.” Dr. Jafari’s conclusions regarding whether different phrases in a different patent are indefinite are irrelevant.

Fourth, PO disingenuously cites to the Board’s institution decision in PGR2024-00012 regarding the parent of the ’029 patent, US Patent No. 11,602,284 (“the ’284 patent”), as supporting its position. See POR, 15. Taking issue with the Petition’s description of “calculating the data of a severity of the sleep disorder symptoms of the subject” as being satisfied by Truitt’s “monitoring the patient’s condition” through “detecting snoring, apneas, and hypopneas” (Pet., 17)⁴, PO

⁴ PO also alleges that the Petition’s reasoning regarding “monitoring” is “wrong because it assumes that *all* ways of monitoring a patient’s condition involve “calculating ‘data of severity of sleep disorder symptoms.’” POR, 18 (emphasis added). This is untrue. The Petition limits its discussion to monitoring mechanisms relevant to “data of severity of sleep disorder symptoms of the subject,” that is, “detecting snoring, apneas, and hypopneas.” See Pet., 17.

mischaracterizes the Board's decision on institution. Although PO states that the Board determined that "'monitor[ing] the condition of the subject' means to 'quantitatively' calculate 'severity of sleep disorder symptoms' not merely to detect symptoms'" (POR, 16 (emphasis added)), PO's conclusion is incorrect. The Board made no findings about the meaning of the term calculating "the data of a severity of the sleep disorder symptoms of the subject" for claim construction. EX1069,15-16; *see also* DI, 29-30. Petitioner also notes that, like the claims of the '029 patent, those of the '284 patent do not recite "quantitatively." *See* EX1062 (the '284 patent), claim 1. And even the evidence the Board pointed to in the '284 patent specification stated that the signals/data were "preferably" analyzed quantitatively, which, as discussed above, further demonstrates that a quantitative assessment is not required. *See* EX1069 (284 PGR Institution Decision), 15; EX1062 ('284 patent) 19:3-7; EX1001, 19:8-12; *Cordis Corp.*, 339 F.3d at 1357.

Finally, even if "calculating the data of a severity of the sleep disorder symptoms" is limited to a "quantitative" assessment, Truitt still discloses it. Kirkness ¶¶181-83; Kirkness Reply ¶¶10-12. A POSITA would have understood Truitt's PAP device to calculate the quantity (e.g., the number of) snores and apnea and hypopnea events in order to treat the patient over time. *See id.*; EX1070, 9. Additionally, Dr. Kirkness previously explained that a POSITA would have understood the PAP to measure "***the number*** of apnea and hypopnea events per unit

time” (“apnea hypopnea index” (AHI)). *See* Kirkness ¶181 (emphasis added); Kirkness Reply ¶12; EX1070, 9. Dr. Kirkness also detailed that Truitt discloses “sensor signals used to control the operation of the PAP system” in a “feedback fashion” (Kirkness ¶183); this would have involved assessing the quantity of apnea-related events. Kirkness Reply ¶12. Thus, even under PO’s improperly narrow construction, Truitt discloses this limitation.

3. Calculating the “data of a severity of the sleep disorder symptoms of the subject” does not indicate “the degree of deviation from the baseline characteristics of a patient without sleep disorder symptoms.”

PO additionally argues, apparently to bolster its erroneous “quantitative” construction, that “a POSITA would readily understand that ‘[calculating the] data of a severity’ for the subject’s symptoms indicates ‘[calculating] the degree of deviation from the baseline characteristics of a patient without sleep disorder symptoms.’” POR, 14-15. In addition to being wrong, this definition finds no basis in the claims or specification. PO and its experts point to no such support for this definition in the specification or otherwise. Second, PO’s ‘definition’ is incorrect. Severity data is frequently calculated as the deviation from baseline characteristics of the patient himself, not a generic person “without sleep disorder symptoms.” Kirkness Reply ¶13. Third, PO’s ‘definition’ is irrelevant. It still encompasses the detection of snores, apneas, and hypopneas in sleep apnea patients, the number

and/or level of which would deviate significantly from that of “a patient without sleep disorder symptoms.” *Id.*

4. PO's other arguments attempting to limit the claims to embodiments in the specification related to “calculating the data of a severity” to evade the prior art should be rejected

PO proceeds to make several other arguments that various embodiments or limitations should be imported into the claims in an attempt to avoid the prior art. These arguments, which are similarly unsupported, should be rejected for that reason alone, along with those discussed in more detail below.

PO first argues that “‘data of a severity’ and ‘sleep disorder symptoms’ are terms of art terms of art” that have “known algorithms to identify different categories of respiratory events” “and determine the level of severity of the patient’s sleep breathing disorder symptoms associated with those events.” POR, 15. Neither PO nor Dr. Borkholder illuminate what these “known algorithms” are. And, importantly, neither does the specification, which says nothing about specific algorithms being necessary to identify “different categories of respiratory events” or “determine the level of severity of the patient’s sleep breathing disorder symptoms associated with those events.” The claims also recite no such algorithms. And, in fact, “data of a severity” is not limited to a particular algorithm. Kirkness Reply ¶13, fn. 4.

PO then argues that a specific index, the apnea hypopnea index (AHI), is

necessary to calculate the data of a severity of the patient's symptoms. POR, 18. PO's is wrong, as determining AHI is not required by the claims, which simply recites an "index." *See* EX1001, claim 1. In fact, AHI is not even explicitly disclosed in the '029 specification, belying PO's assertion of its criticality. A POSITA would have known that AHI could be calculated based on the number of apneas and hypopneas detected by Truitt." Kirkness ¶181. PO also argues that a POSITA would have had no motivation to calculate AHI in view of Truitt's disclosures since the calculation could not be used "in the context of Truitt's real-time treatment device." POR, 19. But Dr. Kirkness has already disproved PO's conclusion. *See* Kirkness ¶183; *see also* Kirkness Reply ¶¶14-19.

PO next inexplicably complains that the Petition needed to have explained, how "data of a severity of the sleep disorder symptoms of the subject" is ... performed by the processor of the PAP device and sent to the remote internet site" (POR, 20), even though PO just argued that "data of a severity" was a term of art and thus, well-known to a POSITA. Regardless, the Petition has outlined how sleep disorder data obtained by Truitt's PAP could have been used in calculating "the data of a severity of the sleep disorder" and "the data of usage of the PAP devices" and, further, why Truitt in view of Kumar discloses transmission of that data from the PAP to the remote internet site. *See* Pet., 17-21, 29-40. No more is required by the '029 claims. Nor would a POSITA require any additional explanation; they would

have well-understood how a processor would calculate the “data of a severity” and transmit it to a remote internet site. *See* Kirkness ¶¶183-184; 235-240.

Finally, regarding the Petition's explanation of how Truitt discloses “data of a severity,” PO contends the Petition does so improperly where it “draws support for its reading of Truitt by asserting that the '029 Patent equates ‘conditions’ and ‘symptoms.’” POR, 21. But as discussed in the Petition, PO did the same in the '284 PGR. *See* Pet., 18 (citing EX1010, 27). Moreover, the Petition identified where the '029 patent itself equated ‘conditions’ and ‘symptoms.’ *See* Pet., 18, citing EX1001, 21:11-15. Although PO counters that this discussion was within the context of “using an Auto-Regressive Moving Average (ARMA) model” (POR, 21), the passage in the '029 patent demonstrates that physiological conditions detected by a PAP system would indicate “the data of a severity” (e.g., spectrum of criticality) of a patient's conditions and/or symptoms. *See* Pet., 18.

PO also generally alleges that Truitt's “basic adjustable devices” were “distinguished” in '029 patent and, further, would have been “unable to monitor the physiological condition of the patient through the generic identification of snores apneas, and hypopneas via ‘measur[ing] gas flow through the device.’” POR, 17. Untrue. The PAP device disclosed in Truitt device was neither explicitly or implicitly distinguished or disparaged in '029 specification. Kirkness Reply ¶¶20-21. Truitt's PAP system, was an improvement on those prior devices *See id.*, 3:8-

10, 42-45. Regardless, “Truitt’s PAP system operates in the materially same way as the ’029 patent” (Pet., 20-21; Kirkness ¶182) and is still encompassed by the claims, which broadly claim a PAP device. *Id.*; *see also* EX1001, claim 1.

C. A POSITA would have been motivated to combine Truitt with Kumar

The Petition describes in great detail why a POSITA would combine Truitt’s disclosures of a PAP device with Kumar’s networking system “to implement a networked PAP treatment system.” *See* Pet., 7-11. PO disagrees for a number of unwarranted reasons.

First, PO complains that a POSITA would not have been motivated “to obtain representative data” from “patient[s] [] in their routine sleep environment” (e.g., their homes) (*see* Pet., 7-8) because “conventional CPAPs, like those described in Truitt, were already being used by patients in their home.” POR, 22. PO’s argument misses the point. Implementing Kumar’s networking system with (Truitt’s) PAP increases the ease and regularity of obtaining PAP data compared to prior unnetworked PAP machines, making monitoring and treatment more convenient and efficient. *See* Pet., 7-9; Kirkness ¶¶144-146.

Next, PO alleges there would have been no motivation “to implement Kumar’s ‘real-time monitoring’ in at-home CPAP systems taught by Truitt, for physician convenience because at-home CPAP therapy is prescribed in situations

where the patient does not require live monitoring.” POR, 23. PO’s incorrect allegation again misses the mark. Dr. Kirkness describes the advantages of monitoring patient sleep in a patient’s home as compared to, for instance, a hospital or sleep lab. Kirkness ¶¶144-146; Pet., 7-8. A POSITA at the time of invention, having knowledge of the potential advantages of at-home monitoring, would have looked to develop a networked PAP system to enable live monitoring of sleep remotely in a patient’s home for the reasons discussed. *See id.*; *see also* Pet., 53; Kirkness Reply ¶¶22-26. PO contends that “the real-time monitoring of Kumar requires wireless data communication techniques between CPAPs and a distributed computing system not disclosed in Truitt or Kumar.” POR, 25. Not only is this statement untrue, it also completely lacks support. Neither PO nor its expert describe what this “distributed computing system” is, why it specifically would be required for live, in-home monitoring of a patient, and how it differs from the network system described in Kumar. Kumar does, in fact, disclose an ability for its network to provide real-time monitoring. *See* EX1008, [0241] (“on line live monitoring”). And, as the Petition details, Kumar, in combination with Truitt, provides the remote wireless data transmissions required by the claims. Pet. 29-34.

PO then argues that a POSITA would not have been motivated to develop a Truitt-Kumar PAP system to increase health care accessibility “because the only way to increase the access to CPAP therapy is by making home sleep testing more

available and getting more patients diagnosed with sleep apnea and prescribed a CPAP.” POR, 25. Nonsensical. The Petition details how a Truitt-Kumar PAP system would increase access to, and convenience and efficiency of CPAP therapy. Pet., 8-9. More people would have been motivated to seek help for sleep disorders with the knowledge that the required “management, support, and frequent follow-up” with a physician could be done from their home.⁵ Pet., 8; Kirkness Reply ¶25.

PO also complains that “neither ‘advances in mobile computing and wireless communications’ nor the ‘general [IoT] market trend’ [demonstrate] that a POSITA would be motivated to combine Truitt with Kumar.” POR, 26-27. Dr. Chatterjee describes the “core benefits” in using the internet in telemedicine (i.e., IoT) such as “automation, real-time access to information, data collection, improved efficiency, and cost reduction.” Chatterjee ¶¶75, 88-90. As Dr. Chatterjee explains, a POSITA’s knowledge of these “core benefits” coupled with the concomitant

⁵ In making this argument, PO cites as support events taking place “today” as opposed to those at the time of invention. See POR, 26. This is legally improper and irrelevant in an obviousness determination. *In re Mayne*, 104 F.3d 1339, 1341 (Fed. Cir. 1997) (“The legal determination under section 103 is whether the claimed **invention** as a whole would have been **obvious** to a person of ordinary skill in the art at the **time** the **invention** was made.”).

“advances in mobile computing” and the “general market trend[]” of combining the internet with (e.g., medical) devices would have provided the motivation for a POSITA to combine Truitt’s PAP system with Kumar’s network system, web-based engine. *See, e.g.*, EX1005 ¶¶86-90. A POSITA would have been motivated to increase computing efficiency and patient compliance and treatment through the implementation of mobile computing advances and wireless communications in the Truitt PAP system. *Id.*; Pet., 6, 26-27; Kirkness ¶¶132-133.

Finally, PO makes a few other unsupported and irrelevant accusations regarding motivation to combine Truitt and Kumar, appearing to suggest that: 1) Kumar’s medical networking system would be limited to “replacing in-lab polysomnography and oximetry,” 2) patient data would not be safely and securely transmitted over the internet, and 3) Truitt’s PAP did not include “wireless data communication functionalities.” *See* POR, 27. None of PO’s statements consider the vision, expertise, and/or knowledge of the POSITA at the time, who would have combined Kumar’s networking system with Truitt’s PAP machine to obtain the advantages discussed for sleep apnea treatment. *See* Pet. 7-11. A POSITA would not have limited Kumar’s telemedicine improvements to the two apnea-related uses disclosed therein. Kirkness Reply ¶26. Additionally, a POSITA would have been able to properly implement a Truitt-Kumar system such that data could be transmitted securely over the internet. *See, e.g.*, EX2018 (Chatterjee Tr.), 15:3-7

(“[T]he answer to your question about security limitations is going to be different [] if the client and server *are implemented in a proper way*”). Finally, a POSITA at the time would have had an ability to adapt Truitt's PAP machine to include the wireless communication capabilities as disclosed in Kumar. *See* Pet., 16; Kirkness ¶¶150-155; Chatterjee ¶¶82-85.

D. Truitt in view of Kumar renders obvious “wherein the airflow sensor data is processed by the second processor, at least in part using one or more of the signal processing techniques” (Claims 8 and 11)

The Petition describes that Kumar discloses the use of signal processing techniques like “FFT, DFT” and the like to process patient data received through its networking system, and that a POSITA would have been motivated to use those techniques to “process/calculate the [] airflow sensor data” received from the Truitt PAP. Pet., 48-49; Kirkness ¶¶269-70; Chatterjee ¶¶164-65. For its prior reasons, PO again argues that Truitt in view of Kumar do not disclose deriving a patient's respiratory airflow or calculating “data of a severity” of a subject's symptoms such that Kumar's further disclosure of signal processing techniques cannot render obvious the limitations of claims 8 and 11. POR, 27-31 (“Because Truitt does not disclose how its airflow sensor data relates to the patient's respiratory airflow and fails to disclose calculation of a level of severity for the subject's symptoms, Challenged Claims 8 and 11 are patentable.”). For the reasons discussed above

regarding Truitt and Kumar's disclosure of all three limitations (*see II supra*), the references further render the signal processing limitations of claims 8 and 11 obvious.

E. Truitt in view of Kumar renders obvious “wherein the remote internet site is adapted to retransmit to the first radio frequency wireless transceiver on the cell phone” (Claims 9 and 13)

The Petition describes in detail Kumar's disclosure of retransmitting data from device to device and that a POSITA would have been motivated to do so within the Truitt Kumar system. Pet., 50-51; Kirkness ¶¶272-276. For instance, Kumar's remote internet site receives the data/index transmitted from the PAP and stores the data for “later access, replay, and/or analysis” from any device with access to the remote internet site. Pet., 50; EX1008, [0083]. In particular, a POSITA would have been motivated to retransmit the data/index to a cell phone so the “patient could “review [] [the] data/index associated with prior use of the PAP device and/or a set of data/index integrated/summarized,” or even commented on “by a physician.” Pet., 51; Kirkness ¶¶273-74.

PO argues that “Kumar does not disclose transmitting data from the PAP device to a remote internet which is then retransmitted to the patient's cell phone, as claimed” because “[t]here is no disclosure in Kumar of *separately* sending” the data without “travers[ing] [the] computing device.” POR, 31-32 (emphasis added). But PO's erroneous conclusions only flow from its unwarranted and narrowing

assumption discussed below.

First, there is no requirement in the claim or specification that the PAP data be sent “separately” to the remote internet site (e.g., not traverse the cell phone) and PO points to no such requirement. *See also* DI____. Regardless, Kumar does in fact disclose that devices can be configured to transfer data directly “from one device to the other,” if desired. Pet., 34-35; EX1008, [0011]. Thus, even if the claims were limited to “separate” (e.g., direct) retransmission (they are not), the Truitt-Kumar system would still meet the “retransmit” limitation.

Second, PO makes the strained argument that because, in the Truitt-Kumar combination, PAP data are first transmitted from the PAP, through the cell phone to the remote internet site, that there would be no need to retransmit “redundant” data from the remote internet site back to the cell phone. POR, 31, 32. To begin with, PO wrongly assumes that the data retransmitted back to the cell phone would be “redundant.” *Id.* Claims 9 and 11 recite that data is retransmitted “in whole or in part.” *See* EX1001. “[I]n part” suggests the patentee contemplated the remote internet site retransmitting data that differed in some respect from the data originally transmitted from the PAP. *See* Pet., 51; Kirkness ¶274; Chatterjee ¶175. Further, PO wrongly assumes that a POSITA would not have retransmitted “redundant” or the same data back to the cell phone. Again, the claims recite that the data can be retransmitted “in whole,” suggesting that the patentee contemplated retransmitting

the “redundant” data. *See also* Kirkness ¶274.

PO also insists that a POSITA would not have been motivated to “design a system to send redundant data back to the device in which [sic] originally received and transmitted the data in the first instance.” POR, 32. But, in addition to the reasons discussed above to retransmit data in whole or in part, a POSITA would have been motivated to retransmit data to the cell phone because a “patient would be interested in reviewing data/index associated with prior use of the PAP device and/or a set of data/index integrated/summarized by the remote engine (including those provided by a physician []).” Pet., 51; Kirkness ¶274. Accordingly, Truitt in view of Kumar render obvious claims 9 and 13.

III. GROUNDS IV-XI: THE CHALLENGED CLAIMS ARE UNPATENTABLE OVER TRUITT IN VIEW OF KUMAR AND MUMFORD

A. Truitt and Kumar in further view of Mumford render obvious the challenged claims

The Petition describes incorporating into the networked PAP system of Truitt and Kumar the “sleep efficacy algorithm” of Mumford which discloses the “data of usage of the PAP device by the subject,” “data of severity of sleep disorder symptoms of the subject,” and “the index” of treatment efficacy. *See* Pet., 67-71; Kirkness ¶¶318-331. Also described is a POSITA’s motivation to combine the references. Pet., 70-71; Kirkness ¶330.

PO argues, however, that Mumford's algorithm "requires 'at least the electrode signals' received from the sensors and electrodes integrated into its mask" to determine "sleep stage," and that "a POSITA considering Mumford's sleep efficacy algorithm must use it in conjunction with the electrodes integrated into Mumford's mask assembly." POR, 39-40. This is incorrect. Mumford's algorithm does not require the use of electrode sensors. *See* Kirkness Reply ¶¶27-28; *see also* DI, 34-35.

Mumford uses electrodes to measure EEG and EMG to determine sleep stage, not for the detection of sleep disordered events. *See id.*; EX1009, 15:42-47. And although Mumford discloses that sleep stage may be helpful information in this determination, it is not required. *See id.*, 15:42-45 ("some sleep apnea events occur more frequently in some sleep stages rather than others"). Even the passage PO cites as support (POR, 40) indicates that electrode sensors are not required in the algorithm: "the sleep efficacy algorithm *may* use a frontal staging algorithm, based on at least the electrode signals, *to determine which stage of sleep* the wearer is in." *Id.*, 15:39-41 (emphasis added). *See, e.g., Game and Tech. Co., Ltd. v. Wargaming Grp. Ltd.*, 942 F.3d 1343, 1351 (Fed. Cir. 2019) ("The use of the word 'may' in the [specification] [] strongly implies" the condition is "not necessarily" required) (emphasis in original).

Second, "sensors" for use with Mumford's algorithm are broad and not

limited to electrode sensors. *See id.*, 3:8-14; *see also* DI, 34-35. Sensors can also include, for instance, “an oximeter sensor 314, a pressure transducer 316, and a position sensor 318.” EX1009, 12:2-3. Importantly, Mumford discloses that both the oximeter and pressure transducer indicate apneic events. *See* EX1009, *id.*, 12:22-23 (“oximeter sensor 314 may be used to help detect sleep apnea”); *id.*, 12:42-46; 18:30-41. These additional sensors are provided to broadly “generate sleep profile information ... related to efficacy and compliance” and “alter[] the amount of pressure that is provided ... to improve the quality of sleep of the wearer.” *Id.*, 7:42-51; Pet., 67, 70.

Finally, Truitt's PAP system included the use of electrode sensing elements; it was not solely a mechanical device. Kirkness Reply ¶28. Truitt's CPAP system at ports 74 and 76 incorporated electric sensing elements that could be “mounted on a circuit board”; these would have functioned similar to Mumford's electrodes. *Id.* So even if Mumford's sleep efficacy algorithm required electrode sensing elements (which it does not), it could have still been implemented with Truitt's CPAP to determine therapy efficacy data. *Id.*

B. A POSITA would have been motivated to combine Truitt with Kumar and Mumford

PO argues that there would have been a lack of motivation to combine Mumford's algorithm with Truitt and Kumar because “Mumford's sleep efficacy

algorithm relies on sensor inputs not present in Truitt” “that are outside the scope of the claims.” POR, 33, 34. As discussed above, both Mumford and Truitt contemplate the use of additional sensors in their PAP systems (*see* III.A *supra*). Moreover, the scope of the claims of the '029 patent is broad, and not limited to a single/particular sensor. For instance, the “comprising” claim language allows for the addition of unrecited components, including additional sensors, many of which are enumerated in the '029 specification. *See* EX1001, claim 1; 9:9-12 (“Although, one sensor 14 and one external input 12 are shown, the signal processing module 16 is capable of accepting multiple external inputs 12 from multiple sensors 14); *id.*, *id.*, 6:25-28 (electrodes); *id.*, 7:43-53 (listing numerous respiration sensors); *id.*, 19:2-7 (electrodes and pulse oximeter).

Finally, PO contends that a POSITA would not have been motivated to combine Mumford's algorithm with the Truitt-Kumar system because the addition of Mumford, which requires multiple sensors, would be “antithetical to Truitt's purpose” “to eliminate [] extra sensors and achieve the same functionality as standard CPAP machines.” As discussed above, Truitt contemplates the use of additional sensors in its PAP system; it is not limited to the use of just one sensor. *See* EX1007, 5:60-67, 6:1-10 (pressure sensor 22); *id.*, 6:39-41 (pressure sensor 32); *id.*, 6:43-46 (flow sensor 32'); *id.*, 6:53-58 (in bi-level operation mode, pressure sensor 22 and pressure sensor 32 (in sensing assembly 72)); *id.*, 7:39-42, 7:49-54

(pressure sensor or flow sensor). Truitt explicitly discloses that “other sensors can be provided to provide additional information to the controller.” *Id.*, 6:60-63; *see also, id.*, 6:1-10 (“pressure pick-off port” and pressure sensor 22 for “controlling the operation of the pressure support system, or monitoring the patient”).

Accordingly, a POSITA would have been motivated to incorporate Mumford's algorithm with a networked Truitt and Kumar PAP system.

IV. CONCLUSION

The Board should find all challenged claims unpatentable.

Dated: January 14, 2026

Respectfully submitted,

By: / Lisa K. Nguyen /
Lisa K. Nguyen (Reg. No. 58,018)
PAUL HASTINGS LLP
1117 S. California Avenue
Palo Alto, CA 94304
Telephone: 650-320-1800
lisanguyen@paulhastings.com

Counsel for Petitioner
RESMED CORP.

CERTIFICATE OF COMPLIANCE WITH 37 C.F.R. § 42.24

I hereby certify that Petitioner's Reply to Patent Owner's Response complies with the word count limitation of 37 C.F.R. § 42.24(a)(1)(i) because the Reply contains a total of 5,414 words, calculated by Microsoft Word's word-count feature. This total excludes the cover page, signature block, and the parts of the Reply exempted by Rule 37 C.F.R. § 42.24(a)(1).

Dated: January 14, 2026

Respectfully submitted,

By: / Lisa K. Nguyen /
Lisa K. Nguyen (Reg. No. 58,018)
PAUL HASTINGS LLP
1117 S. California Avenue
Palo Alto, CA 94304
Telephone: 650-320-1800
lisanguyen@paulhastings.com

Counsel for Petitioner
RESMED CORP.

CERTIFICATE OF SERVICE

I hereby certify that on January 14, 2026, a true and correct copy of the foregoing **PETITIONER'S REPLY TO PATENT OWNER'S RESPONSE** is being served by electronic mail on Patent Owner's counsel of record listed below, pursuant to it Mandatory Notices:

James Hannah (Reg. No. 56,369)
**HERBERT SMITH FREEHILLS KRAMER
(US) LLP**
333 Twin Dolphin Drive, Suite 700
Redwood Shores, CA 94065
Email: James.Hannah@hsfkramer.com

Jeffrey H. Price (Reg. No. 69,141)
Jenna Fuller (Reg. No. 74,212)
Jeffrey Eng (Reg. No. 63,189)
**HERBERT SMITH FREEHILLS KRAMER
(US) LLP**
1177 Avenue of the Americas
New York, NY 10036
Email: Jeffrey.Price@hsfkramer.com
Email: Jenna.Fuller@hsfkramer.com.
Email: Jeffrey.Eng@hsfkramer.com
Email: svdocketingus@hsfkramer.com

Dated: January 14, 2026

Respectfully submitted,

By: / Lisa K. Nguyen /
Lisa K. Nguyen (Reg. No. 58,018)
PAUL HASTINGS LLP
1117 S. California Avenue
Palo Alto, CA 94304
Telephone: 650-320-1800
lisanguyen@paulhastings.com

Counsel for Petitioner
RESMED CORP.