Paper No. 14

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD., SAMSUNG ELECTRONICS AMERICA, INC., FOSSIL GROUP, INC., FOSSIL STORES I, INC., FOSSIL PARTNERS, L.P., OURA HEALTH OY, AND ONEPLUS TECHNOLOGY (SHENZHEN) CO., LTD.,

Petitioners,

v.

OMNI MEDSCI, INC.,
Patent Owner.

U.S. Patent No. 12,268,475

Case No. PGR2025-00063

PATENT OWNER'S PRELIMINARY RESPONSE

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LISTING OF EXHIBITS

Exhibit No.	Description
2001	Complaint, *Omni MedSci, Inc. v. Samsung Electronics Co. Ltd. et al.*, 2:24-cv-01070-JRG-RSP (E.D. Tex.) (Dec. 20, 2024)
2002	Samsung, Fossil, and Oura's Supplemental Invalidity Contentions Cover Document and Charts for the '475 Patent, *Omni MedSci, Inc. v. Samsung Electronics Co. Ltd. et al.*, 2:24-cv-01070-JRG-RSP (E.D. Tex.) (July 18, 2025)
2003	OnePlus's Invalidity Contentions Cover Document and Charts for the '475 Patent, *Omni MedSci, Inc. v. Samsung Electronics Co. Ltd. et al.*, 2:24-cv-01070-JRG-RSP (E.D. Tex.) (Sept. 30, 2025)
2004	Omni MedSci's Infringement Contentions Cover Document, *Omni MedSci, Inc. v. Samsung Electronics Co. Ltd. et al.*, 2:24-cv-01070-JRG-RSP (E.D. Tex.) (Mar. 12, 2025)
2005	Samsung, Fossil, and Oura's Motion to Stay, *Omni MedSci, Inc. v. Samsung Electronics Co. Ltd. et al.*, 2:24-cv-01070-JRG-RSP (E.D. Tex.) (Aug. 27, 2025)
2006	Order Denying Motion to Stay, *Omni MedSci, Inc. v. Samsung Electronics Co. Ltd. et al.*, 2:24-cv-01070-JRG-RSP (E.D. Tex.) (Aug. 29, 2025)
2007	Docket Navigator Statistics for District Judge James Rodney Gilstrap
2008	Lex Machina Statistics for District Judge James Rodney Gilstrap
2009	Model Order Focusing Patent Claims and Prior Art to Reduce Costs (E.D. Tex.)
2010	*Samsung Elecs. Co., Ltd. v. Headwater Rsch. LLC*, IPR2025-00482, Paper 13 (PTAB May 28, 2025)
2011	Patent Assignment Record for U.S. Patent No. 8,108,036
2012-2015	Reserved
2016	*Apple Inc. v. Omni MedSci, Inc.*, IPR2019-00912, Paper 1 (PTAB Apr. 10, 2019)

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2017	*Apple Inc. v. Omni MedSci, Inc.*, IPR2019-00913, Paper 1 (PTAB Apr. 10, 2019)
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2021	*Apple Inc. v. Omni MedSci, Inc.*, IPR2020-00175, Paper 1 (PTAB Dec. 11, 2019)
2022	Defendant's Invalidity Contentions, *Omni MedSci, Inc. vs. Apple Inc.*, Case No. 2: 18-cv-00134 (E.D. Tex.) (Aug. 28, 2018)
2023	Defendant's Invalidity Contentions - Exhibit A, *Omni MedSci, Inc. V. Apple Inc.*, Case No. 2:18-cv-134-RWS (E.D. Tex.) (Aug. 28, 2018)
2024	Defendant's Invalidity Contentions - Exhibit N, *Omni MedSci, Inc. V. Apple Inc.*, Case No. 2:18-cv-134-RWS (E.D. Tex.) (Aug. 28, 2018)
2025	Defendant's Invalidity Contentions - Exhibit P, *Omni MedSci, Inc. V. Apple Inc.*, Case No. 2:18-cv-134-RWS (E.D. Tex.) (Aug. 28, 2018)
2026-2027	Reserved
2028	U.S. Patent Pub. No. 2012/0197093 ("Valencell-093")
2029	File History of U.S. Patent App. No. 16/669,794, issued as U.S. Patent No. 10,874,304
2030	File History of U.S. Patent App. No. 17/078,771, issued as U.S. Patent No. 11,160,455
2031	Declaration of Prof. Igor Efimov, Ph.D
2032	*Curriculum vitae* of Prof. Igor Efimov, Ph.D
2033	Omni MedSci Inc.'s P.R. 4-2 Disclosure of Preliminary Claim

Exhibit No.	Description
	Constructions and Extrinsic Evidence
2034	Samsung Electronics, Co. Ltd., Samsung Electronics America, Inc., Fossil Group, Inc., Fossil Stores I, Inc., and Fossil Partners, L.P., and Oura Health Oy's P.R. 4-2 Disclosure of Preliminary Claim Constructions and Extrinsic Evidence
2035	König, V., et al., "Reflectance Pulse Oximetry – Principles and Obstetric Application in the Zurich System," Journal of Clinical Monitoring, Vol. 14, pp. 403-412 (1998)
2036	Reserved
2037	*Apple Inc. v. Omni MedSci, Inc.*, IPR2019-00914, Paper 13 (PTAB Nov. 6, 2019)

Omni MedSci, Inc. ("Patent Owner") submits this Preliminary Response under 37 C.F.R. § 42.207 to the Petition for Post Grant Review ("Petition") of U.S. Patent No. 12,268,475 ("the '475 Patent"), filed by Samsung Electronics Co. Ltd., Samsung Electronics America Inc., Fossil Group, Inc., Fossil Stores I, Inc., Fossil Partners, L.P., Oura Health Oy, and OnePlus Technology (Shenzhen) Co., Ltd. ("Petitioners").

I. INTRODUCTION

Patent Owner respectfully requests that the Director deny institution because Petitioners have failed to meet their burden of demonstrating that it is more likely than not that any challenged claim of the '475 Patent is unpatentable in relation to any ground raised in the Petition.

As an initial matter, Petitioners have failed to show that the '475 Patent is eligible for post-grant review. Petitioners do not dispute that the challenged claims are supported by the '475 Patent's pre-AIA priority date. Accordingly, the '475 Patent is not eligible for post-grant review and institution should be denied.

Petitioners fail to show that all requirements of limitation [1.n] and limitations [8.d] and [8.g] of the two independent claims 1 and 8 are disclosed or obvious over the asserted prior art. For example, the combination of limitations [8.d] and [8.g] require that the claimed "processor" of [8.d] make the claimed "determin[ation]" in [8.g], but while Petitioners rely on Lisogurski's front-end circuitry 150 for the

claimed "processor" in [8.d], Petitioners fail to even mention the front-end circuitry 150 for limitation [8.g].

Additionally, for the other independent claim, Petitioners' obviousness argument improperly relies on the same components in the asserted reference for separate claim elements.

Also, there are multiple deficiencies regarding Petitioners' showings for an "arc" limitation and "memory" limitation in the dependent claims, including underdeveloped and unsupported theories of motivation to combine.

II. OVERVIEW OF THE '475 PATENT

The '475 Patent discloses wearable devices, and systems including wearable devices, for measuring physiological parameters and for use with a smartphone or tablet. EX1001, Abstract, 8:39-57, 9:29-62, 35:32-37, FIG. 24; EX2031, ¶54. The '475 Patent discloses that a wearable that includes a light course with a plurality of light emitting diodes that generate an output light that is delivered to tissue. EX1001, Abstract, 8:39-57, 9:29-62; EX2031, ¶54. The wearable device is also disclosed as including a detection system comprising a plurality of detectors, and the '455 Patent describes that the detection system receives at least a portion of reflected light and generates an output signal. EX1001, Abstract, 8:39-61, 9:29-62; EX2031, ¶54.

An exemplary physiological measurement system is depicted in Figure 24:

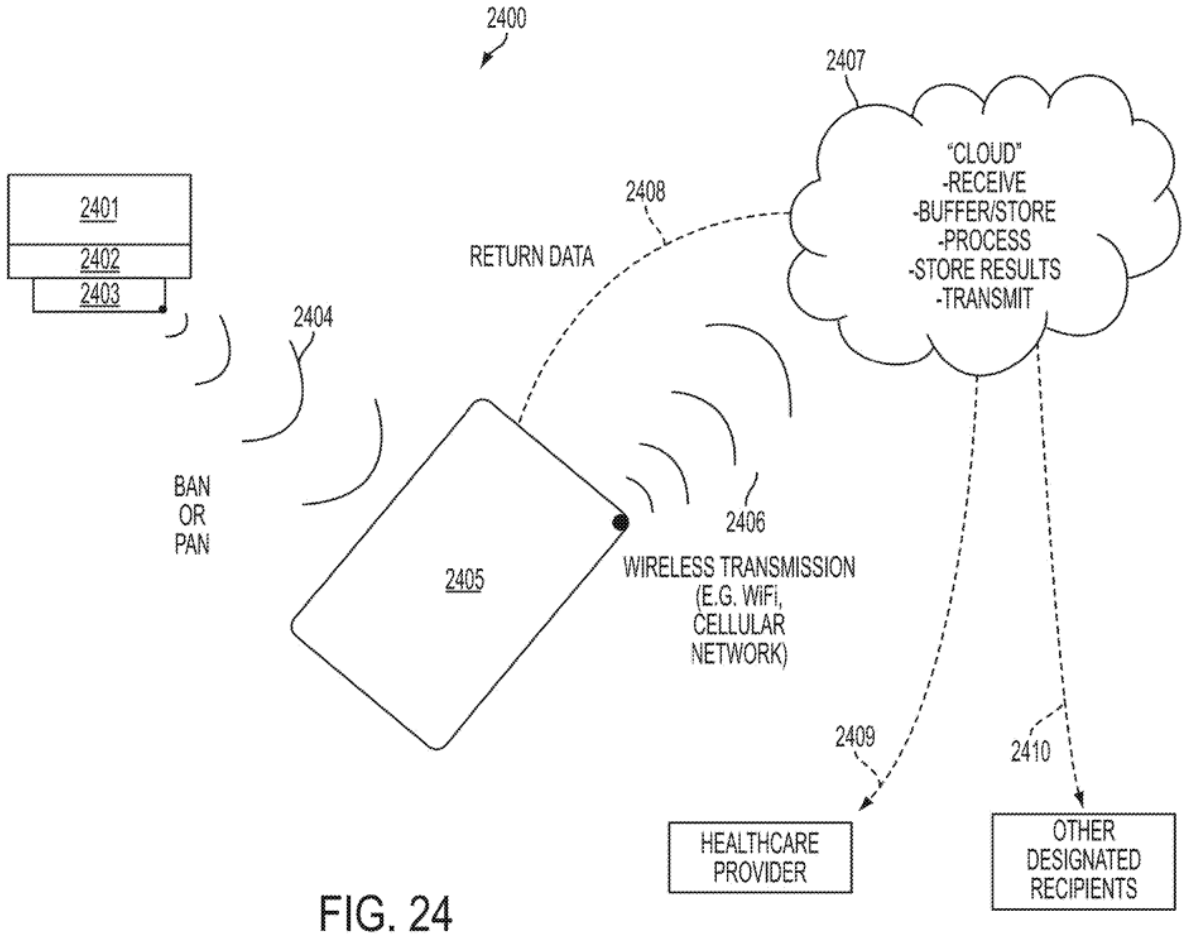


FIG. 24

EX1001, FIG. 24, 11:32-37; EX2031, ¶55. The system includes a measurement device 2401, a personal device 2405 such as a smartphone or tablet, and a cloud server 2407. EX1001, 35:32-36:3; EX2031, ¶55.

The '475 Patent discloses that the wearable device may comprise one or more biosensors. EX1001, Abstract; EX2031, ¶56. The '475 Patent also discloses that the wearable device, or a processor, may be configured to determine, based at least in part on an output signal, that the wearable device is being worn by a user. EX1001, Abstract, 9:3-62; EX2031, ¶56. According to the '475 Patent the wearable device

may also comprise a processor configured to be coupled to a non-transitory computer readable medium. Ex. 1001 at 86:1-3; EX2031, ¶56. The '475 Patent also discloses that the plurality of detectors in the detection system of the wearable device may be arranged along an arc. EX1001, 86:9-10; EX2031, ¶56. The wearable device may improve a signal-to-noise ratio via various techniques disclosed in the '455 Patent, resulting in improved accuracy of physiological measurements despite interference from spectral artifacts. EX1001, 58:1-22, 3:11-51; EX2031, ¶56.

III. LEVEL OF SKILL IN THE ART

Petitioners propose the following definition for a person of ordinary skill in the art ("POSITA") in relation to the '475 Patent:

> on or before the claimed priority date of 12/31/2012, a POSITA would have had a good working knowledge of optical sensing techniques and their applications, and familiarity with optical design and signal processing techniques. Such a person would have obtained such knowledge through an undergraduate education in engineering (electrical, mechanical, biomedical, or optical) or a related field of study, along with relevant experience studying or developing physiological monitoring devices…in industry or academia.

Pet., 17 (cleaned up and citations omitted). For purposes of this Preliminary Response, Patent Owner adopts Petitioners' proposed definition. EX2031, ¶¶50-53.

IV. SUMMARY OF REFERENCES IN THE PETITION

Petitioners challenge claims 1, 5-8, and 11-13 of the '475 Patent as allegedly obvious in Grounds 1-8, which involve various combinations of the following references: Lisogurski, Tran, LeBoeuf, and Carlson. Pet., 8.

A. Lisogurski (EX1025) (Grounds 1-8)

Lisogurski describes a non-invasive system for measuring parameters related to a subject's blood. EX1025, 3:61-4:5; EX2031, ¶79. The system is illustrated in Figures 3 and 1:

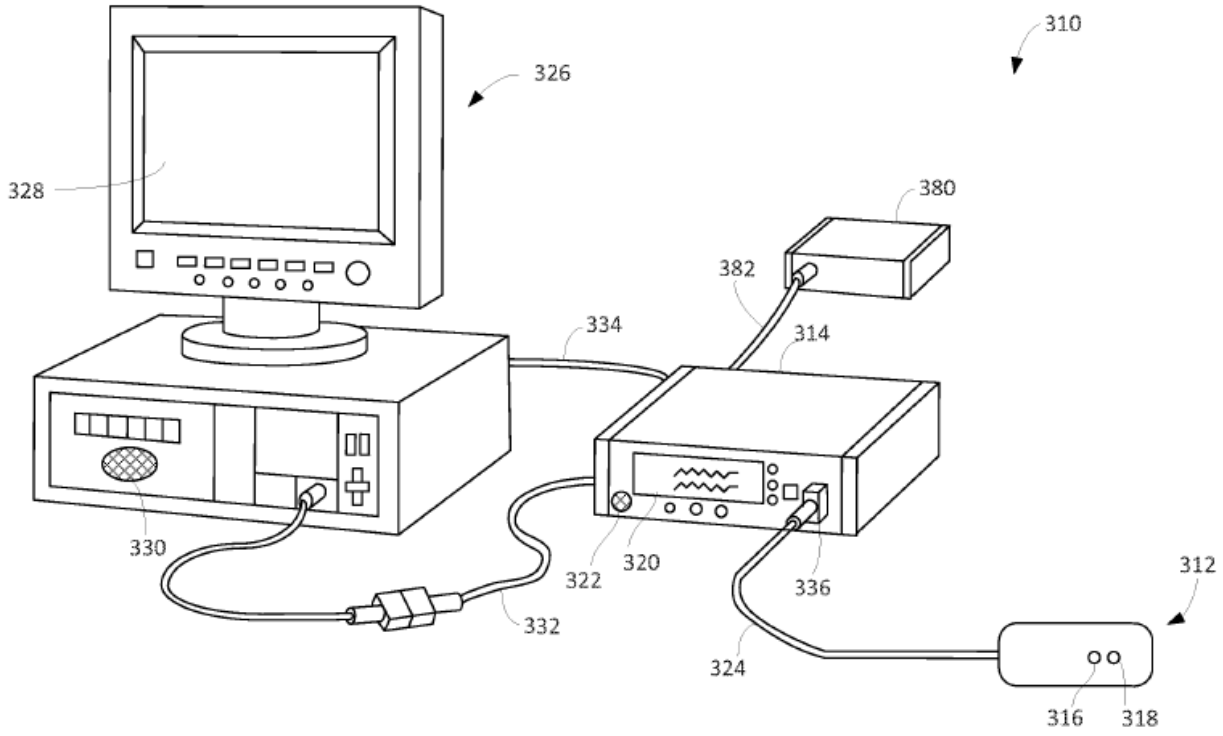


FIG. 3

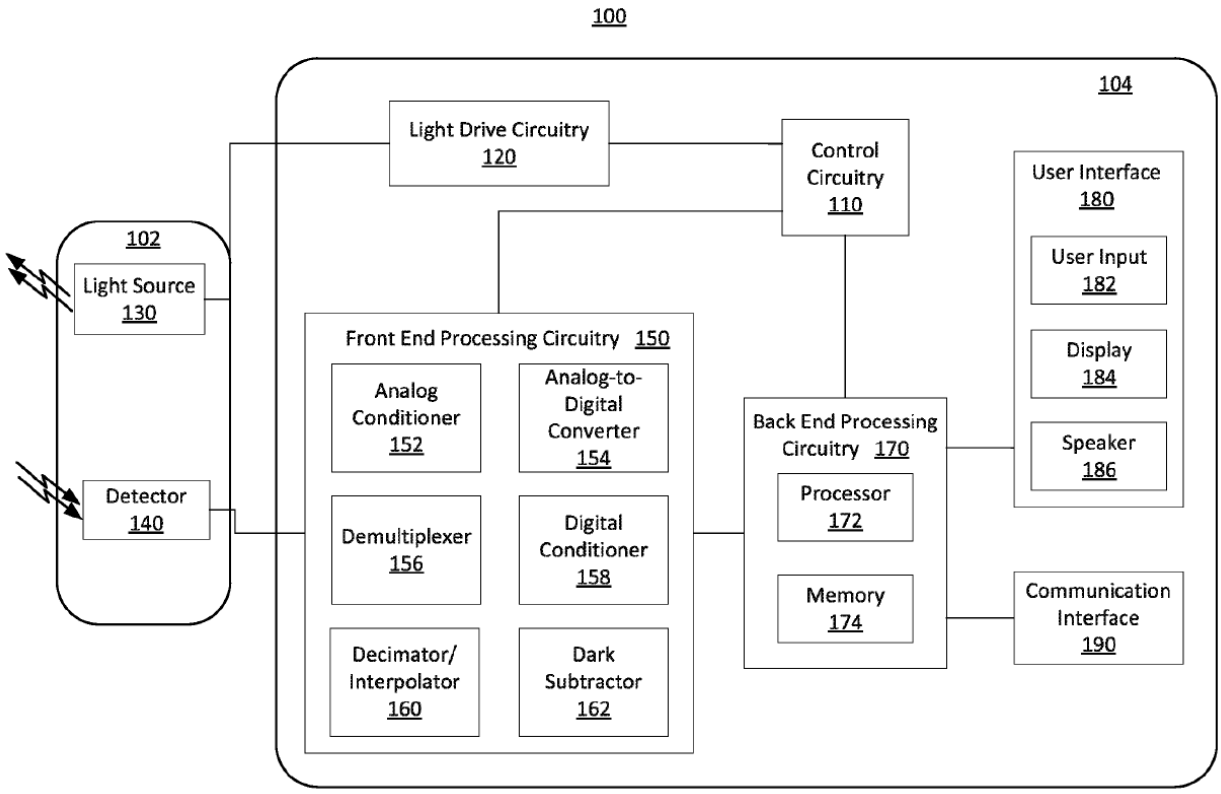


FIG. 1

EX1025, FIGS. 3, 1; EX2031, ¶79. A subject wears sensor unit 312, while the other components in the system are included for system calibration, data processing, and displaying information. EX1025, 17:54-18:15, 18:32-67; EX2031, ¶79. The sensor unit 312 includes light emitting diodes for directing light of different wavelengths to the subject's tissue and a detector that detects the light reflected from the tissue and converts it into an electrical signal. EX1025, 4:42-62, 10:48-64; EX2031, ¶79.

Front end processing circuitry 150 processes that signal. EX1025, 12:42-49; EX2031, ¶79. Then, "[p]rocessor 172 may receive and process physiological signals received from front end processing circuitry 150. For example, processor 172 may

determine one or more physiological parameters based on the received physiological signals." EX1025, 14:60-64; EX2031, ¶79. The system compares the signals to determine parameters such as blood oxygen saturation. EX1025, 24:58-25:5; EX2031, ¶79.

B. Tran (EX1027) (Grounds 2, 4, 6, 8)

Tran describes a patient heart monitoring system with wireless nodes forming a wireless mesh network. EX1027, Abstract, 3:3-13, 8:29-33; EX2031, ¶80. Tran's system also includes a wearable appliance adapted to communicate with the wireless nodes and a statistical analyzer to determine a heart attack or stroke attack. EX1027, Abstract, 3:3-13; EX2031, ¶80. The wearable appliance may include sensors and may non-invasively measure, for example, blood pressure. EX1027, 4:62-65, 9:23-30; EX2031, ¶80.

C. LeBoeuf (EX1026) (Grounds 3-4, 7-8)

LeBoeuf describes monitoring devices, particularly light-guiding earbuds for positioning within an ear. EX1026, Abstract, ¶¶[0002], [0006], [0009], [0084]; EX2031, ¶81. Figure 3 shows one exemplary light-guiding earbud in Carlson:

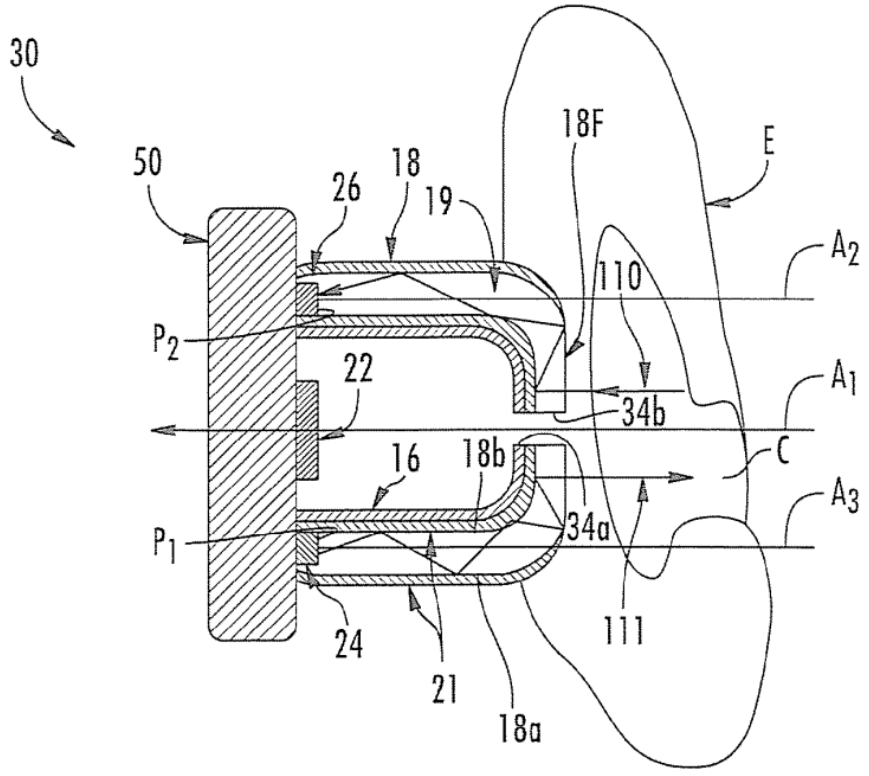


FIG. 3

EX1026, FIG. 3, ¶[0042]; EX2031, ¶81. The light-guiding earbuds include a speaker, such as speaker 22 shown in Figure 3, an earbud housing 16 in acoustical communication with the speaker 22, and apertures 34*a*-34*b* through which sound from the speaker 22 can pass. EX1026, ¶¶[0006], [0009], [0102], FIG. 3; EX2031, ¶81.

The light-guiding earbuds also include a light-guiding cover to deliver light from an optical emitter into the ear canal and to collect and deliver light from outside the earbud to an optical detector, such as shown by cover 18, optical emitter 24, and optical detector 26 depicted in Figure 3 above. EX1026, Abstract, ¶¶[0006], [0106],

FIG. 3; EX2031, ¶81. The light directed into the ear from a light emitter and the subsequent collection of light at a detector may be used for detecting or measuring, for example, body or skin temperature, blood gas levels, heart rate, blood flow, etc. EX1026, ¶[0010]; EX2031, ¶81.

D. Carlson (EX1028) (Grounds 5-8)

Carlson describes a non-invasive optical pulse oximeter. EX1028, ¶[0002]; EX2031, ¶82. The oximeter is designed to be clipped onto a user's ear. EX1028, ¶¶[0048]-[0049]; EX2031, ¶82. This is illustrated in Figures 1 and 2:

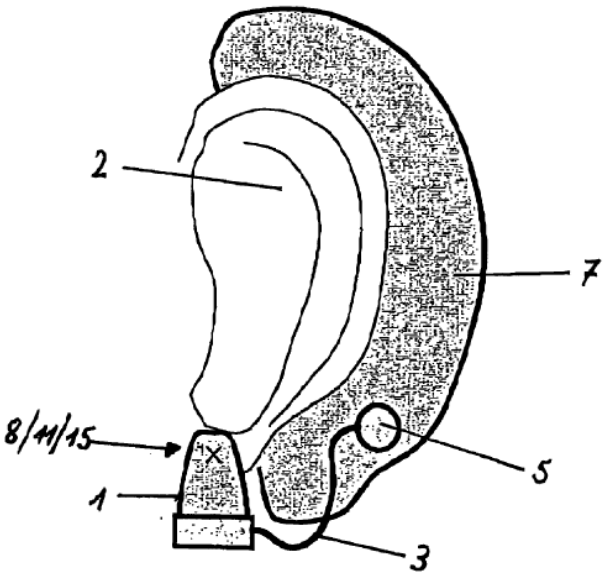


Figure 1

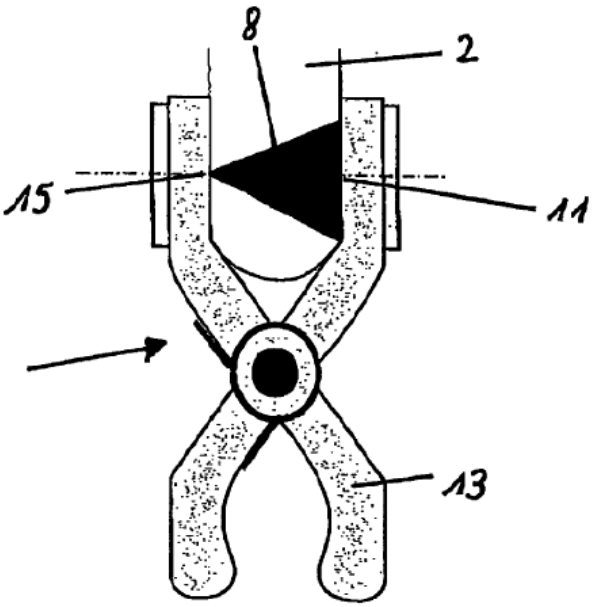


Figure 2

EX1028, FIGS. 1-2; EX2031, ¶82. The oximeter relies on various techniques, including beam shaping optical elements, for improving the signal-to-noise ratio and signal-to-background ratio of the signal generated by its photo detecting element

when it detects light that has been reflected from bodily tissue. EX1028, ¶¶[0010], [0013]-[0014], [0062]; EX2031, ¶82. Carlson also relies on "optical wavelength filters" which filter the light detected by the photo detecting element to a particular range of wavelengths before it is detected by the photo detecting element. EX1028, ¶¶[0026], [0062]; EX2031, ¶82.

V. CLAIM CONSTRUCTION

Petitioners note for certain patents related to the '475 Patent, certain terms that are "identical to or substantially similar to" language in the challenged claims of the '475 Patent were construed in prior Board or district court proceedings but otherwise contend that the remaining terms or phrases in the challenged claims of the '475 Patent do not require construction and can be afforded their plain and ordinary meanings. Pet., 18-19. Petitioners also state that they do not believe that the terms from the prior Board or district court proceedings need to be construed here. *Id*.

Patent Owner agrees that claim construction is not necessary at this time for the Board to find that Petitioners did not meet their burden for institution. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017). Patent Owner reserves the right to seek constructions in litigation or if institution is granted, and to further respond to any constructions that Petitioners propose.

A. The Petition Does Not Comply with the Board's Claim Construction Rules

The Board's rules require that the petition sets forth "[h]ow the challenged claim is to be construed." 37 C.F.R. § 42.204(b)(3). "[W]hen a petitioner takes alternative positions before the Board and a district court, that petitioner should, at a minimum, explain why alternative position are warranted." *Revvo Techs., Inc. v. Cerebrum Sensor Techs., Inc.*, IPR2025-00632, Paper 20 at 3-4 (PTAB Nov. 3, 2025) (precedential). This rule "ensure[s] that the Board correctly construes claim terms and to minimize inconsistency in claim construction between forums." *Id*. at 4. In this case, Petitioners' claim construction positions in the Petition and the Texas Case are inconsistent in at least two material respects, which warrants denial of the Petition.

Petitioners acknowledge that "[i]n the Texas Case, [Petitioners] identified certain limitations [of the '475 Patent]" as indefinite. Pet., 17 n.3 (citing EX1023, 247-48). Specifically, Petitioners assert that the following terms or phrases are indefinite in district court:

- differential measurement (claim 1)
- a plurality of detectors that are spatially separated from each other (claim 1)
- increase the signal-to-noise ratio by comparing the first signal and the second signal (claim 1)

- wherein the detection system is configured to be synchronized to the light source (claim 1)
- configured to use artificial intelligence in making decisions associated with at least a portion of the output signal (claim 5)
- plurality of detectors arranged along an arc (claim 6)

EX1023, 247-48. Despite this, Petitioners apply the plain and ordinary meaning for each of these terms in the Petition. Pet., 17-19.

Petitioners' only explanation for taking inconsistent positions in the Petition and the district court is that "the prior art discloses or renders obvious the indisputable scope of these limitations." Pet., 17 n.3 (citing EX1003, ¶¶66-67, 128-131, 160-162, 167-169, 193-195, 210-211, 293-295, 315-316). Dr. Anthony similarly fails to explain the inconsistency and merely repeats the same conclusory assertions from the Petition. EX1003, ¶¶66-67, 128-131, 160-162, 167-169, 193-195, 210-211, 293-295, 315-316. The Board should deny institution because Petitioners fail to justify their inconsistent positions. *Tesla, Inc. v. Intellectual Ventures II LLC*, IPR2025-00340, Paper 18 at 3-5 (PTAB Nov. 5, 2025) (informative) (denying institution where petitioner argued that claim term was indefinite in district court but adopted patent owner's plain and ordinary meaning construction in its petition).

B. Prior Constructions by the Board

As noted in the Petition, the Board construed the following terms in the prior IPRs concerning patents related to the '475 Patent:

Term/Phrase	Board's Construction
"modulating at least one of the LEDs"	"varying the amplitude, frequency, or phase of the light produced by at least one of the LEDs to include information" (EX2037, 10)

Patent Owner applies this construction in its analysis below. EX2031.

VI. PETITIONERS FAILED TO MEET THEIR BURDEN

The Director should deny institution because Petitioners have not met their burden of demonstrating that it is more likely than not that any claim of the '475 Patent is unpatentable for any of the grounds in the Petition.

A. Petitioners Have Not Shown that the '475 Patent is PGR Eligible

Petitioners bear the burden to show that the '475 Patent is subject to the first-to-file provisions of the AIA and eligible for post-grant review. *US Endodontics, LLC v. Gold Standard Instruments, LLC*, PGR2015-00019, Paper 54 at 9-10 (PTAB Dec. 28, 2016); 37 C.F.R. § 42.204 ("The Petitioner must certify that the patent for which review is sought is available for post-grant review"). As Petitioners recognize,

whether the '475 Patent is eligible for post-grant review "depends on whether the '475 patent is considered an AIA patent or not." Paper 6, ¶2 (citing 35 U.S.C. §§ 311(c), 321(c)).

The earliest claimed priority date of the '475 Patent is December 31, 2012. EX1001, (60). Petitioners "do not contest" that the challenged claims are entitled to this pre-AIA priority date. Petition, 7; Paper 6, ¶¶2-3 (admitting that "the '475 patent is not subject to the AIA, and is available for *inter partes* review"). Given Petitioners' admission that '475 Patent is a pre-AIA patent, the Board should deny institution because the '475 Patent is not eligible for post-grant review. *See*, *e.g.*, *Rockwool Int'l A/S v. Knauf Insulation, Inc. et al.*, PGR2022-00022, Paper 10 (PTAB Jul. 6, 2022) (denying institution where petitioner failed to show patent was eligible for post-grant review).

B. Ground 1: Alleged Obviousness Based on Lisogurski (Claims 1, 6-8, 11-13)

In Ground 1, Petitioners argue that claims 1, 6-8, and 11-13 of the '475 Patent are obvious over Lisogurski. Pet., 8, 22-60. For at least the reasons discussed below, Petitioners failed to meet their burden. EX2031, ¶¶84-173.

1. Independent Claim 1: Lisogurski Does Not Disclose or Render Obvious Claim 1

Petitioners fail to show obviousness of claim 1 for two independent reasons.

a) Petitioners Improperly Rely on the Same Prior Art Components for Different Claim Elements

Claim 1 recites the following as separate and distinct claim elements:

- "one or more biosensors" ([1.a]);
- "a light source" ([1.d]); and
- "a detection system" ([1.f]).[1]

EX1001, 85:11-50; *see also* EX1001, Abstract ("A wearable device … comprising one or more biosensors, ***as well as*** a light source … and a detection system").[2] Petitioners, however, rely on certain components in Lisogurski for more than one of these separately recited claim elements.

Specifically, Petitioners rely on Lisogurski's light source 130 as the claimed "light source" and rely on Lisogurski's detector 140 and front end processing circuitry 150 together as the claimed "detection system." Pet., 34, 36-68; *see also* Pet., 50. However, Petitioners also rely on Lisogurski's light source 130, detector 140, and front end processing circuitry 150 collectively as the separately claimed "biosensor[]." Pet., 34, 36-38; *see also id*., 30-31.

[1] Claim limitations of the '475 Patent are identified herein using the same alphanumeric identifiers as the Petition. Pet., viii-xi.

[2] All emphasis in case and evidence citations herein is added unless otherwise noted.

Thus, Petitioners improperly rely on the same prior art components for separate and distinct claim elements. *Becton, Dickinson and Co. v. Tyco Healthcare Gr., LP*, 616 F.3d 1249, 1254 (Fed. Cir. 2010) ("Where a claim lists elements separately, the clear implication of the claim language is that those elements are distinct components of the patented invention." (cleaned up)); *Hopkins Mfg. Corp. v. Cequent Performance Prods., Inc.*, IPR2015-00613, Paper 9, at 11-12 (PTAB Aug. 7, 2015) (denying institution because a single prior art signal could not teach two separate signals in the claims).

b) Lisogurski Does Not Disclose or Render Obvious Limitation [1.n]

Limitation [1.n] recites "wherein the apparatus is at least in part configured to determine, based at least in part on the output signal, that the apparatus is being worn by the user." EX1001, 85:48-50.[3] Regarding the claimed "determin[ation] … that the apparatus is being worn by the user" (referenced herein as the claimed "determin[ation]" with respect to limitation [1.n]) the language of limitation [1.n] requires both of the following:

[3] Collateral estoppel does not apply for limitation [1.n], which is not included in claims addressed in prior Board decisions, and Petitioners recognize this by not referencing any prior Board decisions. Pet., 43-45.

1) The claimed "determin[ation]" must be made by the "apparatus"; and

2) The claimed "determin[ation]" must be "based at least in part on the output signal."

EX2031, ¶86.

Petitioners argue that the claimed "determin[ation]" is taught by Lisogurski's single-sentence disclosure of "detect[ing]" a "system error" in the form of a "physiological impossible value" or "probe-off signal" (referenced herein as Lisogurski's "error detection"). Pet., 43-45 (citing EX1025, 36:66-7:2). Petitioners also argue that the claimed "apparatus" is met by Lisogurski's sensor 102/312 and that the claimed "output signal" is met by Lisogurski's processed signals, which are sent from Lisogurski's front end processing circuitry 150 (herein, "front-end circuitry 150") to back end processing circuitry 170 (herein, "back-end circuitry 170"). Petition at 42-43, 29, 35-36; EX2031, ¶¶87-90.

Lisogurski fails to disclose or render obvious that its alleged error detection is (1) performed by Lisogurski's sensor (alleged "apparatus") or (2) based at least in part on Lisogurski's processed signals (alleged "output signal") to meet limitation [1.n]'s requirements (1) and (2) above. EX2031, ¶¶85-118.

(1) Lisogurski does not disclose or render obvious that its sensor (alleged "apparatus") is configured to perform error detection (alleged "determin[ation]")

Lisogurski neither discloses nor renders obvious that its sensor (alleged "apparatus") is "configured to" make Lisogurski's error detection (alleged "determin[ation]"). EX2031, ¶¶95-107.

First—Lisogurski does not disclose that its sensor performs the error detection (the alleged "determin[ation]"). Lisogurski's error detection is mentioned only once in Lisogurski, in a single sentence that merely states that "the system" may detect the error, with no discussion of Lisogurski's sensor or any indication as to what component makes the detection. EX1025, 36:66-37:2; EX2031, ¶96.

Second—Petitioners fail to show that it would have been obvious for Lisogurski's sensor to perform the error detection. Pet., 43-45. Petitioners rely on the following statement in Lisogurski: "the functionality of some of the components may be combined in a single component." EX1025, 15:66-16:4; Pet., 44. This statement, however, fails to show that Lisogurski's error detection would have been performed by its sensor, including because: (i) this statement mentions neither Lisogurski's sensor nor error detection; (ii) Petitioners fail to explain why or how this cited statement applies to either Lisogurski's sensor or error detection; (iii) this statement refers to Lisogurski's system 100 in Figure 1, and Lisogurski discloses no

connection between system 100, or sensor 102 therein, and Lisogurski's error detection; (iv) Lisogurski does not identify any component in system 100 that performs the error detection, so Petitioners do not and cannot explain how such an unidentified component along with sensor 102 would be included in the cited statement's reference to "***some*** of the components"; and (v) as explained below, a POSITA would have understood that back-end circuitry 170 performs the error detection and that the cited statement about combining functionality of "some" components would not apply to back-end circuitry 170 and sensor 102, and Petitioners do not argue that combination. *See* EX1025, 15:66-16:4, 36:66-37:2, 14:56-15:18, FIG. 1; Pet., 43-45, 27-29; EX2031, ¶¶97-99.

Petitioners' analysis of limitation [1.n] concludes with a citation to Exhibit 1058 but for an assertion with no mention of Lisogurski's sensor. Pet., 45 (citing EX1058). Moreover, Exhibit 1058 is unrelated to Lisogurski and would not have led a POSITA to understand or find obvious that the error detection is performed by the sensor in Lisogurski. EX2031, ¶100.

Third—A POSITA would have understood that Lisogurski's error detection is made by back-end circuitry 170 and not sensor 102.

For sensor 102, Petition §IX.B argues that Lisogurski would be modified to relocate front-end circuitry 150 into sensor 102. Pet., 27-29. But a POSITA would not have understood or found obvious that front-end circuitry 150 performs

Lisogurski's error detection because front-end circuitry 150 performs signal conditioning, which does not include error detection, and does so with subcomponents 152-162 that perform prescribed signal-conditioning tasks, which do not include error detection. EX1025, FIG. 1, 13:7-14:10; EX2031, ¶¶101-03.

In contrast to front-end circuitry 150 in sensor 102 (as allegedly modified), back-end circuitry 170 performs decision-making and detection using processor 172, which Lisogurski describes as "performing the functions described herein," such as the error detection. EX1025, FIG. 1, 12:42-51, 13:7-14:10, 14:56-15:18; EX2031, ¶¶103-04. Moreover, "step 1904," which includes Lisogurski's disclosure of the error detection, and back-end circuitry 170 both involve determining/detecting "physiological parameter[s]," so it would be consistent for "step 1904" and back-end circuitry 170 to also both be involved in the error detection. EX1025, 36:54-37:2, 14:56-64; EX2031, ¶105.

Additionally, Petitioners argue that Lisogurski's error detection is based on processed signals (alleged "output signal"), and as depicted by the following annotated figure in the Petition, Lisogurski teaches that these processed signals are sent to back-end circuitry 170. Pet., 43-45, 36-37; EX1025, 12:42-45, FIG. 1; EX2031, ¶106.

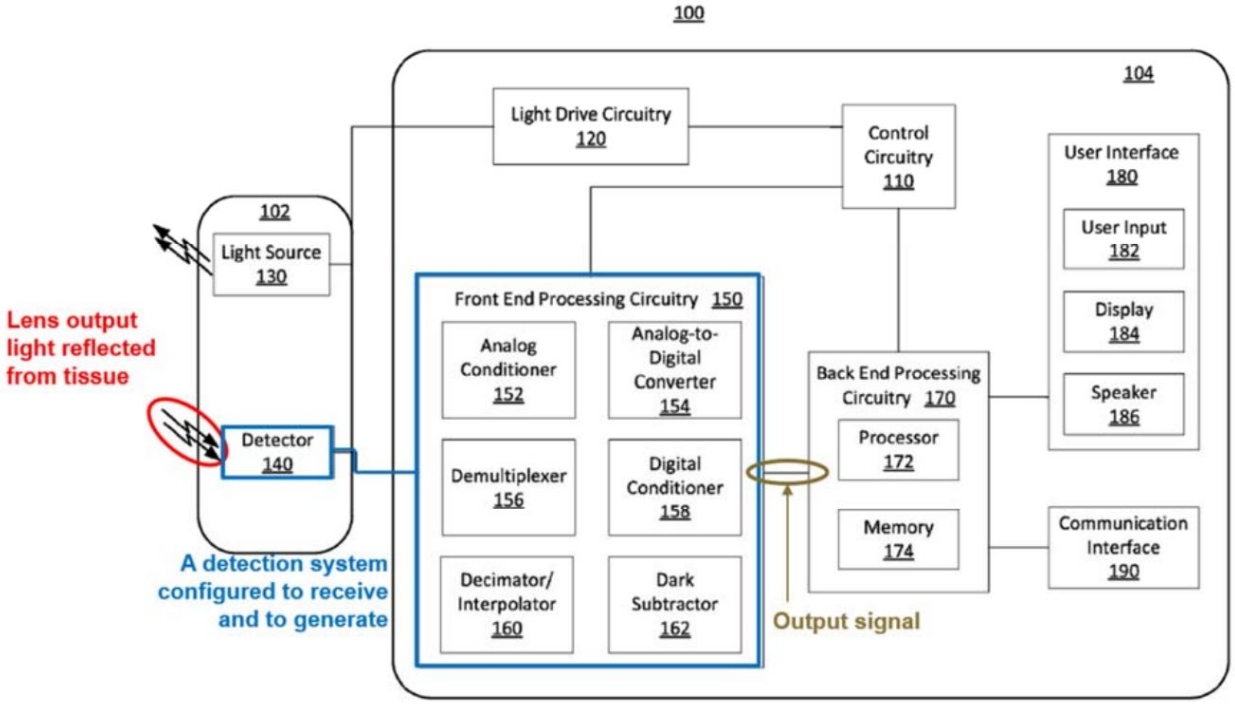


FIG. 1

Pet., 37 (annotating EX1025, FIG. 1)

However, if Lisogurski's error detection is based on these processed signals (alleged "output signal") as Petitioners allege, then the error detection would be performed by back-end circuitry 170 that receives the processed signals and not by front-end circuitry 150 (allegedly within sensor 102) that sends the processed signals. EX1025, FIG. 1, 12:42-45; EX2031, ¶106.

(2) Lisogurski does not disclose or render obvious that the error detection (alleged "determin[ation]") is based on the processed signals (alleged "output signal")

Lisogurski does not disclose or render obvious that its error detection (alleged "determin[ation]") is "based at least in part on" Lisogurski's processed signals

(alleged "output signal"). EX2031, ¶¶108-14.

First—Lisogurski does not disclose that its error detection is based on processed signals, which are disclosed in the context of system 100 in Figure 1. EX1025, 12:42-45. Lisogurski's error detection is mentioned only once in Lisogurski, in a single sentence with no connection to system 100, no mention of processed signals, and no indication of what component performs the error detection or how. EX1025, 36:66-37:2; EX2031, ¶109.

Second—Petitioners fail to show that it would have been obvious for Lisogurski's error detection to be based on Lisogurski's processed signals. The only two portions of Lisogurski cited in Petitioners' analysis of limitation [1.n] do not even mention or relate to the processed signals. Pet., 43-45 (citing EX1025, 36:66-37:2, 15:66-16:4); EX2031, ¶¶110-11. And while Petitioners cross-reference their analysis of limitation [1.f], which mentions Lisogurski's processed signals, that analysis for limitation [1.f] does not address Lisogurski's error detection that Petitioners rely on for the claimed "determin[ation]" in limitation [1.n]. Pet., 43-45 (citing "§IX.B.3.g.[1.f]"); 36-37 (§IX.B.3.g.[1.f]); EX2031, ¶112.

Petitioners also cite Exhibit 1058 but for an assertion with no mention of Lisogurski's processed signals. Pet., 45 (citing EX1058). Indeed, Exhibit 1058 is unrelated to Lisogurski's teachings and would not have led a POSITIA to understand

or find obvious that Lisogurski's error detection is based on processed signals involved in Lisogurski's system 100 in Figure 1. EX2031, ¶113.

(3) Lisogurski's error detection (alleged "determin[ation]") cannot be both (i) performed by the sensor (alleged "apparatus") and (ii) based on the processed signals (alleged "output signal")

Contrary to Petitioners' suggestions, Lisogurski's error detection (alleged "determin[ation]") cannot be ***both*** (1) performed by the sensor (alleged "apparatus") ***and*** (2) based at least in part on the processed signals (alleged "output signal") as required by limitation [1.n]. Pet., 43-45; EX2031, ¶¶115-18. This incompatibility is illustrated by the following annotated figure in the Petition, in which the blue annotation illustrates Petitioners' argument that front-end circuitry 150 would be relocated into sensor 102 and the brown annotation illustrates Lisogurski's processed signals (alleged "output signal") that are sent from front-end circuitry 150 to back-end circuitry 170. Pet., 36-37, 27-29; EX1025, 12:42-45; EX2031, ¶115.

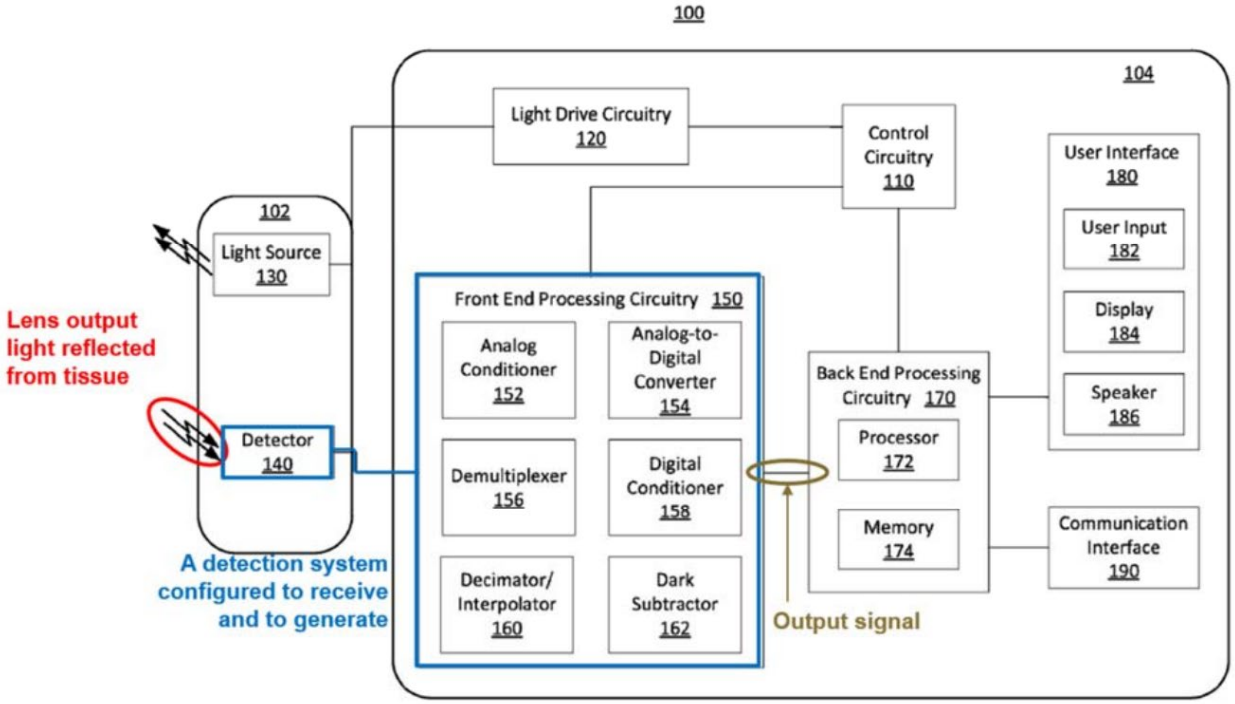


FIG. 1

Pet., 37 (annotating EX1025, FIG. 1)

If Lisogurski's error detection is performed by Lisogurski's sensor 102 (regardless of whether sensor 102 includes front-end circuitry 150), then the error detection (alleged "determin[ation]") cannot be based on the processed signals (alleged "output signal") that are received instead by back-end circuitry 170. EX1025, FIG. 1, 12:42-45; EX2031, ¶116. This fails to satisfy limitation [1.n]'s requirement that the error detection (alleged "determin[ation]") be "based at least in part on" Lisogurski's processed signals (alleged "output signal").

Alternatively, if Lisogurski's error detection is based on the processed signals received by back-end circuitry 170, then the error detection would be performed by back-end processing circuitry 170 and not sensor 102, regardless of whether sensor

102 includes front-end circuitry 150. EX1025, FIG. 1, 12:42-45; EX2031, ¶117. This fails to satisfy limitation [1.n]'s requirement that Lisogurski's sensor (alleged "apparatus") is "configured to" make the error detection (alleged "determin[ation]").

2. Dependent Claim 6: Lisogurski Does Not Disclose or Render Obvious the Arc Limitation

Claim 6 depends from independent claim 1. Petitioners' analysis of claim 6 does not address the deficiencies discussed above regarding claim 1. Pet., 45-48. Therefore, Lisogurski does not render obvious dependent claim 6 for at least the same reasons as claim 1. *Supra*, §VI.A.1; EX2031, ¶¶119-21.

Additionally, Lisogurski does not render obvious claim 6's requirement that "the detection system comprises the plurality of detectors arranged along an ***arc***" (referenced herein as the "arc limitation"). EX1001, 86:9-10.[4] Petitioners rely on Lisogurski's disclosure of a sensor with multiple detectors as the claimed "plurality of detectors." Pet., 38, 45-46. But Lisogurski does not disclose or render obvious that its detectors are "arranged along an arc" for the arc limitation, and Petitioners fail to show otherwise. EX2031, ¶¶122-33. Indeed, Petitioners and their expert each

[4] Collateral estoppel does not apply for the arc limitation, which is not included in claims addressed in prior Board decisions, and Petitioners recognize this by not referencing any prior Board decisions. Pet., 47-48.

provide only a single conclusory paragraph of analysis that fails to explain why an arc would be obvious in view of Lisogurski. Pet., 47-48; EX1003, ¶209; EX2031, ¶124.

Lisogurski does not disclose any arrangement for its detectors, much less an arc arrangement. EX2031, ¶¶125-27. Indeed, Petitioners fail to identify any alleged teaching or suggestion of any particular arrangement in Lisogurski, let alone an arc arrangement. Pet., 47-48.

Lisogurski also does not render obvious the claimed arc arrangement. Petitioners first cite Lisogurski's statement regarding "[a]ny suitable configuration." Pet., 47 (EX1025, 17:39-43). But this statement does not teach or suggest any particular arrangement or teach any one configuration (e.g., arc) as opposed to countless other potential configurations (e.g., triangle or grid). EX2031, ¶¶128-29; *Virtek Vision Int'l ULC v. Assembly Guidance Sys., Inc.*, 97 F.4th 882, 886-87 (Fed. Cir.) (holding that "mere … exist[ence]" of "possible arrangements" and knowledge of "alternative arrangements" are insufficient for motivation).

Petitioners' sole alleged motivation for modifying Lisogurski to include the claimed arc arrangement is an alleged need for a non-"linear" arrangement for "angularly" scattered light. Pet., 47-48 (citing EX1025, 11:16-20; EX1045, 4:14-65). First, however, this alleged motivation is unsupported, as the cited portions of Lisogurski and Exhibit 1045 do not discuss angled light, much less a connection

between angled light and an arc arrangement. EX1025, 11:16-20; EX1045, 4:14-65; EX2031, ¶¶130-31. Second, Petitioners' assertion regarding deficiency of a "linear … detector arrangement" incorrectly assumes that only two possible arrangements existed—i.e., linear and and arc—and fails to consider other possible arrangements (e.g., triangle or grid) or explain why a POSITA would have chosen an arc over other possible arrangements. Pet., 47-48; EX2031, ¶132; *see* EX1026, FIG. 12A, ¶¶[0060], [0138] (showing a non-linear, non-arc arrangement of detectors); *Virtek*, 97 F.4th at 886-87 (holding mere existence or knowledge of "possible arrangements" insufficient for motivation). In fact, the Petition does not even identify an arc arrangement anywhere in any prior art for Ground 1. Pet., 47-48.

3. Dependent Claim 7

Claim 7 depends from claim 6 and indirectly from independent claim 1. Petitioners' analysis of dependent claim 7 does not address the deficiencies discussed above regarding claims 1 and 6. Pet., 48-50. Therefore, Lisogurski does not render obvious claim 7 for at least the same reasons discussed above for claims 1 and 6. *Supra*, §§VI.A.1 (claim 1), VI.A.2 (claim 6); EX2031, ¶¶134-36.

4. Independent Claim 8: Lisogurski Does Not Disclose or Render Obvious Limitations [8.g] and [8.d]

Claim 8 recites, in part: "[8.d] a processor configured to: … [8.g] (iv) determine, based at least in part on the third output signal, that the wearable device

is being worn by the user." EX1001, 86:26, 86:44-46.[5] Thus, regarding the claimed "determin[ation] … that the apparatus is being worn by the user" (referenced herein as the claimed "determin[ation]" with respect to limitation [8.g]) the language of limitations [8.d] and [8.g] together requires both of the following:

1) The claimed "determin[ation]" must be made by the "processor"; and
2) The claimed "determin[ation]" must be "based at least in part on the third output signal."

EX2031, ¶138.

Similar to Petitioners' argument above for the claimed "determin[ation]" in limitation [1.n], Petitioners argue here that the claimed "determin[ation]" in limitation [8.g] is taught by Lisogurski's error detection, i.e., Lisogurski's single-sentence disclosure of "detect[ing]" a "system error" in the form of a "physiological impossible value" or "probe-off signal." Pet., 55-57 (citing EX1025, 36:66-7:2); EX2031, ¶¶139, 144.

Unlike their argument for the claimed "apparatus" in limitation [1.n],

[5] Collateral estoppel does not apply for limitation [8.g], and limitation [8.d] by implication, which is not included in claims addressed in prior Board decisions, and Petitioners recognize this by not referencing any prior Board decisions. Pet., 55-57, 50-51.

Petitioners argue for limitation [8.d] that the claimed "processor" is met by Lisogurski's front-end circuitry 150 (which Petitioners argue would be relocated into sensor 102), not sensor 102. Pet., 51-52, 27-29, 43-45; EX2031, ¶¶141, 145. Also, unlike their argument for the claimed "output signal" in limitation [1.n], for the claimed "third output signal" in limitation [8.g] (and [8.f]), Petitioners rely on Lisogurski's purported teaching of a "'dark subtract[ed]' signal," which Petitioners argue is "an output signal generated after application of a dark subtraction technique," not simply Lisogurski's processed signals. Pet., 54-57, 43-45; EX2031, ¶¶142, 145.

Lisogurski fails to disclose or render obvious that the alleged error detection is (1) performed by Lisogurski's front-end circuitry 150 (alleged "processor") or (2) based at least in part on Lisogurski's purported "'dark subtract[ed]' signal" (alleged "output signal") to meet requirements (1) and (2) above for limitations [8.g] and [8.d]. EX2031, ¶¶137-70.

a) Lisogurski does not disclose or render obvious that front end processing circuitry 150 (alleged "processor") is configured to perform the error detection (alleged "determin[ation]")

Lisogurski does not disclose or renders obvious that its front-end circuitry 150 (alleged "processor") is "configured to" make Lisogurski's error detection (alleged "determin[ation]"). EX2031, ¶¶148-58.

First—Lisogurski does not disclose that its front-end circuitry 150 performs error detection. Lisogurski mentions error detection only once, in a single sentence that merely states that "the system" may detect the error, with no discussion of Lisogurski's front-end circuitry 150 or any indication as to what component makes the detection. EX1025, 36:66-37:2; EX2031, ¶149.

Second—Petitioners fail to show that it would have been obvious for Lisogurski's front-end circuitry 150 to perform the error detection. Pet., 55-57. Petitioners do not and cannot show this because Petitioners' analysis for limitation [8.g] does not even mention front-end circuitry 150. Pet., 55-57. Petitioners instead argue that sensor 102 performs the error detection, but this argument (i) fails because limitations [8.d] and [8.g] together require the error detection (alleged "determin[ation") be performed by the claimed "processor," for which Petitioners rely on front-end circuitry 150 (not sensor 102), and (ii) also fails for the reasons explained above in Section VI.A.1.b.1 regarding limitation [1.n]. Pet., 55-57, 51-52; EX2031, ¶151. Moreover, while front-end circuitry 150 is discussed in Petitioner's analysis for limitation [8.d], limitation [8.d] does not involve the claimed "determin[ation]" or Lisogurski's error detection. Pet., 51-52; EX2031, ¶151.

This apparent oversight regarding limitation [8.d] and [8.g], where Petitioners rely on front-end circuitry 150 as the claimed "processor" in [8.d] but fail to explain how front-end circuitry 150 makes the "determin[ation]" [8.g], demonstrates an

"unfocused approach" that, as the Director has recognized, warrants denial of institution as a matter of policy. *Zhuhai CosMX Battery Co., Ltd. v. Ningde Amperex Tech. Ltd.,* IPR2025-00405, Paper 24 at 2-4 (PTAB Oct. 15, 2025) (Order by Director Squires Granting Director Review, Vacating the Decision Granting Institution, and Denying Institution).

Third—A POSITA would have understood that Lisogurski's error detection is made by back-end circuitry 170, not front-end circuitry 150, for at least the same reasons explained above in Section VI.A.1.b.1. EX2031, ¶¶152-56.

Additionally, Petitioners argue that the error detection is based on Lisogurski's purported "'dark subtract[ed]' signal" (alleged "[third] output signal"), and according to Petitioners, such an alleged "output signal" is sent to back-end circuitry 170, as depicted by the following annotated figure in the Petition. Pet., 54-57, 36-37; EX1025, FIG. 1, 12:42-45; EX2031, ¶157.

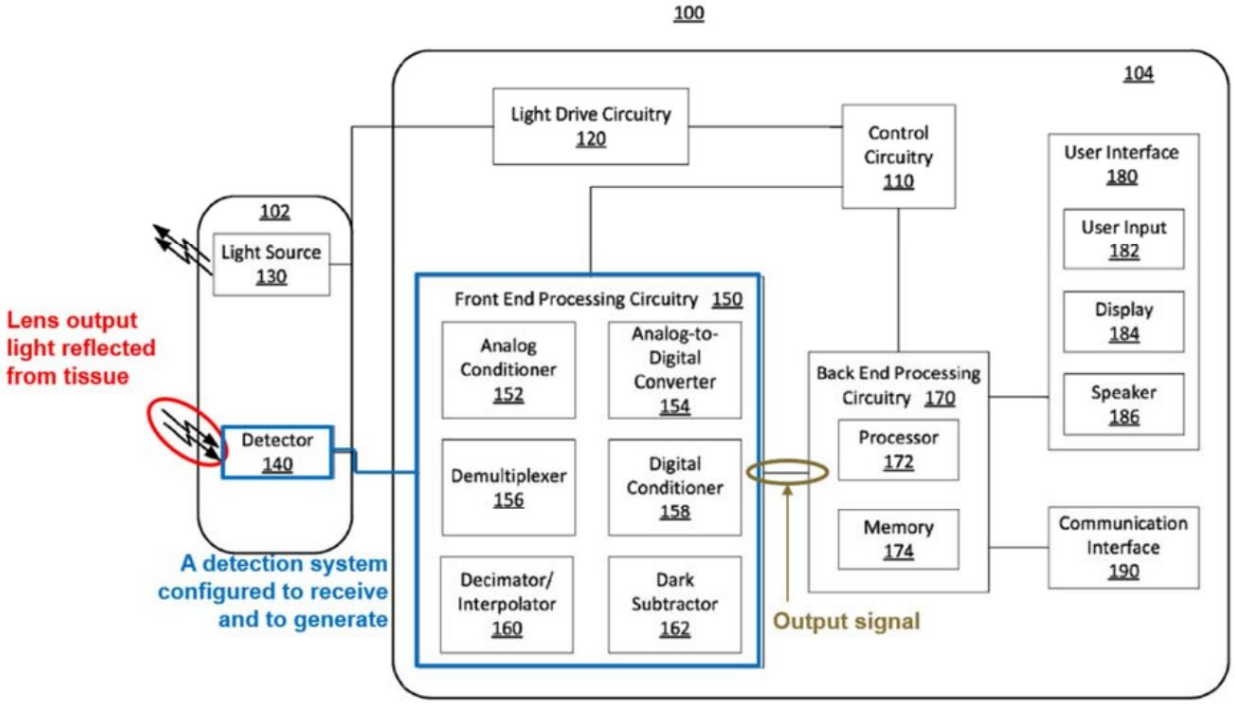


FIG. 1

Pet., 37 (annotating EX1025, FIG. 1)

If Lisogurski's error detection is based on a purported "'dark subtract[ed]' signal" (alleged "[third] output signal") that is sent to back-end circuitry 170, as Petitioners allege, then a POSITA would have understood that the error detection is performed by back-end circuitry 170 that receives this signal and not by front-end circuitry 150 that sends the signal. Pet., 54-57, 36-37; EX1025, FIG. 1, 12:42-45; EX2031, ¶157.

b) Lisogurski does not disclose or render obvious that the error detection (alleged "determin[ation]") is based on the purported "'dark subtract[ed]' signal" (alleged "third output signal")

Lisogurski neither discloses nor renders obvious that its error detection (alleged "determin[ation]") is "based at least in part on" Lisogurski's purported

"'dark subtract[ed]' signal" (alleged "third output signal"). EX2031, ¶¶159-66.

First—Lisogurski does not disclose that its error detection is based on a purported "'dark subtract[ed]' signal." Lisogurski's error detection is mentioned in only one sentence in Lisogurski, with no connection to Lisogurski's disclosures regarding subtraction, no mention of a purported "'dark subtract[ed]' signal," and no indication of what component performs the error detection or how. EX1025, 36:66-37:2; EX2031, ¶160.

Second—Petitioners fail to show that it was obvious for Lisogurski's error detection to be based a purported "'dark subtract[ed]' signal." The only two portions of Lisogurski cited in Petitioners' analysis of limitation [8.g] do not mention or relate to dark subtraction or any purported "'dark subtract[ed]' signal." Pet., 55-57 (citing EX1025, 36:66-37:2, 16:12-14); EX2031, ¶¶161-62. Also, while Petitioners cross-reference their analysis of limitation [1.n], that [1.n] analysis does not address dark subtraction or any purported "'dark subtract[ed]' signal." Pet., 55-57 (citing "§IX.B.3.o.[1.n]"); 43-45 (§IX.B.3.o.[1.n]); EX2031, ¶163.

Petitioners assert that Lisogurski's error detection would be based on a purported "'dark subtract[ed]' signal" to "avoid … noise[]" and improve "accura[cy]." Pet., 56. But Petitioners provide no evidence, and a POSITA would not have understood, that Lisogurski's error detection would be affected by noise or made more accurate with a purported "'dark subtract[ed]' signal." Pet., 56-57 (citing

Petitioners' [1.n] analysis and EX1025, 16:12-14, neither of which address dark subtraction); EX2031, ¶164. As explained above, Petitioners' [8.g] analysis cites no evidence regarding Lisogurski's dark subtraction. While Petitioners cite Exhibit 1057, this exhibit has no connection to Lisogurski, and a POSITA would not have understood Lisogurski's error detection to be associated with a purported "'dark subtract[ed]' signal" based on this unrelated Exhibit 1057. Pet., 57; EX2031, ¶165.

c) Lisogurski's error detection (alleged "determin[ation]") cannot be both (i) performed by front end processing circuitry 150 (alleged "processor") and (ii) based on the purported "'dark subtract[ed]' signal" (alleged "third output signal")

Lisogurski's error detection (alleged "determin[ation]) cannot—as Petitioners allege and as required for limitations [8.d] and [8.g]—be ***both*** (1) performed by front-end circuitry 150 (alleged "processor") ***and*** (2) based at least in part on a purported "'dark subtract[ed]' signal" (alleged "third output signal"). Pet., 51-52, 55-57; EX2031, ¶¶167-70. This incompatibility is illustrated by the following annotated figure in the Petition, in which the blue annotation illustrates Petitioners' argument that front-end circuitry 150 would be relocated into sensor 102 and the brown annotation asserts that a claimed "output signal," such as limitation [8.g]'s "third output signal," corresponds to the processed signals that are sent from front-end circuitry 150 to back-end circuitry 170. Pet., 36-37, 27-29, 51-57 (asserting that claimed "output signal[s]" are generated by front end processing circuitry 150 and

relying on Lisogurski's purported "'dark subtract[ed]' signal" as the claimed "third output signal"); EX1025, 12:42-45; EX2031, ¶167.

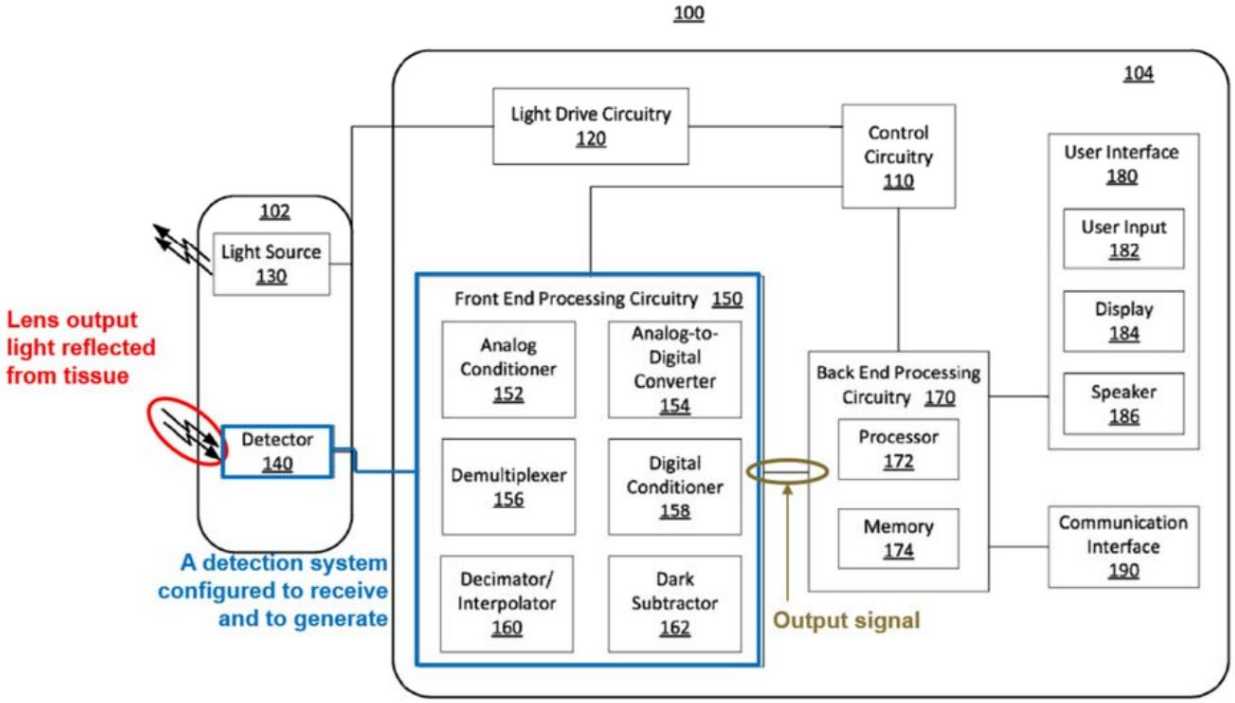


FIG. 1

Pet., 37 (annotating EX1025, FIG. 1)

If Lisogurski's error detection is performed by Lisogurski's front-end circuitry 150 (regardless of whether front-end circuitry 150 is relocated to sensor 102 as alleged), then the error detection (alleged "determin[ation]") cannot be based on a purported "'dark subtract[ed]' signal" that, as the alleged "third output signal," is received instead by back-end circuitry 170. EX1025, FIG. 1, 12:42-45; Pet., 36-37, 51-57; EX2031, ¶168. This fails to satisfy limitation [8.g]'s requirement that the error detection (alleged "determin[ation]") be "based at least in part on" Lisogurski's purported "'dark subtract[ed]' signal" (alleged "third output signal").

Alternatively, if Lisogurski's error detection is based on a purported "'dark subtract[ed]' signal" that, as the alleged "third output signal," is received by back-end circuitry 170, then the error detection would be performed by back-end processing circuitry 170 and not front-end circuitry 150 (regardless of whether front-end circuitry 150 is included in sensor 102 as alleged). EX1025, FIG. 1, 12:42-45; Pet., 36-37, 51-57; EX2031, ¶169. This fails to satisfy the requirement of limitations [8.d] and [8.g] that Lisogurski's front-end circuitry 150 (alleged "processor") is "configured to" make the error detection (alleged "determin[ation]").

5. Dependent Claims 11-13

Claims 11-13 each depend from independent claim 8. Petitioners' analysis of claims 11-13 does not address the deficiencies discussed above for claim 8. Pet., 57-60. Therefore, Lisogurski does not render obvious claims 11-13 for at least the same reasons as claim 8. *Supra*, §VI.A.4; EX2031, ¶¶171-73.

C. Ground 2: Alleged Obviousness Based on Lisogurski and Tran (Claims 5, 7)

In Ground 2, Petitioners argue that claims 5 and 7 of the '475 Patent are obvious over Lisogurski in view of Tran. Pet., 8, 61-68. For at least the reasons discussed below, Petitioners fail to meet their burden. EX2031, ¶¶174-94.

1. Dependent Claim 5: Lisogurski and Tran Do Not Disclose or Render Obvious the Memory Limitation

Claim 5 depends from independent claim 1. Petitioners' analysis of dependent

claim 5 does not address the deficiencies discussed above for claim 1 in Ground 1 or attempt to rely on Tran to cure the deficiencies in Lisogurski. Pet., 65-67. Thus, Petitioners failed to meet their burden for claim 5 in Ground 2 for at least the same reasons they did not meet their burden for claim 1 in Ground 1. *Supra*, §VI.A.1; EX2031, ¶¶175-77.

Additionally, Lisogurski and Tran do not render obvious claim 5's additional requirement that "the apparatus further comprises a processor configured to be coupled to a non-transitory computer readable medium" (referenced herein as the "memory limitation"). EX1001, 86:1-3.[6] Petitioners rely only on Lisogurski for this memory limitation. Pet., 65-66. Specifically, Petitioners argue that Lisogurski's front-end circuitry 150 constitutes the claimed "processor" and that a POSITA would have understood or found obvious that front-end circuitry 150 "include[s] [a] memory" that constitutes the claimed "non-transitory computer readable medium." Pet., 65-66. As discussed below, Lisogurski and Tran do not disclose or render obvious Lisogurski's front-end circuitry 150 including memory. EX2031, ¶¶178-91.

[6] Collateral estoppel does not apply for the memory limitation, which is not included in claims addressed in prior Board decisions, and Petitioners recognize this by not referencing any prior Board decisions. Pet., 65-66.

a) Lisogurski and Tran Do Not Disclose the Memory Limitation

Lisogurski does not disclose that its front-end circuitry 150 (alleged "processor") includes any memory (alleged "non-transitory computer readable medium"). EX2031, ¶182. Petitioners recognize this; they fail to identify any such memory for front-end circuitry 150 and instead assert obviousness. Pet., 65-66.

b) Lisogurski and Tran Do Not Render Obvious the Memory Limitation

First—Petitioners fail to show that memory in front-end circuitry 150 would have been obvious. EX2031, ¶¶183-87. Petitioners assert that Lisogurski's front-end circuitry 150 would have included memory because back-end circuitry 170 includes memory (i.e., memory 174). Pet., 65-66. But Petitioners ignore the differences between Lisogurski's front-end and back-end circuitries such that the mere inclusion of memory 174 in back-end circuitry 170 does not render obvious that front-end circuitry 150 would likewise include memory. EX2031, ¶¶183-85.

Memory 174 is specific to back-end circuitry 170, as memory 174 is associated with processor 172 in back-end circuitry 170. EX1025, FIG. 1, 14:56-15:18; EX2031, ¶185. Front-end circuitry 150 does not include a processor comparable to processor 172 in back-end circuitry 170 and instead includes only specialized subcomponents 152-162 that perform prescribed signal-conditioning functions and are thus different from processor 172 and do not need memory.

EX1025, FIG. 1, 13:7-14:10, 14:56-66; EX2031, ¶185. Indeed, Lisogurski expressly discloses that back-end circuitry 170 includes memory 174 but does not disclose memory in front-end circuitry 150. EX1025, FIG. 1, 13:7-14:10, 14:56-66; EX2031, ¶185.

Additionally, Petitioners fail to articulate any particular motivation as to why a POSITA allegedly would have modified Lisogurski to add memory comparable to memory 174, which is associated with processor 172, into front-end circuitry 150 and its specialized signal-conditioning components, which are different from processor 172. Pet., 65-66; EX2031, ¶186. Petitioners also fail to cite support for including memory in front-end circuitry 150 because they only cite two portions of Lisogurski, one that describes functionality that front-end circuitry already has without memory (EX1025, 12:42-50) and another that relates only to back-end circuitry (EX1025, 14:56-15:18). Pet., 65-66; EX2031, ¶187.

Second—Adding memory in front-end circuitry 150 would not have been obvious. EX2031, ¶¶188-191. Lisogurski teaches that processor 172 in back-end circuitry 170 is a general-purpose processor that "may be adapted to execute software … as part of performing the functions described herein," and that "[m]emory 174 may … stor[e] information that can be interpreted by processor 172." EX1025, 14:56-66, FIG. 1; EX2031, ¶190. Front end processing circuitry 150, in contrast, contains subcomponents with prescribed tasks related only to signal

conditioning, and thus memory would not have been understood to be in front-end circuitry 150 comparable to memory 174 associated with processor 172 in back-end circuitry 170. EX1025, 12:42-51, 13:7-14:10, 14:56-66, FIG. 1; EX2031, ¶¶189-90. It also would not have been obvious. *Id.* This is consistent with Lisogurski's express disclosure of memory for back-end circuitry 170 but not front-end circuitry 150. EX1025, FIG. 1, 14:56-66, 13:7-14:10.

2. Dependent Claim 7

Claim 7 depends from claim 6 and indirectly from independent claim 1. Petitioners' analysis of claim 7 does not address the deficiencies discussed above for claims 1 and 6 in Ground 1 and does not rely upon Tran to cure the deficiencies in Lisogurski. Pet., 67-68. Thus, Lisogurski and Tran do not render obvious dependent claim 7 for at least the same reasons as claims 1 and 6. *Supra*, §§VI.A.1 (claim 1), VI.A.2 (claim 6); EX2031, ¶¶192-94.

D. Ground 3: Alleged Obviousness Based on Lisogurski and LeBoeuf (Claims 6-7)

In Ground 3, Petitioners argue that claims 6-7 of the '475 Patent are obvious over Lisogurski in view of LeBoeuf. Pet., 8, 68-73. For at least the reasons discussed below, Petitioners fail to meet their burden. EX2031, ¶¶195-239.

1. Dependent Claim 6: Lisogurski and LeBoeuf Do Not Disclose or Render Obvious the Arc Limitation

Claim 6 depends from independent claim 1. Petitioners' analysis of claim 6

does not address the deficiencies discussed above regarding claim 1 over Lisogurski in Ground 1 and does not rely upon LeBoeuf to cure those deficiencies. Pet., 72-73. Therefore, Lisogurski does not render obvious claim 6 for at least the same reasons as claim 1. *Supra*, §VI.A.1; EX2031, ¶¶196-98.

Additionally, Lisogurski and LeBoeuf do not render obvious claim 6's arc limitation, which recites "wherein the detection system comprises the plurality of detectors arranged along an ***arc***." EX1001, 86:9-10.[7]

Petitioners rely on Lisogurski's sensor's multiple detectors as the claimed "detectors." Pet., 72, 38, 45-46. Because Lisogurski does not disclose any arrangement of its detectors, much less the claimed "arc," Petitioners rely on LeBoeuf's arrangement of optical detectors 26 in Figure 8B (referenced herein as LeBoeuf's "alleged arc arrangement") and argue that "a POSITA would have been motivated to apply LeBoeuf's arc arrangements to Lisogurski's sensor." Pet., 72-73; EX2031, ¶¶199-200. Petitioners rely on the following annotated Figure 8B of LeBoeuf:

[7] Collateral estoppel does not apply for the arc limitation, which is not included in claims addressed in prior Board decisions, and Petitioners recognize this by not referencing any prior Board decisions. Pet., 72-73.

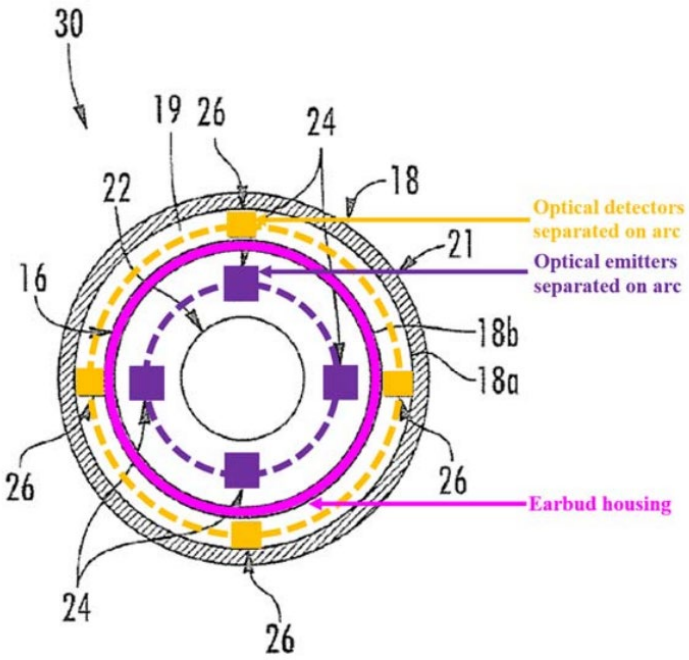


FIG. 8B

Pet., 73 (annotating EX1026, FIG. 8B)

Petitioners, however, failed to show that a POSITA would have implemented LeBoeuf's alleged arc arrangement in Lisogurski. EX2031, ¶¶199-236.

a) Petitioners Do Not Establish Motivation to Implement LeBoeuf's Alleged Arc Arrangement in Lisogurski

Petitioners entire motivation-to-combine argument for the arc limitation consists of a single sentence of their claim 6 analysis that refers back to §IX.D.2, which includes only a single paragraph that arguably discusses a motivation to combine. *See* Pet., 73 ("[a]s discussed (§IX.D.2)"), 68-69 (in §IX.D.2). Petitioners fail to specifically explain, with supporting evidence, either why or how LeBoeuf's alleged arc arrangement in Figure 8B would have been implemented in Lisogurski's sensor. EX2031, ¶¶205-25.

(1) Petitioners Fail to Show *Why* a POSITA Would Have Combined Lisogurski and LeBoeuf

Petitioners first assert that a POSITA would use LeBoeuf's arc arrangement for increased "accuracy and reliability." Pet., 69-70. But neither Lisogurski (which does not include the alleged arc arrangement) nor LeBoeuf disclose or suggest that such an arrangement would lead to increased accuracy or reliability. EX2031, ¶¶209-13. Indeed, while LeBoeuf shows the alleged arc arrangement in Figure 8B, LeBeouf's text does not discuss this arrangement, let alone suggest this arrangement achieves any benefits related to accuracy/reliability. *See* EX1026, FIG. 8B, ¶¶[0123]-[0124]; EX2031, ¶213. Petitioners' citations to LeBoeuf at [0006], [0010], and [0105] are unavailing because none of these paragraphs address the alleged arc arrangement. Pet., 69-70; EX2031, ¶¶212-13. Petitioners cite LeBoeuf at [0105] to assert that the alleged arc arrangement would "improve the detection of scattered light … , and increase the signal-to-noise ratio," but the cited paragraph contains no such teachings or even a discussion of the alleged arc arrangement. Pet., 70 (citing EX1026, ¶[0105]); EX2031, ¶212.

Petitioners' only other cited evidence is Exhibit 1045 ("Mendelson"), which does not relate to the alleged arc arrangement in LeBoeuf or the alleged accuracy/reliability thereof. Pet., 69-70 (citing EX1045, 4:14-65); EX2031, ¶214. Additionally, as discussed below, Mendelson does not support Petitioners' assertion

regarding angularly scattered light because Mendelson does not discuss angles and Dr. Anthony mischaracterizes Mendelson's disclosures. EX2031, ¶¶219, 221-22.

Petitioners also assert that "both Lisogurski and LeBoeuf disclose physiological monitoring devices that can be worn on various parts of the body" and "Lisogurski discloses that '[a]ny suitable configuration … may be used.'" Pet., 69-70 (quoting EX1025, 17:42-45). But this fails to establish why a POSITA would have understood LeBoeuf's alleged arc arrangement in Figure 8B to be suitable or would have chosen it opposed to other possible arrangements, such as LeBoeuf's other arrangements involving multiple detectors that are not arranged in an arc. EX1026, FIGS. 6, 7A, 11A, 12A-B, 22B, 23; EX2031, ¶¶215-17; *Virtek*, 97 F.4th at 886-87 (holding that "mere … exist[ence]" of "possible arrangements" and knowledge of "alternative arrangements" are insufficient for motivation to combine). For example, Petitioners' assertions do not support or explain why LeBoeuf's alleged arc arrangement would improve accuracy/reliability in Lisogurski as alleged. EX2031, ¶¶216-17. In fact, a POSITA would have understood LeBoeuf's alleged arc arrangement is premised on the multiple related components depicted in Figure 8B and that without those related components, which Petitioners do not address or argue to implement into Lisogurski, LeBoeuf's alleged arc arrangement would not be suitable for Lisogurski. EX1026, FIGS. 8A-8B, ¶[0123]; Pet., 69-70; EX2031, ¶218.

Petitioners also argue that a POSITA would modify Lisogurski to use LeBoeuf's alleged arc arrangement because (1) a POSITA would have understood that "reflected light" in Lisogurski exits tissue "at a wide range of angles" (Pet., 70 (citing EX1025, 11:9-27)) and (2) "[a] POSITA would have recognized that a simply linear or closely grouped detector arrangement would fail to capture much of the angularly scattered light" (*id.* (citing EX1045, 4:14-65)). Notably, however, these issues only relate to ***detectors***—not ***emitters***. Pet., 69-70 (addressing a "***detector*** arrangement" and then concluding: "a POSITA would have … appl[ied] LeBoeuf's teaching of … ***detectors*** located on one or more arcs"); EX2031, ¶¶219-20. The alleged arc arrangement of detectors 26 in LeBoeuf's Figure 8B is based on and related to the corresponding arrangement of emitters 24 (as well as other related components) in Figure 8B, so without motivation to apply this arrangement of emitters to Lisogurski, a POSITA would not have been motivated to apply LeBoeuf's alleged arc arrangement of detectors to Lisogurski. EX2031, ¶¶219-20.

Additionally, Petitioners' arguments regarding angularly scattered light are unsupported and flawed. EX2031, ¶¶221-22. With respect to "reflected light" at "angles," the cited portion of Lisogurski does not address angles, and indeed, Lisogurski never mentions an "angle." Pet., 70 (citing EX1025, 11:9-27); EX2031, ¶221. Similarly, Mendelson does not discuss "angles." Pet., 70 (citing EX1045, 4:14-65); EX2031, ¶222. Also, Petitioners' assertion that "linear" arrangements are

deficient wrongly assumes the existence of only two arrangements—i.e., linear and arc—and fails to consider the existence of other potential arrangements (e.g., triangle, square, or grid) for capturing angularly scattered light, including the non-linear and non-arc arrangement of detectors in LeBoeuf's Figure 12A. EX1026, FIG. 12A, ¶[0138]; EX2031, ¶221. Petitioners fail to explain why a POSITA would have chosen an arc arrangement from amongst the wide array of non-arc arrangement options, let alone the alleged arc arrangement in LeBoeuf's Figure 8B. Pet., 69-70; EX2031, ¶221; *Virtek*, 97 F.4th at 886-87 ("mere … exist[ence]" of "possible arrangements" is insufficient for motivation). For example, Petitioners' own cited portion of Mendelson discusses a non-linear, non-arc arrangement that uses only "a single photodiode [i.e., detector]." EX1045, 4:14-65; EX2031, ¶222.

Petitioners and Dr. Anthony's reliance on Mendelson is flawed for several additional reasons. For example, the arrangements cited in Mendelson are different from LeBoeuf's alleged arc arrangement. EX1026, FIG. 8B; EX1045, 4:14-65 (referencing, e.g., "Konig" (EX2035, 5-6), which has centralized LEDs, and another sensor with a "single photodiode"); EX2031, ¶222. Also, Dr. Anthony mischaracterizes Mendelson in asserting that Mendelson "discloses that 'in order to maximize the fraction of backscattered light collected by [a] sensor,' its system includes 'six photodetectors mounted in the center of the sensor ***around*** the LEDs.'" EX1003, ¶ 304 (emphasis in original) (quoting EX1045, 4:14-65). The cited portion

of Mendelson is to its Background section, not "its system," and those two quotes are not related but instead refer to two separate, unrelated publications. EX1045, 4:14-65; EX2031, ¶222.

Petitioners fail to establish a specific connection between their alleged motivation regarding detection of angularly scattered light and LeBoeuf's particular arrangement in Figure 8B. *Innogenetics, N.V. v. Abbott Labs.*, 512 F.3d 1363, 1373 (Fed. Cir. 2008) ("knowledge of a problem and motivation to solve it are entirely different from motivation to combine particular references to reach the particular claimed method"); EX2031, ¶¶209-22.

Moreover, Dr. Anthony's testimony on motivation-to-combine for the arc limitation repeats the same assertions and relies on the same evidence as the Petition, which is flawed for the reasons discussed above. EX1003, ¶¶303-04; EX2031, ¶¶209-22. Dr. Anthony's conclusory testimony is therefore entitled to little or no weight. *Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 9 at 15-17 (PTAB Aug. 24, 2022) (precedential) (denying institution because "declaration testimony is conclusory and unsupported, adds little to the conclusory assertion for which it is offered to support, and is entitled to little weight"); *TQ Delta, LLC v. CISCO Sys., Inc.*, 942 F.3d 1352, 1361-63 (Fed. Cir. 2019) (reversing the Board's obviousness finding based on "unsupported and conclusory" expert testimony); 37 C.F.R. § 42.65(a) ("Expert testimony that does not disclose the underlying facts or data on

which the opinion is based is entitled to little or no weight").

(2) Petitioners Fail to Show *How* a POSITA Would Have Combined Lisogurski and LeBoeuf

Petitioners also fail to explain specifically *how* LeBoeuf's alleged arc arrangement would have been implemented in Lisogurski. *See PersonalWeb Techs., LLC v. Apple, Inc.*, 848 F.3d 987, 993-94 (Fed. Cir. 2017) (finding the Board failed to explain "*how* the combination of the two references was supposed to work" (emphasis in original)); *Braintree Labs., Inc. v. Novel Labs., Inc.*, 749 F.3d 1349, 1359 (Fed. Cir. 2014) ("[Party] failed to prove … why the … references would have worked together" (cleaned up)); *see also In re NuVasive, Inc.*, 842 F.3d 1376, 1381-82 (Fed. Cir. 2016) (emphasizing the "need for specificity" in "findings on motivation").

LeBoeuf's alleged arc arrangement of detectors 26 in Figure 8B is based on and involves multiple related components, including base 50, earbud housing 16, cover 18, speaker 22, and light guiding region 19. EX1026, FIGS. 8A-8B, ¶[0123]; EX2031, ¶224. Petitioners do not address those related components, much less argue to implement those related components into Lisogurski. Pet., 69-70. Petitioners do not explain how LeBoeuf's alleged arc arrangement, which is based on those related components, would purportedly be implemented in Lisogurski's sensor that does not have those related components. EX2031, ¶¶223-24.

Further, Petitioners do not explain how LeBoeuf's alleged arc arrangement of detectors would work to achieve Petitioners' alleged motivation of accuracy/reliability in Lisogurski without those other related components, and a POSITA would have understood that it would not, as explained below. Pet., 69-70; EX1026, FIGS. 8A-8B, ¶[0123]; EX2031, ¶225.

b) A POSITA Would Not Have Been Motivated to Implement LeBoeuf's Alleged Arc Arrangement in Lisogurski

Regardless of the deficiencies in the Petition, a POSITA would not have been motivated to implement LeBoeuf's alleged arc arrangement into Lisogurski. EX2031, ¶¶226-36.

LeBoeuf is directed extensively to "earbud" devices—including the "light-guiding earbud" in Figure 8B—that are specifically configured to be placed within an ear and transmit light and sound into the ear canal. EX1026, Abstract, ¶¶[0002], [0009], [0048]-[0049], [0123], FIGS. 1-12B; EX2031, ¶¶227-29. Further, as demonstrated by the following annotated Figures 8A-8B, LeBoeuf's alleged arc arrangement of detectors 26 (orange) is premised on and involves the corresponding arrangement of emitters 24 (purple) and other related components (green):

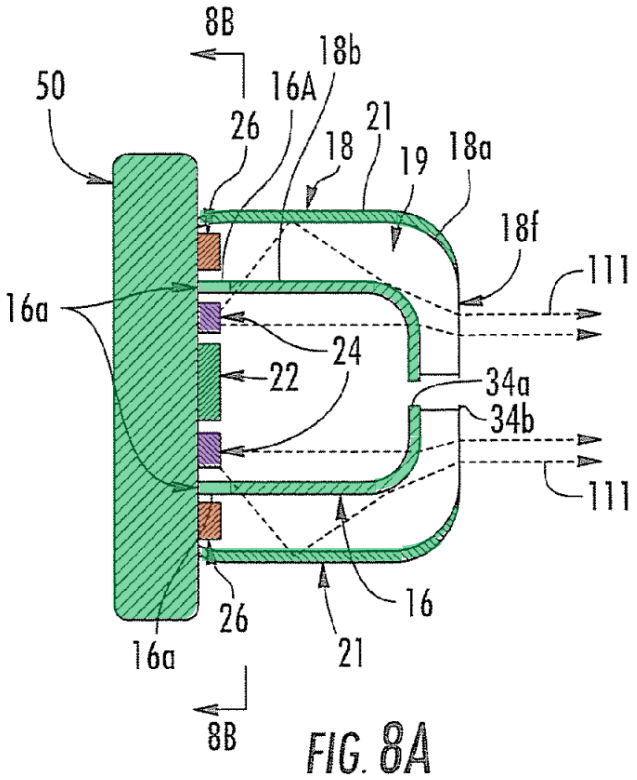


FIG. 8A

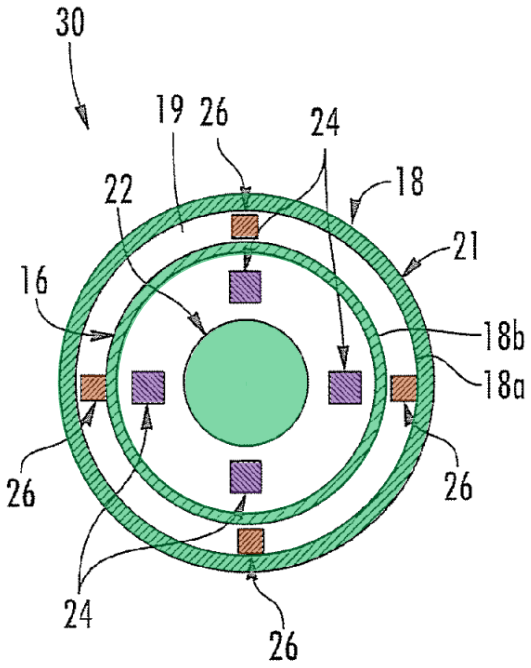


FIG. 8B

EX1026, FIGS. 8A-8B (annotated), ¶¶[0123]-[0124]; EX2031, ¶¶228-29. For example, optical emitters 24 are positioned on base 50 around a centrally located speaker 22 and within earbud housing 16, and optical detectors 26 are positioned on base 50 outside of earbud housing 16 but inside cover 18, with emitters 24 and detectors 26 separated by light blocking region 16*a*. EX1026, FIGS. 8A-8B, ¶¶[0123]-[0124]; EX2031, ¶¶228-29. Further, emitters 24 and detectors 26 are generally directed toward cover end portion 18*f*, with detectors 26 positioned in light guiding region 19 defined between cover 18 and earbud housing 16. EX1026, FIGS. 8A-8B, ¶¶[0123]-[0124]; EX2031, ¶¶228-29.

A POSITA would have understood, and LeBoeuf teaches, that these related components are earbud-specific and that the configuration shown in Figures 8A-8B—including the alleged arc arrangement and the related components upon which it is premised—is specific to an earbud and dictated by the unique physical aspects of guiding sound and light relative to the ear canal. EX1026, FIGS. 8A-8B, ¶[0123] ("light guiding earbud 30"; "earbud housing 16 … configured to be positioned within an ear"; "earbud housing 16 is in acoustical communication with a speaker 22 and … aperture 34*a* through which sound … can pass"; "cover 18 includes … aperture 34*b* through which sound … can pass"; "light guiding region 19"; "cover 18 … delivers light … into an ear canal" and "delivers … collected light to the optical detectors"); EX2031, ¶¶229, 227.

For example, this earbud-specific nature is evident because the alleged arc arrangement involves detectors and associated emitters positioned relative to "speaker 22," "earbud housing 16," and cover 18 that "serves as a light guide" for delivering and collecting light relative to "an ear canal." EX1026, ¶[0123], FIGS. 8A-8B; EX2031, ¶229. Notably, LeBoeuf's non-earbud embodiments in Figures 22A-23 do not include the alleged arc arrangement of Figure 8B, further demonstrating that this alleged arc arrangement is earbud-specific. *See* EX1026, ¶¶[0070]-[0072], [0157], [0164], FIGS. 22A-23; EX2031, ¶235; *Panduit*, 810 F.2d

at 1568 (reference "must be considered in its entirety, … including portions that would lead away" from the claimed invention).

A POSITA would have understood that Lisogurski, in contrast, does not teach or suggest an earbud for positioning in an ear and taking measurements from the ear canal, much less teach the related earbud-specific components in LeBoeuf's Figures 8A-8B. Lisogurski is limited to sensors for a patient's external sites. EX1025, 4:6-20 (describing, at most, placement on an "earlobe" or "around or in front of the ear," and notably not *within* the ear); EX2031, ¶230. A POSITA would have understood that Lisogurski's non-earbud sensor is comparable, at most, to LeBoeuf's non-earbud embodiments in Figures 22A-23, not the earbud in Figures 8A-8B. EX2031, ¶¶235-36; *compare* EX1025, 4:6-20 (fingertip, toe, earlobe, and body) *with* EX1026, ¶¶[0070]-[0071], [0157] (fingers, toes, and earlobes), [0072], [0164] (body), FIGS. 22A-23.

While Petitioners assert that "[b]oth Lisogurski and LeBoeuf disclose … devices that can be worn on various parts of the body including the ear," this fails to recognize, as explained above, that (i) the configuration in LeBoeuf's Figures 8A-8B is specific to an earbud, (ii) the arrangement of detectors is premised on related, earbud-specific components, and (iii) Lisogurski does not teach an earbud. Pet., 69-70; EX2031, ¶231; *Panduit*, 810 F.2d at 1568. Indeed, Petitioners' own citations support this distinction between the references. Pet., 69-70 (citing EX1025, 4:6-20

(no description of placement within an ear); EX1026, ¶¶[0006] ("earbud"), [0010] ("Light directed into the ear"); EX2031, ¶231. Moreover, Petitioners' assertion amounts to attorney argument because it is not supported by Dr. Anthony's declaration. *See* EX1003, ¶¶303-04.

Because Lisogurski does not teach or suggest an earbud sensor for within an ear, a POSITA would not have been motivated to implement LeBoeuf's alleged arc arrangement that, as explained above, is premised on earbud-specific components and, together with those components, is specific to an earbud. EX1026, FIGS. 8A-8B, ¶¶[0123]-[0124]; EX1025, 4:6-20; EX2031, ¶¶229-30, 233. Further, because Lisogurski does not include the related components upon which LeBoeuf's alleged arc arrangement is premised, a POSITA would have had neither the motivation nor capability to implement LeBoeuf's alleged arc arrangement in Lisogurski. EX1026, FIGS. 8A-8B, ¶¶[0123]-[0124]; Pet., 69-70; EX2031, ¶¶228-230, 232.

In an attempt to address these differences, Petitioners quote Lisogurski's statement that "[a]ny suitable configuration … may be used" (Pet., 70 (quoting EX1025, 17:42-45)), but a POSITA would not have understood LeBoeuf's alleged arc arrangement in Figure 8B to be suitable for the reasons discussed above, including that the alleged arc arrangement is based on related components not present in Lisogurski and is earbud-specific, whereas Lisogurski does not include an earbud. EX2031, ¶¶227-34.

2. Dependent Claim 7

Claim 7 depends from claim 6 and indirectly from independent claim 1. Petitioners' analysis of claim 7 does not address the deficiencies discussed above regarding claim 1 over Lisogurski in Ground 1, does not rely upon LeBoeuf to cure those deficiencies regarding claim, and does not address the deficiencies discussed above regarding claim 6 over Lisogurski and LeBoeuf. Pet., 73. Therefore, Lisogurski and LeBoeuf do not render obvious claim 7 for at least the same reasons discussed above for claims 1 and 6. *Supra*, §§VI.A.1 (claim 1), VI.C.1 (claim 6); EX2031, ¶¶237-39.

E. Ground 4: Alleged Obviousness Based on Lisogurski, Tran, and LeBoeuf (Claims 6-7)

In Ground 4, Petitioners argue that claims 6-7 of the '475 Patent are obvious over Lisogurski in view of Tran and LeBoeuf. Pet., 8, 68-73. For at least the reasons discussed below, Petitioners fail to meet their burden. EX2031, ¶¶240-48.

1. Dependent Claim 6

Claim 6 depends from independent claim 1. Petitioners' analysis of claim 6 does not address the deficiencies discussed above regarding claim 1 over Lisogurski in Ground 1 and does not rely upon Tran or LeBoeuf to cure those deficiencies. Pet., 72-73. Therefore, Lisogurski, Tran, and LeBoeuf do not render obvious claim 6 for at least the same reasons discussed above for claim 1. *Supra*, §VI.A.1; EX2031, ¶¶241-43.

Additionally, Petitioners' analysis of claim 6 is the same for both Ground 3 (Lisogurski and LeBoeuf) and Ground 4 (same, plus Tran) and does not rely upon Tran. Pet., 72-73. Therefore, Lisogurski, Tran, and LeBoeuf do not render obvious claim 6 for at least the same reasons discussed above for claim 6 in Ground 3. *Supra*, §§VI.C.1; EX2031, ¶¶244-45.

2. Dependent Claim 7

Claim 7 depends from claim 6 and indirectly from independent claim 1. Petitioners' analysis of claim 7 does not address the deficiencies discussed above for claim 1 in Ground 1 or the deficiencies discussed above for claim 6. Pet., 73. Accordingly, Petitioners failed to meet their burden for claim 7 in Ground 4 for at least the same reasons as claims 1 and 6. *Supra*, §§VI.A.1 (claim 1), VI.D.1 (claim 6); EX2031, ¶¶246-48.

F. Ground 5: Alleged Obviousness Based on Lisogurski and Carlson (Claims 1, 6-8, 11-13)

In Ground 5, Petitioners argue that claims 1, 6-8, and 11-13 of the '475 Patent are obvious over Lisogurski in view of Carlson. Pet., 8, 74-78. Ground 5 is similar to Ground 1 except that Ground 5 further addresses limitations [1.e], [1.f], [8.b], and [8.d] in view of Carlson. Pet., 8, 74-78; EX2031, ¶250. Ground 5 does not address the deficiencies discussed above regarding claims 1, 6-8, and 11-13 in Ground 1 or attempt to rely on Carlson to cure the deficiencies in Lisogurski. *See* Pet., 74-78.

Accordingly, Petitioners failed to meet their burden for Ground 5 for at least the same reasons as Ground 1. *Supra*, §VI.A; EX2031, ¶¶249-51.

G. Ground 6: Alleged Obviousness Based on Lisogurski, Tran, and Carlson (Claims 5, 7)

In Ground 6, Petitioners argue that claims 5 and 7 of the '475 Patent are obvious over Lisogurski in view of Tran and Carlson. Pet., 8, 74-78. Ground 6 is similar to Ground 2 except that Ground 6 further addresses certain limitations of underlying independent claims 1 and 8 in view of Carlson. Pet., 8, 74-78; EX2031, ¶253. Ground 6 does not address the deficiencies discussed above for claims 5 and 7 in Ground 2 or attempt to rely on Carlson to cure the deficiencies in Lisogurski and Tran. *See* Pet., 74-78. Accordingly, Petitioners failed to meet their burden for Ground 6 for at least the same reasons as Ground 2. *Supra*, §VI.B; EX2031, ¶¶252-54.

H. Ground 7: Alleged Obviousness Based on Lisogurski, LeBoeuf, and Carlson (Claims 6-7)

In Ground 7, Petitioners argue that claims 6-7 of the '475 Patent are obvious over Lisogurski in view of LeBoeuf and Carlson. Pet., 8, 74-78. Ground 7 is similar to Ground 3 except that Ground 7 further addresses certain limitations in independent claims 1 and 8 in view of Carlson. Pet., 8, 74-78; EX2031, ¶256. Ground 7 does not address the deficiencies discussed above for claims 6-7 in Ground 3 or attempt to rely on Carlson to cure the deficiencies in Lisogurski and LeBoeuf.

See Pet., 74-78. Accordingly, Petitioners failed to meet their burden for Ground 7 for at least the same reasons as Ground 3. *Supra*, §VI.C; EX2031, ¶¶255-57.

I. Ground 8: Alleged Obviousness Based on Lisogurski, Tran, LeBoeuf, and Carlson (Claims 6-7)

In Ground 8, Petitioners argue that claims 6-7 of the '475 Patent are obvious over Lisogurski in view of Tran, LeBoeuf, and Carlson. Pet., 8, 74-78. Ground 8 is similar to Ground 4 except that Ground 8 further addresses certain limitations in independent claims 1 and 8 in view of Carlson. Pet., 8, 74-78; EX2031, ¶259. Ground 8 does not address the deficiencies discussed above for claims 6-7 in Ground 4 or attempt to rely on Carlson to cure the deficiencies in Lisogurski, Tran, and LeBoeuf. *See* Pet., 74-78. Accordingly, Petitioners failed to meet their burden for Ground 8 for at least the same reasons as Ground 4. *Supra*, §VI.D; EX2031, ¶¶258-60.

VII. CONCLUSION

For at least the foregoing reasons, the Petition should be denied as to each of the requested grounds. For brevity, Patent Owner may not have addressed all characterizations of the applied references and the challenged claims and reserves the right to do so should institution be granted. The absence of a response by Patent Owner to any of the positions presented in the Petition or the associated expert declaration is not a concession to those positions. The fact that Patent Owner's

Preliminary Response has focused on particular arguments is not a concession that there are no other arguments for patentability of the challenged claims.

Respectfully submitted,

Dated: November 12, 2025 By: /s/ *Jennifer Hayes*

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Lead Counsel for Patent Owner

CERTIFICATION OF WORD COUNT

Pursuant to 37 C.F.R. § 42.24(d), the undersigned hereby certifies that the foregoing Patent Owner's Preliminary Response is produced using a 14-point Times New Roman font and contains approximately 10,686 words, which is less than the 18,700 total words permitted by the U.S. Patent Trial and Appeal Board rules. Counsel relies on the word count of the computer program used to prepare the response on November 12, 2025.

By: /s/ *Jennifer Hayes*
Lead Counsel for Patent Owner

CERTIFICATE OF SERVICE

The undersigned hereby certifies that a copy of the foregoing **Patent Owner's Preliminary Response** was served on November 12, 2025, by email:

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