

**UNITED STATES PATENT AND TRADEMARK OFFICE**

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**BEFORE THE PATENT TRIAL AND APPEAL BOARD**

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WHOOOP, INC.,

Petitioner,

v.

OMNI MEDSCI, INC.,

Patent Owner

U.S. Patent No. 12,193,790

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Case No. PGR2026-00003

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**PATENT OWNER'S PRELIMINARY RESPONSE**

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**LISTING OF EXHIBITS**

| <b>Exhibit No.</b> | <b>Description</b>                                                                                                                            |
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| 2001-2017          | Reserved                                                                                                                                      |
| 2018               | <i>Apple Inc. v. Omni MedSci, Inc.</i> , IPR2019-00914, Paper 1 (PTAB Apr. 10, 2019)                                                          |
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| 2020               | Reserved                                                                                                                                      |
| 2021               | <i>Apple Inc. v. Omni MedSci, Inc.</i> , IPR2020-00175, Paper 1 (PTAB Dec. 11, 2019)                                                          |
| 2022               | Defendant's Invalidity Contentions, <i>Omni MedSci, Inc. vs. Apple Inc.</i> , Case No. 2:18-cv-00134 (E.D. Tex.) (Aug. 28, 2018)              |
| 2023               | Defendant's Invalidity Contentions - Exhibit A, <i>Omni MedSci, Inc. v. Apple Inc.</i> , Case No. 2:18-cv-134-RWS (E.D. Tex.) (Aug. 28, 2018) |
| 2024               | Defendant's Invalidity Contentions - Exhibit N, <i>Omni MedSci, Inc. v. Apple Inc.</i> , Case No. 2:18-cv-134-RWS (E.D. Tex.) (Aug. 28, 2018) |
| 2025               | Defendant's Invalidity Contentions - Exhibit P, <i>Omni MedSci, Inc. v. Apple Inc.</i> , Case No. 2:18-cv-134-RWS (E.D. Tex.) (Aug. 28, 2018) |
| 2026-2030          | Reserved                                                                                                                                      |
| 2031               | First Amended Complaint, <i>Omni MedSci, Inc. v. Whoop, Inc.</i> , No. 1:25-cv-00140 (D. Del.) (May 5, 2025)                                  |

| Exhibit No. | Description                                                                                                                                                                                                         |
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| 2032        | Complaint, <i>Omni MedSci, Inc. v. Whoop, Inc.</i> , No. 1:25-cv-00140 (D. Del.) (Feb. 3, 2025)                                                                                                                     |
| 2033        | Defendant Whoop, Inc.'s Motion to Stay Pending Inter Partes and Post Grant Review, <i>Omni MedSci, Inc. v. Whoop, Inc.</i> , No. 1:25-cv-00140 (D. Del.) (October 22, 2025)                                         |
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| 2035        | Transcript of Case Scheduling Hearing Conducted on October 24, 2025, <i>Omni MedSci, Inc. v. Whoop, Inc.</i> , No. 1:25-cv-00140 (D. Del.).                                                                         |
| 2036-2040   | Reserved                                                                                                                                                                                                            |
| 2041        | Prosecution History of U.S. Patent No. 11,160,455 ("the GGP '455 Patent")                                                                                                                                           |
| 2042        | Plaintiff's Answering Brief in Opposition to Defendant's Motion To Stay Pending <i>Inter Partes</i> and Post Grant Review, <i>Omni Medsci, Inc. v. Whoop, Inc.</i> , No. 1:25-Cv-00140 (D. Del.) (November 5, 2025) |
| 2043        | Docket Navigator Statistics for United States Circuit Judge William C. Bryson, Pre-Institution Stay Requests                                                                                                        |
| 2044        | Defendant's Answer to First Amended Complaint for Patent Infringement, <i>Omni Medsci, Inc. V. Whoop, Inc.</i> , No. 1:25-cv-00140 (D. Del.) (Sept. 29, 2025)                                                       |

| Exhibit No. | Description                                                                                                                                                                               |
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| 2048        | Whoop Inc.'s Invalidity Contentions, <i>Omni MedSci, Inc. v. Whoop, Inc.</i> , Case No. 25-140 (WCB) (D. Del.) (served Jan. 21, 2026) (excerpted)                                         |
| 2049        | Joint Claim Construction and Prehearing Statement, <i>Omni MedSci, Inc. v. Samsung Electronics Co. Ltd. et al.</i> , 2:24-cv-01070-JRG-RSP (E.D. Tex.) (Nov. 21, 2025)                    |

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. 12,193,790 ("the '790 Patent"), filed by Whoop, Inc. ("Petitioner").

## **I. INTRODUCTION**

The Director should deny institution because if the Board were to institute this PGR while instituting an IPR filed by Samsung on the same patent, it would risk inconsistent decisions.

The Director should also deny institution because the Petition does not show it is more likely than not that claim 7 is unpatentable.

The Petition should be denied because it advances inconsistent claim construction positions. For example, Petitioner asks the Board to construe the phrase "identify an object" and applies that construction for Grounds 1-3 yet argues in Ground 4 that the same phrase is indefinite. Petition, 90. As another example, the Petition applies the plain and ordinary meaning of the phrases "a plurality of detectors that are spatially separated from each other" and "increase the signal-to-noise ratio by comparing the first signal and the second signal," while Petitioner is contending that these phrases are indefinite in related district court litigation ("the Delaware Case").

Petitioner's collateral estoppel argument based on prior IPRs for related U.S. Patent Nos. 9,651,533 and 10,517,484 ("the '533 and '455 IPRs") fails for multiple

reasons. First, there are material differences between claim 7 of the '790 Patent and the claims at issue in the prior IPRs. Second, the grounds in the prior IPRs differ from this PGR. Third, the '455 IPR decision is currently on appeal to the Federal Circuit and therefore has no collateral estoppel effect.

Petitioner did not meet its burden for Grounds 1-3 because Petitioner conflates measuring a parameter with identifying an object. In a decision that was affirmed by the Federal Circuit, the Board previously construed the phrase "identify an object" to mean "recognize or establish an object as being a particular thing." EX1011, 8-10; EX1012, 3-5. Petitioner's references are directed to measuring known parameters, not recognizing or establishing an unknown object as being a particular thing. Additionally, for Grounds 2-3, Petitioner failed to show that a POSITA would have been motivated to combine Lamego (Ground 2) and Soller (Ground 3) with Lisogurski.

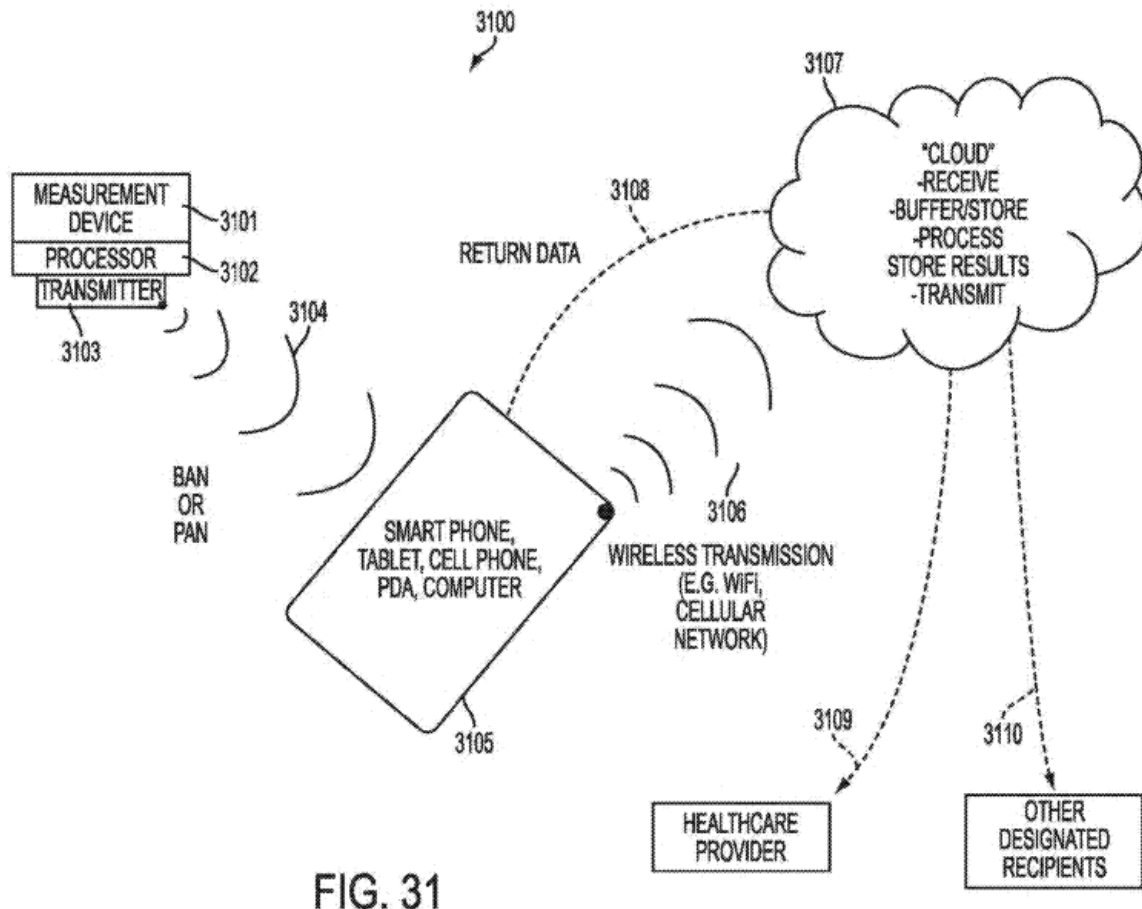
Petitioner also failed to meet its burden for its § 112 arguments in Grounds 4-5. In Ground 4, Petitioner does not argue that the phrase "identify an object" is indefinite based on the intrinsic record. Instead, Petitioner argues that this phrase is indefinite based on mischaracterizations of Patent Owner's argument in the pending Federal Circuit appeal for the '484 IPR. Petitioner's indefiniteness arguments are also inconsistent with its application of the prior claim construction for this phrase Grounds 1-3 and all of the other Board proceedings that addressed similar claim

language. In Ground 5, Petitioner failed to show that claim 7 is not enabled because they are conclusory and fail to apply the *Wands* factors.

## **II. OVERVIEW OF THE '790 PATENT**

The '790 Patent discloses wearable optical systems that generate optical light, including near-infrared wavelengths, deliver that light to tissue (such as skin at the wrist), and detect returned light with one or more detectors. EX1001, 20:56-22:34; EX2046, ¶60. These systems process the resulting signals to obtain physiological information and, in certain embodiments, identify an object or material based on its optical response. EX1001, 87:32-33; EX2046, ¶59.

An exemplary system is depicted in Figure 31:



EX1001, FIG. 31

The specification describes implementations using a plurality of semiconductor diodes (e.g., LEDs or laser diodes) capable of emitting at one or more wavelengths, including near-infrared wavelengths in the 700-2500 nm range. EX1001, 20:56-22:34; FIG. 65B; EX2046, ¶60. Light is directed to tissue via optical lenses, and the reflected or transmitted light is received by a detection system which produces an electrical signal that is then analyzed. *Id.*

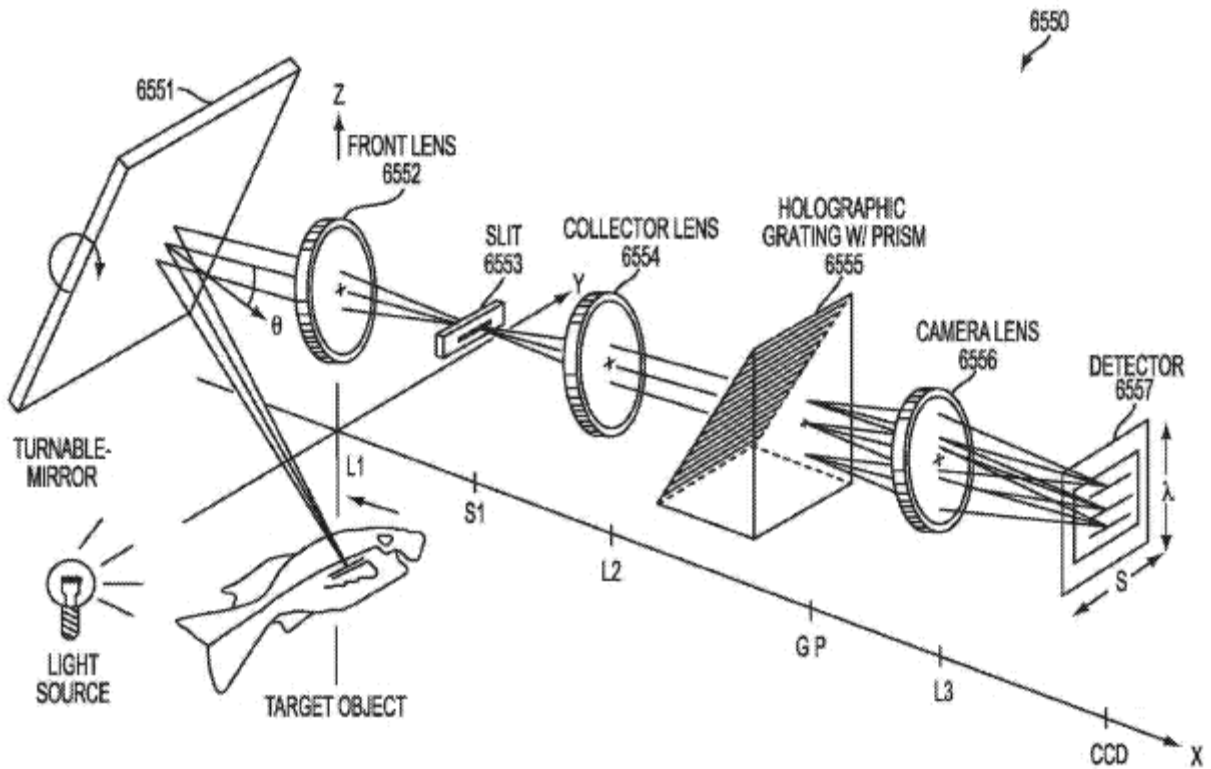


FIG. 65B

EX1001, FIG. 65B

The '790 Patent describes synchronization between the light source and the detection system to improve the signal to noise ratio, along with various modulation techniques to improve the signal to noise ratio. EX1001, 9:19-21, 59:64-67; EX2046, ¶61. Improving the signal to noise ratio improves the ability to identify an object—greater accuracy is achieved through reducing the relative contribution of ambient light and other background influences. EX2046, ¶61. For example, the specification describes the use of an active illuminator to modulate sunlight and use

synchronous or lock-in detection such that sunlight changes are factored out, improving the signal to noise ratio. EX1001, 58:24-45; EX2046, ¶61. In another example, the signal to noise ratio is improved by “narrow band filtering around the modulation frequency may be used to reject noise outside the modulation frequency.” EX1001, 58:34-36; EX2046, ¶62. In another example, “change detection schemes may be used, where the detection system captures the signal with the light source on and with the light source off. Again, for this system the light source may be modulated. Then, the signal with and without the light source is differenced.” EX1001, 58:37-41; EX2046, ¶63.

The '790 Patent performs identification by applying algorithmic analysis to multi-wavelength data. EX2046, ¶64. The specification describes identification through comparison against reference libraries, the use of mathematical modeling (such as multivariate techniques), and signal processing technologies to determine material identity. EX1001, 18:10-27; 20:28-32; 21:7-28; 54:32-59; EX2046, ¶64. “In addition, change detection may help to *identify objects* that change in the field of view.” EX1001, 58:42-45;<sup>1</sup> EX2046, ¶64.

Identification is also described by the '790 Patent through correlating spectral data with a spectral library to identify the blood constituents of interest, including,

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<sup>1</sup> All emphasis in evidence and case citations here is added unless otherwise noted.

for example, glucose, triacetin, ascorbate, lactate, alanine, and others. EX1001, 18:10-27; EX2046, ¶65. “Although glucose has a distinctive signature in the SWIR wavelength range, one problem of non-invasive monitoring is that many other blood constituents also have hydro-carbon bonds” and thus must be identified and distinguished. EX1001, 18:3-6; EX2046, ¶65. “To identify the blood constituents of interest...the spectrum may be correlated with a library of known spectra.” EX1001, 18:19-24; EX2046, ¶65. The identities of other blood constituents such as proteins, albumin, urea, creatine, or nitrates, are recognized through SWIR optical techniques, including pattern matching libraries and algorithms. EX1001, 20:24-32; EX2046, ¶66.

The specification of the ‘790 Patent describes distinguishing between the identities of different materials such as gypsum, painted structures, from other materials, such as plant life, soil, and trees. EX1001, 54:32-59; EX2046, ¶68. This identification is achieved by active remote sensing which references the chemical signature of data from a spectral library in order to identify materials. EX1001, 54:32-59. In other words, the ‘790 Patent discloses processes for “identification of objects based on their chemical signature.” EX1001, 54:58-59; EX2046, ¶68.

Identification of blood constituents of interest may be improved by techniques described in the ‘790 Patent. EX1001, 21:7-28; EX2046, ¶67. One technique comprises the use of a higher light level or intensity to improve the signal to noise

ratio. EX1001, 21:11-13; EX2046, ¶67. Another uses mathematical modeling and signal processing methodologies to reduce interference—which accentuates differences between spectra. EX1001, 21:13-22; EX2046, ¶67. “In addition, by using a wider wavelength range and using more sampling wavelengths may improve the ability to discriminate one signal from another.” EX1001 at 21:22-28; EX2046, ¶67.

Independent claim 7 of the ‘790 Patent—the only challenged claim—is reproduced below with the identifiers used in the Petition for ease of reference:

|         |                                                                                                                                                                                                                                                                                                                                         |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| [7.pre] | An optical system, comprising:                                                                                                                                                                                                                                                                                                          |
| [7.a.]  | a wearable device for measuring one or more physiological parameters, the wearable device adapted to be placed on a wrist of a user;                                                                                                                                                                                                    |
| [7.b]   | the wearable device including a light source comprising a plurality of semiconductor diodes that are configured to generate an output optical light having one or more optical wavelengths, wherein at least a portion of the one or more optical wavelengths is a near-infrared wavelength between 700 nanometers and 2500 nanometers; |
| [7.c]   | the wearable device comprising one or more lenses configured to receive at least a portion of the output optical light and to deliver a lens output light to tissue comprising skin;                                                                                                                                                    |
| [7.d]   | the wearable device further comprising a detection system configured to receive at least a portion of the lens output light reflected from the tissue and to generate an output signal having a signal-to-noise ratio, wherein the detection system is configured to be synchronized to the light source;                               |
| [7.e]   | wherein the detection system comprises a plurality of detectors that are spatially separated from each other, and wherein at least one analog to digital converter is coupled to at least one of the plurality of detectors;                                                                                                            |
| [7.f]   | wherein the output signal is indicative of the one or more of the physiological parameters;                                                                                                                                                                                                                                             |

|       |                                                                                                                                                                                                  |
|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| [7.g] | the wearable device configured to increase the signal-to-noise ratio by increasing light intensity of at least one of the plurality of semiconductor diodes from an initial light intensity; and |
| [7.h] | the detection system further configured to:                                                                                                                                                      |
| [7.i] | generate a first signal responsive to light received while the semiconductor diodes are off                                                                                                      |
| [7.j] | generate a second signal responsive to light received while at least one of the semiconductor diodes is on, and                                                                                  |
| [7.k] | increase the signal-to-noise ratio by comparing the first signal and the second signal; and                                                                                                      |
| [7.l] | wherein the wearable device is at least in part configured to identify an object.                                                                                                                |

### III. LEVEL OF SKILL IN THE ART

Petitioner proposes the following definition for a POSITA in relation to the '790 Patent:

“A person of ordinary skill in the art (“POSITA”) at the time of the alleged invention (December 2012) would have had good working knowledge of optical sensing techniques and their applications, and familiarity with optical system design and signal processing techniques. The POSITA would have an undergraduate degree in engineering (electrical, mechanical, biomedical, or optical) or a related field of study, along with relevant experience studying or developing physiological monitoring devices (e.g., non-invasive optical biosensors) in industry or academia. *Id.* Lack of professional experience can be remedied by additional education, and vice versa.

Petition, 13 (internal citations omitted). For purposes of this Preliminary Response, Patent Owner adopts Petitioner's proposed level of skill. Patent Owner reserves the right to propose a differing level of skill should the Board institute a PGR.

#### IV. SUMMARY OF REFERENCES IN THE PETITION

Petitioner challenges claim 7 of the '790 Patent as allegedly obvious based on combinations of Lisogurski and Carlson (Ground 1), Lisogurski, Carlson, and Lamego (Ground 2), and Lisogurski, Carlson, and Soller (Ground 3). Grounds 4 and 5 allege indefiniteness and lack of enablement.

##### A. Lisogurski (EX1027) (Grounds 1-3)

Lisogurski describes a non-invasive system for measuring parameters related to a subject's blood. EX1027, 3:61-4:5; EX2046, ¶¶79-80. The system is illustrated in Figures 3 and 1:

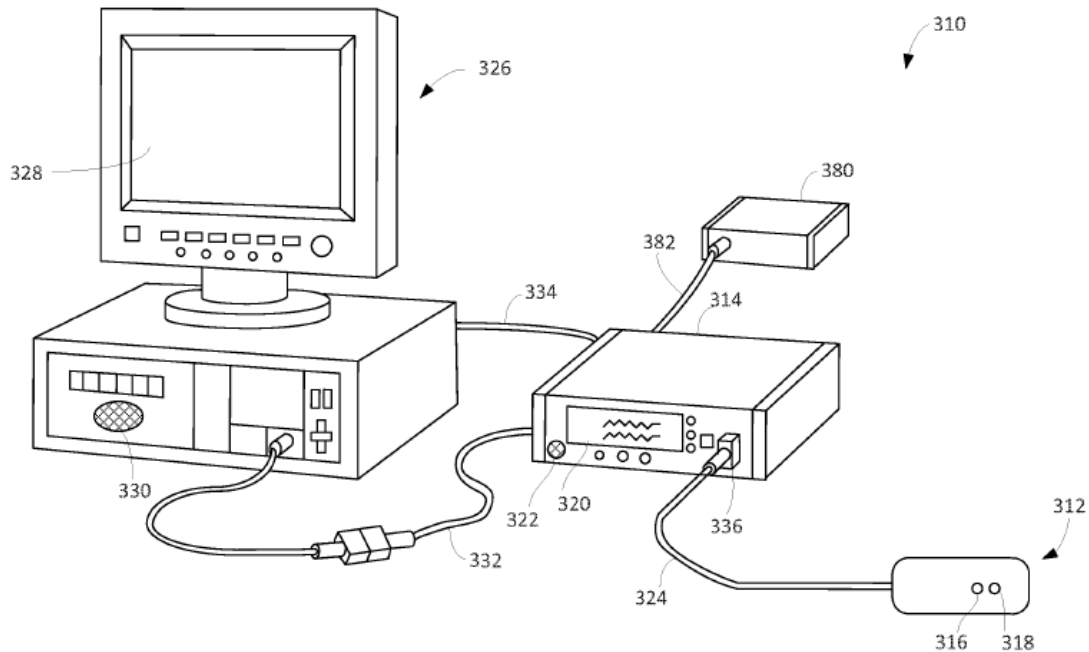


FIG. 3

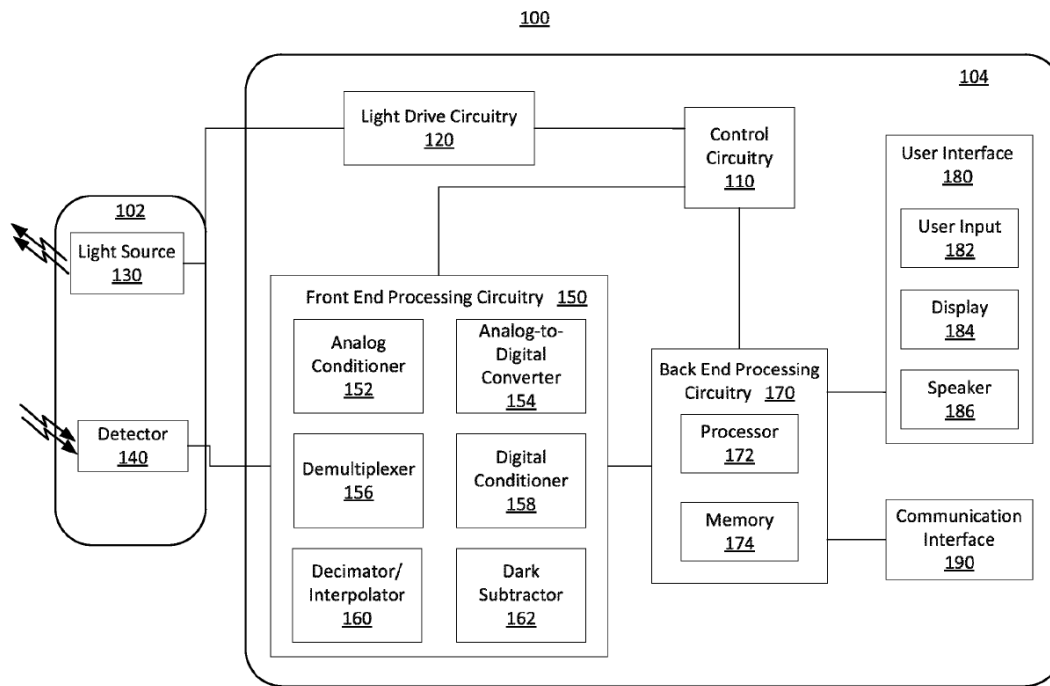


FIG. 1

EX1027, FIGS. 3, 1; EX2046, ¶¶83-84. A subject wears sensor unit 312, while the other components in the system are included for system calibration, data processing, and displaying information. EX1027, 17:54-18:15, 18:32-67; EX2046, ¶80. 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. EX1027, 4:42-62, 10:48-64; EX2046, ¶80.

Lisogurski's front end processing circuitry 150 processes that signal. EX1027, 12:42-49; EX2046, ¶80. 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.” EX1027, 14:60-64; EX2046, ¶80. The system compares the signals to determine parameters such as blood oxygen saturation. EX1027, 24:58-25:5; EX2046, ¶80.

**B. Carlson (EX1028) (Grounds 1-3)**

Carlson describes a non-invasive optical pulse oximeter. EX1028, ¶[0002]; EX2046, ¶81. The oximeter is designed to be clipped onto a user's ear. EX1028, ¶¶[0048]-[0049]; EX2046, ¶81. This is illustrated in Figures 1 and 2:

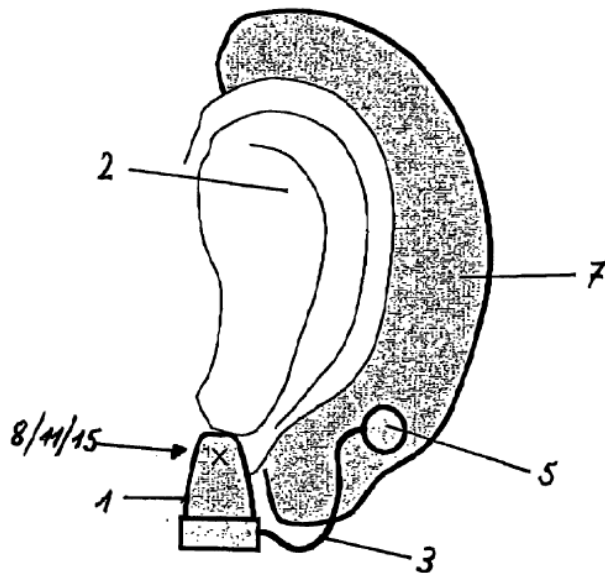


Figure 1

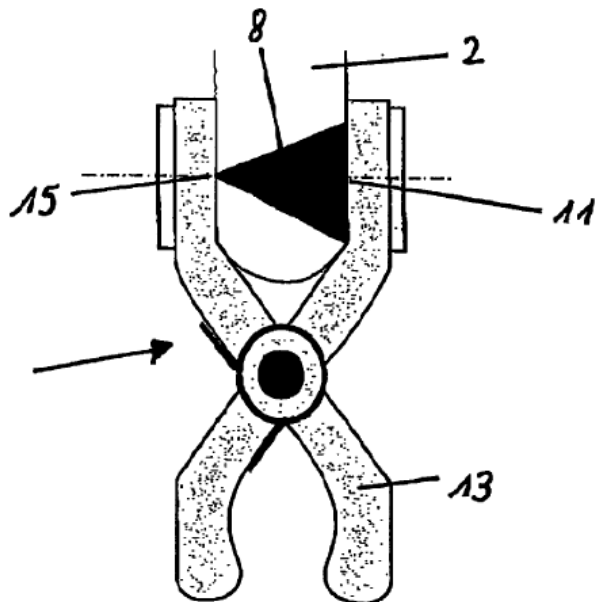


Figure 2

EX1028, FIGS. 1-2; EX2046, ¶81. 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]; EX2046, ¶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]; EX2046, ¶82.

**C. Lamego (EX1062) (Ground 2)**

Lamego describes a multi-wavelength physiological monitoring system that estimates concentrations of blood constituents, such as methemoglobin (MetHb) and carboxyhemoglobin (COHb), to compensate and improve the accuracy of conventional oxygen saturation or related outputs. EX1062, Abstract, ¶[0003]; EX2046, ¶¶83-84. Multiple light sources using different wavelengths, paired with a detector, measure attenuated light from tissue to determine information related to oxygen saturation and related blood information.

**D. Soller (EX1030) (Ground 3)**

Soller describes a non-invasive optical technique for estimating hematocrit using multiple wavelengths, photodetector measurements, and statistical modeling, including regression techniques, to correlate measured optical signals with hematocrit values. EX1030, Abstract, 5:33-11:42; EX2046, ¶¶85-86. Soller focuses on improving measurement accuracy for a predefined estimation task.

## V. PGR ELIGIBILITY

The Petition acknowledges that whether the '790 Patent is eligible for PGR turns on whether it is a pre-AIA patent or an AIA patent. *See* Petition, 9-14. As explained in Patent Owner's discretionary denial brief, this is the *third* petition challenging the '790 Patent. Paper 6, 3-8. Samsung and others filed: (1) an IPR petition and (2) a PGR petition challenging claim 7 of the '790 Patent. *See* EX1053 (Samsung IPR petition); EX1054 (Samsung PGR petition). Samsung argued that the '790 Patent was a *pre-AIA* patent and eligible for IPR. EX1053, 7; EX1064, 4 (Samsung's ranking of petitions).

On December 1, 2025, the Director denied Samsung's PGR petition and indicated that Samsung's IPR would be reviewed on the merits. EX2045. By denying Samsung's PGR, the Director implicitly found that the '790 Patent is a pre-AIA patent and not PGR eligible. The Director should deny this PGR Petition because if the Board were to institute this PGR while instituting the Samsung IPR, this would risk inconsistent decisions. Indeed, the Director has found that "[i]nstituting more than one petition to challenge the same claims under two different priority dates" is inefficient and places an undue burden on the Board and patent owners. *PacifiCorp v. Birchtech Corp.*, IPR2025-00687, Paper 40 at 3-4 (Director Jan. 12, 2026) (precedential).

## VI. CLAIM CONSTRUCTION

Petitioner argues that with the exception of limitation 7[l] (discussed below), “all other terms should be construed according to their plain and ordinary meaning” and that no construction is necessary. Petition, 17 (citing EX1003, ¶¶43-44).<sup>2</sup>

### A. Limitation 7[l]: “Identify an Object”

Claim 7 recites: “wherein the wearable device is at least in part configured to identify an object.” EX1001, 87:32-33. As discussed below, Petitioner argues that the phrase “identify an object” is indefinite despite the fact that (1) Petitioner has stipulated that it will not raise indefiniteness in the Delaware Case if a PGR is instituted and (2) this phrase has already been construed by the Board and Federal Circuit in a related patent.

#### 1. Petitioner's Inconsistent Claim Construction Positions for this Term Warrant Denial

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.*

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<sup>2</sup> Patent Owner reserves the right to seek constructions in litigation or if institution is granted, and to further respond to any constructions that Petitioner proposes.

*Cerebrum Sensor Techs., Inc.*, IPR2025-00632, Paper 20 at 3-5 (Director 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, Petitioner’s claim construction positions for the phrase “identify an object” are inconsistent and warrant denial for at least two reasons.

First, Petitioner argues, for Grounds 1-3, that the phrase “identify an object” should be construed as “to recognize or establish an object as being a particular thing” (Petition, 17-18) but argues in Ground 4 that the same phrase is indefinite (*id.*, 90-93). The Director has found that a petitioner cannot argue for a claim construction (e.g., plain and ordinary meaning) before the Board, while arguing that the same term is indefinite in district court without a sufficient explanation for its inconsistent positions. *Tesla, Inc. v. Intellectual Ventures II LLC*, IPR2025-00340, Paper 18 at 3-5 (Director Nov. 5, 2025) (informative) (denying institution where petitioner argued that claim term was indefinite in district court but applied plain and ordinary meaning construction in an IPR). The same reasoning should apply here where the Petition simultaneously advocates for a claim construction and indefiniteness without explaining why these “different positions are warranted.” *Id.* at 3.

Second, Petitioner filed a stipulation in the Delaware case the day this Preliminary Response was due stipulating that “if the PTAB institutes PGR on a ground presented in the petition, Defendant will not pursue in this co-pending district

court litigation the specific ground asserted in the petition.” EX1077, 1-2. Petitioner expressly stipulated “that if the PTAB institutes PGR on a ground presented in Defendant’s petition, Defendant will not pursue in this co-pending district court litigation an argument that a claim subject to such PGR is indefinite. *Id.*, 2. Through this stipulation, Petitioner has committed itself to taking inconsistent positions in different forums if a PGR instituted: it intends to argue before the Board that the phrase “identify an object” is indefinite but will *not* argue indefiniteness in the Delaware Case. The Director’s reasoning in *Tesla* should apply equally to this situation where Petitioner is arguing indefiniteness in one forum while advocating for a construction in a different forum. IPR2025-00340, Paper 18 at 3-5.

## **2. The Board Should Adopt its Prior Construction, which was Affirmed by the Federal Circuit**

In a prior decision concerning related U.S. Patent No. 10,517,484 (“the ‘484 Patent”), the Board construed the phrase “to identify an object” to mean “to recognize or establish an object as being a particular thing.” Petition, 17; EX1011, 8-10. The Federal Circuit affirmed the Board’s construction on appeal. *Apple Inc. v. Omni MedSci, Inc.*, No. 2023-1034, 2024 WL 3084509, at \*3 (Fed. Cir. Jun. 21,

2024); EX1012, 5. Petitioner proposes “adopting an identical construction to the extent a construction is necessary in this PGR.” Petition, 18.<sup>3</sup>

In the prior proceedings, Patent Owner demonstrated that there is a difference between (1) identification, which requires recognizing or establishing an object is a particular thing and (2) detection, which merely requires noticing an object's presence.” EX1011, 8. The petitioner in that IPR had argued that the phrases “identify an object” and “detect an object” should have the same meaning. *Id.* at 9. The Board disagreed:

[W]e decline to adopt Petitioner's proposal to construe the terms “identify an object” and “detect an object” to have the same meaning. Instead, we construe these terms consistent with the dictionary definitions of “identify” and “detect,” *i.e.*, we construe “to identify an object” to mean “to recognize or establish an object as being a particular thing,” and we construe “to detect an object” to mean “to discover or notice the existence or presence of something.”

EX1015, 10. This distinction is critical. Identification requires determining the identity of an unknown object, *i.e.*, recognizing or establishing an object as being a

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<sup>3</sup> In the related Texas Case, the parties agreed that “to identify and object” should be construed as “to recognize or establish an object as being a particular thing.” EX2049.

particular thing, whereas detection and measurement merely ascertain the presence or quantity of a known object. EX2046, ¶92.

The '790 Patent exemplifies identification through distinguishing unknown constituents and describes identification through discriminating among multiple unknown constituents using spectral analysis, pattern matching algorithms, and spectral signature libraries. EX1001, 18:17-27, 78:51-79:12; FIG. 41; EX2046, ¶¶93-94. For example, the specification explains that “to identify the blood constituents of interest...the spectrum may be correlated with a library of known spectra.” EX1001, 18:19-21. Different blood constituents are identified from one another, and the specification emphasizes that this is “identification of objects based on their chemical signature.” EX1001, 54:58-59.

“Identify[ing] an object” in the context of the '790 Patent requires determining what an object is—not measuring a presumed object's parameters. To illustrate, a scale measures weight without identifying the object on the scale, and a pH meter measures acidity without identifying which acids or bases are present. EX2046, ¶160. Similarly, a pulse oximeter measures the ratio of oxygenated to deoxygenated hemoglobin to calculate oxygen saturation, but it does not “identify” hemoglobin because the device is not determining *what* is present—it is determining *how much* of a known constituent is present. EX2046, ¶160.

Accordingly, the Board should construe “identify an object” to mean “to

recognize or establish an object as being a particular thing.”

**B. The Director Should Deny Institution based on Petitioner's Inconsistent Claim Construction Positions for Limitations 7[c] and 7[k]**

Limitation 7[c] recites “a plurality of detectors that are spatially separated from each other.” EX1001, 87:14-15. Limitation 7[k] recites “increase the signal-to-noise ratio by comparing the first signal and the second signal.” EX1001, 87:30-31. As discussed above, Petitioner does not propose claim constructions for either limitation and advocates for plain and ordinary meaning. Petition, 17 (arguing that aside from limitation 7[l], “all other terms should be construed according to their plain meaning”).

This is inconsistent with Petitioner's claim construction positions in the parallel Delaware Case. The day before this Preliminary Response was due, Petitioner served invalidity contentions alleging that the phrases “a plurality of detectors that are spatially separated from each other” and “increase the signal-to-noise ratio by comparing the first signal and the second signal” are indefinite. EX2048, 236-38. Because Petitioner has offered no explanation for its inconsistent claim construction positions in the Delaware Case relative to the Petition, this warrants denial of the Petition. *Tesla*, IPR2025-00340, Paper 18 at 3-5 (denying institution where petitioner argued that claim term was indefinite in district court but applied plain and ordinary meaning construction in an IPR); *see also Revvo Techs.*,

IPR2025-00632, Paper 20 at 3-5 ([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”).

### **C. Other Prior Constructions**

Claim 7 recites: “the wearable device comprising one or more lenses configured to receive at least a portion of the output optical light and to deliver a lens output light to tissue comprising skin.” EX1001, 87:4-5. In a previous litigation regarding a related patent (the '533 Patent) in the Eastern District of Texas, the court found that the term “lenses” in claims of related patents should be given its “plain and ordinary meaning without the need for further construction.” EX1018, 10-13 (construing “plurality of lenses” in claims 5 and 13 of the related '533 patent); EX1019, 12-15 (construing “lens” and “one or more lenses” in related patents). Patent Owner submits that the Board need not construe this phrase in claim 7 of the '790 Patent to deny institution.

## **VII. COLLATERAL ESTOPPEL DOES NOT APPLY**

Before addressing Grounds 1-5, Petitioner argues that Patent Owner “is collaterally estopped from challenging the unpatentability of claim 7 (and motivation to combine Lisogurski and Carlson), at least as to limitations 7[pre]-7[k].” Petition, 29. Specifically, Petitioner argues that claim 7 “is materially identical to the claims found unpatentable by the Board in the prior '533 and '484 IPRs.” *Id.*, 26. As set

forth below, Petitioner's collateral estoppel arguments are flawed for several reasons.

First, the Board's remand decision in the '484 IPR has no collateral estoppel effect because, as Petitioner concedes, that decision "is currently under review." Petition, 29. It is black letter law that "an IPR decision does not have collateral estoppel effect until that decision is affirmed or the parties waive their appeal rights." *United Therapeutics Corp. v. Liquidia Techs., Inc.*, 74 F.4th 1360, 1372 (Fed. Cir. 2023). The remand decision in the '484 IPR therefore has no preclusive effect. Indeed, Petitioner admits that there is no collateral estoppel with respect to limitation 7[1].

Second, contrary to Petitioner's suggestion, there are material differences between claim 7 of the '790 Patent and the claims in the prior '533 and '484 IPRs. Collateral estoppel requires that the issues presented be identical; where differences between the unadjudicated patent claims and adjudicated patent claims materially alter the question of invalidity, collateral estoppel does not apply. *MaxLinear, Inc. v. CF CRESPE LLC*, 880 F.3d 1373, 1377-78 (Fed. Cir. 2018) (collateral estoppel does not apply to claims that "present materially different issues that alter the question of patentability"). Consistent with these principles, the Board has declined to apply collateral estoppel in similar circumstances: "[c]ollateral estoppel does not apply because there are differences between the claim limitation at issue here and

the adjudicated claim limitations at issue in the prior IPRs.” *Palo Alto Networks, Inc. v. Centripetal Networks, Inc.*, IPR2021-01153, Paper 10 at 18 (PTAB Jan. 24, 2022).

Petitioner's own comparison table confirms these material differences. *See* Petition, 27-29. Petitioner mixes and matches claim limitations in the '790 Patent with limitations in multiple, different patents – the '533 Patent and the '484 Patent. For the '533 Patent (EX1004), Petitioner identifies corresponding limitations only for 7[pre], 7[a], and 7[b] (citing claims 5 and 13). *Id.* at 27. But for limitations 7[c] through 7[l], Petitioner only cites the '484 Patent (EX1005), not the '533 Patent. *Id.* at 27-29. This is because the '533 claims do not recite at least the following limitations of claim 7[c] through 7[l]: lenses configured to...deliver a lens output light to tissue comprising skin (7[c]); a detection system configured to receive...lens output light reflected from the tissue...and synchronized to the light source (7[d]); detectors that are spatially separated...[and] one analog to digital converter is coupled 7[e]; output signal [] indicative [] of the physiological parameters (7[f]); a detection system configured to generate first and second signals responsive to light received while semiconductor diodes are off and on, and to increase the signal-to-noise ratio by comparing those signals (7[h]-7[k]); and “identify an object” (7[l]). These limitations are absent from the '533 Patent claims that were considered in the prior IPR.

Petitioner's limited citations to the '533 Patent are flawed for two additional reasons. First, Petitioner relies on multiple, different independent claims from the '533 Patent, i.e., independent claim 5 of the '533 Patent for limitation 7[pre] and independent claim 13 of the '533 Patent for limitations 7[a] and 7[b]. *Id.* Second, claim 13 of the '533 Patent does not recite that the "wearable device [is] adapted to be placed on a wrist of a user" as required by limitation 7[a]. EX1004, 30:46-31:20.

Petitioner's chart also shows that the prior IPR for the '484 Patent did not address limitations 7[pre] and 7[b]. Petition, 26. Limitation 7[b] recites "an output optical light having one or more optical wavelengths, wherein at least a portion of the one or more optical wavelengths is a near-infrared wavelength between 700 nanometers and 2500 nanometers." EX1001, 86:60-87:33. Based on antecedent basis, at least limitations 7[c] and 7[d] either expressly or implicitly refer back to the "optical wavelengths" in limitation 7[b]. EX1001, 86:60-87:33. None of the claims of the '484 Patent recite the "near-infrared wavelength between 700 nanometers and 2500 nanometers" required in limitation 7[b]. *See* EX1005. This is yet another difference between the claims in the prior IPRs and the claim 7 of the '790 Patent that Petitioner ignores.

Third, the issues presented in this PGR Petition and the prior IPRs are not identical. Collateral estoppel requires that "(1) the issue is identical to one decided in the first action; (2) the issue was actually litigated in the first action; (3) resolution

of the issue was essential to a final judgment in the first action; and (4) [the party against whom collateral estoppel is asserted] had a full and fair opportunity to litigate the issue in the first action.” *In re Freeman*, 30 F.3d 1459, 1465 (Fed. Cir. 1994). Here, neither the first nor second requirement is satisfied. Grounds 2 and 3 of this Petition assert that claim 7 would have been obvious in view of Lamego and Soller. Neither Lamego nor Soller was asserted or considered in the '533 or '484 IPRs. Because the patentability of claim 7 over those references was never “actually litigated,” collateral estoppel cannot apply to these grounds.

Second, Grounds 4 and 5 of the Petition assert that claim 7 is indefinite and not enabled. These grounds could not have been raised in the prior IPRs because IPR proceedings cannot consider challenges under §112. Because the prior IPRs presented no forum for litigating § 112 issues, those issues were not, and could not have been, “actually litigated.” Collateral estoppel therefore does not apply to Grounds 4 and 5.

## **VIII. PETITIONER FAILED TO MEET ITS BURDEN**

The Director should deny institution because Petitioner has not met its burden of showing it is more likely than not that claim 7 of the '790 Patent is unpatentable under any of the grounds presented in the Petition.

### **A. Ground 1: Lisogurski in View of Carlson**

In Ground 1, Petitioner asserts that claim 7 of the '790 Patent is obvious over

Lisogurski in view of Carlson. Petition, 32; EX1003, ¶¶90-92. As discussed below, Petitioner failed to meet its burden because neither reference discloses or renders obvious identifying an object under the proper claim construction. *Supra*, §VI.A.2.

Lisogurski does not disclose identifying an object as required in limitation 7[1]. EX2046, ¶¶98-103. Petitioner conflates measurement of an object with identification of an object in citing to the Board's remand decision in the '484 IPR finding that "Lisogurski discloses a method of measuring oxygen saturation that uses different wavelengths to distinguish hemoglobin from oxygen carrying hemoglobin, *i.e.*, oxyhemoglobin," and thus "teaches identifying an object, *i.e.*, the blood constituent oxyhemoglobin." Petition, 69 (quoting EX1013, 7). Petitioner's reliance on the Board's previous findings is misplaced for two reasons.

First, the Board's remand decision for the '484 IPR is on appeal and has no preclusive effect, as Petitioner concedes. Petition, 29. Second, measuring the ratio of two known forms of a known constituent to calculate a known parameter is not recognizing or establishing an object as being a particular thing. EX2046, ¶¶100, 102. Lisogurski merely describes oximetry, which is a technique that "exclusively focuses on one blood constituent, hemoglobin, and measur[es] the ratio of oxygenated and deoxygenated hemoglobin, without discriminating hemoglobin from other blood constituents." EX1027, 3:61-4:3; EX2046, ¶99. Lisogurski operates on the presupposition that the object of interest, hemoglobin, is present,

uses known characteristics of that constituent to estimate oxygen saturation, and does not include any step where the system attempts to determine what the substance or object is. EX2046, ¶100; EX1027, 3:61-4:3; 4:35-41. In other words, Lisogurski assumes the identity of the object rather than recognizing or establishing an object as being a particular thing. EX2046, ¶¶92, 98-103.

Petitioner's expert, Dr. Mercier, fares no better than the Petition. Dr. Mercier argues that "Lisogurski necessarily must 'recognize or establish an object as being a particular thing,' specifically, a particular form of hemoglobin" because it distinguishes between oxygenated and deoxygenated hemoglobin. EX1003, ¶200. This argument mischaracterizes the claim construction. The claim requires recognizing an object as a particular thing, determining what is present from among unknown possibilities, not measuring the ratio of two known forms of a known constituent. EX1011, 8-10; EX2046, ¶¶100-03. Unlike the "identify an object" requirement in claim 7, Lisogurski monitors a known constituent (hemoglobin) to compute a known metric (oxygen saturation) from optical signals. EX2046, ¶99.

Petitioner offers two arguments in support of the Board's previous findings for the related '484 Patent that are under appeal. First, Petitioner argues that "Lisogurski teaches techniques for measuring blood oxygen saturation and other blood constituents." Petition, 69. But as explained above, as the Board already found, there is a difference between detecting or measuring an object and

recognizing an object as a particular thing. *Supra*, §VI.A.2. Thus, in an attempt to address the claim construction, Petitioner argues Lisogurski identifies an object because “measuring blood oxygen saturation requires selecting oxygenated and deoxygenated hemoglobin from among other blood constituents and then identifying and quantifying both components.” Petition, 69-70.

This is incorrect. Lisogurski does not identify one unknown substance as being oxygenated hemoglobin and identify another unknown substance as being deoxygenated hemoglobin. EX2046, ¶102. Instead, Lisogurski merely measures the light absorbed by the mixture of the two forms of hemoglobin, and the amount of absorbed light correlates mathematically to the percentage of oxygen saturation. EX2046, ¶102. Petitioner does not, because it cannot, point to any express disclosure in Lisogurski stating that it recognizes or establishes an object as oxygenated hemoglobin versus deoxygenated hemoglobin. *See* Petition, 69-71.

Instead, Petitioner asserts that Lisogurski “necessarily must distinguish between the different forms of hemoglobin-oxygenated and deoxygenated.” Petition, 70. This an argument of inherency but Petitioner has failed to show that this identification is necessarily present in Lisogurski. *See, e.g., PAR Pharm., Inc. v. TWI Pharms., Inc.*, 773 F.3d 1186, 1195-96 (Fed. Cir. 2014) (“A party must, therefore, meet a high standard in order to rely on inherency to establish the existence of a claim limitation in the prior art in an obviousness analysis—the limitation at issue

necessarily must be present, or the natural result of the combination of elements explicitly disclosed by the prior art”); *Roland Corp. v. inMusic Brands, Inc.*, IPR2018-00335, 2018 WL 3244506, at \*7 (PTAB July 2, 2018) (“Petitioner's argument that these features are inherent is insufficient absent persuasive evidence or argument that such features are necessarily present”).

Second, Petitioner argues that “Lisogurski’s technique could be used to identify and measure other blood constituents as well.” Petition, 71. Specifically, Petitioner argues that “Lisogurski teaches that other wavelengths may be used that can identify other blood constituents using the spectral signatures of those constituents.” *Id.* (citing EX1027, 1:22-25, 4:36-41). However, the text of Lisogurski does not support this, as it does not mention identifying and distinguishing a blood constituent from others; instead, it describes a system which will “estimate the blood oxygen saturation of hemoglobin”—a specific and known constituent. EX1027, 4:36-62; EX2046, ¶103.

Carlson does not cure this deficiency in Lisogurski. EX2046, ¶104. Petitioner does not allege that Carlson teaches “identify[ing] an object” as required in limitation 7[I]. Petition, 34-35, 68-72. Indeed, Carlson does not teach or suggest object identification and is instead directed to methods for monitoring data such as pulse rate, blood oxygen saturation, and breathing frequency. EX2046, ¶104; EX1028 at ¶¶[0010]-[0012], [0017], [0026].

For at least these reasons, Petitioner failed to meet its burden for Ground 1.

**B. Ground 2: Lisogurski in View of Carlson and Lamego**

In Ground 2, Petitioner asserts that claim 7 is obvious over Lisogurski, Carlson, and Lamego. Petition, 72; EX1003, ¶¶204-16. As set forth below, Petitioner failed to meet its burden for this ground because (1) Lamego does not disclose “identify[ing] an object” and (2) a POSITA would not have combined Lisogurski, Carlson, and Lamego as proposed by Petitioner.

**1. Lamego Does not Disclose “Identify[ing] an Object”**

Lamego does not disclose “identify[ing] an object” as required in limitation 7[1] as properly construed. *Supra*, §VI.A.2.

First, Petitioner argues that Lamego’s multi-wavelength monitor “can identify (recognize or establish) MetHb as an object that may cause aberrations in blood oxygen measurements.” Petition, 79. This argument fails because Lamego’s system does not recognize MetHb as an unknown object—it measures the concentration of a pre-defined known variable. Lamego relates to spectroscopy: “measuring the concentration of organic and some inorganic constituents of a solution.” EX2046, ¶113; EX1062, ¶[0022].

Dr. Mercier further contends that Lamego teaches identifying an object such as methemoglobin (MetHb) “to compensate and account for the presence of other conditions that may affect the particular physiological parameter being measured.”

EX1003, ¶208. This argument fails because the governing construction requires recognizing or establishing the identity of an object—not correcting, compensating, or improving a physiological calculation.

Second, Petitioner argues that “Lamego explains that while a conventional two-wavelength monitor could not “identify the cause for the decreased reading,” a multi-wavelength monitor...can identify (recognize or establish) MetHb as an object that may cause aberrations in blood oxygen measurements.” Petition, 79 (citing EX1003, ¶209). But Lamego’s disclosure about “identify[ing] the cause” refers to diagnosing why measurements are inaccurate—not recognizing an object as a particular thing under the claim construction—because the system is configured to know from the outset that MetHb may be present. EX2046, ¶¶110-11. Petitioner’s own phrasing reveals the flaw: the Petition argues that Lamego teaches recognition of “other blood constituents” using “wavelengths sensitive to the other blood constituents *of interest*.” Petition, 79-80. The phrasing “of interest” shows that such constituents were already identified previously as constituents of interest, and Lamego’s selection of additional wavelengths sensitive to those constituents is pre-defined. EX2046, ¶¶111-14. This is measurement, not identification. *Id.*

**2. A POSITA Would Not Have Been Motivated to Combine  
Lisogurski, Carlson, and Lamego**

Even if, *arguendo*, Lamego discloses “identify[ing] an object” as claimed,

which it does not, Petitioner failed to show that a POSITA would have been motivated to combine Lisogurski, Carlson, and Lamego to arrive at the claimed invention.

In the “Motivation to Combine” section, Petitioner begins by arguing that “Lisogurski, Carlson, and Lamego are also analogous references” and that a “POSITA would have considered the references together when implementing a system based on Lisogurski’s teachings.” Petition, 74. But the mere fact that these references are analogous and discuss related technology, standing alone, does not supply a motivation to combine them to arrive at the claimed invention. *Johns Manville Corp., v. Knauf Insulation, Inc.*, IPR2018-00827, Paper 9 at 10 (PTAB Oct. 16, 2018) (showing “that a reference is analogous art or relevant to the field of endeavor of the challenged patent is not sufficient to establish that one of ordinary skill would have had reason to combine its teachings with other prior art in the manner set forth in the claim.”); *Securus Techs., Inc. v. Glob. Tel\*Link Corp.*, 701 F. App'x 971, 977 (Fed. Cir. 2017) (“[A] broad characterization of [prior art] as both falling within the same alleged field... without more, is not enough for Securus to meet its burden of presenting a sufficient rationale to support an obviousness conclusion...such short-cut logic would lead to the conclusion that any and all combinations of elements known in this broad field would automatically be obvious, without the need for any further analysis”).

Petitioner's "Motivation to Combine" section summarizes each reference and asserts that "a POSITA would have looked to Lamego to implement and obtain more accurate readings and increase signal-to-noise ratio from Lisogurski's physiological monitor because a POSITA would have looked for ways to improve the operation of a device by looking to complementary designs and techniques." Petition, 76. But Petitioner does not explain *how* modifying Lisogurski with Lamego would allegedly lead to "more accurate readings and increase[d] signal-to-noise ratio" relative to Lisogurski and Carlson unmodified. *Id.*

Indeed, according to Petitioner, Lisogurski and Carlson already teach techniques for obtaining more accurate readings and increasing the signal-to-noise ratio: "both Lisogurski and Carlson teach techniques for improving the signal-to-noise ratio of blood oxygen saturation measurements." Petition, 74. "Lisogurski and Carlson also both seek to mitigate the effects of patient motion on signal-to-noise ratio and measurement accuracy." *Id.* at 75. Specifically, Petitioner acknowledges that "Lisogurski teaches altering drive parameters of the LEDs" to "thereby increase SNR." *Id.* at 60 (citing EX1027, 1:19-21, 9:46-52, 5:57-61, 9:57-60, 14:40-55, 35:4-9). Petitioner also acknowledges that Carlson "aims to improve these sensors by "defin[ing] optical and/or electrical means for increasing the Signal-to-Noise ratio (S/N) ... of a pulsoximeter sensor." Petition, 35 (citing EX1028, [0010]). Because Petitioner's own Petition establishes that Lisogurski and Carlson already provide

improvements to signal-to-noise ratio, Petitioner fails to explain why a POSITA would look beyond these existing techniques to add Lamego. EX2046, ¶¶119, 123-25.

Dr. Mercier's framing underscores the problem. He asserts that "a POSITA would have been motivated to combine the teachings of Lamego into the optical measurement system of Lisogurski (as modified by Carlson) with the goal of improving the accuracy and signal-to-noise ratio of the system's blood oxygen saturation measurements." EX1003, ¶215. Notably, Dr. Mercier does not assert that adding Lamego would result in object identification as required by claim 7 or actually improve accuracy and signal-to-noise ratio—he merely asserts that the latter would be a "goal." EX1003, ¶215.

Second, this conclusory assertion does not address why a POSITA allegedly would have combined Lisogurski, Carlson, and Lamego to arrive at the claimed invention. For example, Petitioner never addresses limitation 7[I] in the "Motivation to Combine" section of the Petition. Petition, 75-76. This failure is fatal. As the Federal Circuit has held, "obviousness concerns whether a skilled artisan not only *could have made* but *would have been motivated to make* the combinations or modifications of prior art to arrive at the claimed invention. *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1073 (Fed. Cir. 2015) (emphasis in original). The relevant inquiry is "why a person of ordinary skill in the art would have combined elements

from specific references *in the way the claimed invention does.*" *ActiveVideo Networks, Inc. v. Verizon Commc'ns, Inc.*, 694 F.3d 1312, 1328 (Fed. Cir. 2012) (emphasis in original). A generic or conclusory analysis is insufficient. *Id.*

Here, Petitioner's motivation, that "a POSITA would have looked for ways to improve the operation of a device by looking to complementary designs and techniques," is precisely the type of generic rationale that the Federal Circuit has rejected. *Petition*, 76; *Virtek Vision Int'l ULC v. Assembly Guidance Sys., Inc.*, 97 F.4th 882, 888 (Fed. Cir. 2024) (reversing the Board's obviousness finding where petition contained "nothing other than an assertion that because [claim elements] were disclosed in a prior art reference and were therefore "known," that satisfies the motivation to combine analysis. That is an error as a matter of law. It does not suffice to simply be known. A reason for combining must exist."). Petitioner's failure to explain why a POSITA would have combined Lisogurski, Carlson, and Lamego to arrive at limitation 7[1] warrants denial.

The Petition is also unclear as to what aspects of Lamego Petitioner proposes to implement in Lisogurski. The closest Petitioner comes to explaining this is when it asserts that a POSITA "would have had a reasonable expectation of success implementing Lamego's multi-wavelength sensor with Lisogurski's system." *Petition*, 76. The Petition does not explain what "Lamego's multi-wavelength sensor" is or how it would be implemented in Lisogurski. This is yet another fatal

flaw in the Petition. *Pers. Web Techs., LLC v. Apple, Inc.*, 848 F.3d 987, 994 (Fed. Cir. 2017) (finding claims non-obvious where petition “nowhere clearly explained, or cited evidence showing, *how* the combination of the two references was supposed to work”) (emphasis in original); *ActiveVideo*, 694 F.3d at 1327 (finding claims non-obvious because “expert failed to explain...which combination(s) of elements in specific references would yield a predictable result, or how any specific combination would operate”); *Juniper Networks, Inc. v. Smart Path Connections, LLC*, IPR2021-01356, Paper 27 at 48-50 (PTAB Jan. 19, 2023) (finding petitioner did “not adequately explain[] how [one reference] would be modified to incorporate teachings from [another reference]”); *Hyundai Motor Co. v. Blitzsafe Texas, LLC*, IPR2016-01476, Paper 12 at 32 (PTAB Jan. 24, 2017) (finding petitioner failed to explain “how or why the references would be combined to produce the claimed invention”);

Petitioner's analysis for limitation 7[1] in Ground 2 does not cure any of these deficiencies with respect to motivation to combine. *See* Petition, 77-84. Regarding motivation to combine, Petitioner merely asserts, that “a POSITA would have been motivated to combine the teachings of Lisogurski (in view of Carlson) with Lamego to improve the optical measurement of, e.g., blood oxygen concentration, consistent with Lisogurski's stated goals of reducing noise and improving accuracy.” *Id.*, 82. Again, Petitioner does not explain how modifying Lisogurski with Lamego would

lead to improved optical measurements or what aspect(s) of Lamego would be combined with Lisogurski, let alone how they would operate with Lisogurski. *Id.*

### **C. Ground 3: Lisogurski in View of Carlson and Soller**

In Ground 3, Petitioner asserts that claim 7 is obvious over Lisogurski in view of Carlson and Soller. Petition, 83; EX1003, ¶¶217-30. Petitioner failed to meet its burden at least because Soller does not disclose “identify[ing] an object” and because a POSITA would not have been motivated to combine Lisogurski and Soller.

#### **1. Soller Does Not Disclose “Identify[ing] an Object”**

Soller is directed to measuring a known physiological parameter—hematocrit—not to identifying an unknown object. EX1030, Title (“Non-Invasive Optical *Measurement* of Blood Hematocrit”); EX2046, ¶¶132-36. Petitioner describes how Soller measures hematocrit “using a larger set of wavelengths” and “by using a multivariate calibration technique.” Petition, 87-88. Soller uses a pre-trained calibration model based on Partial Least Squares (PLS) regression, taking optical spectra as input and outputting a single numerical value: hematocrit percentage. EX2046, ¶¶134-36; EX1030, 1:17-44, 5:42-67, 6:27-59, 22:26-42. Outputting a numerical estimate of a known parameter is not the same as recognizing or establishing an unknown object as being a particular thing. EX2046, ¶135; *supra*, §VI.A.2. A device that outputs a hematocrit percentage has not identified anything; it has merely measured a ratio. EX2046, ¶¶133-36. As Dr. Efimov explains,

regression is not identification; regression estimates a quantity, whereas identification determines what something is. EX2046, ¶¶132-36. Soller is directed to the former, not the latter.

Petitioner and Dr. Mercier do not point to any teaching in Soller that requires recognition of an object as a particular thing; instead, he incorrectly equates multivariate calibration/regression (mapping optical features to a numeric output) with object identification. EX1003, ¶¶217-30; EX2046, ¶¶132-36. A regression-based output of hematocrit does not identify discrete constituents as objects; it estimates a parameter correlated with optical features within a predefined calibration framework. EX2046, ¶¶132-36.

Dr. Mercier's own discussion of Soller confirms this analysis: "In sum, Soller teaches the quantification of "all of the components of red blood cells."" EX1003, ¶227. But quantification is not identification, and Dr. Mercier does not explain why a POSITA would have looked to Soller to supply the missing capability of identifying an object—because Soller does not teach that capability. EX2046, ¶¶132-36.

**2. A POSITA Would Not Have Been Motivated to Combine  
Lisogurski, Carlson, and Soller**

Even if, *arguendo*, Soller discloses “identify[ing] an object”, which it does not, Petitioner failed to show that a POSITA would have been motivated to combine Lisogurski, Carlson, and Soller to arrive at the claimed invention.

Similar to Ground 2, Petitioner generically alleges that “POSITA would have considered Lisogurski, Carlson, and Soller together; they are analogous optical measurement systems with common applications and utility.” Petition, 84. But the mere fact that these references are analogous does not mean a POSITA would combine them. *Johns Manville*, IPR2018-00827, Paper 9 at 10 (showing “that a reference is analogous art or relevant to the field of endeavor of the challenged patent is not sufficient to establish that one of ordinary skill would have had reason to combine its teachings with other prior art in the manner set forth in the claim.”); *Securus Techs.*, 701 F.App'x at 977 (“[A] broad characterization of [prior art] as both falling within the same alleged field ... without more, is not ... a sufficient rationale to support an obviousness conclusion”).

In discussing limitation 7[1], Petitioner asserts that “a POSITA therefore would have been motivated to use Soller’s technique involving three or more wavelengths to yield a more accurate measurement.” Petition, 89. Petitioner, however, fails to explain why using Soller’s technique would allegedly “yield a more

accurate measurement” compared to Lisogurski unmodified. *Id.*; EX2046, ¶139; *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (“obviousness grounds cannot be sustained by mere conclusory statements”).

The Petition is also flawed because it is unclear what aspects of Soller Petitioner proposes to implement in Lisogurski. The closest Petitioner comes to explaining this is when it asserts that “[i]mplementing Soller’s light source modifications, including the arrangement and number of LEDs and detectors and the number of wavelengths emitted by the LEDs, into Lisogurski would have been routine.” Petition, 85; *see also id.* (referring to “these features” from Soller without identifying them with specificity). The Petition does not explain what “Soller’s light source modifications” entail or how they would be implemented in Lisogurski. *Pers. Web*, 848 F.3d at 994 (finding claims non-obvious where petition “nowhere clearly explained, or cited evidence showing, *how* the combination of the two references was supposed to work”) (emphasis in original); *ActiveVideo*, 694 F.3d at 1327 (finding claims non-obvious because “expert failed to explain...which combination(s) of elements in specific references would yield a predictable result, or how any specific combination would operate”); *Hyundai*, IPR2016-01476, Paper 12 at 32 (finding petitioner failed to explain “how or why the references would be combined to produce the claimed invention”).

Regardless of these deficiencies in the Petition, a POSITA would not have been motivated to combine Lisogurski (as modified by Carlson) and Soller. EX2046, ¶¶137-54. As discussed herein, Lisogurski is directed to oximetry, *i.e.*, measuring blood oxygen saturation. Petition 32-33 (“a pulse oximetry system”); EX1027, 3:61-4:5. EX2046, ¶¶143-44. By contrast, Soller is directed to measuring hematocrit, which is the percentage of red blood cells in a patient’s blood. *See, e.g.*, EX1030, Abstract, 5:42-67, 6:27-59, 22:26-42; EX2046, ¶132. A POSITA would not have been motivated to look to or employ Soller’s techniques for measuring hematocrit in Lisogurski because Lisogurski does not measure hematocrit. EX2046, ¶¶144-45, 149.

Petitioner appears to recognize this critical difference between Lisogurski and Soller and argues that Lisogurski “could have been modified to measure, *e.g.*, the hematocrit components disclosed by Soller.” Petition, 85. This argument fails for several reasons. First, Petitioner provides no reason or evidence as to *why* a POSITA would allegedly modify Lisogurski to measure hematocrit. *Id.* The fact that Lisogurski allegedly “could have been modified” to do so does not mean that a POSITA would have been motivated to do so. *See, e.g., Polaris Indus., Inc. v. Arctic Cat, Inc.*, 882 F.3d 1056, 1068-69 (Fed. Cir. 2018) (holding that it is error to focus “on what a skilled artisan would have been able to do, rather than what a skilled artisan would have been motivated to do”); *InTouch Techs., Inc. v. VGO Commc’ns*,

*Inc.*, 751 F.3d 1327, 1352 (Fed. Cir. 2014) (a showing that “one of ordinary skill in the could combine” but “not that they would have been motivated to do so” does not establish obviousness).

Second, Lisogurski's system is simply unable to measure hematocrit without substantial modifications. EX2046, ¶¶137-154. Oximetry only requires two wavelengths of light to measure blood oxygen saturation. EX2046, ¶143. By contrast, as taught by Soller, measuring hematocrit non-invasively requires eight wavelengths of light. EX1030, 13:13-28; 20:58-67. Lisogurski does not disclose or suggest this. Moreover, Soller teaches that using multivariate calibration/regression is necessary to measure hematocrit, which would further increase the cost and complexity of the device. EX1030, Abstract, 5:42-67, 6:27-59, 22:26-42; EX2046, ¶¶150-51.

To the extent Petitioner is suggesting that a POSITA would modify Lisogurski with Soller's components and techniques to measure hematocrit, a POSITA would not have been motivated to do this. Modifying Lisogurski to measure hematocrit would increase component count (e.g., the number of light sources), complexity, size, and cost of the device. EX2046, ¶151. These changes are antithetical to Lisogurski's stated goal to provide a portable or wearable device. Petition, 35-36 (citing EX1027, 1:4-6, 1:16-18, 3:50-53).

**D. Ground 4: Alleged Indefiniteness**

In Ground 4, Petitioner asserts that claim 7 is indefinite because Patent Owner's application of "identify an object" in the '484 IPR would not inform a POSITA of the scope of the term with reasonable certainty. Petition, 90; EX1003, ¶¶231-38. Petitioner has failed to meet its burden for multiple reasons.

First, Petitioner's indefiniteness argument is inconsistent with the prior claim construction from the Board (which was affirmed by the Federal Circuit). EX1011, 8-10; EX1012, 2-4. Petitioner asks the Board to adopt the Board's construction of "identify an object" for Grounds 1-3 yet simultaneously argues that the same construction renders claim 7 indefinite. Petition, 18, 90. These positions are irreconcilable. If the Board-adopted construction supplies a reasonably certain meaning for adjudicating obviousness—and Petitioner concedes it does by relying on it—then Petitioner's indefiniteness argument is a disagreement about application of the construction, not a defect of indefiniteness. *Supra*, §VI.A.1.

Petitioner and Dr. Mercier understood the phrase sufficiently to apply prior art in Grounds 1-3. Petition, 32-90. In the Apple IPR for the '484 Patent, Apple and its expert understood the scope and applied prior art to argue unpatentability. EX1012, 3-4; EX2046, ¶156. Samsung also did not argue indefiniteness in its PGR petition challenging the '790 Patent and was able to apply prior art to the phrase. EX1053, 25; EX2046, ¶156. The fact that multiple parties and experts were able to

apply prior art to this term is evidence that it is not indefinite. *Sonix Tech. Co. v. Pubs. Int'l, Ltd.*, 844 F.3d 1370, 1380 (Fed. Cir. 2017) (finding that expert's application of an allegedly indefinite term to prior art "provide[s] evidence that a skilled artisan did understand the scope of this invention with reasonable certainty").

Second, Petitioner does not argue that a POSITA reviewing the '790 Patent would not understand the scope of the phrase "identify an object" with reasonable certainty. In fact, Petitioner admits that a POSITA would understand "in light of the specification" that this phrase "refers to identification of any material or constituent by the wearable device as a particular thing." Petition, 91. Rather, Petitioner argues that Patent Owner's "position as to the scope of 'identify an object' in its appeal of the '484 IPR, if accepted, would render" claim 7 indefinite. *Id.*, 90. Petitioner's rationale rests upon mischaracterizations of Patent Owner's arguments in the appeal of the '484 IPR.

Petitioner argues that Patent Owner's position in the '484 IPR appeal creates an "arbitrary distinction" based on a premise that oxygenated and deoxygenated hemoglobin are not "objects." Petition, 92. This mischaracterizes Patent Owner's arguments in the appeal. Tellingly, Petitioner does not quote any statement from Patent Owner to this effect. Patent Owner's position in the appeal is consistent with its position in this PGR: a pulse oximeter is "configured to know from the outset precisely what it [is] measuring" and therefore does not identify an object in the

sense of recognizing an *unknown* constituent as a particular thing. EX1061, 27; *supra*, §VI.A.2; EX2046, ¶162. This is a distinction in function—measuring known parameters versus identifying unknown constituents—not a distinction in what qualifies as an object.

Petitioner argues that the specification does not support drawing a distinction between a pulse oximetry device that simply measures a blood constituent and a device that identifies an object. Petition, 91-92. This is incorrect. The specification distinguishes systems designed to measure known parameters from systems designed to identify objects, describing active remote sensing to “distinguish different concrete structures” and to distinguish “building materials” from “plant life, soil, and trees,” and explaining that this adds “a fourth dimension—namely, identification of objects based on their chemical signature.” EX1001, 54:33-59; EX2046, ¶164. A POSITA would readily understand the distinction between identification (determining what something is) and measurement (determining how much of something is present). EX2046, ¶164.

Third, the specification provides multiple examples of how identification of an object is performed. EX1001, FIG. 65B, 54:33-59; EX2046, ¶165. The specification provides concrete examples of objects that can be identified, including building materials such as gypsum, painted structures, plywood, and concrete (EX1001, 54:54-56); plant life, soil, and trees (EX1001, 54:56-57); blood

constituents such as glucose, triacetin, ascorbate, lactate, alanine, and urea (EX1001, 18:3-27); and tissue constituents with specific spectral signatures (EX1001, 76:37-49). The specification also provides functional context, explaining that identification involves using spectral techniques and pattern matching to recognize materials based on their chemical signatures. Ex. 1001 at 54:57-59; 18:20-27; EX2046, ¶165.

For at least these reasons, Petitioner has not shown claim 7 is unpatentable for indefiniteness.

**E. Ground 5: Alleged Non-Enablement**

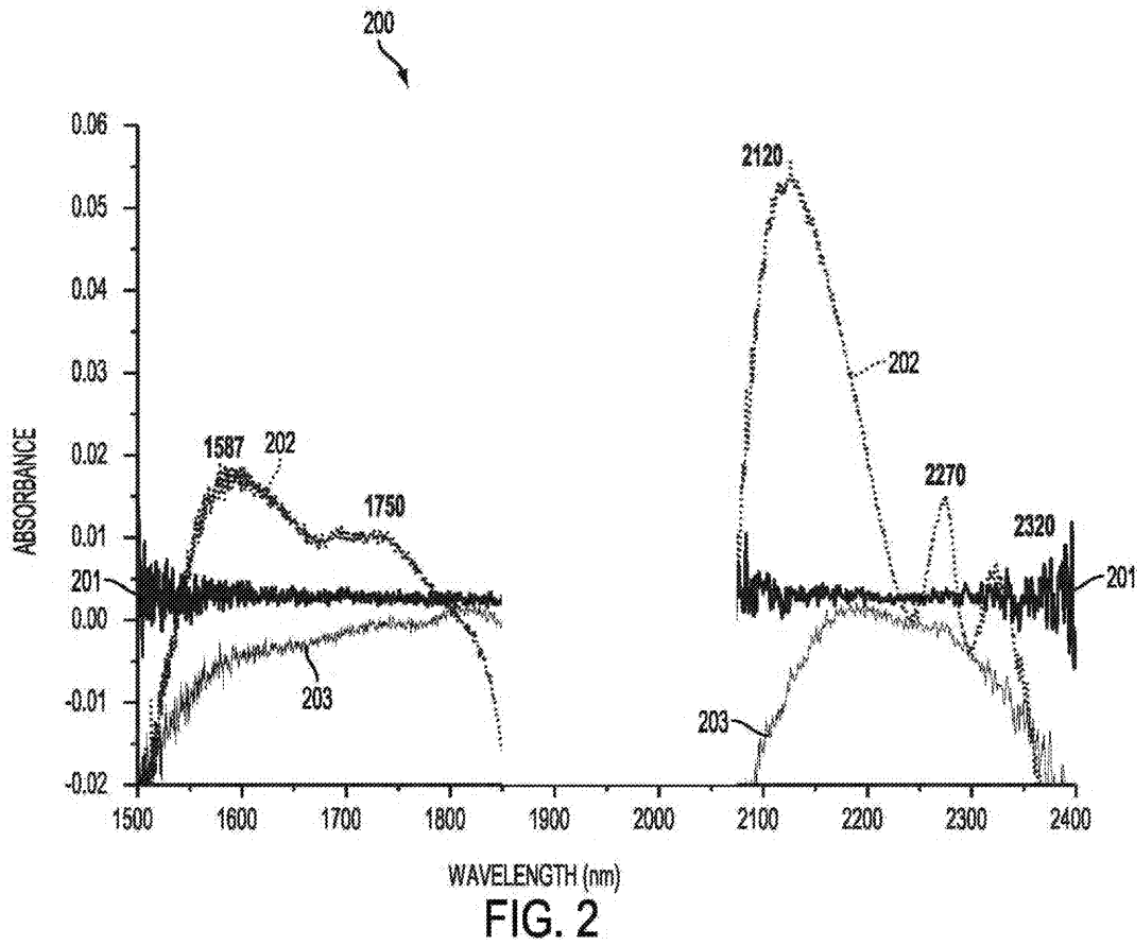
In Ground 5, Petitioner asserts that claim 7 is unpatentable for non-enablement based on Patent Owner's understanding of "identify an object," as evidenced by the '484 IPR. Petition, 93; EX1003, ¶¶239-42. Petitioner failed to meet its burden for at least four reasons.

First, Petitioner and its expert failed to address the *Wands* factors. *See* Petition, 93-95; EX1003, ¶¶239-45; *In re Wands*, 858 F.2d 731 (Fed. Cir. 1988). The Board has held that a petitioner's "failure to adequately address the *Wands* factors supports denial" of a PGR raising an enablement ground. *Merck Sharp & Dohme Corp., v. Wyeth LLC*, PGR2017-00016, Paper 9 at 8-9 (PTAB Oct. 20, 2017) (denying institution of PGR where Petitioner's expert did not provide an analysis "grounded in the *Wands* factors" and "Petitioner's arguments relating to undue experimentation rest on unsupported [expert] opinions"); *see also* MPEP 2164.01(a) ("It is improper

to conclude that a disclosure is not enabling based on an analysis of only one of the above factors while ignoring one or more of the others.”). The Director should find that Petitioner failed to meet its burden for this reason alone.

Second, the '790 Patent specification provides substantial guidance and working embodiments within the scope of claim 7. EX2046, ¶168. These embodiments include non-invasive glucose and blood-constituent monitoring using near-infrared spectroscopy (EX1001, 2:60-3:30); identification of the glucose spectrum (EX1001, 16:48-18:27; FIG. 2), monitoring ketone bodies (EX1001, 18:28-19:47); and hemoglobin A1c monitoring (EX1001, 19:48-21:28). The same framework applies to remote sensing embodiments identifying building materials, vegetation, and concrete structures based on spectral signatures. EX1001, 54:32-59; EX2046, ¶168.

Figure 2 of the '790 Patent presents actual measurement test data demonstrating the absorbance spectra of different blood constituents:



Ex. 1001 at FIG. 2

Figure 2 refutes Petitioner's enablement argument. EX2046, ¶169. Dr. Mercier argues that "non-invasive optical monitoring of glucose, to a degree of certainty that would be useful in health or disease monitoring...has not been accomplished in the art to the present day, never mind by the priority date of the patent." EX1003, ¶242. But Figure 2 shows that the disclosure obtained and documented spectral absorbance data for glucose and other blood constituents using

near infrared wavelengths as claimed in claim 7. EX2046, ¶169. A POSITA reviewing Figure 2 and the accompanying disclosure would have understood how to practice the claimed invention without undue experimentation. EX2046, ¶169.

Third, Dr. Mercier's declaration is conclusory and provides little technical reasoning relative to the conclusions in the Petition. *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"); 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"). The *only* support Dr. Mercier cites for his opinions is a 2023 article that states that "accurate detection of blood glucose concentration is not feasible without stable measurement conditions." EX1003, ¶243 (quoting EX1065). This actually confirms that blood glucose *can* be measured non-invasively. EX2046, ¶170.

Fourth, Petitioner's arguments are qualified in ways that do not address the actual claim scope. For example, Dr. Mercier asserts that "non-invasive optical monitoring of glucose, to a degree of certainty that would be useful in health or disease monitoring and that would distinguish glucose reliably in practical applications...has not been accomplished." EX1003, ¶242. Notably, Dr. Mercier does not argue that a POSITA would be unable to practice the claimed invention

without undue experimentation. Instead, Dr. Mercier argues only that one could not so in a manner “useful in health or disease monitoring” or “reliabl[e] in practical applications.” *Id.* But claim 7 does not require a particular degree of accuracy or reliability. EX2046, ¶170.

For these reasons, Petitioner has not shown claim 7 is unpatentable for non-enablement.

## **IX. 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: January 22, 2026

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**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 10,224 words, which is less than the 14,000 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 January 22, 2026.

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 January 22, 2026, by email:

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