IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

OMNI MEDSCI, INC.,	§	
	§	
Plaintiff,	§	**CIVIL ACTION NO. 2:18-CV-00429-RWS**
	§	
v.	§	
	§	
APPLE INC.,	§	
	§	
Defendant.	§	

CLAIM CONSTRUCTION MEMORANDUM OPINION AND ORDER

Before the Court is the opening claim construction brief of Omni MedSci, Inc. ("Plaintiff") (Docket No. 102, filed under seal on May 29, 2019),[1] the response of Apple Inc. ("Defendant") (Docket No. 125, filed on June 21, 2019),[2] and Plaintiff's reply (Docket No. 129, filed on July 1, 2019). The Court held a hearing on the issue of claim construction and claim definiteness on July 16, 2019. After the hearing, the parties submitted supplemental briefing: Defendant's supplemental brief (Docket No. 144,[3] filed on July 31, 2019) and Plaintiff's response to the supplemental brief (Docket No. 145, filed under seal on August 5, 2019). Having considered the arguments and evidence presented by the parties at the hearing and in their briefing, the Court issues this Order.

[1] Citations to the parties' filings are to the filing's number in the docket (Docket No.) and pin cites are to the page numbers assigned through ECF.
[2] Defendant submitted an amended responsive brief to correct misquoted claim language in the originally submitted brief. Docket No. 133. The Court cites the amended brief (Docket No. 133-1).
[3] Defendant incorporated a brief filed under seal on July 29, 2019 as Docket No. 244 in *Omni MedSci, Inc. v. Apple Inc.*, No. 2:18-cv-134-RWS (E.D. Tex.) (the "'134 Case").

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I. BACKGROUND

Plaintiff alleges infringement of four U.S. Patents: Nos. 9,861,286 (the "'286 Patent"), 10,098,546 (the "'546 Patent"), 10,188,299 (the "'299 Patent"), and 10,213,113 (the "'113 Patent") (collectively, the "Asserted Patents"). The Asserted Patents are subject-matter related and each incorporates the disclosure of the others. The '286, '546 and '113 Patents are related through a series of continuation applications and claim priority to a provisional application filed on December 31, 2012. The '299 Patent claims priority to a different provisional application filed on December 31, 2012.

The Court recently construed claims of the '286 Patent and other subject-matter related patents. *Omni MedSci, Inc. v. Apple Inc.*, No. 2:18-cv-00134-RWS, 2019 U.S. Dist. LEXIS 104669 (E.D. Tex. June 24, 2019) (the "*'134 Order*"). In the *'134 Order*, the Court considered the scope of "beam," "lenses" and "modulating" terms. *Id*. at *11–26. These exact or substantially similar terms are before the Court here.

In general, the Asserted Patents are directed to technology for non-invasively determining characteristics of a material or substance, such as blood within biological tissue, using a light source. For example, the '286 Patent discloses using spectroscopy to inspect a sample "by comparing different features, such as wavelength (or frequency), spatial location, transmission, absorption, reflectivity, scattering, fluorescence, refractive index, or opacity." '286 Patent 9:19–22. This may entail measuring various optical characteristics of the sample as a function of the wavelength[4] of the source light by varying the wavelength of the source light or by using a broadband source of light. *Id*. at 9:22–33.

[4] Wavelength and frequency of light are inversely related, and as it concerns the relevant technology and the Asserted Patents, these terms are practically interchangeable. Accordingly, references to the frequency of light in this order also refers to the wavelength, and vice versa.

Claim 16 of the ’286 Patent is exemplary of a claimed system:

> **16**. A wearable device for use with a smart phone or tablet, the wearable device comprising:
>
> a measurement device including a light source comprising a plurality of light emitting diodes (LEDs) for measuring one or more physiological parameters, the measurement device configured to generate, by modulating at least one of the LEDs having an initial light intensity, an optical beam having a plurality of optical wavelengths, wherein at least a portion of the plurality of optical wavelengths is a near-infrared wavelength between 700 nanometers and 2500 nanometers;
>
> the measurement device comprising one or more lenses configured to receive and to deliver a portion of the optical beam to tissue, wherein the tissue reflects at least a portion of the optical beam delivered to the tissue, and wherein the measurement device is adapted to be placed on a wrist or an ear of a user;
>
> the measurement device further comprising a receiver configured to:
>
> capture light while the LEDs are off and convert the captured light into a first signal and
>
> capture light while at least one of the LEDs is on and convert the captured light into a second signal, the captured light including at least a portion of the optical beam reflected from the tissue;
>
> the measurement device configured to improve a signal-to-noise ratio of the optical beam reflected from the tissue by differencing the first signal and the second signal;
>
> the light source configured to further improve the signal-to-noise ratio of the optical beam reflected from the tissue by increasing the light intensity relative to the initial light intensity from at least one of the LEDs;
>
> the measurement device further configured to generate an output signal representing at least in part a non-invasive measurement on blood contained within the tissue; and
>
> wherein the receiver includes a plurality of spatially separated detectors, wherein at least one analog to digital converter is coupled to the spatially separated detectors.

The Asserted Patents also disclose various techniques for improving the signal-to-noise ratio for the measurement. For example, the signal-to-noise ratio may be improved by increasing the intensity of the source light. *See, e.g.*, ’286 Patent 4:20–24 (“The light source is configured to further improve the signal-to-noise ratio of the optical beam reflected from the tissue by increasing the light intensity relative to the initial light intensity from at least one of the LEDs.”). The signal-to-noise ratio may also be improved by taking the difference between two light measurements.

See, e.g., *id*. at 4:17–20 ("The measurement device is configured to improve a signal-to-noise ratio of the optical beam reflected from the tissue by differencing the first signal and the second signal."). Modulation of the light source may also be used to increase the signal-to-noise ratio. *See, e.g.*, *id*. at 24:12–17 ("For example, one way to improve the signal-to-noise ratio would be to use modulation and lock-in techniques. In one embodiment, the light source may be modulated, and then the detection system would be synchronized with the light source."). Further, the source light may be pulsed and the pulse rate increased to improve the signal-to-noise ratio. *See, e.g.*, '299 Patent 2:50–55 ("The light source is configured to improve the signal-to-noise ratio of the output signal by increasing light intensity relative to an initial light intensity from at least one of the plurality of LEDs and by increasing pulse rate relative to an initial pulse rate of at least one of the plurality of LEDs.").

II. LEGAL PRINCIPLES

A. Claim Construction

"It is a 'bedrock principle' of patent law that 'the claims of a patent define the invention to which the patentee is entitled the right to exclude.' " *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (quoting *Innova/Pure Water Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). To determine the meaning of the claims, courts start by considering the intrinsic evidence. *Id.* at 1313; *C.R. Bard, Inc. v. U.S. Surgical Corp.*, 388 F.3d 858, 861 (Fed. Cir. 2004); *Bell Atl. Network Servs., Inc. v. Covad Commc'ns Group, Inc.*, 262 F.3d 1258, 1267 (Fed. Cir. 2001). The intrinsic evidence includes the claims themselves, the specification and the prosecution history. *Phillips*, 415 F.3d at 1314; *C.R. Bard, Inc.*, 388 F.3d at 861. The general rule—subject to certain specific exceptions discussed *infra*—is that each claim term is construed according to its ordinary and accustomed meaning as understood by one of ordinary skill in the art at the time of the invention in the context of the patent. *Phillips*, 415 F.3d

at 1312–13; *Alloc, Inc. v. Int'l Trade Comm'n*, 342 F.3d 1361, 1368 (Fed. Cir. 2003); *Azure Networks, LLC v. CSR PLC*, 771 F.3d 1336, 1347 (Fed. Cir. 2014) ("There is a heavy presumption that claim terms carry their accustomed meaning in the relevant community at the relevant time.") (vacated on other grounds).

"The claim construction inquiry . . . begins and ends in all cases with the actual words of the claim." *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1248 (Fed. Cir. 1998). "[I]n all aspects of claim construction, 'the name of the game is the claim.' " *Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1298 (Fed. Cir. 2014) (quoting *In re Hiniker Co.*, 150 F.3d 1362, 1369 (Fed. Cir. 1998)). First, a term's context in the asserted claim can be instructive. *Phillips*, 415 F.3d at 1314. Other asserted or unasserted claims can also aid in determining the claim's meaning, because claim terms are typically used consistently throughout the patent. *Id.* Differences among the claim terms can also assist in understanding a term's meaning. *Id*. For example, when a dependent claim adds a limitation to an independent claim, it is presumed that the independent claim does not include the limitation. *Id*. at 1314–15.

"[C]laims 'must be read in view of the specification, of which they are a part.'" *Id*. (quoting *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995) (en banc)). "[T]he specification 'is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.' " *Id*. (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)); *Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1325 (Fed. Cir. 2002). But, " '[a]lthough the specification may aid the court in interpreting the meaning of disputed claim language, particular embodiments and examples appearing in the specification will not generally be read into the claims.' " *Comark Commc'ns, Inc. v. Harris Corp.*, 156 F.3d 1182, 1187 (Fed. Cir. 1998) (quoting *Constant v. Advanced Micro-*

Devices, Inc., 848 F.2d 1560, 1571 (Fed. Cir. 1988)); *see also Phillips*, 415 F.3d at 1323. "[I]t is improper to read limitations from a preferred embodiment described in the specification—even if it is the only embodiment—into the claims absent a clear indication in the intrinsic record that the patentee intended the claims to be so limited." *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 913 (Fed. Cir. 2004).

The prosecution history is another tool to supply the proper context for claim construction because, like the specification, the prosecution history provides evidence of how the U.S. Patent and Trademark Office ("PTO") and the inventor understood the patent. *Phillips*, 415 F.3d at 1317. However, "because the prosecution history represents an ongoing negotiation between the PTO and the applicant, rather than the final product of that negotiation, it often lacks the clarity of the specification and thus is less useful for claim construction purposes." *Id.* at 1318; *see also Athletic Alternatives, Inc. v. Prince Mfg.*, 73 F.3d 1573, 1580 (Fed. Cir. 1996) (ambiguous prosecution history may be "unhelpful as an interpretive resource").

Although extrinsic evidence can also be useful, it is " 'less significant than the intrinsic record in determining the legally operative meaning of claim language.' " *Phillips*, 415 F.3d at 1317 (quoting *C.R. Bard, Inc.*, 388 F.3d at 862). Technical dictionaries and treatises may help a court understand the underlying technology and the manner in which one skilled in the art might use claim terms, but technical dictionaries and treatises may provide definitions that are too broad or may not be indicative of how the term is used in the patent. *Id*. at 1318. Similarly, expert testimony may aid a court in understanding the underlying technology and determining the particular meaning of a term in the pertinent field, but an expert's conclusory, unsupported assertions as to a term's definition are not helpful to a court. *Id*. Extrinsic evidence is "less reliable than the patent

and its prosecution history in determining how to read claim terms." *Id*. The Supreme Court has explained the role of extrinsic evidence in claim construction:

> In some cases, however, the district court will need to look beyond the patent's intrinsic evidence and to consult extrinsic evidence in order to understand, for example, the background science or the meaning of a term in the relevant art during the relevant time period. *See, e.g.*, *Seymour v. Osborne*, 11 Wall. 516, 546 (1871) (a patent may be "so interspersed with technical terms and terms of art that the testimony of scientific witnesses is indispensable to a correct understanding of its meaning"). In cases where those subsidiary facts are in dispute, courts will need to make subsidiary factual findings about that extrinsic evidence. These are the "evidentiary underpinnings" of claim construction that we discussed in *Markman*, and this subsidiary factfinding must be reviewed for clear error on appeal.

Teva Pharm. USA, Inc. v. Sandoz, Inc., 135 S. Ct. 831, 841 (2015).

B. Departing from the Ordinary Meaning of a Claim Term

There are "only two exceptions to [the] general rule" that claim terms are construed according to their plain and ordinary meaning: "1) when a patentee sets out a definition and acts as his own lexicographer, or 2) when the patentee disavows the full scope of the claim term either in the specification or during prosecution."[5] *Golden Bridge Tech., Inc. v. Apple Inc.*, 758 F.3d 1362, 1365 (Fed. Cir. 2014) (quoting *Thorner v. Sony Computer Entm't Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012)); *see also GE Lighting Solutions, LLC v. AgiLight, Inc.*, 750 F.3d 1304, 1309 (Fed. Cir. 2014) ("[T]he specification and prosecution history only compel departure from the plain meaning in two instances: lexicography and disavowal."). The standards for finding lexicography or disavowal are "exacting." *GE Lighting Solutions*, 750 F.3d at 1309.

To act as his own lexicographer, the patentee must "clearly set forth a definition of the disputed claim term," and "clearly express an intent to define the term." *Id.* (quoting *Thorner*, 669

[5] Some cases have characterized other principles of claim construction as "exceptions" to the general rule, such as the statutory requirement that a means-plus-function term is construed to cover the corresponding structure disclosed in the specification. *See, e.g.*, *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1367 (Fed. Cir. 2002).

F.3d at 1365); *see also Renishaw*, 158 F.3d at 1249. The patentee's lexicography must appear "with reasonable clarity, deliberateness, and precision." *Renishaw*, 158 F.3d at 1249.

To disavow or disclaim the full scope of a claim term, the patentee's statements in the specification or prosecution history must amount to a "clear and unmistakable" surrender. *Cordis Corp. v. Boston Sci. Corp.*, 561 F.3d 1319, 1329 (Fed. Cir. 2009); *see also Thorner*, 669 F.3d at 1366 ("The patentee may demonstrate intent to deviate from the ordinary and accustomed meaning of a claim term by including in the specification expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope."). "Where an applicant's statements are amenable to multiple reasonable interpretations, they cannot be deemed clear and unmistakable." *3M Innovative Props. Co. v. Tredegar Corp.*, 725 F.3d 1315, 1326 (Fed. Cir. 2013).

A. Definiteness Under 35 U.S.C. § 112, ¶ 2 (pre-AIA) / § 112(b) (AIA)

Patent claims must particularly point out and distinctly claim the subject matter regarded as the invention. 35 U.S.C. § 112, ¶ 2. A claim, when viewed in light of the intrinsic evidence, must "inform those skilled in the art about the scope of the invention with reasonable certainty." *Nautilus Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 910 (2014). If it does not, the claim fails § 112, ¶ 2 and is therefore invalid as indefinite. *Id.* at 901. Whether a claim is indefinite is determined from the perspective of one of ordinary skill in the art as of the time the application for the patent was filed. *Id.* at 911. As it is a challenge to the validity of a patent, the failure of any claim in suit to comply with § 112 must be shown by clear and convincing evidence. *BASF Corp. v. Johnson Matthey Inc.*, 875 F.3d 1360, 1365 (Fed. Cir. 2017). "[I]ndefiniteness is a question of law and in effect part of claim construction." *ePlus, Inc. v. Lawson Software, Inc.*, 700 F.3d 509, 517 (Fed. Cir. 2012).

When a term of degree is used in a claim, "the court must determine whether the patent provides some standard for measuring that degree." *Biosig Instruments, Inc. v. Nautilus, Inc.*, 783

F.3d 1374, 1378 (Fed. Cir. 2015) (quotation marks omitted). Likewise, when a subjective term is used in a claim, "the court must determine whether the patent's specification supplies some standard for measuring the scope of the [term]." *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1351 (Fed. Cir. 2005). The standard "must provide objective boundaries for those of skill in the art." *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014).

III. CONSTRUCTION OF DISPUTED TERMS

A. "beam"

Disputed Term[6]	Plaintiff's Proposed Construction	Defendant's Proposed Construction
"beam" • '286 Patent Claim 16 • '546 Patent Claims 1, 8, 15 • '299 Patent Claim 7 • '113 Patent Claims 1, 22	photons or light transmitted to a particular location in space	photons or light transmitted to a particular location in space

<u>The Parties' Positions</u>

Both Plaintiff and Defendant present the Court's construction of "beam" from the *'134 Order*[7] but dispute whether this construction needs clarification. Docket No. 130 at 5. Defendant originally proposed that "beam" should be construed as "photons or light transmitted to a particular location in space (a 'beam' does not include scattered light)." *Id.* at 5 n.2.

Plaintiff reiterates the arguments it presented to the court in the '134 Case. Specifically, Plaintiff contends that "beam" is defined in the Asserted Patents such that it does not necessarily exclude "scattered light." Docket No. 102 at 9 (citing '286 Patent 10:14–23; '546 Patent 8:41–50; '299 Patent 10:43–52; '113 Patent 10:36–45).

[6] For all term charts in this order, the claims in which the term is found are listed with the term but: (1) only the highest-level claim in each dependency chain is listed, and (2) only asserted claims identified in the parties' Joint Patent Rule 4-5(d) Claim Construction Chart (Docket No. 130) are listed.
[7] 2019 U.S. Dist. LEXIS 104669, at *11–15.

Defendant responds that the patents' definition of "beam" does not include "scattered (or randomly directed) light." Docket No. 133-1 at 7. As described in the patents, a "beam" of light is distinct from undirected or stray or diffusely reflected light. *Id*. at 6–7 (citing '286 Patent 8:50–53; '546 Patent 7:10–13; '299 Patent 9:4–7; '113 Patent fig. 12C, 9:4–7, 24:22–25, 24:34–37). As it did in the '134 Case, Defendant contends that the customary meaning of "beam," which refers to "rays" and "streams," does not include randomly scattered light. *Id*. at 9 (citing *Merriam-Webster's Collegiate Dictionary* (11th ed., 2003), Docket No. 125-3 at 4 [hereinafter *Merriam-Webster's*]; *The American Heritage Dictionary of the English Language* (5th ed., 2012), Docket No. 125-4 at 4 [hereinafter *American Heritage*]).

Plaintiff, in its reply, contends that "beam" should be construed here as it was in the *'134 Order*. Docket No. 129 at 4.

In supplemental briefing, Defendant contends that "beam" should be construed to clarify that the light is directed to a particular location and that "beam" does not encompass any randomly directed, scattered, or diffused light that is simply received at a particular location. '134 Case Docket No. 244 at 5–6. Plaintiff responds that as is known in the art and taught in Defendant's own patents, diffuse light may be directed to a particular location through scattering. Docket No. 145 at 5–6 (citing U.S. Patent Nos. 10,215,698 and 9,891,098).

<u>Analysis</u>

The issues in dispute, as well as the parties' arguments and evidence, are substantially the same as addressed in the *'134 Order*. The Court here adopts the reasoning and holding of the *'134 Order*. 2019 WL 2578714, at *4–6, 2019 U.S. Dist. LEXIS 104669, at *11–15 (finding that "beam" is defined in the patents). The Court reiterates that a "beam," as set forth in the Asserted Patents, is not necessarily collimated or focused, but rather may include diffuse light that is at least

in part directed to a particular location. The Court also reiterates that a "beam," as set forth in the Asserted Patents, is directed at a particular location and is not just light that may be transmitted to an indeterminate location. Further, the Court does not draw the distinction between scattered light and directed light that Defendant urges. Specifically, Defendant argues that "diffusely reflected light" or scattered light is inherently not directed to a particular location. Docket No. 133-1 at 9 (citing '113 Patent fig. 12C, 24:22–25, 24:34–37). The Court disagrees. Whether a particular instance of diffused or scattered light is directed to a particular location is a factual issue of infringement or invalidity.

Accordingly, the Court construes "beam" as follows:

- "beam" means "photons or light transmitted to a particular location in space."

B. "lens" and "one or more lenses"

Disputed Term	Plaintiff's Proposed Construction	Defendant's Proposed Construction
"lens" • '299 Patent Claim 7	plain and ordinary meaning	plain and ordinary meaning
"one or more lenses" • '286 Patent Claim 16 • '546 Patent Claims 1, 8, 15	plain and ordinary meaning	plain and ordinary meaning

Because the parties' arguments and proposed constructions with respect to these terms are related, the Court addresses the terms together.

<u>The Parties' Positions</u>

Both Plaintiff and Defendant present the Court's construction of "lenses" from the *'134 Order*[8] but dispute whether this construction needs clarification. Docket No. 130 at 6. Defendant

[8] 2019 WL 2578714, at *6–7, 2019 U.S. Dist. LEXIS 104669, at *15–20.

originally proposed that "lens" should be construed as "transparent surface[s] used to collimate (make parallel) or focus rays of light." *See id*. at 6 n.4.

Plaintiff reiterates the arguments it presented to the court in the '134 Case. Specifically, Plaintiff contends that "lens" would be readily understood by a jury without construction. Plaintiff further contends that a "lens" is not limited to focusing or collimating light, but rather may also diverge light. Docket No. 102 at 10 (citing *American Heritage*, Docket No. 102-5 at 6–7; *Merriam-Webster's*, Docket No. 102-6 at 7). According to Plaintiff, the lenses described in the Asserted Patents include—but are not limited to—collimating or focusing lenses. *Id*. at 10–12 (citing '286 Patent fig. 4, 7:60–8:3, 14:2–5, 18:3–17; '546 Patent fig. 4, 6:19–29; '299 Patent 8:34–44, 18:26–28, 22:55–23:2; '113 Patent fig. 4, 8:14–24). In addition, Plaintiff argues that a lens is not necessarily completely transparent: something that blocks all light is not a lens, but a lens that attenuates the light, such as a sunglass lens, is still a lens. *Id*. at 12.

Defendant responds that in order to serve their claim-recited purpose—to deliver a beam to a sample or tissue—the lenses of the claims cannot diverge light, they necessarily collimate or focus light. Docket No. 125 at 9. Lenses are "consistently and repeatedly" described in the Asserted Patents as collimating or focusing light. *Id*. at 9–10 (citing '286 Patent 13:62–64, 14:2–5, 14:26–27, 14:61–63, 18:3–17; '546 Patent 12:22–24, 12:53–54, 13:21–23, 16:43–44; '299 Patent 20:2–5, 22:55–23:2; '113 Patent 13:17–19, 14:17–19, 14:48–50, 15:17–18). Specifically, the patents provide that a lens system that directs light to a sample or tissue necessarily collimates or focuses light. *Id*. at 12 (citing '286 Patent 13:61–64; '546 Patent 12:21–24; '113 Patent 14:16–19). As described in the patents, this collimating or focusing serves the inventions' purpose of increasing the signal-to-noise ratio. *Id*. at 10 (citing '546 Patent at Abstract; '299 Patent 5:32–34). A diverging lens would run counter to this purpose. *Id*. Even the lens depicted in Figure 4 of the

’286 Patent, which does not perform the claim-recited purpose of a lens, is described as “collecting light” rather than “diverging light” and therefore does not support a construction of “lens” that encompasses a diverging lens. *Id*. at 11–12 (citing ’286 Patent fig. 4, 14:2–5; ’546 Patent 12:30; ’113 Patent 14:25). Finally, Defendant argues that a lens is necessarily transparent. *Id*. at 12. “To the extent that transparency is a question of degree,” Defendant concludes, whether a particular material is transparent is for the jury.

Plaintiff, in its reply, contends that “lens” should be construed here as it was in the *’134 Order*. Docket No. 129 at 4.

Analysis

The issues in dispute, as well as the parties’ arguments and evidence, are substantially the same as addressed in the *’134 Order*. The Court here adopts the reasoning and holding of the *’134 Order*. 2019 WL 2578714, at *6–7, 2019 U.S. Dist. LEXIS 104669, at *15–20. That is, “lens” is used in the Asserted Patents according to its plain and ordinary meaning, which does not exclude diverging lenses and requires transparency. *Id*. at *18–20. The Court agrees with Defendant that whether a particular lens, in the prior-art or in an accused product, satisfies the degree of transparency required to be a “lens” is an issue for the jury. The Court notes, however, that it does not understand the plain meaning of “lens” to exclude all components that attenuate light to any degree. Further, the Court is not persuaded by Defendant’s argument that construing “lens” according to its plain and ordinary meaning, which does not exclude diverging lenses, would improperly run counter to a “key aspect of the invention.” It may be that improving the signal-to-noise ratio is important to the invention. The patents, however, disclose multiple ways to achieve this purpose. *See, e.g.*, ’286 Patent 4:17–20 (differencing two light-detection signals), 4:20–24 (increasing the intensity of light produced by a source), 24:12–17 (using modulation and lock-in

techniques); ’299 Patent 2:50–55 (“increasing pulse rate”). A focusing or collimating lens is not a necessary aspect of the invention.

Accordingly, the Court rejects Defendant’s position that the “lens” of the Asserted Patents is necessarily a collimating or focusing lens and determines that “lens” and “lenses” have their plain and ordinary meanings without the need for further construction.

C. The Modulating Terms

Disputed Term	Plaintiff’s Proposed Construction	Defendant’s Proposed Construction
“modulating at least one of the LEDs” • ’286 Patent Claim 16 • ’546 Patent Claims 1, 8, 15	varying [of] the amplitude, frequency, or phase of the light produced by at least one of the LEDs to include information	varying [of] the amplitude, frequency, or phase of the light produced by at least one of the LEDs to include information
“modulating of the at least one of the LEDs” • ’286 Patent Claim 19 • ’546 Patent Claim 18		
modulate at least the first light emitting diode • ’113 Patent Claim 1		
at least one of the first light emitting diodes is modulated • ’113 Patent Claim 22		
modulating of the at least one of the first and second light emitting diodes • ’113 Patent Claim 22		

Because the parties’ arguments and proposed constructions with respect to these terms are related, the Court addresses the terms together.

The Parties' Positions

Both Plaintiff and Defendant present the Court's construction of the Modulating Terms from the *'134 Order*[9] but dispute whether this construction needs clarification. Docket No. 130 at 7. Plaintiff originally proposed that these terms should be construed as "varying the amplitude, frequency, or phase of the light produced by at least one of the LEDs." Docket No. 102 at 13. Defendant originally proposed "varying the frequency or phase of the light produced by at least one of the LEDs to include information." *See* Docket No. 130 at 7 n.6.

Plaintiff argues that "modulating" the light produced by a light-emitting diode (LED) does not necessarily involve including information in the signal "beyond the fact of the modulation." Docket No. 102 at 13. For example, the Asserted Patents describe simple pulsing of the light as modulation. *Id*. at 13–14 (citing '286 Patent 17:57–60; '546 Patent 16:17–20; '299 Patent 22:42–45; '113 Patent 8:34–37). Defendant's technical documents also refer to simple pulsing as modulation. *Id*. at 14 (citing *Citrine ASIC Engineering Requirements Specification*, Docket No. 102-7).

Defendant responds that "modulation" necessarily involves encoding information. Docket No. 133-1 at 15. The Asserted Patents distinguish modulated light from unmodulated light in that the modulated light necessarily includes information, unlike unmodulated light. *Id*. (citing '286 Patent 10:17–19; '546 Patent 8:44–46; '299 Patent 10:46–48; '113 Patent 10:39–41). This is the customary meaning of "modulate." *Id*. at 16 (citing *Microsoft Computer Dictionary* (4th ed. 1999), Docket No. 125-7 at 4; *Merriam-Webster's*, Docket No. 102-6 at 8; *Newton's Telecom Dictionary* (26th ed. 2011), Docket No. 125-5 at 6). In addition, the patents distinguish between modulating on the one hand and pulsing or varying light amplitude on the other; thus, the Modulate Terms do

[9] 2019 WL 2578714, at *7–10, 2019 U.S. Dist. LEXIS 104669, at *20–26.

not properly encompass pulsing or varying the amplitude. *Id*. at 16–18 (citing ’286 Patent 5:12–18, 24:21-25; ’546 Patent 4:6–9, 4:31–35; ’299 Patent 18:16–24; ’113 Patent 4:7–24, 26:17–21). In fact, Claim 16 of the ’286 Patent recites modulating separately from varying the light intensity, indicating that modulating and varying light intensity are two different concepts. *Id*. at 17–18.

Plaintiff, in its reply, contends that “modulating” should be construed here as it was in the *’134 Order*. Docket No. 129 at 4.

In supplemental briefing, Defendant contends that “modulating” should be construed to clarify that modulating does not encompass pulsing a light source without varying the amplitude, frequency, or phase of the pulses. ’134 Case Docket No. 244 at 2–5. Plaintiff responds that while simply turning a light on then off a single time is not modulating, a train of light pulses is modulating in that the pulses represent a variance of the light amplitude. The pulse train may be further modulated by, for example, varying the amplitude, duration, or position of the pulses, but such pulse modulation is not required by the Modulation Terms. Docket No. 145 at 2–4.

Analysis

The issues in dispute, as well as the parties’ arguments and evidence, are substantially the same as addressed in the *’134 Order*. The Court here adopts the reasoning and holding of the *’134 Order*. 2019 WL 2578714, at *7–10, 2019 U.S. Dist. LEXIS 104669, at *20–26. That is, “modulating” light does not necessarily exclude pulsing the light or otherwise varying the amplitude of the light. And “modulating” light necessarily includes the addition of information to the signal. Such information could be, e.g., an identification of the source of the light. *See, e.g.*, ’286 Patent 24:9–16 (describing synchronizing the detection system with the light source through modulation and lock-in techniques).

Specifically, the Court rejects Defendant's arguments that the Modulating Terms as applied to a pulsed light necessarily require modulation of the light pulses by varying the amplitude, frequency, or phase of the pulses. This argument conflates two different signals (namely, the light signal and the pulse train) and two different modulations (namely, light modulation and pulse modulation). As described in the Asserted Patents, the light has a wavelength (and thus a frequency) and an intensity (an amplitude). *See, e.g.*, '286 Patent 3:64– 4:27, 17:27–40. Under the customary meaning of "modulate," light may be modulated by varying its amplitude or frequency (or phase). *Merriam-Webster's*, Docket No. 102-6 at 8; *Microsoft Press Computer Dictionary* (3d ed. 1997); '134 Case Docket No. 85-8 at 4. The Asserted Patents further teach that light may be pulsed to produce pulses having a particular width and repetition rate (pulse frequency). *See, e.g.*, '286 Patent at 15:18–27, 17:27–40.

As explained in the *'134 Order*, pulsing the light inherently involves varying the amplitude of the light. 2019 WL 2578714, at *9–10, 2019 U.S. Dist. LEXIS 104669, at *23–26. For example, the light may be pulsed by repeatedly varying the light amplitude between "1" (on) and "0" (off). While this may create a train of pulses of constant amplitude, the light amplitude is not constant, it is varied between "1" and "0." Characteristics of the pulse train may also be varied to effect different types of pulse modulation, such as "pulse amplitude modulation" and "pulse width modulation." *Microsoft Press Computer Dictionary* (3d ed. 1997), '134 Case Docket No. 85-8 at 5–6.

Modulating the light, therefore, does not require modulating the pulses. That is, pulsing without varying the amplitude, frequency, or phase of the pulses still constitutes varying the amplitude of the light. And the Asserted Patents teach that such pulsing may inject information that can be used to increase the signal-to-noise ratio. *See, e.g.*, '286 Patent 15:18–27. Ultimately,

and consistent with the *'134 Order*, "modulating" is a broad term that has not been redefined to exclude pulsing that does not vary the amplitude, frequency, or phase of the pulses.

Accordingly, the Court construes the Modulating Terms as follows:

- "modulating at least one of the LEDs" means "varying the amplitude, frequency, or phase of the light produced by at least one of the LEDs to include information"; and
- "modulating of at least one of the LEDs" means "varying of the amplitude, frequency, or phase of the light produced by at least one of the LEDs to include information";
- "modulate at least the first light emitting diode" means "vary the amplitude, frequency, or phase of the light produced by at least the first light emitting diode to include information";
- "at least one of the first light emitting diodes is modulated" means "the amplitude, frequency, or phase of the light produced by at least one of the first light emitting diodes is varied to include information";
- "modulating of the at least one of the first and second light emitting diodes" means "varying of the amplitude, frequency, or phase of the light produced by the at least one of the first and second light emitting diodes to include information."

D. "spectral filter"

Disputed Term	Plaintiff's Proposed Construction	Defendant's Proposed Construction
"spectral filter" • '546 Patent Claims 1, 8, 15 • '113 Patent Claim 26	a physical component or coating that passes light based on wavelengths or wavelength bands	a physical component designed to selectively allow light of a particular wavelength or range of wavelengths to pass through it

<u>The Parties' Positions</u>

Plaintiff argues that "spectral filter" is not properly limited to a component that is "designed" to pass light based on wavelength of the light. Rather, the term encompasses any component or coating (e.g., a dielectric filter) that actually passes light based on wavelength of the light. Docket No. 102 at 15–16 (citing '299 Patent 19:5–7, 19:9–11).

Defendant responds that "spectral filter" does not properly cover components that are not designed to pass light based on wavelength "but may do so by happenstance." Docket No. 133-1 at 19. As described in the Asserted Patents, a "spectral filter" is used to ***select*** a particular wavelength or wavelength band which requires that the filter be designed for the selection, rather than some component that merely incidentally provides wavelength-based filtering. *Id*. at 19–20 (citing '299 Patent 19:5–9; '113 Patent 12:4–14, 24:39–43). That a "spectral filter" is designed for a selected or desired wavelength or wavelength band comports with the customary meaning of "filter," which is a device used to select a portion of signal and suppress unwanted portions of the signal. *Id*. at 20 (citing *Newton's Telecom Dictionary* (18th ed. 2002), Docket No. 125-8 at 4). Thus, "spectral filter" does not encompass a component that is neither designed nor used to selectively pass light based on wavelength, regardless if such a component actually passes light based on wavelength. *Id*. at 21.

Plaintiff replies that the defining feature of a "spectral filter" is that it passes light based on the wavelength of the light, regardless of the intended design or use of the component. Docket No. 129 at 4–5. Thus, a component that passes light based on wavelength is a "spectral filter," regardless of the "motivation behind" using the component. *Id*. at 5.

Analysis

The issue in dispute appears to be whether a "spectral filter" is something that necessarily selects a particular wavelength or wavelength band. It is.

A "spectral filter" is a component that filters light according to wavelength of the light. The Court agrees with Defendant that, as relevant to the Asserted Patents, a "filter" is something that selects a particular portion of a signal. For example, the '286 Patent describes using optical filters to select a "plurality of wavelengths" from a "broadband light source" and thus utilize, e.g., light at "wavelengths near 1090 nm, 1440 nm and 1610 nm." '286 Patent 11:49–57. Similarly, optical filters are described as being used "to discriminate between different wavelengths." *Id*. at 13:2–8. Other filters are described as being used to select a particular portion of a signal to suppress noise. *See, e.g.*, *id*. at 24:18–20 ("narrow band filtering around the modulation frequency may be used to reject noise outside the modulation frequency."). This comports with the customary meaning of filter . *See, e.g.*, *Newton's Telecom Dictionary* (18th ed. 2002), Docket No. 125-8 at 4 (defining a "filter" as "[a] device which transmits a selected range of energy" and noting it is "used to suppress unwanted frequencies or noise"). Thus, a "spectral filter" selects a portion of an optical signal according to wavelength.

The Court declines to include Defendant's proposed "designed to" language into the construction of "spectral filter." This threatens to improperly supplant a component's role in a particular system with the component-creator's subjective intent for the component, perhaps

divorced from the system. For example, a particular material designed for structural purposes may also incidentally possess optical-filtering attributes. Or, a particular material prized for its aesthetic qualities may be accidently discovered to possess natural optical-filtering attributes. These materials are not necessarily "designed to" selectively filter light, but can, in fact, be used to selectively filter light. Thus, Defendant's proposed "designed to" limitation would improperly exclude these materials from the scope of "spectral filter" even if the material is used in an allegedly infringing product to filter light to selectively provide a portion of the light.

Plaintiff's proposed construction, however, is too broad. It ostensibly covers material that passes light of all wavelengths equally or indiscriminately passes based on wavelength. This reads out the selective nature of a filter. Rather than indiscriminate passing of light based on wavelength, the spectral filter is configured in the claimed device to selectively pass light based on wavelength.

Accordingly, the Court construes "spectral filter" as follows:

- "spectral filter" means "physical component or coating configured in the device to selectively pass light of a particular wavelength or range(s) of wavelengths"

E. "two receiver outputs"

Disputed Term	Plaintiff's Proposed Construction	Defendant's Proposed Construction
"two receiver outputs" • '546 Patent Claim 1, 8, 15	plain and ordinary meaning	two outputs representing the intensity of the light received by a detector

<u>The Parties' Positions</u>

Plaintiff argues that the outputs of the receiver are not properly limited to signals that represent light intensity. Docket No. 102 at 16–17. The receiver outputs described in the '546 Patent are not limited to representations of light intensity. *Id*. at 17 (citing '546 Patent fig. 5A, 4:17–22, 11:35–39). And the claims do not express that the outputs represent light intensity. *Id*. at 16.

Defendant responds that the claimed receiver outputs are expressly linked to capturing light, converting the captured light into signals, and comparing the signals to improve the measurement. Docket No. 133-1 at 22. The receiver outputs thus must be "light signals." *Id*. Further, as described in the '546 Patent, the detectors recited in the claims as generating the receiver outputs are light detectors. *Id*. at 22–24 (citing '546 Patent, Abstract, figs. 4, 5A, 1:57–61 3:53–59, 4:22–27, 9:66–10:1, 12:51–13:5).

Plaintiff replies that the receiver outputs are expressly generated by analog to digital converters and therefore are digital signals, not light signals. While the '546 Patent "broadly discloses taking measurements using light," the disclosure does not justify reading a light-intensity limitation into the construction of "two receiver outputs." In fact, "light intensity" is recited in the claims apart from the receiver-output limitations. Docket No. 129 at 5–6.

Analysis

The issue in dispute is whether the two receiver outputs necessarily represent the intensity of light received by a detector. They do not.

Neither the claims nor the description of the invention limit the two receiver outputs to signals that represent the intensity of the light received by a detector. For example, Claim 1 of the '546 Patent recites that an analog-to-digital converter that is coupled to a plurality of detectors generates "at least two receiver outputs." '546 Patent 27:18–23. The claim separately recites that the receiver is configured to "capture light . . . and convert the captured light into a first signal" and "capture light . . . and convert the captured light into a second signal" and that the signal-to-noise ratio is improved "by differencing the first signal and the second signal and by differencing the two receiver outputs." This suggests that the receiver outputs are not necessarily simply converted captured light which is represented by other signals. Further, the patent describes the receiver

performing "lock-in detection" in which "narrow band filtering around the modulation frequency may be used to reject noise outside the modulation frequency." *See, e.g.*, *id*. at 20:17–19, 22:28–35, 23:62–24:1. This suggests that the receiver outputs may be related to detected light frequency or modulation frequency, rather than light intensity. Ultimately, the Court is not persuaded that the two receiver outputs necessarily represent light intensity.

Accordingly, the Court rejects Defendant's proposed construction and determines that "two receiver outputs" has its plain and ordinary meaning without the need for further construction.

F. "the measurement device [further] configured to improve [the] signal-to-noise ratio of the output signal by increasing light intensity relative to the initial light intensity of at least the first light emitting diode"

Disputed Term	Plaintiff's Proposed Construction	Defendant's Proposed Construction
"the measurement device configured to improve signal-to-noise ratio of the output signal by increasing light intensity relative to the initial light intensity of at least the first light emitting diode" • '113 Patent Claim 1	plain and ordinary meaning	indefinite
"the measurement device further configured to improve the signal-to-noise ratio of the output signal by increasing light intensity relative to the initial light intensity of at least the first light emitting diode" • '113 Patent Claim 22		

Because the parties' arguments and proposed constructions with respect to these terms are related, the Court addresses the terms together.

The Parties' Positions

Plaintiff argues that "increasing the light intensity relative to the initial light intensity of at least the first light emitting diode" encompasses the increase in light intensity of any light source in the measurement device. Docket No. 102 at 19–20. The increase need not be limited to either the first or second light emitting diode, therefore there is no ambiguity regarding which source has its intensity increased. *Id*.

Defendant responds that the claim is ambiguous with respect to whether the "initial light intensity" of the first or second light emitting diode, or some other light source, is increased and thus the scope of the claim is uncertain. Docket No. 133-1 at 25–26.

Plaintiff replies that the plain meanings of these terms are reasonably certain, the light produced by the measurement device "increases above the initial intensity of the first LED." Docket No. 129 at 8. The claims need not specify what component of the measurement device provides the increased light intensity. *Id*. at 7–8.

Analysis

The issue in dispute is whether it is reasonably certain what light intensity is increased as recited in the claims. It is.

The Court agrees with Plaintiff that the claim need not specify which light source has its light intensity increased. The plain reading of the claim language is that it encompasses increasing any light intensity relative to the initial light intensity of at least the first light emitting diode. While the scope is quite broad, it is reasonably certain.

Accordingly, the Court holds that Defendant has not proven any claim indefinite for including the phrase "increasing light intensity relative to the initial light intensity of at least the first light emitting diode."

G. "wherein the modulation frequency has a phase, and wherein the receiver is configured to lock onto the phase"

Disputed Term	Plaintiff's Proposed Construction	Defendant's Proposed Construction
"wherein the modulation frequency has a phase, and wherein the receiver is configured to lock onto the phase" • '113 Patent Claims 4, 23	plain and ordinary meaning	indefinite

<u>The Parties' Positions</u>

Plaintiff argues that " 'phase' is an inherent feature of any modulation frequency" because a modulation frequency has "cyclic behavior," which behavior inherently has a phase. Docket No. 102 at 20–21 (citing "phase" and "frequency" entries from <u>www.dictionary.com</u>, Docket Nos. 102-9, 102-10). The '113 Patent describes that the modulation frequency has a phase in describing a lock-in type technique: "detecting at the same frequency as the pulsed light source and also possibly phase locked to the same signal." *Id*. at 21 (citing '113 Patent 15:44–49).

Defendant responds that "phase" and "frequency" are distinct attributes of a signal. A frequency does not have a phase. Docket No. 133-1 at 28 (citing *The American Heritage College Dictionary* (4th ed., 2007), Docket No. 125-10 at 4–5; "phase" and "frequency" entries from <u>www.dictionary.com</u>, Docket Nos. 102-9, 102-10). While the "modulation" may have a phase, the "modulation frequency" cannot have a phase. The claims plainly state "the modulation frequency has a phase," which is nonsensical and therefore indefinite. *Id*. at 29. And the Court should not redraft the claim language to preserve the validity of the claims. *Id*. (citing *Allen Eng'g Corp. v. Bartell Indus.*, 299 F.3d 1336, 1348–49 (Fed. Cir. 2002); *Chef Am., Inc. v. Lamb-Weston, Inc.*, 358 F.3d 1371, 1374 (Fed. Cir. 2004)).

Plaintiff replies that phase and frequency are interlinked, and the claim recitation of "the modulation frequency has a phase" is there to provide antecedent basis for "wherein the receiver is configured to lock onto the phase." Docket No. 129 at 10–11.

Analysis

The issue in dispute is whether a modulation frequency may have a phase. On the record before it, the Court agrees with Defendant that frequency and phase are distinct attributes of a cyclic signal and it is nonsensical to state that a frequency has a phase. For example, as relevant to the subject matter of the Asserted Patents, *The American Heritage College Dictionary* (4th ed., 2007) defines "frequency" as the "number of times a specified phenomenon occurs with a specified interval" and the "number of complete cycles of a periodic process occurring per unit time" and the dictionary defines "phase" as a "particular stage in a periodic process or phenomenon" and the "fraction of a complete cycle elapsed as measured from a reference point." Docket No. 125-10 at 4–5. That is, both frequency and phase refer to cyclic phenomena but denote separate attributes of the phenomena: "frequency" refers to the cycle rate, "phase" refers to how much of the cycle has elapsed by some point. Consistent with the customary meanings of "frequency" and "phase," the '113 Patent suggests frequency and phase are separate attributes of a signal. *See, e.g.*, '113 Patent 15:45–47 ("detecting at the same frequency as the pulsed light source and also possibly phase locked to the same signal").

While it may make sense to state that a frequency is associated with a phase or that the modulation has both a frequency and a phase, the claims do not state this and thus are unintelligible. The Court is bound to "construe the claim as written, not as the patentees wish they had written it." *Chef Am., Inc. v. Lamb-Weston, Inc.*, 358 F.3d 1371, 1373–75 (Fed. Cir. 2004)

(refusing to rewrite a nonsensical claim). That is, the plain meaning of the claim language yields a nonsensical result and, as such, the meaning of this term is not reasonably certain.

Accordingly, the Court holds that Defendant has proven Claims 4 and 23 of the ’113 Patent are indefinite by reason of the phrase “wherein the modulation frequency has a phase.”

H. “first reflected portion of the [first / second] output optical beam”

Disputed Term	Plaintiff’s Proposed Construction	Defendant’s Proposed Construction
“first reflected portion of the first output optical beam” • ’113 Patent Claims 2, 3	plain and ordinary meaning	indefinite
“first reflected portion of the second output optical beam” • ’113 Patent Claim 2	plain and ordinary meaning	indefinite

<u>The Parties’ Positions</u>

Plaintiff argues that the recited “first reflected portion” is understandable because, as described in the ’113 Patent, light can reflect in many different directions and only a portion of this light may be collected. Docket No. 102 at 21–23 (citing ’113 Patent fig. 12C, 9:4–7, 11:28–29, 12:36–38, 24:34–36).

Defendant responds that for both the “first output optical beam” and the “second output optical beam” there are two antecedent “a first reflected portion” phrases in Claim 2 of the ’113 Patent, one expressed in Claim 2 and the other expressed in Claim 1, from which Claim 2 depends. Docket No. 133-1 at 29–30. As such, it is not clear which reference forms the antecedent basis for “the received first reflected portion” phrases in Claim 2 and “the first reflected portion” in Claim 3. *Id*. It is likewise not clear whether there are two “first reflected portions” of the first output optical beam, or how there could be. *Id*. at 30–31.

Plaintiff replies that Claims 1 and 2 are directed to different situations and thus "a first reflected portion" is recited in each claim. In Claim 1, each "first reflected portion is received by each of the first and second detectors." In Claim 2, each "first reflected portion . . . is received by [a] single detector." Docket No. 129 at 11–13.

Analysis

The issue in dispute distills to whether the meanings of Claims 2 and 3 of the '113 Patent are reasonably certain given the multiple uses of "a first reflected portion of the first output optical beam" and "a first reflected portion of the second output optical beam" in the claims. The meanings are not reasonably certain.

Claim 2, reproduced and annotated here, includes multiple references to "a first reflected portion of the first output optical beam" and "a first reflected portion of the second output optical beam" and there is no reasonably certain way to determine which of these forms the antecedent basis for "the received first reflected portion of the first output optical beam" and "the received first reflected portion of the second output optical beam." Specifically, Claim 2 recites comparing the received first reflected portion of the first output optical beam with that of the second output optical beam. It also recites: (1) a first detector configured to

> 1. A wearable device, comprising:
> a measurement device … further comprising a receiver … having a first detector and a second detector the first and second detectors being spatially separated, the first detector configured **to receive** at least ***a first reflected portion of the first output optical beam*** the second detector configured **to receive** at least ***a first reflected portion of the second output optical beam*** …
>
> 2. The **wearable device of claim 1** wherein one of the spatially separated detectors is located a first distance from the first light emitting diode and a different distance from the second light emitting diode such that the receiver can **receive** ***a first reflected portion of the first output optical beam*** and ***a first reflected portion of the second output optical beam***, and wherein the receiver is configured to generate a detector output signal at least in part by **comparing** ***the*** **received** ***first reflected portion of the first output optical beam*** and ***the*** **received** ***first reflected portion of the second output optical beam***.

receive a first reflected portion of the first output optical beam, (2) a second detector configured to receive a first reflected portion of the second output optical beam, and (3) the receiver can receive a first reflected portion of the first output optical beam and a first reflected portion of the second output optical beam. It is not clear what "received" reflected portions are compared. It could be those received by the first and second detectors. Or it could be those received by the receiver. Claim 3, which depends from Claim 2, does nothing to resolve this ambiguity and thus suffers the same deficiency.

Accordingly, the Court holds that Defendant has proven that Claims 2 and 3 of the '113 Patent are indefinite by reason of the multiple instances of "a first reflected portion" in the claims.

I. "generate a second receiver signal from light detected while at least one of the first and second light emitting diodes is on including at least a portion of the first reflected portion of the first output optical beam"

Disputed Term	Plaintiff's Proposed Construction	Defendant's Proposed Construction
"generate a second receiver signal from light detected while at least one of the first and second light emitting diodes is on including at least a portion of the first reflected portion of the first output optical beam" • '113 Patent Claim 3	plain and ordinary meaning	indefinite

<u>The Parties' Positions</u>

Plaintiff argues that the meaning of this term is clear: it requires a signal "including at least a portion of the first reflected portion of the first output optical beam" and "the first reflected portion of the first output optical beam" refers to a portion of the beam generated by the first light emitting diode. Docket No. 102 at 20.

Defendant responds that Claim 3 requires a signal that includes "the first reflected portion of the first output optical beam" and that is generated "from light detected while at least one of the first and second light emitting diodes is on." This allows for the nonsensical result that the signal includes a portion of a beam generated by the first light emitting diode while that diode is off, so long as the second light emitting diode is on. Docket No. 133-1 at 29–31.

Plaintiff replies: the signal that includes a "first reflected portion of the first output optical beam" from the first light emitting diode may be generated while the first light emitting diode is pulsed on and off. Plaintiff contends that Defendant's argument is improperly premised on the first light emitting diode being continuously on to satisfy the claim. Docket No. 129 at 8–10.

Analysis

The issue in dispute is whether Claim 3 of the '113 Patent is rendered indefinite by requiring: (1) a signal to be generated from light detected while at least a first or second LED is on, and (2) the signal to include a reflected portion of an optical beam generated by the first LED. Claim 3 is not rendered indefinite by this requirement.

The meaning of the claim language is reasonably certain: it requires that the signal include a portion of a beam created by the first LED, and it requires that this signal be generated from light detected while at least one of the first and second LEDs are on. It may be that requiring the signal be generated from light detected while at least one of the first and second LEDs is on is redundant because requiring the signal to include a reflected portion of the first optical beam necessarily entails using light detected while the first LED is on, but the meaning of the claim is clear.[10]

[10] Defendant appears to be arguing the redundancy in a claim necessarily renders a claim indefinite. The Court disagrees. For example, the Federal Circuit has held that "[a] 'whereby' clause that merely states the result of the limitations in the claim ***adds nothing to the patentability or substance*** of the claim." *Tex. Instruments Inc. v. U.S. Int'l Trade Comm'n*, 988 F.2d 1165, 1172 (Fed. Cir. 1993) (emphasis added). Such a limitation is redundant, but instead of the redundancy resulting in an invalid claim, the redundant limitation has no effect on patentability precisely because it is redundant. Similarly, in the context of determining whether a limitation recited in a dependent claim is

Further, it is not clear that the claim includes necessarily redundant language as it encompasses a situation in which the reflected portion of the first optical beam that is included in the signal is not collected when the first LED is on.

Accordingly, the Court holds that Defendant has not shown Claim 3 is indefinite for including the phrase "generate a second receiver signal from light detected while at least one of the first and second light emitting diodes is on including at least a portion of the first reflected portion of the first output optical beam."

IV. CONCLUSION

The Court adopts the constructions above for the disputed terms of the Asserted Patents. The Court further finds that Claims 2, 3, 4, and 23 of the '113 Patent are invalid as indefinite.

It is so ORDERED.

SIGNED this 14th day of August, 2019.

Robert W Schroeder III

ROBERT W. SCHROEDER III
UNITED STATES DISTRICT JUDGE

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merely redundant because of a limitation found in an independent claim, the Federal Circuit has noted, "Claim differentiation is a guide, not a rigid rule. If a claim will bear only one interpretation, ***similarity will have to be tolerated***." *ICU Med., Inc. v. Alaris Med. Sys.*, 558 F.3d 1368, 1376 (Fed. Cir. 2009) (quoting *Autogiro Co. of Am. v. United States*, 384 F.2d 391, 404 (Ct. Cl. 1967)) (emphasis added). Taken in this light, the Federal Circuit's canon that claims should be construed "with an eye toward giving effect to all of their terms," *Haemonetics Corp. v. Baxter Healthcare Corp.*, 607 F.3d 776, 781 (Fed. Cir. 2010), should not be taken as a hard and fast rule that will render claims indefinite if necessarily violated. Rather, if there is only one reasonable interpretation of a claim then the meaning of the claim is reasonably certain, even with redundant terms. *See Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 910 (2014) (35 U.S.C. § 112, ¶ 2 requires that the claims "inform those skilled in the art about the scope of the invention ***with reasonable certainty***" (emphasis added)).