

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

LIGHT TRANSFORMATION	§	
TECHNOLOGIES LLC,	§	
	§	
v.	§	Civil Action No. 2:12-cv-826-MHS-RSP
	§	(LEAD CASE)
LIGHTING SCIENCE GROUP	§	
CORP., <i>et al.</i>	§	

LIGHT TRANSFORMATION	§	
TECHNOLOGIES LLC,	§	
	§	
v.	§	Civil Action No. 2:12-cv-827-MHS-RSP
	§	
GENERAL ELECTRIC COMPANY, <i>et al.</i>	§	

**CLAIM CONSTRUCTION
MEMORANDUM OPINION AND ORDER**

On June 18, 2014, the Court held a hearing to determine the proper construction of the disputed claim terms in United States Patent Nos. 8,220,959 (the “’959 Patent”) and 6,951,418 (the “’418 Patent”) (collectively, the “patents-in-suit”). After considering the arguments made by the parties at the hearing and in the parties’ claim construction briefing (Dkt. Nos. 106, 108, and 109), the Court issues this Claim Construction Memorandum and Order.

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I. BACKGROUND

The patents-in-suit are titled “Highly Efficient Luminaire Having Optical Transformer Providing Precalculated Angular Intensity Distribution and Method Therefore,” and claim priority to U.S. Patent No. 6,543,911 (the ’911 Patent”). The patents-in-suit share essentially the same specification and generally relate to devices and methods for efficiently redirecting and redistributing light emitted from a light source in a predetermined pattern.¹ The specifications state that prior art roadway lighting systems (e.g., airport taxiway lighting) had “low efficiency” because they did “not sufficiently redirect light in an optimal pattern for drivers.” ’959 Patent at 1:25–45. For example, the specification states that the prior art lamps did “not provide adequate light to drivers located far away from the lamps,” did “not adjust for the fact that a driver can see the lamp better when the driver is closer to the lamp,” and thus “direct[ed] only a portion of light emitted by a light source in a useful pattern.” *Id.* Thus, the specification states that the “present invention provides a method and apparatus for a high efficiency redirected light emitted by a light source in a predetermined pattern by using an optical transformer with a precisely calculated reflective surface.” *Id.* at 1:60–63.

Regarding the ’959 Patent, the parties agree that the cross-section of Figure 7 is illustrative of the ’959 Patent’s asserted claims.

¹ The Abstract of the ’959 Patent follows:

A highly efficient luminaire is provided. The luminaire includes a light source that emits light. The emitted light is redirected by a light transformer having a curved circular reflective interior surface, the reflective interior surface reflecting the light in a predetermined pattern. A substantial amount of light being may be reflected close to an axis coincident with a radial line defining a radius of the circular reflective interior surface. Additionally, a substantial amount of light may be reflected in a pattern with low divergency or parallel with an axis of the light transformer. The light is transmitted to the exterior of the luminaire by an optical window.

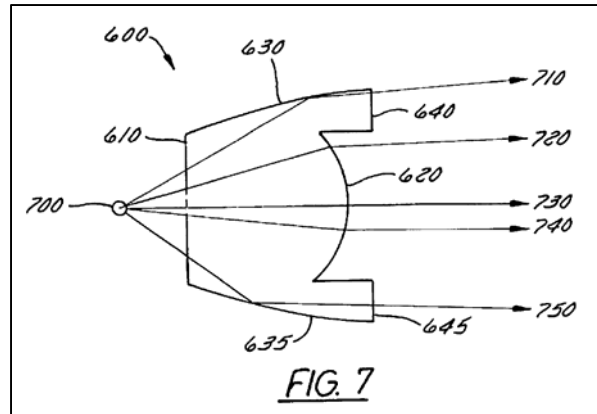


Figure 7 shows an exemplary cross-sectional view of a light transformer (600). *Id.* at 5:4–21. The specification states that light source (700) emits light rays (710-750) that enter the first end of the light transformer (610). *Id.* The specification adds that certain light rays (710) and (750), which travel to surfaces 630 and 635, are reflected through clear windows (640) and (645). *Id.* The other light rays (720, 730, 740) enter the central portion of the light transformer and are directed through a centrally located aspheric lens (620) and out of the transformer. *Id.* The specification states that the illustrated light rays propagate in a direction with low divergence or substantially parallel to light ray (730). *Id.*

Regarding the '418 Patent, the parties agree that the cross-section of Figure 17 is illustrative of the '418 Patents' asserted claim.

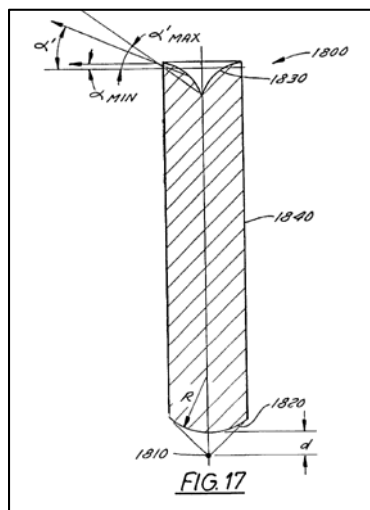


Figure 17 illustrates an exemplary optical transformer for an elevated omnidirectional light transformer. '418 Patent at 3:31–32. The specification states that light from light source (1810) propagates up light channel or light pipe (1840) and is reflected at reflective surface (1830). *Id.* at 8:63–9:13. The specification adds that the reflective surface (1830) can reflect the light according to a specified distribution pattern. *Id.*

Plaintiff brings suit alleging infringement of claims 1, 3, 4, 6 and 7 of the '959 Patent and claim 24 of the '418 Patent. Claim 1 is representative of the asserted claims of the '959 Patent and recites the following elements (disputed terms are shown in italics):

1. A light transformer for highly efficient directing and redistributing light from a light source in a predetermined pattern, comprising:
 - a first end that receives light from the light source;
 - a second end that outputs the received light, the second end located on an opposite end of the device from the first end;
 - a first member located on a third end of the device between the first end and the second end, wherein the first member has an outer wall comprising a *total internal reflection surface* that redirects and redistributes the received light in a direction of the second end;
 - a first planar optical window located at an end of the first member, the first planar optical window being substantially perpendicular to the *axis of light direction*;
 - a *second member* located on a fourth end of device, the fourth end located on an opposite end of the device from the third end, between the first end and the second end, the *second member* having an outer wall comprising a *total internal reflection surface* which redirects and redistributes the received light in a direction of the second end;
 - a *second planar optical window* located at an end of the *second member*, the *second planar optical window* being substantially perpendicular to the *axis of light direction*, the *second planar optical window* further being *symmetrical across the axis of light direction* with the first planar optical window; and
 - an aspheric lens located between the first and the *second members*, the aspheric lens having an input side on the first end of device and an output side on the second end of device, the output side of aspheric lens located between the first and the second planar optical windows.

Claim 24 of the '418 Patent recites the following elements (disputed terms are shown in italics):

24. A *lighting system*, comprising:

a housing;

a light assembly supported by the housing, the light assembly including

a light source for emitting light; and

a *light pipe* having a first end in *close association* with the light source for coupling the light thereinto, and a second end opposite the first end from which the light is dispersed; and

a light transformer between the first end and the second end of the *light pipe* in *close proximity* to the second end with a transformer axis coaxial to the longitudinal axis of the *light pipe*, the light transformer having a *curved conical reflective surface* that redirects and redistributes light received from the light source, wherein the light transformer provides an *omnidirectional pattern in a horizontal plane* with precalculated angular luminous intensity distribution in a vertical plane.

II. APPLICABLE LAW

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. *See 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. *See Phillips*, 415 F.3d at 1314; *C.R.*

Bard, Inc., 388 F.3d at 861. Courts give claim terms their 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 entire patent. *Phillips*, 415 F.3d at 1312–13; *Alloc, Inc. v. Int’l Trade Comm’n*, 342 F.3d 1361, 1368 (Fed. Cir. 2003).

The claims themselves provide substantial guidance in determining the meaning of particular claim terms. *Phillips*, 415 F.3d at 1314. First, a term’s context in the asserted claim can be very instructive. *Id.* 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. Conceptoronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)); *Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1325 (Fed. Cir. 2002). This is true because a patentee may define his own terms, give a claim term a different meaning than the term would otherwise possess, or disclaim or disavow the claim scope. *Phillips*, 415 F.3d at 1316. In these situations, the inventor’s lexicography governs. *Id.* The specification may also resolve ambiguous claim terms “where the ordinary and accustomed meaning of the words used in the claims lack sufficient clarity to permit the scope of the claim to be ascertained from the words alone.” *Teleflex, Inc.*, 299 F.3d at 1325. 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. The prosecution history is another tool to supply the proper context for claim construction because a patent applicant may also define a term in prosecuting the patent. *Home Diagnostics, Inc., v. Lifescan, Inc.*, 381 F.3d 1352, 1356 (Fed. Cir. 2004) (“As in the case of the specification, a patent applicant may define a term in prosecuting a patent.”).

Although extrinsic evidence can 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 entirely unhelpful to a court. *Id.* Generally, extrinsic evidence is “less reliable than the patent and its prosecution history in determining how to read claim terms.” *Id.*

B. Construction Indefiniteness

The “determination of claim indefiniteness is a legal conclusion that is drawn from the court's performance of its duty as the construer of patent claims.” *Exxon Research & Eng'g Co. v. United States*, 265 F.3d 1371, 1375 (Fed. Cir. 2001). “Because claims delineate the patentee's

right to exclude, the patent statute requires that the scope of the claims be sufficiently definite to inform the public of the bounds of the protected invention, i.e., what subject matter is covered by the exclusive rights of the patent.” *Halliburton Energy Services, Inc. v. M-I LLC*, 514 F.3d 1244, 1249 (Fed. Cir. 2008). In order for a patent to be definite under § 112, ¶2, “a patent's claims, viewed in light of the specification and prosecution history, [are required to] inform those skilled in the art about the scope of the invention with reasonable certainty.” *Nautilus Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2129 (2014). “The definiteness requirement . . . mandates clarity, while recognizing that absolute precision is unattainable.” *Id.* “Whether a claim reasonably apprises those skilled in the art of its scope is a question of law that [is] review[ed] de novo.” *Microprocessor Enhancement Corp. v. Texas Instruments Inc.*, 520 F.3d 1367, 1374 (Fed. Cir. 2008). 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. *Nautilus*, 134 S. Ct. at n.10.

III. THE PARTIES’ STIPULATED TERMS

Prior to the June 18, 2014 hearing, the parties reached agreement on constructions for several terms, as stated in their April 17, 2014 Joint Claim Construction and Prehearing Statement Pursuant to Local Patent Rule 4-3 (Dkt. No. 103), their briefing, and their June 3, 2014 Joint Claim Construction Chart Pursuant to Local Patent Rule 4-5(d) (Dkt. No. 112, Exs. A and B).² Those agreed-upon constructions are set forth in Appendix A to this Claim Construction Memorandum and Order.

During the claim construction hearing, the Court provided the parties with preliminary constructions for twenty groups of the disputed terms/phrases. The parties agreed to the

² All citations to documents filed with the Court are to the ECF page number assigned by the Court’s filing system.

following constructions:

Claim Term/Phrase	Agreed Construction
<p>“redirecting/redirects”</p> <p>(’418 Patent - claims 1, 19, 24) (’959 Patent - claims 1, 4, 6)</p>	<p>changing the direction of light rays</p>
<p>“first/second/third/fourth end”</p> <p>(’959 Patent – claim 1, 4)</p>	<p>“first end” - a first extremity on the light transformer that is different from the second, third, and fourth extremities</p> <p>“second end” - a second extremity on the light transformer that is different from the first, third, and fourth extremities</p> <p>“third end” - a third extremity on the light transformer that is different from the first, second, and fourth extremities</p> <p>“fourth end” - a fourth extremity on the light transformer that is different from the first, second, and third extremities</p>
<p>“planar optical window”</p> <p>(’959 Patent – claims 1, 7)</p>	<p>an optical element that is planar and that has a neutral impact on the passage of visible light, meaning that major parameters of light do not change</p>
<p>“output side of aspheric lens located between the first and the second planar optical windows / output side of aspheric lens located between the first and the second openings”</p> <p>(’959 Patent – claims 1, 4)</p>	<p>Plain and ordinary meaning</p>
<p>“precalculated angular luminous intensity distribution in a vertical plane”</p> <p>(’418 Patent – claims 1, 19, 24)</p>	<p>an analytical description of the angular luminous intensity distribution of the light emitted by the light source in a vertical plane that is calculated or specified in advance</p>

In addition to the terms/phrases listed above, the parties also agreed that the term **“light**

transformer” should be given its **plain and ordinary meaning**.³ Consistent with its preliminary construction, the Court finds that the preamble of claim 1 of the ‘959 Patent is limiting. Specifically, during the reexamination of the ‘911 Patent, the patentee argued that phrases/terms found in the preamble (e.g., “highly efficient directing and redistributing light,” “a light source,” and “a predetermined pattern”) were necessary and essential elements of the claims. (Dkt. No. 108-2 at 11–15, 11/23/2010 IPR Response and Amendment). Thus, because the preamble of claim 1 of the ‘959 Patent includes these phrases/terms, the Court finds that the preamble of this claim is limiting. However, the preamble of claim 4 of the ‘959 Patent does not include these phrases/terms and only recites “a light transformer comprising.” Accordingly, the Court finds that the preamble of claim 4 is not limiting. Likewise, the preamble of claim 24 of the ‘418 Patent does not include the term “light transformer,” and thus, is not limiting. In addition, as will be discussed in more detail below, the Court’s preliminary construction found that the patentee did not make a “clear and unmistakable” disclaimer of round optics during the prosecution of the ‘911 Patent.

Finally, the parties also agreed that the term **“redistributing/redistributes”** should be construed as **“changing the angular intensity distribution of light rays, including changing the relative order or sequence of light rays.”**⁴ Before agreeing to this construction, Defendants expressed concern that “including” could mean that changing the relative order or sequence of light rays was merely optional. In response, Plaintiff agreed that “including” required changing the relative order or sequence of light rays and that it was not optional. Given

³ The term “light transformer” appears in the preamble of asserted independent claims 1 and 4 of the ‘959 Patent. The term appears only in the body of claims 1, 19, and 22–24 of the ‘418 Patent.

⁴ The term “redistributing/redistributes” appears in claims 1, 19, and 24 of the ‘418 Patent and claims 1, 3, 4, and 6 of the ‘959 Patent.

this understanding, the parties agreed to the Court’s preliminary construction for this term.

IV. CONSTRUCTION OF DISPUTED TERMS

The parties’ dispute focuses on the meaning and scope of 14 terms/phrases in the patents-in-suit.

A. “total internal reflection surface”

<u>Disputed Term</u>	<u>Plaintiff’s Proposal</u>	<u>Defendants’ Proposal</u>
total internal reflection surface	a surface that reflects all of the light rays that strike it and does not allow any light rays to pass through it.	a surface that reflects all of the light rays that strike it and does not allow any light rays to pass through it and that is designed by receiving maximum and minimum output angles; receiving a location of a portion of the light transformer with respect to a light source that provides light; and iteratively point-by-point calculating an optical transformer reflective surface by providing an associated increment for an output angle for each increment of an input angle, the associated increment for the output angle being consistent with a predetermined output intensity distribution to reflect light provided by the light source according to the received maximum and minimum output angles based on the received location of a portion of the light transformer

The parties dispute whether the phrase “total internal reflection surface” should be construed as Plaintiff proposes—“a surface that reflects all of the light rays that strike it and does not allow any light rays to pass through it”—or if it should include additional limitations as Defendants propose. Plaintiff contends that its construction provides a simplified but useful definition for the well-known phenomenon known as total internal reflection. (Dkt. No. 106 at 31.) Plaintiff further argues that Defendants’ construction adds a series of additional concepts that would effectively convert claims 1 and 4 into product-by-process claims. (Dkt. No. 106 at 31.)

Defendants contend that their construction is supported by the intrinsic record and limits

the term to the statement that the patentee made to obtain allowance. (Dkt. No. 108 at 29.) Specifically, Defendants argue that the patentee argued for the allowance of the pending claim by declaring that the apparatus of that claim could only be made one way. (Dkt. No. 108 at 30.) Defendants further argue that it was only when the validity of the '911 Patent was questioned that the patentee attempted to “expressly disclaim” these statements during the prosecution of the '959 Patent. (Dkt. No. 108 at 30–31.) Defendants argue that the patentee’s statement falls short of the clarity and timeliness required to put the examiner on notice as to the scope applicants were trying to reclaim. (Dkt. No. 108 at 31.) Defendants further argue that their proposed construction is not written as a product-by-process claim, but instead recites the language that applicants themselves used to overcome prior art during prosecution and obtain the patent. (Dkt. No. 108 at 32.)

Plaintiff responds that the patentee’s retraction of the limiting statement was not ineffectual. (Dkt. No. 109 at 12.) Plaintiff argues that it expressly identified the alleged prior disclaimer that Plaintiff sought to disclaim, and Plaintiff put the examiner on express notice that it was disclaiming its prior statements. (Dkt. No. 109 at 12.) Plaintiff also argues that the examiner did not put any stock in the patentee’s alleged limiting statement from the '911 Patent file history. (Dkt. No. 109 at 12.) Plaintiff further argues it acted entirely appropriately in October 2011 in submitting its disclaimer. (Dkt. No. 109 at 13.) Plaintiff also contends that Defendants misread the statement because it does not say that the methods recited in Defendants’ construction are the only ones available. (Dkt. No. 109 at 13.) Finally, Plaintiff argues that the GE Lighting Defendants should be judicially estopped from advocating their present narrow construction after having taken a contrary position before the PTAB. (Dkt. No. 109 at 13.)

For the following reasons, the Court finds that **“total internal reflection surface”** should

be construed as **“a surface designed to reflect all of the light rays that strike it in a predetermined pattern, and that does not allow any light rays to pass through it”**.

1. The Intrinsic Evidence

The term “total internal reflection surface” appears in claims 1 and 4 of the ’959 Patent. The Court finds that the term is used consistently in the claims and is intended to have the same meaning in each claim. The Court also finds that the preamble of claim 1 of the ’959 Patent recites that the light transformer directs and redistributes light “from a light source in a *predetermined pattern*.” ’959 Patent, claim 1 (emphasis added). For the reasons discussed above, the Court finds that the preamble of claim 1 is limiting and requires the redirecting and redistributing of the received light to be done in a predetermined pattern. Furthermore, the body of claim 1 of the ’959 Patent recites that the total internal reflection surface “redirects and redistributes the received light in a direction.”

Turning to the parties’ constructions, the Court finds that Defendants’ construction improperly narrows the scope of the claims to one preferred method for designing the reflective surface. Defendants rely on the following statement made during the prosecution of the ’911 Patent to support their construction:

Matter and Uke are both based on principles of geometrical (imaging) optics, assuming an ideal point source. In practice, all light sources have a physical dimension. It is well known (M. Born and E. Wolf, *Principles of Optics*, Sixth Edition, Chapter IV and V) that because of aberration, reflectors designed on the basis of second order curves (parabolas, ellipses, etc.) have sufficient losses. In contrast, the principles of non-imaging optics allows design optical devices with very high efficiency. (W. Wefford and R. Winston, *High Collection Nonimaging Optics*, Academic Press, 1989.)

Independent claims 6 [claim 2 of the ’911 Patent] and 11 [claim 6 of the ’911 Patent] claim a nonimaging device, designed by the method recited in allowed claim 5 [claim 1 of the ’911 Patent] and have no alternative design using a traditional imaging approach. The claimed optical transformers provide specific predetermined angular luminous intensity distribution. In particular, the method

for designing is described on pages 11-14 [columns 6-7 of the '911 Patent] and recited in claim 5 [claim 1 of the '911 Patent] using desired angular light distribution and spatial light distribution of the light source to create an arbitrary surface - reflective (130, 1130) or total interval reflective (630, 635) – to transform second distribution in first. This is not just redirection (change of ray direction), but redistribution of light (change of angular intensity distribution). This is not disclosed or suggested by any of the prior art cited by the Examiner.

(Dkt. 108-4 at 7–8, 1/28/2002 OA for the '911 Patent). According to Defendants, this passage indicates that the patentee argued for the allowance of claim 11 (claim 6 of the '911 Patent) by declaring that the apparatus of that claim could only be made one way, i.e., by the method of allowable claim 5 (claim 1 of the '911 Patent). Thus, Defendants argue that the Court should adopt their construction given that claim 1 of the '959 Patent is virtually identical to claim 6 of the '911 Patent. (Dkt. No. 108 at 32.)

The Court disagrees. First, the patentee distinguished the claims of the '911 Patent from the prior art based on the differences between imaging optics and non-imaging optics. Specifically, the patentee argued that the claimed *nonimaging* devices “have no alternative design using a traditional *imaging* approach.” (Dkt. 108-4 at 7, 1/28/2002 OA for the '911 Patent) (emphasis added). Thus, the distinction is not as clear as Defendants contend.

Second, as in the preamble of claim 1 of the '959 Patent, the patentee stated that the “claimed optical transformers provide specific predetermined angular luminous intensity distribution.” (Dkt. 108-4 at 7, 1/28/2002 OA for the '911 Patent). Thus, it was the “specific predetermined ... distribution” that the patentee argued was important to distinguish the claims from the prior art. Indeed, the patentee argued that this was an essential component of the invention that was recited in the preamble of the claims in the '911 Patent. (Dkt. No. 108-2 at 11, 11/23/2010 IPR Response and Amendment).

Third, the specification provides evidence that Defendants' construction is incorrect. For

example, in the “Field of the Invention” section, the specification states that “the present invention is directed to light transforming devices that provide a precisely determined light distribution pattern.” ’959 Patent at 1:19–23. Likewise, the “Summary of the Invention” section states that the “present invention provides a method and apparatus for a high efficiency redirected light emitted by a light source in a predetermined pattern by using an optical transformer with a precisely calculated reflective surface.” *Id.* at 1:60–63. The specification contrasts the disclosed invention with the prior art lighting systems that did not “sufficiently redirect light in an optimal pattern for drivers.” *Id.* at 1:35–37. In other words, it is the recited redirection of light in a predetermined pattern that distinguishes the claims from the prior art. Thus, the Court finds that the intrinsic evidence indicates that the patentee emphasized that the recited “total internal reflection surface” is a surface designed to reflect all of the light rays that strike it in a predetermined pattern.

Finally, Defendants’ construction would effectively convert the apparatus claims 1 and 4 of the ’959 Patent into product-by-process claims by requiring the apparatus to be designed by one specific process. *Baldwin Graphic Systems, Inc. v. Siebert, Inc.*, 512 F.3d 1338, 1344 (Fed. Cir. 2008) (“Courts must generally take care to avoid reading process limitations into an apparatus claim . . . because the process by which a product is made is irrelevant to the question of whether that product infringes a pure apparatus claim”) (internal quotations omitted); *Research Corp. Techs. v. Microsoft Corp.*, 627 F.3d 859, 873 (Fed. Cir. 2010) (“Apparatus claims do not need to recite every method of making the claimed apparatus.”). As discussed above, the Court does not agree that the prosecution history warrants such a result.

2. Court’s Construction

In light of the intrinsic evidence, the Court construes the phrase “**total internal**

reflection surface” to mean “a surface designed to reflect all of the light rays that strike it in a predetermined pattern, and that does not allow any light rays to pass through it”.

B. “axis of light direction”

<u>Disputed Term</u>	<u>Plaintiff’s Proposal</u>	<u>Defendants’ Proposal</u>
axis of light direction	Needs no construction.	Indefinite

The parties dispute whether the term is indefinite.⁵ Plaintiff contends that the term is not indefinite and that additional words of geometric precision would likely only tend to confuse rather than clarify. (Dkt. No. 106 at 26.) Defendants respond that the ’959 Patent fails to identify the specific axis or direction that constitutes “the axis of light direction.” (Dkt. No. 108 at 18.) Defendants note that Plaintiff’s only response is that the term “is clearly not indefinite,” and that Plaintiff does not provide a construction of the term. (Dkt. No. 108 at 19.) Thus, according to Defendants, the term is indefinite. (Dkt. No. 108 at 19.) Plaintiff replies that Defendants cannot meet their high burden of proving indefiniteness. (Dkt. No. 109 at 10.)

For the following reasons, the Court finds that the term “**axis of light direction**” is **indefinite**.

1. The Intrinsic Evidence

As an initial matter, the Supreme Court recently held that, in order for a patent to be definite under § 112, ¶2, “a patent’s claims, viewed in light of the specification and prosecution history, [are required to] inform those skilled in the art about the scope of the invention with reasonable certainty.” *Nautilus Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2129 (2014). Accordingly, the Court will proceed under the new standard to determine if the disputed term is indefinite.⁶

⁵ The term “axis of light direction” appears in claims 1, 3, 4, and 6 of the ’959 Patent.

⁶ In *Nautilus*, the Supreme Court also stated that “[f]irst, definiteness is to be evaluated from the perspective of someone skilled in the relevant art ... [s]econd, in assessing definiteness, claims are to be read in light of the patent’s specification and prosecution history ... [t]hird, [d]efiniteness is measured from the viewpoint of a person skilled in [the] art *at the time the*

Defendants contend that the term is indefinite because the '959 Patent fails to identify the specific axis or direction that constitutes “the axis of light direction.” (Dkt. No. 108 at 18.) The Court agrees. First, it is undisputed that light propagates in three-dimensions on an infinite number of axes. Indeed, the specification illustrates numerous exemplary axes of light directions for any given viewpoint. For example, Figure 7 depicts a number of light rays 710, 720, 730, 740, and 750 propagating “straight from the light source along *an axis* coincident with a radial line defining a radius of the circular reflective interior surface.” '959 Patent at 5:12–14 (emphasis added). Based on this figure, a person of ordinary skill in the art would be unable to determine which one of these exemplary axes is the “axis of light direction.” Accordingly, the Court finds that Defendants have met their burden and shown by clear and convincing evidence that the claims when read in light of the intrinsic evidence, fail to inform those skilled in the art about the scope of the invention with reasonable certainty.

In response, Plaintiff did not offer a construction for the phrase “axis of light direction” but instead only stated that the term is not indefinite and that additional words of geometric precision would likely only tend to confuse rather than clarify. (Dkt. No. 106 at 26.) In fact, when asked, Plaintiff could not provide a construction for the phrase. Indeed, it was only at the end of the claim construction hearing that Plaintiff proposed that the phrase be construed as “center of directed light,” for the round embodiment, and “center plane of directed light” for the torodial embodiment. Plaintiff’s support for this construction was dictionary definitions it located via an Internet search during the hearing. Specifically, Plaintiff referenced dictionary definitions that define the term “axis” as “line of symmetry of an optical system” or “the straight

patent was filed.” Nautilus, 134 S. Ct. at 2128.

line passing through the geometrical center of a lens and joining the two centers of curvatures of its surface.”

Notwithstanding the issue of whether a person skilled in the art at the time the patent was filed would understand the recited “axis” to be consistent with these definitions, the problem is that Plaintiff’s construction is not supported by these definitions because they do not mention a “center of directed light.” Moreover, Plaintiff’s construction fails to provide an objective standard for determining the “axes of light direction” because there could be multiple “centers of the directed light.” *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1350 (Fed. Cir. 2005) (“Some objective standard must be provided in order to allow the public to determine the scope of the claimed invention.”). In further illustration of the indefiniteness of the term, these definitions contradict Plaintiff’s construction for the patent’s toroidal embodiment because the definitions define the “axes” as a “line” and not a “plane,” as Plaintiff proposed. Accordingly, Plaintiff’s dictionary definitions fail to support its proposed construction.

Finally, during the claim construction hearing, Plaintiff argued that Defendants failed to offer any “real evidence” and only relied on attorney argument. The Court finds that for this particular term expert testimony is not necessary. *Centricut, LLC v. Esab Group, Inc.*, 390 F.3d 1361, 1369 (Fed. Cir. 2004) (“In many patent cases expert testimony will not be necessary because the technology will be ‘easily understandable without the need for expert explanatory testimony.’”) (quoting *Union Carbide Corp. v. Am. Can Co.*, 724 F.2d 1567, 1573 (Fed. Cir. 1984)). Indeed, Plaintiff cited to general dictionary definitions during the claim construction hearing, which included conducting a Google search for the term “axis.” Accordingly, the Court finds that Defendants have met their burden of proof and shown that the claims are indefinite.

2. Court’s Construction

In light of the intrinsic evidence, the Court finds that the term “**axis of light direction**” is **indefinite** and that the claims including this term are invalid for failing to particularly point out and distinctly claim the subject matter regarded as the invention.

C. “*low divergence or substantially parallel with an axis of light direction*”

<u>Disputed Term</u>	<u>Plaintiff’s Proposal</u>	<u>Defendants’ Proposal</u>
low divergence or substantially parallel with an axis of light direction	Needs no construction. Alternatively, “low divergence” means diverging less than about 15 degrees from the axis of light direction.	To the extent “axis of light direction” can be construed, Defendants propose the following construction: all rays from the light transformer are nearly parallel to an axis of light direction.

The parties dispute whether the phrase “low divergence or substantially parallel with an axis of light direction” requires construction. Plaintiff argues that the phrase includes relatively simple terms that a jury would likely understand, and thus the phrase does not require construction. (Dkt. No. 106 at 27.) In the alternative, Plaintiff contends that the term “low divergence” is different from and somewhat broader than “substantially parallel.” (Dkt. No. 106 at 27.) Plaintiff further argues that a related patent discloses exemplary numerical values of 6 to 15 degrees for low divergence. (Dkt. No. 106 at 27.) Thus, Plaintiff contends that “low divergence” should be construed as “diverging less than about 15 degrees from the axis of light direction.”

Defendants’ construction replaces the phrases “low divergence” and “substantially parallel” with “nearly parallel,” thus requiring all the rays from the light transformer to be “nearly parallel.” (Dkt. No. 108 at 20.) Defendants argue that the claim language makes clear that all rays received from the light source must be subject to this claim limitation. (Dkt. No. 108

at 20.) Defendants further contend that their construction is also supported by the specification. (Dkt. No. 108 at 20–21.) Defendants further argue that Plaintiff’s only support for its “about 15 degrees” construction is by reference to a continuation-in-part to the ’911 Patent, which by definition discloses subject matter beyond what was included in the ’911 Patent. (Dkt. No. 108 at 21.)

For the following reasons, the Court finds that **“low divergence or substantially parallel with an axis of light direction”** should be construed to mean **“parallel with the axis of light direction or diverging not more than 15 degrees from parallel with the axis of light direction.”**

1. The Intrinsic Evidence

The phrase “low divergence or substantially parallel with an axis of light direction” appears in claims 3 and 6 of the ’959 Patent. The Court finds that the phrase is used consistently in the claims and is intended to have the same meaning in each claim. The Court also finds that the claim language does not use the terms “low divergence” and “substantially parallel” interchangeably as suggested by Defendants’ “nearly parallel” construction. Specifically, the claim language uses the disjunctive “or” and not the conjunction “and.” The Court further finds that Plaintiff’s reference to U.S. Patent No. 7,503,669 (“the ’669 Patent”) is relevant.⁷ The ’669 Patent states the following regarding the term “low divergence”:

The majority of manufacturers have in production LED packages with the primary optic designed to provide a symmetrical pattern with low (6° to 15°), medium (15° to 45°) and wide (up to 120°) divergence because of the nature of the asymmetrical pattern emitted by the LED's die (chip).

(Dkt. 106-12 at 9, ‘669 Patent at 2:4–10). Thus, the ’669 Patent indicates that a person of ordinary skill in the art would understand “low divergence” to mean not more than 15 degrees.

⁷ The ’959 Patent is a continuation of the ’669 Patent, list the same inventors as the ’959 Patent, and was filed over 7 years before the ’959 Patent was filed.

During the claim construction hearing, Defendants argued that the '669 Patent's discussion of "low divergence" was not applicable because it was directed to divergence from a package. The Court is not persuaded by Defendants' argument. The "package" discussed in the '669 Patent is LED 14 that can emit light rays with low, medium, and high divergence. (Dkt. 106-12 at 10, '669 Patent at 4:26–42, Figure 2). Similarly, the claims recite directing and redistributing light from a light source in a predetermined pattern with low divergence. Accordingly, the Court finds that a person of ordinary skill in the art would understand that the recited "predetermined pattern" is parallel with the recited axis of light direction or diverging not more than 15 degrees from parallel with the recited axis of light direction.

Finally, the Court does not adopt Defendants' construction that requires "all rays from the light transformer" to be low divergence or substantially parallel. Neither the claims nor the specification require all the possible light rays to be distributed in a particular way. Indeed, claim 3 and 6 of the '959 Patent only require "light" from the light source to be directed and redistributed in a predetermined pattern and not "all the light" from the light source to be directed and redistributed in a predetermined pattern, as Defendants propose. Similarly, the specification explicitly contemplates that not all of the light will be reflected by stating that "a substantial amount of light may be reflected in a pattern with low divergency or parallel with an axis of the light transformer." A "substantial amount" is not "all" as required by Defendants' construction.

2. Court's Construction

In light of the intrinsic evidence, the Court construes "**low divergence or substantially parallel with an axis of light direction**" to mean "**parallel with the axis of light direction or diverging not more than 15 degrees from parallel with the axis of light direction**".

D. “symmetrical across the axis of light direction”

<u>Disputed Term</u>	<u>Plaintiff’s Proposal</u>	<u>Defendants’ Proposal</u>
symmetrical across the axis of light direction	Needs no construction. Alternatively, the first planar optical window and the second planar optical window (or first window and second window) are symmetrical.	To the extent “axis of light direction” can be construed, Defendants propose the following construction: symmetrical on opposite sides of the axis of light direction, but not around the axis

The parties dispute whether the phrase “symmetrical across the axis of light direction” requires construction. Plaintiff argues that the phrase need not be construed because construing the phrase with additional words of geometric precision would likely only tend to confuse rather than clarify. (Dkt. No. 106 at 30.) In the alternative, Plaintiff argues that its construction is correct because it is consistent with ordinary and customary meaning. (Dkt. No. 106 at 30.) Plaintiff further argues that Defendants’ construction is incorrect because it is confusing and is likely to be uninformative to a jury. (Dkt. No. 106 at 30.)

Defendants respond that their construction incorporates the statements made by the patentee during prosecution. (Dkt. No. 108 at 21.) Defendants further argue that Figures 4, 6, and 7 of the ’959 Patent depict the planar optical windows symmetrical on opposite sides, but not around an axis of light direction. (Dkt. No. 108 at 21.) Defendants further argue that it is improper to construe a term to include scope disclaimed by the patentee during prosecution. (Dkt. No. 108 at 22.)

Plaintiff responds that Defendants’ construction improperly limits the claims of the ’959 Patent to the torus-shaped optic and excludes the round-shaped optic. (Dkt. No. 109 at 10.) Plaintiff argues the patentee’s statements included the phrase “not necessarily around [the axis],” and not “but not around the axis,” as Defendants propose. (Dkt. No. 109 at 10.) Plaintiff further

argues that the GE Lighting Defendants should be judicially estopped from advocating such a narrow construction after taking a contrary position before the PTAB. (Dkt. No. 109 at 10.)

For the following reasons, the Court finds that **“symmetrical across the axis of light direction”** should be construed to mean **“symmetrical on opposite sides of the axis of light direction.”**

1. The Intrinsic Evidence

The phrase “symmetrical across the axis of light direction” appears in claims 1 and 4 of the ’959 Patent. The Court finds that the phrase is used consistently in the claims and is intended to have the same meaning in each claim. The Court further finds that claim 1 recites a second planar optical window and a first planar optical window, and that it is the second planar optical window that is “symmetrical across the axis of light direction” with the first planar optical window. In other words, symmetrical on opposite sides of the recited axis of light direction.

Turning to the parties’ constructions, the Court finds that Plaintiff’s construction is unnecessarily broad and does not specify that the optical windows must be symmetrical about an identified axis, in this case the recited “axis of light direction.” Likewise, Defendants’ construction is too narrow and includes the unwarranted limitation of “but not around the axis.” To support their construction, Defendants argue that the following statements from the prosecution of the ’911 Patent should limit the claims:

Basic Difference Between Claimed Light Transformer And Prior Art

Matter and Uke may be pooled by indication of an annular or circular design around the optical axis. Reflector 2 (Matter), as well as reflectors 10, 30, 50, 74 and 90 (Uke) are shaped by rotation of a parabola (or a similar curve) around an optical axis and are symmetrical about all directions.

The claimed light transformer in the present invention is symmetrical across the optical axis, meaning in two opposite directions, not necessarily around. As a result, the claimed transformer may not be round in that it can be extended in a

horizontal direction perpendicular to the optical axis, or it can even be toroidal.

(Dkt. No. 108-4 at 7, 1/28/2002 OA). The Court disagrees with Defendants' contention that this is "clear and unmistakable" disclaimer and finds that these statements are subject to multiple reasonable interpretations. *Omega Eng'g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1325-1326 (Fed. Cir. 2003) ("[F]or prosecution disclaimer to attach, our precedent requires that the alleged disavowing actions or statements made during prosecution be both clear and unmistakable."); *see also Home Diagnostics, Inc. v. LifeScan, Inc.*, 381 F.3d 1352, 1358 (Fed. Cir. 2004) ("Absent a clear disavowal in the specification or the prosecution history, the patentee is entitled to the full scope of its claim language.").

For example, these statements can be read as stating different options without limiting to a specific configuration (i.e., "not necessarily around," "may not be round in that it can be extended in a horizontal direction," and "it can even be toroidal"). Moreover, Figure 17 illustrates a "light transformer" that is round. If the Court were to adopt Defendants' construction, then the embodiment illustrated in Figure 17 would be excluded from the scope of the claims. *Vitronics Corp. v. Conceptoronic, Inc.*, 90 F.3d 1576, 1583-84 (Fed. Cir. 1996) (stating that a claim construction that excludes the preferred embodiment "is rarely, if ever, correct and would require highly persuasive evidentiary support.").

2. Court's Construction

In light of the intrinsic evidence, the Court construes "**symmetrical across the axis of light direction**" to mean "**symmetrical on opposite sides of the axis of light direction**".

E. “second member,” “second planar optical window,” and “second opening”

<u>Disputed Term</u>	<u>Plaintiff’s Proposal</u>	<u>Defendants’ Proposal</u>
second member	Needs no construction. Alternatively, in the context of a cross section of a light transformer, a second region.	a member different than and discrete from the first member
second planar optical window	Needs no construction, apart from “planar optical window”, above. Alternatively, a second element or region that is planar and that has a neutral impact on the passage of visible light, meaning major parameters of light do not change.	a planar optical window that is different than and discrete from the first planar optical window
second opening	Needs no construction. Alternatively, a second gap or vacant space.	an opening that is different than and discrete from the first opening

The parties dispute whether the terms listed above require construction. Plaintiff contends that the terms are simple words with simple plain meanings and require no construction. (Dkt. No. 106 at 27.) In the alternative, Plaintiff contends that the Court should construe these terms with reference to the cross section of a light transformer, as is described in the specification of the ’959 Patent. (Dkt. No. 106 at 27.)

Defendants respond that there can be no reasonable dispute that first, second, third and fourth are commonly understood to mean different and distinct multiples of something. (Dkt. No. 108 at 23.) Defendants argue that Plaintiff’s construction is misleading because it is based on a single sentence in the specification that describes an embodiment in terms of a cross-section. (Dkt. No. 108 at 24.) Defendants argue that neither the specification nor the language of the claims provide any indication that the claims are to be read in the context of a cross-section. (Dkt. No. 108 at 24.) Defendants further contend that all references in the specification to cross-

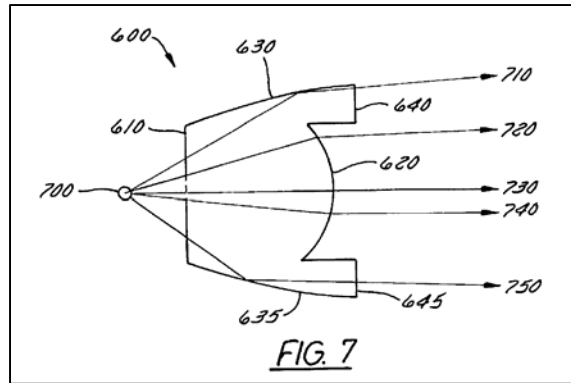
sections are discussed in the context of a three-dimensional light transformer, and not in the manner Plaintiff suggests. (Dkt. No. 108 at 24.)

For the following reasons, the Court finds that the terms should be construed as follows:

second member	a member located at a second location on the light transformer that is different from the location of the first member
second planar optical window	a planar optical window located at a second location on the light transformer that is different from the location of the first planar optical window
second opening	an opening located at a second location on the light transformer that is different from the location of the first opening

1. The Intrinsic Evidence

The term “second member” appears in claims 1 and 4 of the ’959 Patent; the term “second opening” appears in claims 4 and 7 of the ’959 Patent; and the term “second planar optical window” appears in claims 1 and 7 of the ’959 Patent. The Court finds that the respective terms are used consistently in the claims and are intended to have the same meaning in each claim. The Court also agrees that terms like first, second, third, and fourth are commonly understood in patent claims to mean different things. In this case, the claims use these terms to refer to different locations on the light transformer. For example, claim 1 of the ’959 Patent recites that “the second end” is “located on an opposite end of the device from the first end;” the “third end” is “between the first end and the second end,” and the “the fourth end” is “located on an opposite end of the device from the third end.” Figure 7 is a cross-section of an exemplary embodiment that illustrates the locations of the different ends on the light transformer:



Specifically, Figure 7 illustrates that the first end is located at 610, the second end is located at 620, the third end is located at 630, and the fourth end is located at 635. Figure 7 further illustrates the locations of the recited first member (630) “located on the third end of the device,” the recited second member (635) “located on a fourth end of device,” the recited first optical window (640) “located at an end of the first member,” and the recited second optical window (645) “located at an end of the second member.” Thus, a person of ordinary skill in the art would understand that the recited “second member,” “second planar optical window,” and “second opening” are located at a second location on the light transformer that is different from the location of the “first member,” “first planar optical window,” and “first opening,” as illustrated in Figure 7. However, this is only one embodiment and the Court finds that Plaintiff’s construction is too vague because “in the context of a cross-section” would require further construction. Likewise, Defendants’ construction of “different than and discrete from” is unnecessary and only further confuses the issue by attempting to construe the terms to exclude round optics. As discussed above, the Court disagrees with Defendants’ contention that the patentee “clearly and unmistakably” disclaimed round optics.

2. Court’s Construction

In light of the intrinsic evidence, the Court construes the terms as follows:

second member	a member located at a second location on the light transformer that is different from the location of the first member
second planar optical window	a planar optical window located at a second location on the light transformer that is different from the location of the first planar optical window
second opening	an opening located at a second location on the light transformer that is different from the location of the first opening

F. “opening”

<u>Disputed Term</u>	<u>Plaintiff’s Proposal</u>	<u>Defendants’ Proposal</u>
opening	Needs no construction. Alternatively, a gap or vacant space	a gap or vacant space that has a neutral impact on the passage of visible light, meaning that major parameters of light do not change

The parties dispute whether the term “opening” requires construction. Plaintiff contends that its alternative construction is correct because it is consistent with the ordinary and customary meaning of the term. (Dkt. No. 106 at 29.) Plaintiff further argues that its construction is correct because it is consistent with the doctrine of claim differentiation. (Dkt. No. 106 at 29.) Plaintiff also contends that Defendants’ construction improperly attempts to copy over the limiting language from the file history for the term “window.” (Dkt. No. 106 at 29.)

Defendants respond that there is no reasonable way to interpret this term without reference to the fundamental feature of the “planar optical window.” (Dkt. No. 108 at 33.) Defendants further argue that Plaintiff’s construction would permit the major parameters of the light rays to change, in contravention to the problem that the patent sought to address. (Dkt. No. 108 at 33.) Defendants also contend the Plaintiff cites to no support in the specification or file history for a light transformer that does not prevent the major light parameters from changing.

(Dkt. No. 108 at 33.)

For the following reasons, the Court finds that **“opening”** should be construed as **“a gap or vacant space”**.

1. The Intrinsic Evidence

The term “opening” appears in claims 4 and 7 of the ’959 Patent. Specifically, claim 4 recites “a first opening located at an end of the first member” and “a second opening located at an end of the second member.” The Court first notes that claim 1 and claim 4 of the ’959 are nearly identical, the one major difference being that the term “planar optical window” in claim 1 is replaced with “opening” in claim 4. It is dependent claim 7 that recites “wherein the first opening is a first planar optical window and the second opening is a second planar optical window.” Thus, Plaintiff argues that it must be presumed that “openings” and “windows” have different meanings. (Dkt. No. 106 at 29.) The Court agrees and finds that Defendants have not overcome this presumption. Accordingly, since the parties agree that opening is at least “a gap or vacant space,” the Court adopts this construction.

2. Court’s Construction

In light of the intrinsic evidence, the Court construes **“opening”** to mean **“a gap or vacant space”**.

G. “curved conical reflective surface”

<u>Disputed Term</u>	<u>Plaintiff’s Proposal</u>	<u>Defendants’ Proposal</u>
curved conical reflective surface	Needs no construction. Alternatively, a reflective surface in the shape of a cone having a curved edge when the surface of the transformer is viewed from the side or in profile.	A cone-shaped curved surface that reflects the light rays that strike it and that is designed by receiving maximum and minimum output angles; receiving a location of a portion of the light transformer with respect to a light source that provides light; and iteratively point-by-point calculating an optical transformer reflective surface by providing an associated increment for an output angle for each increment of an input angle, the associated increment for the output angle being consistent with a predetermined output intensity distribution to reflect light provided by the light source according to the received maximum and minimum output angles based on the received location of a portion of the light transformer.

The term “curved conical reflective surface” appears in claim 1, 19, and 24 of the ’418 Patent. The parties’ dispute is very similar to the dispute for the term “total internal reflection surface.” In fact, the parties refer the Court to their arguments for the term “total internal reflection surface” for this term. *See* Dkt. No. 106 at 33; Dkt. No. 108 at 34. For the reasons discussed above for the term “total internal reflection surface,” the Court rejects the parties’ constructions and construes **“curved conical reflective surface”** to mean **“a cone-shaped curved surface designed to reflect light rays that strike it in a predetermined pattern.”**

H. “omnidirectional pattern in a horizontal plane”

<u>Disputed Term</u>	<u>Plaintiff’s Proposal</u>	<u>Defendants’ Proposal</u>
omnidirectional pattern in a horizontal plane	The intensity of the emitted light is the same in all directions in a horizontal plane (i.e., when the light pipe is viewed from the top or bottom).	Indefinite. To the extent a construction is possible, GE and Walmart propose: pattern of light that is reflected in all directions in the plane that is perpendicular to the central axis of the light source.

The parties dispute whether the phrase “omnidirectional pattern in a horizontal plane” is

indefinite. Plaintiff contends that the phrase is not indefinite and that its construction is correct because it uses relatively simple words that comport with the ordinary and customary meaning. (Dkt. No. 106 at 32.) Plaintiff further argues that Defendants GE and Walmart’s construction does not accurately reflect that the intensity of light is the same in all directions in a horizontal plane, and does not simplify the horizontal plane concepts. (Dkt. No. 106 at 32.)

Defendants respond that claim term is indefinite because there are an infinite number of horizontal planes in which a light pattern can be present. (Dkt. No. 108 at 32.) Defendants contend that neither the claims nor the specification provide any guidance as to which is the proper horizontal plane. (Dkt. No. 108 at 34.) In the alternative, Defendants GE and Walmart contend that their proposed construction is supported by the specification. (Dkt. No. 108 at 34.) Defendants further argue that Plaintiff’s construction is too broad and finds no support in the intrinsic record. (Dkt. No. 108 at 35.)

For the following reasons, the Court finds that **“omnidirectional pattern in a horizontal plane”** should be construed as **“pattern of light that is emitted in all directions in a horizontal plane”**.

1. The Intrinsic Evidence

The phrase “omnidirectional pattern in a horizontal plane” appears in claims 1, 19, and 24 of the ’418 Patent. Claim 24 recites that the light transformer has “a curved conical reflective surface that redirects and redistributes light” to provide “an omnidirectional pattern in a horizontal plane.” The specification further provides that the “optical window 110 may comprise an omnidirectional window” that can distribute “light out of the light transformer 100 in a 360 degree pattern” (i.e., in all directions). ’418 Patent at 3:39–44. The specification also provides an exemplary embodiment where a higher percentage of the light rays are reflected in a horizontal plane. ’418 Patent at 4:21–26 (“For example, 70% of the light emitted from the light source 310

can be reflected substantially along the path of light ray 350, 10% substantially along the path of light ray 352 and the remaining 20% substantially between paths 350 and 352.). Likewise, Figure 14(c) illustrates an exemplary “system 1500 that provides an omnidirectional light pattern in a horizontal plane with a precisely predetermined luminous intensity distribution in the vertical plane.” ’418 Patent at 7:65–8:2. Thus, contrary to Defendants contention, the intrinsic evidence informs, with reasonable certainty, those skilled in the art about the scope of the invention. The fact that the illustrated embodiments may deliver light in more than one horizontal plan does not make the claims indefinite. Instead, the claim language only requires that the “light transformer provides an omnidirectional pattern in a horizontal plane.” *KCJ Corp. v. Kinetic Concepts, Inc.*, 223 F.3d 1351, 1356 (Fed. Cir. 2000) (“This court has repeatedly emphasized that an indefinite article ‘a’ or ‘an’ in patent parlance carries the meaning of ‘one or more’ in open-ended claims containing the transitional phrase ‘comprising.’”)

Turning to the parties’ constructions, the Court does not adopt Plaintiff’s construction because the language “top or bottom of the light pipe as a point of reference” is not found in the intrinsic record. Likewise, the Court does not adopt Defendants’ construction because the “perpendicular to the central axis of the light source” could be confusing to a jury. In short, the term “horizontal plane” is not confusing and the parties agree that the pattern of light is reflected in all directions in this plane. Accordingly, the phrase should be construed as “pattern of light that is emitted in all directions in a horizontal plane.”

2. Court’s Construction

In light of the intrinsic evidence, the Court construes “**omnidirectional pattern in a horizontal plane**” to mean “**pattern of light that is emitted in all directions in a horizontal plane**”.

I. “light pipe”

<u>Disputed Term</u>	<u>Plaintiff’s Proposal</u>	<u>Defendants’ Proposal</u>
light pipe	An optical structure that transfers light.	An optical element that channels the light from the light source to the light transformer.

The parties dispute whether the term “light pipe” should be construed as structure or element that “channels” the light. Plaintiff contends that Defendants’ construction using the word “channels” is narrow and could unduly limit the scope of the claim by requiring light rays to bounce off the sides of the light pipe as they travel from the light source to the light transformer. (Dkt. No. 106 at 31–32.) Plaintiff further contends that its proposed construction is more appropriate because it does not implicate such a requirement. (Dkt. No. 106 at 32.)

Defendants respond that their proposed construction is supported by the intrinsic record and the widely accepted definition of a “light pipe” in the industry. (Dkt. No. 108 at 37.) Defendants contend that Plaintiff’s construction improperly broadens the definition of a light pipe to encompass structures such as lenses, collimators, diffusers, optical reflectors, or reflective surfaces. (Dkt. No. 108 at 38.) Defendants further argue that the patentee expressly disavowed a broad construction when it distinguished “light pipe” from a simple light transfer assembly during prosecution of the ‘418 Patent. (Dkt. No. 108 at 38.)

For the following reasons, the Court finds that **“light pipe”** should be construed as **“optical structure that channels light from the light source to the light transformer”**.

1. The Intrinsic Evidence

The phrase “light pipe” appears in claims 1, 15, 18, 19, 21, 22, 23, and 24 of the ‘418 Patent. The Court finds that the term is used consistently in the claims and is intended to have the same meaning in each claim. Claim 24 recites that the light pipe is an optical structure that

has a first end and a second end. Claim 24 also recites that the light pipe is not the recited reflective surface or the recited light transformer because both are positioned “between the first end and the second end of the light pipe.” Thus, the Court agrees with Defendants that Plaintiff’s construction is too broad because it could include the recited light transformer or the recited reflective surface.

Furthermore, the specification describes that “[t]he input surface 1820 can direct the light through the light channel 1840 by way of total internal reflection to the reflective surface 1830.” ’418 Patent at 9:6–8. Therefore, the Court finds that the “light channel 1840,” or “light pipe,” channels light from a light source to the light transformer. During the claim construction hearing, Plaintiff reiterated its concern that “channels” could be interpreted to mean that the light rays must bounce off the sides of the light pipe as they travel from the light source to the light transformer. Defendants responded that they would not contend that “channels” requires the light to bounce off the sides of the optical structure, instead their understanding was that it only had to pass through the optical structure.

2. Court’s Construction

In light of the intrinsic evidence, the Court construes “**light pipe**” to mean “**optical structure that channels light from the light source to the light transformer**”.

J. “*lighting system*”

<u>Disputed Term</u>	<u>Plaintiff’s Proposal</u>	<u>Defendants’ Proposal</u>
lighting system	Needs no construction.	GE/Walmart - as to the accused GE products: ordinary and customary meaning. Walmart - as to the accused Great Value products: a luminaire.

The parties dispute whether the term “light system” requires construction. Plaintiff

contends that the term should not be construed because it is a simple term and appears only in the preamble of claim 24, which it contends is not limiting. (Dkt. No. 106 at 34.) Plaintiff further argues that Walmart's construction is not appropriate because it introduces a definition that is more complex and less enlightening than the claim term itself. (Dkt. No. 106 at 34.)

Walmart responds that the proper construction is "a luminaire," but only as it applies to the Great Value Products. (Dkt. No. 108 at 38.) Walmart contends that its construction is consistent with the specification and should be adopted because the patent makes clear, a lighting system is distinct from a lamp or light source. (Dkt. No. 108 at 39.) As to the accused GE products, GE and Walmart contend that this term should be given its ordinary and customary meaning. (Dkt. No. 108 at 39.)

The phrase "lighting system" appears only in the preamble of claims 1 and 24 of the '418 Patent. The Court finds that "the body of the claim fully and intrinsically sets forth the complete invention, including all of its limitations, and the preamble offers no distinct definition of any of the claimed invention's limitations, but rather merely states, for example, the purpose or intended use of the invention." *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1305 (Fed.Cir.1999). Specifically, claim 24 recites that the lighting system includes a housing, a light source, a light pipe, and a light transformer. Thus, the body of the claim set forth the elements that make up the "lighting system." Moreover, there are no elements in the body of the claim that rely on the preamble of the claim for antecedent basis. Furthermore, the term "lighting system" is unambiguous and is easily understandable by a jury. Indeed, Defendants GE and Walmart agree that that term should be given its plain and ordinary meaning as to the accused GE products. Accordingly, the Court finds that "**lighting system**" should be given its **plain and ordinary meaning**.

K. “close association” / “close proximity”

Disputed Term	Plaintiff’s Proposal	Defendants’ Proposal
close association	Needs no construction. Alternatively, near or close by.	Indefinite.
close proximity	Needs no construction. Alternatively, near or close by.	Indefinite.

The parties dispute whether the terms “close association” and “close proximity” are indefinite. Plaintiff contends that both terms are simple words with simple plain meanings and that they should be understood by the jury. (Dkt. No. 106 at 34.) In the alternative, Plaintiff contends that the proper context can be provided by reference to Figure 17 of the ’418 Patent. (Dkt. No. 106 at 34.)

Defendants respond that the terms are indefinite because the claim language provides no objective basis by which a person skilled in the art could ascertain their meaning. (Dkt. No. 108 at 39.) Defendants argue that the terms are not used or otherwise defined in the patent specification or prosecution history. (Dkt. No. 108 at 39.) Defendants also argue that if any construction can be provided, the terms should not be construed identically because the patentee used the terms separately in the claim, presumably to give the terms different meanings. (Dkt. No. 108 at 39.) Finally, Defendants contend that Plaintiff’s proposed construction of “near or close by” has the same indefiniteness problem as the terms themselves. (Dkt. No. 108 at 39.)

As an initial matter, it well accepted that “patentable inventions cannot always be described in terms of exact measurements, symbols and formulae, and the applicant necessarily must use the meager tools provided by language, tools which admittedly lack exactitude and precision.” *Georgia-Pacific Corp. v. United States Plywood Corp.*, 258 F.2d 124, 136 (2d Cir.

1958), cert. denied, 358 U.S. 884 (1958). Therefore, “[e]xpressions such as ‘substantially’ are used in patent documents when warranted by the nature of the invention, in order to accommodate the minor variations that may be appropriate to secure the invention ... and indeed may be necessary in order to provide the inventor with the benefit of his invention.” *Verve, LLC v. Crane Cams, Inc.*, 311 F.3d 1116, 1120 (Fed. Cir 2002). That said, the Court understands that “[w]hen a word of degree is used the district court must determine whether the patent’s specification provides some standard for measuring that degree.” *Seattle Box Co., Inc. v. Indus. Crating & Packing, Inc.*, 731 F.2d 818, 826 (Fed. Cir. 1984). The Court will now turn to each phrase in light of the intrinsic evidence to determine if it informs, with reasonable certainty, those skilled in the art about the scope of the invention. *Nautilus Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2129 (2014).

1. “close association”

The term “close association” appears in claims 1, 18, and 24 of the ’418 Patent. Claim 24 recites that the lighting system includes a light source and a light pipe having a first end and a second end. The claim further recites that the first end of the light pipe is in “close association with the light source for coupling the light therinto.” In this context, the specification informs, with reasonable certainty, those skilled in the art about the scope of the term “close association” by stating the following:

The light source 1810 can be located a distance d from the input surface 1820. Additionally, the input surface can be semispherical about a radius R .

’418 Patent at 8:66–9:2. Furthermore, Figure 17 illustrates an exemplary distance “ d ” and radius “ R ” and provides a standard for determining when the first end of the light pipe is in close association or near the light source. *Young v. Lumenis, Inc.*, 492 F.3d 1336, 1346 (Fed. Cir. 2007) (“[The] figure illustrates where the first incision is made in relation to the crest and

phalanx, and provides a standard for measuring the meaning of the term “near.”) Accordingly, the Court finds that the term “**close association**” is not indefinite and should be given its **plain and ordinary meaning**.

2. “*close proximity*”

The term “close proximity” appears in claims 1, 19, and 24 of the ’418 Patent. Claim 24 recites that the lighting system includes a light pipe and a light transformer with a reflective surface. The claim further recites that the light transformer is “in close proximity to the second end” of the light pipe. In this context, the specification informs, with reasonable certainty, those skilled in the art about the scope of the term “close proximity” by stating the following:

In operation, the light source **1810** can transmit light through the input surface **1820**. The input surface **1820** can direct the light through the light channel **1840** by way of total internal reflection to the reflective surface **1830**. The reflective surface **1830** can reflect the light according to a specified distribution pattern. For example, the reflective surface **1830** can reflect the light at an angle α' where α' falls between α'_{\min} and α'_{\max} . Additionally, the reflective surface can reflect the light in a manner similar to the semi-flush omnidirectional luminaire **300** of FIG. 3.

’418 Patent at 9:5–13. Furthermore, Figure 17 illustrates the reflective surface of the light transformer in close proximity or near the edge of the light pipe. *Young*, 492 F.3d at 1347 (“The claim language and the specification make clear that the term “near” means close to or at the most distal edge of the unguled crest.”) Thus, Figure 17 provides a standard for determining when the light transformer is “in close proximity to the second end” of the light pipe.

Moreover, the Court is not persuaded by Defendants’ argument that the term “close proximity” is indefinite because Defendants have no reservation using the relative term “nearly parallel” for their proposed construction for the phrase “low divergence or substantially parallel with an axis of light direction.” Thus, the Court finds that the intrinsic evidence informs, with reasonable certainty, those skilled in the art about the scope of the invention. *Rosemount, Inc. v.*

Beckman Instruments, Inc., 727 F.2d 1540, 1546-1547 (Fed. Cir. 1984) (in rejecting challenge on indefiniteness grounds to the phrase “close proximity,” court cautions against turning construction of a patent “into a mere semantic quibble that serves no useful purpose”). Indeed, Plaintiff’s proposed construction for the term “close proximity” uses the similar “near or close by.” Accordingly, the Court finds that the term “**close proximity**” is not indefinite and should be given its **plain and ordinary meaning**.

V. CONCLUSION

The Court adopts the above constructions. The parties are ordered that they may not refer, directly or indirectly, to each other’s claim construction positions in the presence of the jury. Likewise, the parties are ordered to refrain from mentioning any portion of this opinion, other than the actual definitions adopted by the Court, in the presence of the jury. Any reference to claim construction proceedings is limited to informing the jury of the definitions adopted by the Court.

It is SO ORDERED.

SIGNED this 10th day of July, 2014.


ROY S. PAYNE
UNITED STATES MAGISTRATE JUDGE

APPENDIX A

The parties have agreed to the construction of the following terms:

Claim Term/Phrase	Agreed Construction
“predetermined pattern” (‘959 Patent - claims 1, 3, 6)	“A light pattern specified in advance, where the transformer is designed taking into account the angular luminous intensity distribution of the light emitted by the light source as a design input parameter.”
“transformer axis coaxial to the longitudinal axis of the light pipe” (‘418 Patent - claim 24)	“The transformer and the light pipe have a common axis or centerline.”

(Dkt. No. 112–1 at 7, 16; Dkt. No. 112–2 at 9, 23 (Charts of Proposed Constructions)).