

IN THE UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF NORTH CAROLINA

OPTOLUM, INC.,)	
)	
Plaintiff,)	
)	
v.)	1:17CV687
)	
CREE, INC.,)	
)	
Defendant.)	

CLAIM CONSTRUCTION MEMORANDUM OPINION AND ORDER

OSTEEN, JR., District Judge

This matter is before the court for claim construction of terms in U.S. Patents Nos. 6,831,303 ("the '303 Patent") and 7,242,028 ("the '028 Patent").^{1,2} The parties, Plaintiff OptoLum, Inc. ("Plaintiff") and Defendant Cree, Inc. ("Defendant") agree with respect to construction of several claim terms and the court adopts those agreed-upon constructions. (Joint Claim Construction Statement (Doc. 106) at 1-2.) The parties disagree,

¹ The '028 Patent is a continuation of the '303 Patent. '028 Patent col. 1, lines 5-9. While a few differences exist between the two patents, both parties agree that they are largely the same for purposes of claim construction. (See Def.'s Mem. in Supp. of its Claim Construction ("Def.'s Mem.") (Doc. 115) at 7 & n.1; OptoLum's Opening Mem. in Supp. of Claim Construction ("Pl.'s Mem.") (Doc. 118) at 10 & n.2.)

² All citations in this Memorandum Opinion and Order to documents filed with the court refer to the page numbers located at the bottom right-hand corner of the documents as they appear on CM/ECF.

however, as to construction of eight terms in the '303 and '028 Patents and submitted proposed constructions of those terms. (Id. at 2-3.) Both parties submitted claim construction briefs, (Doc. 115 (Defendant); Doc. 118 (Plaintiff)), and responsive briefs, (Doc. 127 (Defendant); Doc. 128 (Plaintiff)). The court held a claim construction hearing on January 16, 2018, at which time the court took this matter under advisement. On May 29, 2018, this court requested supplemental briefing, (Doc. 139), which the parties thereafter filed, (Doc. 140 (Plaintiff); Doc. 141 (Defendant)). On June 19, 2018, this court requested responses to the supplemental briefing, (Text Order 06/19/2018), which the parties thereafter filed, (Doc. 144 (Defendant); Doc. 146 (Plaintiff)).

I. LEGAL STANDARD

In Markman v. Westview Instruments, Inc., 517 U.S. 370 (1996), the Supreme Court clarified which issues in a patent trial are properly reserved for the jury, and which are questions of law to be determined by the court. Specifically, the Court held that interpretation of language in patent claims "is an issue for the judge, not the jury[.]" Id. at 391. The Federal Circuit has provided further guidance on how to interpret patent claims, stating that, in general, courts are to give the words of a claim "their ordinary and customary meaning"

as understood by "a person of ordinary skill in the art in question at the time of the invention[.]" Phillips v. AWH Corp., 415 F.3d 1303, 1312-13 (Fed. Cir. 2005) (en banc) (citations omitted).

In construing claim terms, courts are directed to consult several specific types of evidence to discern what a person of ordinary skill in the art would understand the term to mean.

Because the meaning of a claim term as understood by persons of skill in the art is often not immediately apparent, and because patentees frequently use terms idiosyncratically, the court looks to "those sources available to the public that show what a person of skill in the art would have understood disputed claim language to mean." Those sources include "the words of the claims themselves, the remainder of the specification, the prosecution history, and extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art."

Id. at 1314 (citations omitted).

First, "the claims themselves provide substantial guidance as to the meaning of particular claim terms." Id. (citation omitted). "To begin with, the context in which a term is used in the asserted claim can be highly instructive." Id. Federal Circuit case law "provide[s] numerous . . . examples in which the use of a term within the claim provides a firm basis for construing the term." Id. (citations omitted).

Other claims of the patent in question, both asserted and unasserted, can also be valuable sources of enlightenment as to the meaning of a claim term.

Because claim terms are normally used consistently throughout the patent, the usage of a term in one claim can often illuminate the meaning of the same term in other claims. Differences among claims can also be a useful guide in understanding the meaning of particular claim terms. For example, the presence of a dependent claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim.

Id. at 1314-15 (citations omitted). "The words of a claim are generally given their ordinary and customary meaning as understood by a person of ordinary skill in the art when read in the context of the specification and prosecution history."

Thorner v. Sony Comput. Entm't Am. LLC, 669 F.3d 1362, 1365 (Fed. Cir. 2012) (citation omitted).

The second type of evidence the court should consider is the specification, which "contains a written description of the invention that must enable one of ordinary skill in the art to make and use the invention." See Markman v. Westview Instruments, Inc., 52 F.3d 967, 979 (Fed. Cir. 1995) (en banc), aff'd, 517 U.S. 370 (1996); see also Phillips, 415 F.3d at 1315. "Claims must be read in view of the specification, of which they are a part." Markman, 52 F.3d at 979 (citations omitted). The claims define the invention, but "the 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.'" Phillips, 415 F.3d at 1315 (citation omitted).

"For claim construction purposes, the description may act as a sort of dictionary, which explains the invention and may define terms used in the claims." Markman, 52 F.3d at 979 (citation omitted). "[A] patentee is free to be his own lexicographer[, but] . . . any special definition given to a word must be clearly defined in the specification." Id. at 980 (citations omitted). "[C]laims are not to be interpreted by adding limitations appearing only in the specification. . . . [P]articular embodiments appearing in a specification will not be read into the claims when the claim language is broader than such embodiments." Electro Med. Sys., S.A. v. Cooper Life Scis., Inc., 34 F.3d 1048, 1054 (Fed. Cir. 1994) (citations omitted). A limitation from the specification should only be read into the claims when the specification requires that limitation. See id.

The third type of evidence that a court should consider is the patent's prosecution history. See Phillips, 415 F.3d at 1317; see also Markman, 52 F.3d at 980; Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582 (Fed. Cir. 1996). "This 'undisputed public record' of proceedings in the Patent and Trademark Office is of primary significance in understanding the claims." Markman, 52 F.3d at 980 (citation omitted). "The prosecution history limits the interpretation of claim terms so as to exclude any interpretation that was disclaimed during

prosecution. Claims may not be construed one way in order to obtain their allowance and in a different way against accused infringers." Southwall Techs., Inc. v. Cardinal IG Co., 54 F.3d 1570, 1576 (Fed. Cir. 1995) (citations omitted).

There are two relevant exceptions to the general rule that claim terms "are generally given their ordinary and customary meaning as understood by a person of ordinary skill in the art[.]" Thorner, 669 F.3d at 1365 (citation omitted).

First, the claim term will not receive its ordinary meaning if the patentee acted as his own lexicographer and clearly set forth a definition of the disputed claim term in either the specification or prosecution history. Second, a claim term will not carry its ordinary meaning if the intrinsic evidence shows that the patentee distinguished that term from prior art on the basis of a particular embodiment, expressly disclaimed subject matter, or described a particular embodiment as important to the invention.

CCS Fitness, Inc. v. Brunswick Corp., 288 F.3d 1359, 1366-67 (Fed. Cir. 2002) (citations omitted); see also Thorner, 669 F.3d at 1365.

The redefinition of a claim term must be clear "so as to put one reasonably skilled in the art on notice that the patentee intended to so redefine the claim term." Bell Atl. Network Servs., Inc. v. Covad Commc'ns Grp., Inc., 262 F.3d 1258, 1268 (Fed. Cir. 2001) (citations omitted). However, redefinition need not be explicit. Id. "[T]he specification may define claim terms 'by implication' such that the meaning may be

'found in or ascertained by a reading of the patent documents.'" Id. (citation omitted); see also Trs. of Columbia Univ. v. Symantec Corp., 811 F.3d 1359, 1364 (Fed. Cir. 2016).

"The party seeking to invoke prosecution history disclaimer bears the burden of proving the existence of a 'clear and unmistakable' disclaimer that would have been evident to one skilled in the art." Mass. Inst. of Tech. v. Shire Pharm., Inc., 839 F.3d 1111, 1119 (Fed. Cir. 2016) (citation omitted); see also Omega Eng'g, Inc., v. Raytek Corp., 334 F.3d 1314, 1324 (Fed. Cir. 2003) (stating that a disclaimer occurs where the "patentee has unequivocally disavowed a certain meaning to obtain his patent"). Said disavowal must be clear and may not be "too vague or ambiguous[.]" Omega Eng'g, 334 F.3d at 1325 (citation omitted).

Evidence from sources other than the claims, the specification, and the prosecution history is extrinsic and generally should be relied upon only when the intrinsic evidence fails to resolve any ambiguity in a disputed term. See Vitronics, 90 F.3d at 1583; see also Phillips, 415 F.3d at 1318-19. Extrinsic evidence includes "expert and inventor testimony, dictionaries, and learned treatises." Markman, 52 F.3d at 980. A court may use extrinsic evidence to aid its understanding of a patent, but "not for the purpose of varying or contradicting the

terms of the claims." Id. at 981 (citations omitted).

Accordingly, the Federal Circuit has stated that "expert testimony, whether it be of an attorney, a technical expert, or the inventor, on the proper construction of a disputed claim term may only be relied upon if the patent documents, taken as a whole, are insufficient to enable the court to construe disputed claim terms." Vitronics, 90 F.3d at 1585 (emphasis omitted). In such "rare instances," prior art documents and dictionaries are preferable to expert testimony because they are objective, reliable, and "accessible to the public in advance of litigation." Id. With these guiding principles in mind, the court proceeds to construe the claim terms at issue.

I. DISCUSSION

A. "carried on"

Claim Term	Plaintiff's Construction	Defendant's Construction
"carried on" (all claims)	"supported on"	"in direct contact with, and supported by"

The court starts by considering the claim term itself and the ordinary meaning that would be attributed to the term by a person skilled in the relevant art. This term appears in multiple claims. Claim 1, for example, references "a plurality of solid state light sources carried on said elongate member

outer surface[.]” Patent ‘028 col. 4, lines 34-35. Taken in isolation, this claim term is self-explanatory and appears to be in need of no special construction.

Next, this court reads the claim term in light of the ‘028 Patent’s specification. The specification of the ‘028 Patent discloses a “heat conducting epoxy” between the tube and the light-emitting diodes (“LEDs”) that aids in the transmission of heat between the tube and the LEDs. ‘028 Patent col. 3, lines 47-49. Defendant advocates for a construction of “carried on” that is more limited than the term’s plain meaning and which requires direct contact between the solid state light sources and the elongate member’s outer surface. Unless an exception applies, it is generally error to adopt a construction which excludes a preferred embodiment. See, e.g., MBO Labs., Inc. v. Becton, Dickinson & Co., 474 F.3d 1323, 1333 (Fed. Cir. 2007); On-Line Techs., Inc. v. Bodenseewerk Perkin-Elmer GMBH, 386 F.3d 1133, 1138 (Fed. Cir. 2004). Because the specification contains a preferred embodiment which does not require direct contact, a person skilled in the relevant art would understand “carried on” to mean “supported on.”

Next, the court looks to the prosecution history of the patents at issue. It is here that Defendant contends that the applicant disclaimed the contention “that the claimed invention

covers a device having an intervening structure between the LEDs and the ETCM [elongate thermally conductive member]." (Def.'s Mem. in Supp. of its Claim Construction ("Def.'s Mem.") (Doc. 115) at 14.) While claims will normally not be interpreted in a way that excludes an embodiment disclosed in the specification, an exception to this rule is when a clear disclaimer is made during prosecution. Oatey Co. v. IPS Corp., 514 F.3d 1271, 1277 (Fed. Cir. 2008); N. Am. Container, Inc. v. Plastipak Packaging, Inc., 415 F.3d 1335, 1345-46 (Fed. Cir. 2005). Here, Defendant, the party seeking to invoke a prosecution history disclaimer, carries the burden. See Shire Pharm., 839 F.3d at 1119. It must establish that the applicant unequivocally disclaimed that the invention covers a device where a structure intervenes between the LEDs and the elongate thermally conductive member. See Omega Eng'g, 334 F.3d at 1324-25.

In the prosecution of the '028 Patent, the applicant made statements responsive to the examiner's initial rejection of the invention as anticipated by U.S. Patent 6,848,819 ("the '819 Patent"). (Decl. of Lynne A. Borchers ("Borchers Decl."), Ex. E, '028 File History Amendment (Doc. 117-5) at 20 ("The '819 patent teaches away from Applicant's novel structures.")) Generally discussing the '819 Patent, the applicant stated:

[T]he structures of the '819 patent require that the LEDs are carried on copper solder pads on one surface

of a circuit board and heat transfer is via solder pads through the circuit board to a metallization layer on the opposite surface of the circuit board and then to the cooling member via an adhesive layer.

The LEDs are not carried by the cooling member.

(Id. at 21.) Later, when arguing that the examiner incorrectly applied the standard for anticipation, the applicant referenced figures from the '819 Patent and distinguished it from the invention at issue, stating:

It is clear from the drawings that the thermally conductive member 3 does not carry its LEDs 2 on its outer surface. Rather, the thermally non-conductive printed circuit board 1 carries the LEDs 2. The Examiner's attention is again directed to the reproduced portions of the reference above which clearly state that the LEDs are carried on the printed circuit board 1 and not on the structure 3.

It is clear from a plain reading of the descriptions of the structures in the '819 patent that the printed circuit board 1 carries LEDs 2 on one surface and carries the heat sink 3 (thermally conductive member) on its opposite surface.

In other words, the '819 patent teaches away from the novel structures of applicant's claimed invention which set forth structure in which the LEDs, solid state light sources, radiation emitting semiconductor devices, and radiation emitting solid state devices are carried on an elongate thermally conductive member.

(Id. at 27.) While applicant certainly used the term "carried on" during the patent prosecution, the statements at issue were not made with respect to whether direct contact was required but instead with respect to which structure within the '819 patent

supported various other parts of the invention. Here, nothing in the prosecution record amounts to a clear and unambiguous disavowal. See SanDisk Corp. v. Memorex Prods., Inc., 415 F.3d 1278, 1287 (Fed. Cir. 2005) ("There is no 'clear and unmistakable' disclaimer if a prosecution argument is subject to more than one reasonable interpretation, one of which is consistent with a proffered meaning of the disputed term." (citation omitted)).

Extrinsic evidence only serves to further support this conclusion. The court finds the following dictionary definitions of "carry" to be helpful in educating it as to possible ordinary meanings of this claim term: "to bear the weight of," Webster's New World Dictionary (3d College ed. 1989), and "to hold or be capable of holding," Webster's II New College Dictionary (2001); see also Phillips, 415 F.3d at 1319 ("[B]ecause extrinsic evidence can help educate the court regarding the field of the invention and can help the court determine what a person of ordinary skill in the art would understand claim terms to mean, it is permissible for the district court in its sound discretion

to admit and use such evidence.”).³ The court has also considered whether expert testimony could further educate it as to possible ordinary meanings. Looking to expert testimony provided as to this term, however, is unhelpful in further educating the court at this point in its analysis as the experts are in disagreement as to how such a person would understand the term. (Compare Decl. of Leah R. McCoy, Ex. 3, Expert Decl. of A. Brent York on Claim Construction (“York Decl.”) (Doc. 119-3) ¶ 54, with Supplemented Decl. of Dr. Eric Bretschneider (“Bretschneider Suppl. Decl.”) (Doc. 116) ¶¶ 50-52.) Because the court cannot evaluate the credibility of the experts based on their declarations alone, it will refrain from weighing the testimony at this juncture and rely on the outcome clearly supported by the intrinsic evidence.

Having considered the claim term, the specification, the prosecution history, and for the purpose of educating the court, extrinsic evidence, this court finds that a person of ordinary skill in the art would construe “carried on” as “supported on.”

³ These definitions are consistent with other courts’ plain meaning construction of “on” or “carried on” to require support but not direct contact. See Spectrallytics, Inc. v. Cordis Corp., 576 F. Supp. 2d 1030, 1038, (D. Minn. 2008), aff’d, 649 F.3d 1336 (Fed. Cir. 2011); IPS Corp. v. WCM Indus., Inc., No. 2:12-CV-02694-JPM, 2014 WL 8508558, at *13 (W.D. Tenn. Sept. 18, 2014); Produits Berger S.A. v. Schemenauer, No. CIV A 2:06CV002, 2007 WL 809611, at *9 (E.D. Tex. Feb. 27, 2007).

Accordingly, this court will adopt Plaintiff's construction of this term.

B. "a plurality of solid state light sources"

Claim Term	Plaintiff's Construction	Defendant's Construction
"a plurality of solid state light sources" ('028 Patent, claims 1-3, 5-8, 14, & 16-17)	"two or more packages, each of which comprise a thermally conductive back and a solid state light source"	"two or more packages, each of which comprise a solid state light source"

The court starts by considering the claim term itself and the ordinary meaning that would be attributed to the term by a person skilled in the relevant art. Claim 1 of the '028 Patent, for example, describes "a plurality of solid state light sources carried on said elongate member outer surface[.]" '028 Patent col. 4, lines 33-37.⁴ Here, the parties agree that "plurality" should be construed as "two or more," (Joint Claim Construction Statement (Doc. 106) at 2), consistent with its plain and ordinary meaning, see York Prods., Inc. v. Cent. Tractor Farm & Family Ctr., 99 F.3d 1568, 1575 (Fed. Cir. 1996). The parties' narrow disagreement with respect to this term is whether a

⁴ The "solid state light source" terminology reflects a difference between the '028 Patent and the '303 Patent. The earlier '303 Patent references "LEDs" while the '028 Patent references "solid state light sources" in an otherwise identical Claim 1. Compare '303 Patent col. 4, lines 29-30, with '028 Patent col. 4, lines 34-35.

"thermally conductive back" is necessarily included in this definition. Taken in isolation, this claim term does not appear to be limited to packages with a thermally conductive back.

Next, the court considers this claim term in light of the '028 Patent's specification. The '028 Patent's specification, however, does not describe "solid state light sources" and refers exclusively to "LEDs." See generally '028 Patent cols. 1-4. Although the parties agreed to construe "a plurality of light emitting diodes" as "two or more packages, each of which comprise a thermally conductive back and a diode that emits light[,]" (Joint Claim Construction Statement (Doc. 106) at 1), the specification does not make clear how LEDs differ from solid state light sources. Further, both parties agree that LEDs are a subset of solid state light sources, but neither points to compelling material within the intrinsic evidence to explain how they differ. (See OptoLum's Opening Mem. in Supp. of Claim Construction ("Pl.'s Mem.") (Doc. 118) at 29; Def.'s Mem. (Doc. 115) at 14.) The specification provides that "[f]lexible printed circuit 113 has mounting holes 134 for receiving LEDs 109 such that the backs of LEDs 109 are in thermal contact with the tube surface 107." '028 Patent col. 3, lines 45-51. Because the difference between LEDs and solid state light sources with respect to this invention is unclear, however, the court cannot

conclude from the specification that solid state light sources likewise require thermally conductive backs. “[C]laims are not to be interpreted by adding limitations appearing only in the specification. . . . [P]articular embodiments appearing in a specification will not be read into the claims when the claim language is broader than such embodiments.” Electro Med. Sys., 34 F.3d at 1054; see also GE Lighting Solutions v. AgiLight, Inc., 750 F.3d 1304, 1310 (Fed. Cir. 2014).

Next, the court looks to the prosecution history. Here, the court does not find any evidence relevant to this claim term. Having considered the claim term, the specification, and the prosecution history, the court concludes that a “thermally conductive back” limitation should not be read into this claim term. The extrinsic evidence only serves to further support the court’s conclusion. While the parties’ witnesses disagree with respect to their ultimate conclusion as to this term, only the Defendant’s expert discusses how an LED and a solid state light source differ and how such differences might affect the construction of this term. (Compare York Decl. (Doc. 119-3) ¶¶ 78-79 (stating that a person of ordinary skill in the art would understand that the package includes a thermally conductive back but not going into why this is necessarily the case for all solid state light sources as compared to just

LEDs), with Bretschneider Suppl. Decl. (Doc. 116) ¶¶ 76-84 (stating that solid state light sources encompass LEDs and that "the full scope of the SSLS [solid state light source] phrase is indeterminate. This is because neither the patent specification nor its prosecution history explain or refer to the [solid state light source] phrase and it is not apparent to a POSA [person of ordinary skill in the art] what other structures which fall within the plain meaning of the phrase but which may or may not be suitable to be incorporated in the overall structure described in the '028 patent."). Here, the only expert witness that directly engages this issue shares the court's concern about how LEDs and solid state light sources differ in scope. Accordingly, this court will adopt Defendant's proposed construction of the term "a plurality of solid state light sources" as "two or more packages, each of which comprise a solid state light source."

C. "disposed in a second plane not coextensive with said first plane"

Claim Term	Plaintiff's Construction	Defendant's Construction
"disposed in a second plane not coextensive with said first plane" (all claims)	"arranged in a second flat surface not having the same spatial boundaries as the first flat surface"	"disposed in a second plane that is not the same as the first plane wherein the plurality of LEDs are not disposed in a single plane perpendicular to the axis of the elongate thermally conductive member"

The court starts with the claim term itself and the ordinary meaning that would be attributed to the term by a person skilled in the relevant art. This term appears, for example, in Claim 1 of the '028 Patent, which describes:

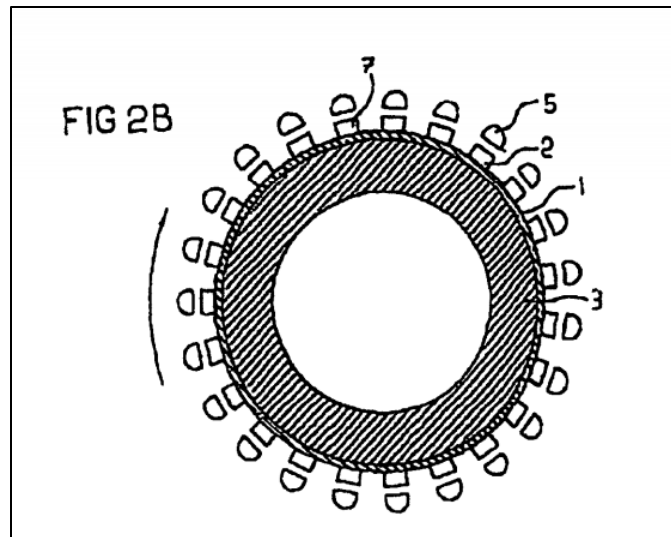
[A] plurality of solid state light sources carried on said elongate member outer surface at least some of said solid state light sources being disposed in a first plane and others of said solid state light sources being disposed in a second plane not coextensive with said first plane[.]

'028 Patent col 4, lines 33-38.

The court next considers this claim term in light of the '028 Patent's specification. See Markman, 52 F.3d at 979. Within the summary of the invention, Patent '028 describes "[a] plurality of light emitting diodes is carried on the elongate member outer surface. At least some of the light emitting diodes are disposed in a first plane and others of said light emitting

diodes are disposed in a second plane not coextensive with the first plane." '028 Patent col 1, lines 49-53. Similarly worded to Claim 1, above, the use of the term in the specification does not provide much insight.

Next, the court turns to the prosecution history. See Markman, 52 F.3d at 980; see also Vitronics, 90 F.3d at 1582. It is here that Defendant contends that, in distinguishing the '028 Patent from the '819 Patent, the applicant disclaimed "the circumstance in which LEDs are placed in a single plane perpendicular to the axis of the elongate heat sink." (Def.'s Mem. (Doc. 115) at 20.) Defendant, the party seeking to invoke a prosecution history disclaimer, carries the burden of proving that there was a "clear and unmistakable" disclaimer that would have been evident to a person of ordinary skill in the art. See Shire Pharm., 839 F.3d at 1119 (citation omitted). In the prosecution of what became the '028 Patent, applicant made statements in response to the examiner rejecting the application as anticipated by the '819 patent. ('028 File History Amendment (Doc. 117-5) at 23.) Statements relevant to the disputed claim terms centered around the below-pictured figure from the '819 Patent, also contained in applicant's amendment/response:



(Id. at 26.) Applicant stated in relevant part:

[T]he Examiner points to FIG. 2B as showing solid state light sources that are in a first plane and a second plane not coextensive with the first plane. The Examiner is mistaken. All the LEDs shown in FIG. 2B are in the same plane, i.e., the plane defined by the drawing sheet.

(Id. at 27.) Plaintiff contends that no such disavowal was made, pointing out that the '028 Patent refers to LEDs being "disposed" in a plane whereas the prosecution history references LEDs being "in" the same plane defined by the drawing sheet.

(Pl.'s Suppl. Mem. in Supp. of Claim Construction ("Pl.'s Suppl. Mem.") (Doc. 140) at 8-9.) Plaintiff further contends that the "clear and unmistakable standard" was not met because the statements at issue were made with respect to a two-dimensional drawing and could be interpreted as highlighting an evidentiary defect in the Examiner's initial refusal. (Id. at 10 & n.4.)

This court is unpersuaded by Plaintiff's arguments. Applicant's statements made during patent prosecution were in response to the Examiner's statement that Figure 2B in the '819 Patent illustrated "solid state light sources that are in a first plane and a second plane not coextensive with the first plane." ('028 File History Amendment (Doc. 117-5) at 27.) This issue was raised in relation to the Examiner's initial position that the claimed invention was anticipated by prior art, the '819 Patent. Applicant responded to the Examiner's position by contending that "[a]ll the LEDs shown in FIG. 2B are in the same plane, i.e., the plane defined by the drawing sheet[,]" thereby distinguishing the claimed invention from the '819 Patent. (See id.) This statement carries more significance than merely "highlighting an evidentiary defect" as Plaintiff contends, and was made in an effort to refute the Examiner's position as to anticipation. This court finds such a statement to amount to a

clear and unequivocal disclaimer. See Shire Pharm., 839 F.3d at 1119; Omega Eng'g, 334 F.3d at 1324.⁵

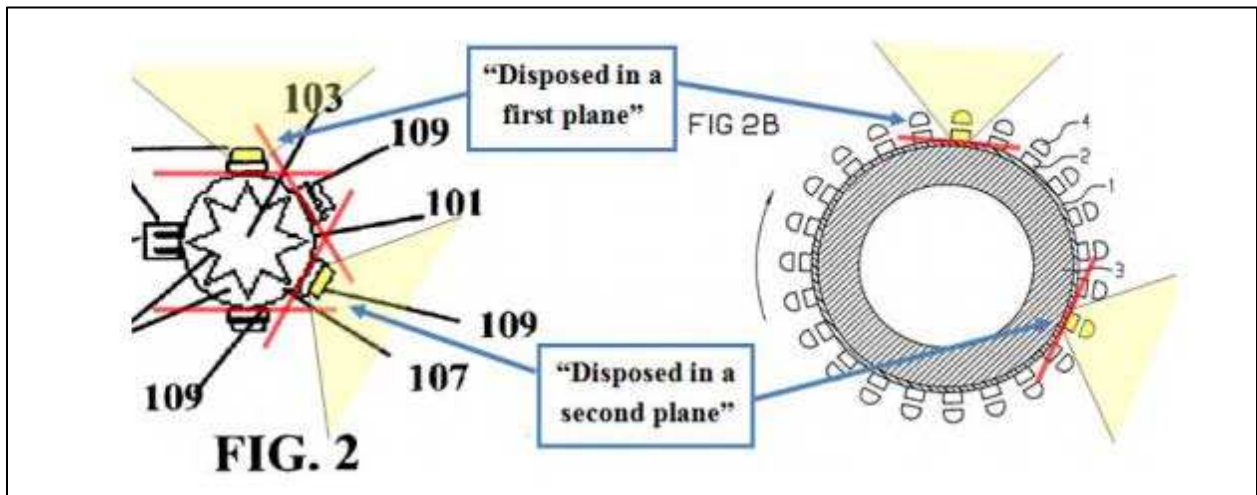
The disclaimer that was made is extremely narrow, however. Applicant distinguished the claimed invention from one in which

⁵ Plaintiff contends that because the above-discussed argument made by applicant with respect to the '819 Patent was rejected by the Examiner that it cannot serve as the basis of a disclaimer. To support this contention, Plaintiff cites to TriVascular, Inc. v. Samuels, 812 F.3d 1056, 1064 (Fed. Cir. 2016). (Pl.'s Mem. (Doc. 118) at 26; Pl.'s Suppl. Mem. (Doc. 140) at 10.) TriVascular does not directly support Plaintiff's argument. As explained by a Northern District of Illinois court in Not Dead Yet Manufacturing Inc. v. Pride Solutions, LLC, 265 F. Supp. 3d 811, 831-32 (N.D. Ill. 2017), reconsideration denied, No. 13 C 3418, 2018 WL 688324 (N.D. Ill. Feb. 2, 2018), the patentee in TriVascular attempted to distinguish prior art by proposing an amendment with a new limitation, but later

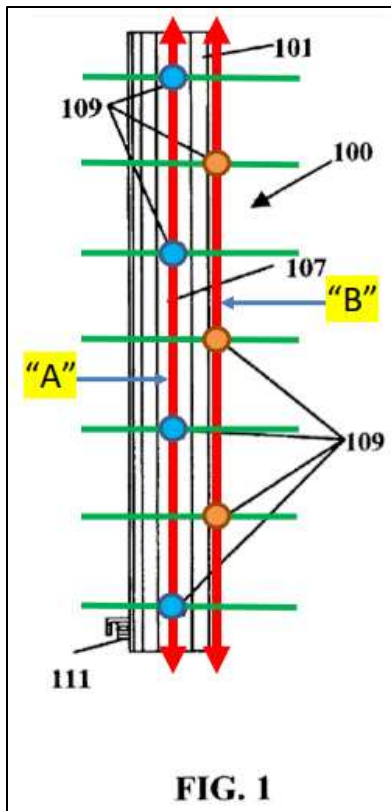
changed their positions on the need for the amendment [and] the examiner thus deleted the amendment and approved the claims without the . . . limitation. Thus because the proposed amendment was not ultimately adopted and there appeared to be change of position by both the examiner and the patentee after the amendment was proposed, it was "difficult to see how a skilled artisan could interpret the proposed amendment as a disclaimer required for patentability."

Id. at 832 (citing TriVascular, 812 F.3d at 1064). Similarly, in this case, there is no evidence that Plaintiff changed its position such that any person of ordinary skill in the art would have reason to believe that it withdrew the arguments made in distinguishing prior art. See id. As reasoned by the Northern District of Illinois court, "[a]n assertion made during prosecution may create an estoppel 'whether or not [it was] actually required to secure allowance of the claim . . . because the relevant inquiry is whether a competitor would reasonably believe that the applicant had surrendered the relevant subject matter.'" Id. at 831 (quoting PODS, Inc. v. Porta Stor, Inc., 484 F.3d 1359, 1367 (Fed. Cir. 2007)).

LED placement may be described as being in a single plane perpendicular to the axis of the elongate thermally conductive member. In other words, the two plane limitation is tied to the elongate nature of the elongate thermally conductive member such that Plaintiff's proffered explanation of Figure 2 of the '028 and '303 Patents and Figure 2B of the '819 Patent meeting the two plane limitation, pictured below, is unavailing:



(Pl.'s Suppl. Mem. (Doc. 140) at 7.) Instead, this court is convinced that Defendant's proffered conceptualization of the two plane limitation, pictured below, is in keeping with the patent's teachings and prosecution history:



(Def.'s Suppl. Mem. in Resp. to Ord. of Court and in Supp. of its Claim Construction ("Def.'s Suppl. Mem.") (Doc. 141) at 7.) In accordance with the overall teachings of the patent, this court will adopt Defendant's proposed construction: "disposed in a second plane that is not the same as the first plane wherein the plurality of LEDs are not disposed in a single plane perpendicular to the axis of the elongate thermally conductive member."

D. "plane"

Claim Term	Plaintiff's Construction	Defendant's Construction
"plane" (all claims)	"a flat surface"	plain and ordinary meaning ⁶

The court starts with the claim term itself and the ordinary meaning that would be attributed to the term by a person skilled in the relevant art. Closely related to the prior term, "plane" likewise appears, for example, in Claim 1 of the '028 Patent, which describes:

[A] plurality of solid state light sources carried on said elongate member outer surface at least some of said solid state light sources being disposed in a first plane and others of said solid state light sources being disposed in a second plane not coextensive with said first plane[.]

'028 Patent col 4, lines 33-38. Plaintiff advocates for "plane" to be construed as "a flat surface." (York Decl. (Doc. 119-3) ¶ 61 (claiming that a person of ordinary skill in the art would understand "plane," in the context of the OptoLum patents, to require "a flat surface on which to arrange the LEDs"). On the other hand, Defendant first advocated for "plane" to be given its plain and ordinary meaning, while contending that

⁶ In Defendant's supplemental memorandum, it proposed the following alternative construction, which mirrors language referenced by its expert in prior filings: "a spatial relationship concerning certain identified locations on the elongate heat sink and having the specific mathematical description of a plane." (Def.'s Suppl. Mem. (Doc. 141) at 12.)

Plaintiff's proposed "flat surface" construction would not be in keeping with said plain and ordinary meaning. (Bretschneider Suppl. Decl. (Doc. 116) ¶ 64 ("'[P]lane' in this context is understood by a POSA [person of ordinary skill in the art] to be a spatial relationship concerning certain identified locations on the elongate heat sink and having a specific mathematical description, i.e., that of a plane. In the context of the patents, the term 'plane' is not a physical 'surface' nor does it include the inaccurate descriptor of 'flat.'").) A finding that the plain and ordinary meaning of the claim term should be adopted would be inadequate because it would "not resolve the parties' dispute[,] specifically whether "plane" should be construed as referring to physical, flat surfaces alone. See O2 Micro Int'l v. Beyond Innovation Tech. Co., 521 F.3d 1351, 1362 (Fed. Cir. 2008). Accordingly, in its supplemental briefing, Defendant proposed the following alternative construction of "plane": "a spatial relationship concerning certain identified locations on the elongate heat sink and having the specific mathematical description of a plane." (Def.'s Suppl. Mem. (Doc. 141) at 12.) Plaintiff protests that this proposed construction is too lengthy and "circular." (Pl.'s Resp. Mem. in Supp. of Claim Construction (Doc. 146) at 4-6.)

The court next considers this claim term in light of the '028 Patent's specification. See Markman, 52 F.3d at 979. Within the summary of the invention, Patent '028 describes "[a] plurality of light emitting diodes is carried on the elongate member outer surface. At least some of the light emitting diodes are disposed in a first plane and others of said light emitting diodes are disposed in a second plane not coextensive with the first plane." '028 Patent col 1, lines 48-53. It is here that Plaintiff contends that the specification ties "disposed in a . . . plane" to a flat surface. (Pl.'s Suppl. Mem. (Doc. 140) at 11.) While the specification and abstract mention LEDs being mounted on the elongate member's outer surface, "plane" is used to describe the fashion in which the LEDs are arranged and it is not necessarily linked with the physical flat elongate member's outer surface.

Next, the court turns to the prosecution history. See Markman, 52 F.3d at 980; see also Vitronics, 90 F.3d at 1582. First, applicant's usage of the term within the prosecution history is consistent with the term not being limited to physical flat surfaces, as it was used to describe a "plane defined by the drawing sheet." ('028 File History Amendment (Doc. 117-5) at 27.) Second, with respect to applicant's above-discussed disclaimer, the "plane" of the invention implicated by

the disclaimer - the plane perpendicular to the axis of the elongate thermally conductive member - is likewise not tied to the physical, flat surfaces thereof. Construing claim terms consistently with their usage in the patent's intrinsic evidence, Nystrom v. TREX Co., 424 F.3d 1136, 1145 (Fed. Cir. 2005), this court adopts Defendant's proffered construction of "plane": "a spatial relationship concerning certain identified locations on the elongate heat sink and having the specific mathematical description of a plane."

E. "heat dissipation protrusion"

Claim Term	Plaintiff's Construction	Defendant's Construction
"heat dissipation protrusion" (all claims)	"projection from a surface designed to convect heat"	plain and ordinary meaning

The court starts with the claim term itself and the ordinary meaning that would be attributed to the term by a person skilled in the relevant art. Considering this term as it appears within the claims alone does not provide much guidance. For example, Claim 1 of the '028 Patent references the term, stating, "said elongate thermally conductive member comprises one or more heat dissipation protrusions, at least one of said heat dissipation protrusions being carried on said elongate member outer surface." '028 Patent col. 4, lines 47-50.

While this claim term appears in claims within both the '028 and '303 patents, it only appears in the specification of the '028 patent. Compare '028 Patent col. 3, lines 4-9 (referring to "heat dissipating protrusions"), with '303 Patent col. 2, line 67 - col. 3, line 2 (referring to "heat dissipating fins"). The detailed description within the specification of the '028 Patent provides:

To improve the heat dissipative properties of light source 100, elongate heat sink 101 is configured to provide convective heat dissipation and cooling. As more clearly seen in FIG. 2, tubular heat sink 101 is hollow and has an interior cavity 103 that includes one or more heat dissipating protrusions 105. Protrusions 105 are shown as being triangular shaped fins but may take on other shapes. Protrusions or fins 105 are integrally formed on the interior of elongate heat sink 101. Each pair of fins 105 defines a channel 105a. In the illustrative embodiment convective cooling is provided by movement of a medium 102 through the channel formed by elongate heat sink 101. The medium utilized in the illustrative embodiment is air, but may in some applications be a fluid other than air to provide for greater heat dissipation and cooling.

'028 Patent, col. 3, lines 1-17. Here, "fins" and "heat dissipating protrusions" are used interchangeably, as fins are one form protrusions may take. The summary of the invention of the '028 Patent, referring to "fins," provides in part:

the elongate thermally conductive member transfers heat from the light emitting diodes to a medium within said elongate thermally conductive member. In the illustrative embodiment of the invention, the medium is air.

In accordance with another aspect of the invention, the elongate thermally conductive member has one or more fins to enhance heat transfer to the medium.

'028 Patent, col. 1, line 65 - col. 2, line 5. Defendant contends that Plaintiff's proposed construction is inaccurate because the fins themselves do not convect heat, but the medium (i.e., air) inside the elongate heat sink does. (Def.'s Mem. (Doc. 115) at 21-22.) Plaintiff, on the other hand, insists that the concept of convection is broad enough to encompass the transfer of heat from the surface of the protrusions in question to the fluid inside the elongate member. (Pl.'s Resp. to Cree's Claim Construction Br. ("Pl.'s Resp.") (Doc. 128) at 26.) Plaintiff further suggests that the definition appropriately uses the phrase "designed to" in accordance with this understanding of heat convection. (Id. at 26.) Nothing within the prosecution history runs contrary to this understanding of the term.

Finally, the court looks to dictionary definitions of "dissipation" and "protrusion" to further aid in its understanding of possible plain meanings of said terms. The court finds the following definition of "dissipate" to support its understanding of the intrinsic evidence: "to cause to lose (e.g., heat) irreversibly." Webster's II New College Dictionary (2001). The court likewise finds the following definition of

“protrude” instructive: “to jut out.” Id. Looking to expert testimony as to this term, however, is unhelpful in further educating the court at this point in its analysis as the experts are in disagreement as to what a person of ordinary skill in the art would understand the term to mean. (Compare York Decl. (Doc. 119-3) ¶ 72, with Bretschneider Suppl. Decl. (Doc. 116) ¶¶ 68-69.)

Because a person of ordinary skill in the art would understand the patent to teach that the heat dissipation protrusions, or fins, serve to increase convection by increasing the surface area within the elongate member from which heat is transferred to the air, (see '028 Patent, col. 2, lines 3-5 (“[T]he elongate thermally conductive member has one or more fins to enhance heat transfer to the medium.”)), this court will adopt Plaintiff’s proposed construction.

F. “contained”

Claim Term	Plaintiff’s Construction	Defendant’s Construction
“contained” (all claims)	plain and ordinary meaning ⁷	“enclosed by”

The court starts with the claim term itself and the ordinary meaning that would be attributed to the term by a

⁷ Plaintiff argues in the alternative that, to the extent a construction is warranted, the term can be properly understood as “found within.” (See Pl.’s Resp. (Doc. 128) at 28.)

person skilled in the relevant art. Claim 1 of the '028 Patent reads in relevant part, "said elongate thermally conductive member being configured to conduct heat away from said solid state light sources to fluid contained by said elongate thermally conductive member[.]" '028 Patent col. 4, lines 43-46 (emphasis added). In this instance, a finding that the term at issue should retain its plain and ordinary meaning alone would not resolve the underlying dispute between the parties. See O2 Micro Int'l, 521 F.3d at 1362. Defendant advocates for a construction of "enclosed by," which this court understands to mean total enclosure, or containment on all sides, see, e.g., Webster's II New College Dictionary (2001) ("to surround on all sides"); Webster's New World Dictionary (3d College ed. 1989) ("to shut in all around; hem in; fence in; surround"), whereas Plaintiff advocates for a construction of "found within," which does not require total enclosure.

The court next looks to the specification. While the specification does not use the phrase "contained," it further explains the context surrounding its usage in above-quoted Claim 1. First, the summary of the invention generally explains that, "the elongate thermally conductive member transfers heat from the light emitting diodes to a medium within said elongate thermally conductive member." '028 Patent col. 1, line 65 - col.

2, line 1. The specification goes on to teach that, “[i]n the illustrative embodiment convective cooling is provided by movement of a medium 102 through the channel formed by elongate heat sink 101.” Id. at col. 3, lines 10-13 (emphasis added). Similarly, it explains “convection cooling by flow of air through tubular heat sink 101 is utilized such that cool or unheated air enters tubular heat sink 101 at its lower end and exits from the upper end as heated air.” Id. at col. 4, lines 4-7 (emphasis added). Considering the patent’s teachings within the specification, because this court understands Defendant’s proposed construction to imply that the fluid is surrounded on all sides, it runs contrary to how a person of ordinary skill in the art would understand the teachings of the patent. The invention teaches the free movement of a medium through the elongate member, suggesting that Plaintiff’s alternative construction “found within” is more appropriate.

Next, the court looks to the prosecution history of the patent. Here, Defendant contends that the ‘536 Patent, a predecessor to the patents at issue, was amended to replace “within” with “contained.” (Def.’s Resp. Mem. (Doc. 127) at 22.) Defendant does not argue, however, that this amendment amounts to a prosecution history disclaimer. This court likewise does

not find that such an amendment amounts to an unequivocal disclaimer. See Omega Eng'g, 334 F.3d at 1324-25.

This court's review of the extrinsic evidence only serves to further support this conclusion. Both parties' expert witnesses agree that the elongate member has an opening at the top and bottom. (York Decl. (Doc. 119-3) ¶ 67; Bretschneider Suppl. Decl. (Doc. 116) ¶¶ 72-73.) Nonetheless, Defendant contends that unless the medium (i.e., air) is enclosed within the elongate member, the cooling feature of the invention is lost. (Def.'s Mem. (Doc. 115) at 23.) Because the overwhelming intrinsic evidence supports Plaintiff's preferred construction, the court will adopt "found within" with respect to this term.

G. "channel"

Claim Term	Plaintiff's Construction	Defendant's Construction
"channel" ('303 Patent claim 9; '028 Patent claims 8 & 22)	"the space defined by a pair of heat dissipation protrusions"	"a hollow extruded extended structure"

The court starts with the claim term itself and the ordinary meaning that would be attributed to the term by a person skilled in the relevant art. The terms within the claims at issue read:

A light source in accordance with claim 1, wherein: said elongate thermally conductive member comprises a channel.

'303 Patent, col. 4, line 65-67; '028 Patent, col. 5, Lines 1-3
(identical phrasing).

A radiation emitting source in accordance with
claim 19 wherein:

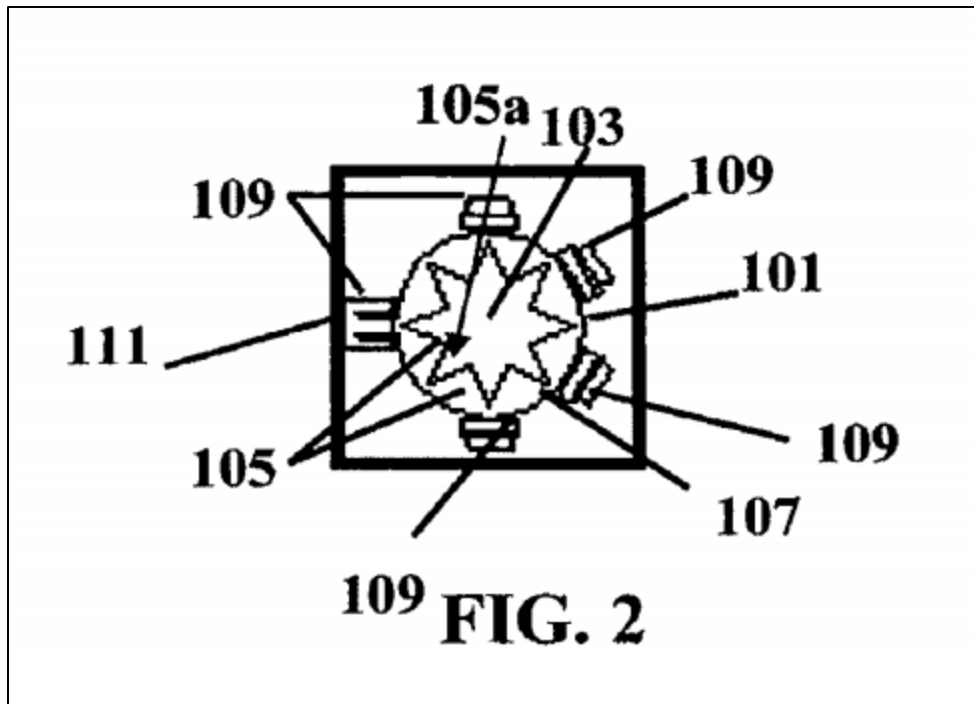
said elongate thermally conductive member
comprises a channel.

'028 Patent, col. 6, lines 13-16.

The court next looks to the specification. The
specification provides in relevant part that

[A] light source 100 in accordance with the invention
includes an elongate thermally conductive member or
heat sink 101. Elongate heat sink 101 is formed of a
material that provides excellent thermal conductivity.
Elongate heat sink 101 in the illustrative embodiment
of the invention is a tubular aluminum extrusion. To
improve the heat dissipative properties of light
source 100, elongate heat sink 101 is configured to
provide convective heat dissipation and cooling. As
more clearly seen in FIG. 2, tubular heat sink 101 is
hollow and has an interior cavity 103 that includes
one or more heat dissipating protrusions 105.
Protrusions 105 are shown as being triangular shaped
fins, but may take on other shapes. Protrusions or
fins 105 are integrally formed on the interior of
elongate heat sink 101. Each pair of fins 105 defines
a channel 105a. In the illustrative embodiment
convective cooling is provided by movement of a medium
102 through the channel formed by elongate heat sink
101.

'028 Patent, col. 2, line 63 - col. 3, line 13 (emphasis
added). Figure 2 is pictured below.



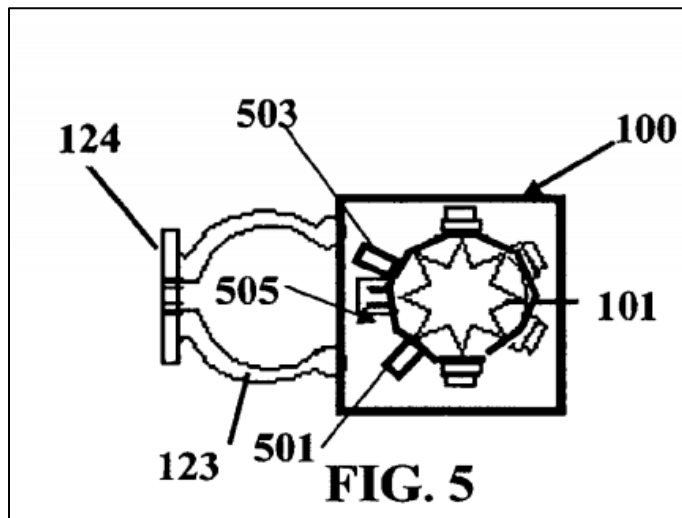
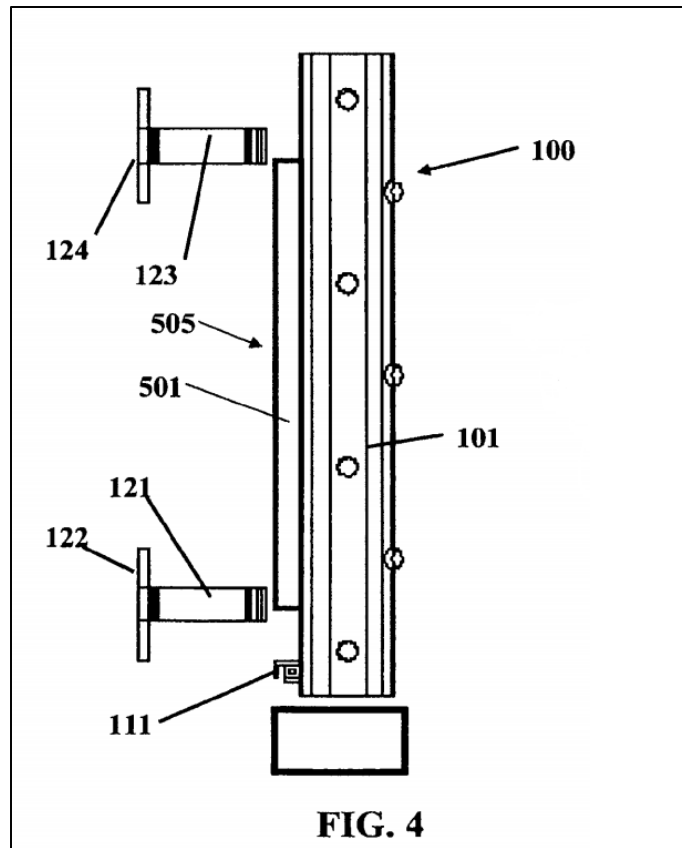
(Id. fig. 2.) The specification goes on to explain:

Fins 105 may vary in number and location depending on particular LED layouts and wattage. In some instances, fins may be added to the exterior surface of tubular heat sink 101, such as shown in FIGS. 4 and 5 by fins or protrusions 501, 503 which also define a channel 505.

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Although light source 100 is shown as comprising an elongate tubular heat sink, other extruded elongate members may be used such as channels.

(Id. col. 3, line 56 - col. 4, line 3 (emphasis added).) Figures 4 and 5 are pictured below.



(Id. figs. 4 & 5.) A patentee has acted as their own lexicographer when they have "clearly set forth a definition of the disputed claim term in . . . the specification[.]" CCS

Fitness, 288 F.3d at 1366-67 (citation omitted). Here, this court finds that the patentee acted as a lexicographer by clearly defining "channel" within the specification. See Markman, 52 F.3d at 980. As the specification makes evident, "[e]ach pair of fins . . . defines a channel[.]" '028 Patent col. 3, line 10. The use of "fins" within this definition may be understood, in light of the entire patent, to refer to "heat dissipating protrusions" more generally. (See Patent '028 col. 3, lines 4-6 ("As more clearly seen in FIG. 2, tubular heat sink 101 is hollow and has an interior cavity 103 that includes one or more heat dissipating protrusions 105. Protrusions 105 are shown as being triangular shaped fins, but may take on other shapes."); Patent '028 col. 3, lines 58-61 ("In some instances, fins may be added to the exterior surface of tubular heat sink 101, such as shown in FIGS. 4 and 5 by fins or protrusions 501, 503 which also define a channel 505.")) Further, nothing within the prosecution history contradicts applicant's definition of this term within the specification.

With respect to the parties' expert witnesses, both contend that the specification clearly defines the term in question (See York Decl. (Doc. 119-3) ¶ 74; Bretschneider Suppl. Decl. (Doc. 116) ¶ 99.) However, the experts disagree as to whether a channel must be "extruded" and "elongate." Because the

specification clearly teaches that the elongate member "may comprise an extrusion," and does not require that it be an extrusion, '028 Patent, col. 2, lines 15-18, this court will not allow Defendant's expert testimony to contradict the intrinsic evidence to the contrary. Accordingly, this court will adopt Plaintiff's proposed construction of "channel."

H. "some" and "others"

Claim Term	Plaintiff's Construction	Defendant's Construction
"some" (all claims)	"one or more"	"more than one of a group"
"others" (all claims)	"one or more different"	plain and ordinary meaning

The court starts with the claim terms themselves and the ordinary meaning that would be attributed to the terms by a person skilled in the relevant art. Both "some" and "others" appear in Claim 1 of the '028 Patent, which states in part:

[A] plurality of solid state light sources carried on said elongate member outer surface at least some of said solid state light sources being disposed in a first plane and others of said solid state light sources being disposed in a second plane not coextensive with said first plane[.]

'028 Patent, col. 4, lines 33-38 (emphasis added).

Because a person of ordinary skill in the art reads the claim term not only in the context of the particular claim but also in the context of the entire patent, Phillips, 415 F.3d at 1313, the court also considers how the parties agreed to

construe other terms not at issue. Here, the parties stipulated to construe "plurality" as "two or more." (Joint Claim Construction Statement (Doc. 106) at 2.) A stipulated construction, once adopted by the court, is binding on the parties just the same as any other claim construction. See Dig.-Vending Servs. Int'l, LLC v. Univ. of Phoenix, Inc., 672 F.3d 1270, 1278 (Fed. Cir. 2012); see also Versata Software, Inc. v. SAP Am., Inc., 717 F.3d 1255, 1262 (Fed. Cir. 2013) (holding that a party "cannot now collaterally attack the claim construction it has agreed to").

Reading this agreed-upon construction for "plurality" into Claim 1 of the '028 Patent provides:

[Two or more] of solid state light sources carried on said elongate member outer surface at least some of said solid state light sources being disposed in a first plane and others of said solid state light sources being disposed in a second plane not coextensive with said first plane[.]

'028 Patent, col. 4, lines 33-38 (emphasis added). In this claim, "plurality of light emitting diodes" is the antecedent basis for "said light emitting diodes." Cf. Baldwin Graphic Sys., Inc. v. Siebert, Inc., 512 F.3d 1338, 1342-43 (Fed. Cir. 2008) (stating that subsequent use of "said" is understood to refer back to the same claim term). It logically follows that "some" of "two or more" must be one or more and "others" of said "two or more" must likewise be one or more. Nothing in the

specification or prosecution history justifies a different outcome. Accordingly, this inescapable conclusion leads the court to adopt Plaintiff's proposed construction of "some."

Likewise, with respect to "others," because the first-referenced "plurality of solid state light emitting diodes" is the antecedent basis of both "some" and "others" it naturally follows that "others" would include different light emitting diodes from the initially mentioned plurality. Again, nothing in the specification or prosecution history warrants a different outcome. Accordingly, the court will adopt Plaintiff's proposed construction of "others."

III. CONCLUSION

For the foregoing reasons, the court construes the disputed terms as follows:

Claim Term	Court's Construction
"carried on" (all claims)	"supported on"
"a plurality of solid state light sources" ('028 Patent, claims 1-3, 5-8, 14, & 16-17)	"two or more packages, each of which comprise a solid state light source"
"disposed in a second plane not coextensive with said first plane" (all claims)	"disposed in a second plane that is not the same as the first plane wherein the plurality of LEDs are not disposed in a single plane perpendicular to the axis of the elongate thermally conductive member"

"plane" (all claims)	"a spatial relationship concerning certain identified locations on the elongate heat sink and having the specific mathematical description of a plane."
"heat dissipation protrusion" (all claims)	"projection from a surface designed to convect heat"
"contained" (all claims)	"found within"
"channel" ('303 Patent claim 9; '028 Patent claims 8 & 22)	"the space defined by a pair of heat dissipation protrusions"
"some" (all claims)	"one or more"
"others" (all claims)	"one or more different"

IT IS SO ORDERED.

This the 22nd day of August, 2018.

William L. Ostun, Jr.

 United States District Judge