United States District Court
Northern District of California

UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

SAN JOSE DIVISION

FINISAR CORPORATION, Plaintiff, v. NISTICA, INC., Defendant.	Case No. 13-cv-03345-BLF **ORDER CONSTRUING CLAIMS OF U.S. PATENT NOS. 6,430,328; 6,956,687; 7,126,740; 7,397,980** [Re: ECF 99, 100, 105]

Plaintiff Finisar Corporation brings this patent infringement lawsuit against its competitor, defendant Nistica, Inc., alleging infringement of six of Finisar's patents directed at devices and components used in optical communications networks: U.S. Patent Nos. 6,430,328 ('328 Patent); 6,956,687 ('687 Patent); 7,092,599 ('599 Patent); 7,123,833 ('833 Patent); 7,126,740 ('740 Patent); and 7,397,980 ('980 Patent) (collectively, "Asserted Patents"). The Court held a tutorial on July 21, 2014 and a *Markman* hearing[1] on August 8, 2014 for the purpose of construing five disputed terms in the '328, '687, '740, and '980 Patents.[2]

I. BACKGROUND

A. The Technology and Patents

Finisar and Nistica are competitors in the market for components used in optical networking devices. Finisar is the more well-established company and Nistica is a more recent entrant into the market. The patents asserted by Finisar in this case are all directed toward devices and components

[1] *Markman v. Westview Instruments, Inc.*, 517 U.S. 370 (1996).

[2] The parties do not presently dispute the construction of terms in the '599 and '833 Patents. Those patents are accordingly not addressed in this order.

that perform various critical functions in optical networks. The inventions manipulate light in predictable manners so that optical signals—beams of light that carry data through the optical network—can be altered and/or redirected with precision and alacrity.

The '328 Patent, titled "Optical Switch," tackles the need to more quickly change the direction of an optical beam within an optical network. The optical switch apparatus described in this patent uses phase spatial light modulators ("SLM's") comprised of an array of micromirrors to rapidly change the direction of a beam of light. '328 Patent col. 1:33-64, ECF 99-2. The object of the invention is to devise a system that can switch beam directions faster than could be accomplished with a single rotating mirror. *Id.* col. 1:24-29.

The '687 Patent, titled "Optical Blocking Filter Having An Array of Micro-Mirrors" relates to a tunable optical filter that can selectively delete individual channels, or wavelengths of light, from within an optical signal containing numerous channels—a wavelength division multiplexed (WDM) optical signal. '687 Patent col. 1:25-31, ECF 99-3. The invention comprises a pixilated filter having an SLM that includes a micromirror device, where the pixilated filter configuration operates as an easily reconfigurable blocking filter. *Id.* col. 2:24-41.

The '740 Patent, titled "Multifunctional Optical Device Having a Spatial Light Modulator With an Array of Micromirrors," describes a reconfigurable optical device that is capable of receiving an optical signal, spreading it into one or more bands or channels, and performing separate optical functions on each signal, in effect processing a number of channels at the same time. '740 Patent, at Abstract; col. 2:49-65, ECF 99-4. The object of the invention is to accomplish all of this with a single SLM. *Id.* col. 2:46-48.

The '980 Patent, titled "Dual-Source Optical Wavelength Processor," describes a reconfigurable system for manipulating optical signals from two different sources or groups. '980 Patent col. 1:6-10, 4:52-57, ECF 99-5.

Common across all of these patents is the use of SLM's to process and redirect selected beams and/or wavelengths of light. For purposes of this action, SLM's are comprised of two broad categories of devices: microelectromechanical mirror (MEMS) devices, which are arrays of individually movable micromirrors; and liquid crystal on silicon (LCOS) devices, which use a layer

of liquid crystal pixels on top of a silicon backplane, instead of individual micromirrors. Both types of devices afford the ability to control and redirect portions or even individual bands of an optical signal.

B. Procedural Background

On July 21, 2014, the Court heard the parties' respective technology tutorials. The Court also heard argument on Finisar's Motion to Strike Nistica's revised claim construction proposals and corresponding portions of Nistica's responsive claim construction brief, which revisions were made after the parties submitted the Joint Claim Construction and Prehearing Statement required by the local patent rules. Pl.'s MTS, ECF 101. This Court orally denied the motion, finding such a drastic remedy unwarranted given the nature of the claim construction process, but offered Finisar the option of continuing the claim construction proceeding so that it could have additional time to respond to Nistica's revised constructions. Finisar declined, opting to proceed on the parties' extant briefing.

On August 8, 2014, the Court conducted a *Markman* hearing and heard oral argument on the parties' respective constructions. During the hearing, the Court ordered Finisar to submit revised structure proposals for the disputed means-plus-function terms of the '980 Patent. Finisar did so on August 14, 2014. ECF 118. On August 27, 2014, with the Court's permission, the parties also submitted separate 2-page letter briefs to address some of the Court's concerns raised during the *Markman* hearing. Pl.'s Ltr., ECF 121; Def.'s Ltr., ECF 122.

II. LEGAL STANDARD

Claim construction is a matter of law. *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 387 (1996). "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) (internal citation omitted), and, as such, "[t]he appropriate starting point . . . is always with the language of the asserted claim itself," *Comark Commc'ns, Inc. v. Harris Corp.*, 156 F.3d 1182, 1186 (Fed. Cir. 1998).

Claim terms "are generally given their ordinary and customary meaning," defined as "the meaning . . . the term would have to a person of ordinary skill in the art in question . . . as of the

effective filing date of the patent application." *Phillips*, 415 F.3d at 1313 (internal citation omitted). The court reads claims in light of the specification, which is "the single best guide to the meaning of a disputed term." *Id.* at 1315; *see also Lighting Ballast Control LLC v. Philips Elecs. N. Am. Corp.*, 744 F.3d 1272, 1284-85 (Fed. Cir. 2014) (en banc). Furthermore, "the interpretation to be given a term can only be determined and confirmed with a full understanding of what the inventors actually invented and intended to envelop with the claim." *Phillips*, 415 F.3d at 1316 (quoting *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998)). The words of the claims must therefore be understood as the inventor used them, as such understanding is revealed by the patent and prosecution history. *Id.* The claim language, written description, and patent prosecution history thus form the intrinsic record that is most significant when determining the proper meaning of a disputed claim limitation. *Id.* at 1315-17; *see also Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996).

Evidence external to the patent is less significant than the intrinsic record, but the court may also consider such extrinsic evidence as expert and inventor testimony, dictionaries, and learned treatises "if the court deems it helpful in determining 'the true meaning of language used in the patent claims.'" *Philips*, 415 F.3d at 1318 (quoting *Markman*, 52 F.3d at 980). However, extrinsic evidence may not be used to contradict or change the meaning of claims "in derogation of the 'indisputable public records consisting of the claims, the specification and the prosecution history,' thereby undermining the public notice function of patents." *Id.* at 1319 (quoting *Southwall Techs., Inc. v. Cardinal IG Co.*, 54 F.3d 1570, 1578 (Fed. Cir. 1995)).

III. AGREED CONSTRUCTIONS

The parties agree on the construction for three terms. ECF 98. The Court accordingly adopts and approves the following constructions:

Patent	Term	Agreed Construction
7,126,740	achromatic lens	a lens that provides accurate focus for multiple wavelengths
7,126,740	Fourier lens	a lens used to collimate or focus a beam of light where the source or image is located the focal length away from the lens
7,092,599	polarization alignment element	an optical element or a series of

	[for aligning the polarization state of said optical signals]	optical elements that align the two polarization components of one or more optical signals

IV. CONSTRUCTION OF DISPUTED TERMS

The parties dispute the construction of one term in each of the '328, '687, and '740 Patents and two terms in the '980 Patent. The Court addresses each disputed term below.

A. The '328 Patent: "displaceable reflectors"

Finisar's Proposal	Nistica's Proposal	Court's Construction
moveable reflectors	reflectors of a spatial light modulator array that move substantially perpendicular to the plane of the reflective surface of the reflective element	reflectors that move generally perpendicular to the plane of their reflective surface

This term appears in independent claim 17 and dependent claim 19 of the '328 Patent. Claim 17 is representative of how the disputed term is used:

> 17. An optical switch, comprising:
> an array of **displaceable reflectors**, each reflector displacing a portion of a wave front of an optical beam.

The parties agree that "displaceable reflectors" equates to reflectors—individual pixels or pixel mirrors of a micromirror array—that are able to move, but dispute the type and direction of reflector movement contemplated by the '328 Patent. Both parties rely heavily on the patent specification for their respective positions.

Finisar contends that there is no express limitation in the '328 Patent that in any way limits each reflector's range of movement. "[D]isplaceable reflectors," in Finisar's view, can therefore embrace reflectors that tilt or rotate about an axis,[3] move up and down relative to the backplane of the micromirror device, or both. Pl.'s Br. 4, 6, ECF 99; Pl.'s Reply 2, ECF 105. Finisar also points to several lines in the specification that it contends demonstrate reflector movement in a direction that is not perpendicular to the reflective surface. Pl.'s Br. 4-5. Moreover, Finisar argues that adopting Nistica's more limited construction would improperly import a limitation from a preferred

[3] For purposes of the '328 Patent, there does not appear to be any dispute that tilting and rotating are the same type of movement. Hr'g Tr. 68:14-17, ECF 119.

embodiment into the claim. Pl.'s Brief 6 (citing *Trebro Mfg., Inc. v. Firefly Equip., LLC*, 748 F.3d 1159, 1166 (Fed. Cir. 2014)). As such, Finisar's proposed construction does not place any limits on the reflectors' range of movement.

Nistica, in turn, argues that the proper construction of "displaceable reflectors" should limit the reflectors to movement that is "substantially perpendicular to the plane of the reflective surface" of the reflector or, in other words, up and down piston-like movement relative to the backplane of a micromirror device. Def.'s Br. 3-4, ECF 100. In support of its construction, Nistica focuses on Figures 1 and 2 of the '328 Patent, which depict "[a] portion of a reflective SLM . . . in cross section," '328 Patent col. 2:50-51, and discusses the perpendicular movement of the reflectors, *id.* col. 2:50-3:67. Nistica also contends that Finisar's examples do not actually disclose non-perpendicular movement. Def.'s Br. 5-7. Because, in Nistica's view, the only reflector movement disclosed in the '328 Patent is perpendicular to its reflective surface, "displaceable reflectors" should be construed to only encompass perpendicular, piston-like movement.

The Court finds that the intrinsic evidence favors Nistica's position.

i. The specification does not disclose non-perpendicular movement.

As a preliminary matter, Finisar's several examples of non-perpendicular movement are not persuasive. The supposed "express[] reference[]" to "rotating mirrors" in the '328 Patent in fact discusses the advantage of the present invention over a prior art rotating mirror that would have to be moved a greater distance than the displaceable micromirrors. Pl.'s Br. 5 (citing '328 Patent col. 3:18-22). Likewise, as Nistica correctly points out, the multiple references to "MEMS devices" in the specification at most support an implied—not express—reference to rotational movement. Def.'s Br. 7. Finally, although the Summary of the Invention could be read to supply an example wherein the orientation of the perpendicular movement is *not* relative to the reflectors' surface, the Court agrees with Nistica that this reading is inconsistent with the description of the same concept elsewhere in the patent and, quite frankly, not grammatically coherent. '328 Patent col. 1:60-64 ("[e]ach deflector changes the direction of the light beam by changing the phase of the beam wave front by displacing the pixel reflectors in a direction *essentially perpendicular to the beam axis and relative to each other*"); Pl's Br. 5; Def.'s Br. 6. As such, there are no clear examples in the

specification of reflector movement—rotational or otherwise—that is not perpendicular to the plane of their reflective surface.

ii. The specification does not identify Figures 1 and 2 as embodiments.

The parties' dispute thus boils down to whether, in the absence of any express disclosure of rotational movement, the '328 Patent nevertheless encompasses rotating or tilting reflectors. This, in turn, depends on whether Figures 1 and 2 of the '328 Patent describe the entire invention or are simply preferred embodiments.

It is undisputed that Figures 1 and 2 depict the operation of the displaceable reflectors, but Finisar contends that this is merely a preferred embodiment and should not be limiting. Pl.'s Br. 5-6. Finisar correctly noted at the *Markman* hearing that "even where a patent describes only a single embodiment, claims will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using 'words or expressions of manifest exclusion or restriction." *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1117 (Fed. Cir. 2004) (quoting *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 906 (Fed. Cir. 2004)). However, the Court must also look to "how the specification characterizes the claimed invention" and "whether the specification refers to a limitation only as a part of less than all possible embodiments or whether the specification read as a whole suggests that the very character of the invention requires the limitation be a part of every embodiment." *Alloc, Inc. v. Int'l Trade Comm'n*, 342 F.3d 1361, 1370 (Fed. Cir. 2003). Ultimately, the claims "cannot enlarge what is patented beyond what the inventor has described as his invention." *Abbot Laboratories v. Sandoz*, 566 F.3d 1282, 1288 (Fed. Cir. 2009) (quoting *Biogen, Inc. v. Berlex Labs., Inc.*, 318 F.3d 1132, 1140 (Fed. Cir. 2003)). Here, the Court disagrees with Finisar's contention that Figures 1 and 2 are merely preferred embodiments, as they are essential to the patented invention's use of light beam wave front phase changes to accomplish rapid optical switching.

The written description states that "[t]he present invention optically switches a signal carrying light beam . . . by independently changing a phase of individual sections of the beam wave front using a phase spatial light modulator (SLM)." '328 Patent col. 2:27-33. Phase SLM's can either be reflective or transmissive, *id.* col. 2:33-38, and the written description indicates that

Figure 1 is "[a] portion of a reflective SLM [] depicted in cross section [that] changes the phase of a beam 12 wave front by changing the positions of small plate shaped reflectors 14-24 in the path of the beam 12," *id.* col. 2:50-53. *See also id.* col. 2:7-8 ("FIG. 1 depicts the operation of an SLM according to the present invention."). In this figure, "[e]ach pixel reflector is moved in a direction that is generally perpendicular the [sic] reflective surface of the element." *Id.* col. 2:57-58.

Similarly, Figure 2 depicts a displacement pattern for the pixel reflectors that takes advantage of another key aspect of the '328 Patent invention: "with this approach a pixel reflector must be moved at most the λ/2 distance which is a fraction of the distance . . . that an edge of a rotating mirror is moved to produce the same angle of reflection." *Id.* col. 3:19-22. Figure 2 illustrates that the reflectors are successively *and* relatively displaced so that the distance between successive reflectors is measurable and need not be more than a half wavelength of light. This successive, relative displacement of reflectors is crucial to accomplishing the object of rapidly changing the direction of a beam of light by "changing the relative-phase of individual portions of the cross section of a wave front of a beam," rather than by simple reflection. *Id.* col. 1:33-36; *see* also *id.* col. 2:38-49. Nothing in the specification indicates that this pattern of displacement, or of causing relative phase shifts, can be accomplished with reflectors that do not move generally perpendicular to the reflective surface in a piston-like manner. Moreover, Figure 3, described as "a 2 dimensional depiction of another configuration of the invention" and Figures 4, 16, and 17 all illustrate this concept of successive and relative displacement, showing the reflectors moving perpendicular to their reflective surface.

As such, the specification read as a whole suggests that Figures 1 and 2 are not merely "less than all possible embodiments" because they represent, without caveat, the operation of the reflective phase SLM's that are used in other figures depicting other embodiments of the claimed invention. *See* '328 Patent Figs. 1-3, 8-14 16, 17. Given that the patent discloses only SLM's with perpendicular movement and contains a lengthy discussion of the benefits of wave front phase modulation accomplished through relative pixel displacement, the Court concludes that perpendicular movement of the displaceable reflectors is an essential feature of the claimed invention of the '328 Patent.

To be sure, the specification describes the invention as an improvement over a single rotating mirror and does not discuss the pixel mirrors' potential range of movement, other than that they advantageously move faster due to their relatively small size. *See id.* col. 2:44-49; 5:20-26. As Finisar notes, the specification further indicates that "[a]ny decrease of motion or wave front phase modulation allowed by dividing up the deflector into separate pixels is within the spirit of this invention." Pl.'s Br. 4; '328 Patent col. 3:64-67. This reservation, however, appears in a discussion of Figures 1 and 2 that emphasizes the fact that relative pixel displacement greater or less than $\lambda/2$ would also accomplish the object of the invention. *Id.* col. 3:54-67. Read in context, this passage does not contradict the conclusion that "displaceable reflectors" only move "generally perpendicular to the plane of their reflective surface."

Moreover, this understanding of "displaceable reflectors" is consistent with the term as it appears elsewhere in the claim language. Dependent claim 19 adds the limitation "wherein the displaceable reflectors are displaced relative to the adjoining reflector by a distance modulo($\lambda/2$)."[4] This additional limitation embodies the concept described at col. 3:5-34 that no reflector need be moved more than a distance modulo($\lambda/2$), and that displacing the reflectors by that relative distance maximizes switching speed. The limitation in claim 19 is thus in the specific increment of displacement and not in the addition of a perpendicular movement limitation that does not exist in independent claim 17.

The Court therefore finds that the term "displaceable reflectors," within the context of the '328 Patent, embraces a limitation that the reflectors, at a minimum, move generally perpendicular to the plane of their reflective surface. This limitation may not necessarily preclude perpendicular movement *plus* tilting, but there is no support in the intrinsic record for reflectors that *only* move by rotating, or tilting, about a rotational axis. Accordingly, and for the foregoing reasons, the Court construes "displaceable reflectors" to be "reflectors that move generally perpendicular to the plane of their reflective surface."[5]

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[4] This quotation reflects the changes made to the claim language in a Certificate of Correction dated February 25, 2003.

[5] The Court's construction is a rewording of Nistica's somewhat cumbersome construction using

B. The '687 Patent: "scattered light from a dropped signal is directed onto the micromirror device to reflect away from the return path"

Finisar's Proposal	Nistica's Proposal	Court's Construction
1.) plain and ordinary meaning 2.) light from a dropped signal scattered as a result of interactions with the spatial light modulator is directed onto the micromirror device to reflect away from the return path[6]	light from a dropped signal that is scattered from the edges of the micromirrors used to block that signal is directed onto the micromirror device to reflect away from the return path	light from a dropped signal that is scattered along the edge of the micromirrors used to block that signal is directed onto the micromirror device to reflect away from the return path

This disputed phrase appears in independent claims 1 and 49 of the '687 Patent. Claim 1 is representative of how the disputed phrase is used:

> 1. An optical blocking filter for receiving an optical signal having one or more optical bands or channels, characterized in that
> the optical blocking filter comprises a spatial light modulator having a micro-mirror device with an array of micro-mirrors for selectively deflecting the one or more optical bands or channels so that each optical band or channel is reflected off a respective plurality of micro-mirrors to eliminate a selected band or channel or a specified selection of bands or channels from the optical signal provided along an optical return path, wherein **scattered light from a dropped signal is directed onto the micromirror device to reflect away from the return path.**

The crux of the parties' dispute is in the origin of the scattered light. Finisar originally contended that "scattered light" refers "to all scattered light of a dropped signal, and does not discriminate based on the source of the scattering." Pl.'s Br. 8. Based on this expansive interpretation of the "plain and ordinary meaning," Finisar argued in its brief, and at the claim construction hearing, that the "light from a dropped signal" refers to light that the entire optical blocking filter eliminated. *See id.* at 7, 8. If that were true, then the scattering of light could, as

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the words used in the patent to describe the movement of the reflectors. Moreover, the Court's construction eliminates the phrase "of a spatial light modulator array," as the reference to a "spatial light modulator" appears to be merely for clarification, and the use of the word "array" is redundant of the claim language.

[6] Finisar's "compromise" proposal, submitted on August 27, 2014 as part of its post-*Markman* letter brief. Pl.'s Ltr. 1.

Finisar contended at the *Markman* hearing, occur anywhere in the free space optical arrangement of the claimed device, not just at the micromirror array within the device. Hr'g Tr. 98-102, ECF 119.

On August 27, 2014, Finisar proposed a "compromise" construction based on the Court's suggestion during the *Markman* hearing that the more reasonable plain reading of the disputed phrase, within the context of Claims 1 and 49, would be that "scattered light from a dropped signal" refers to light scattered by the elimination of the signal at the SLM micromirror array, and nowhere else. Pl.'s Ltr. 1. It thus appears that the parties at least agree that the "scattered light" is light scattered by the dropping of the signal at the SLM, and not scattered by any other component in the claimed device. The question then becomes whether, as Nistica argues, this phrase is to be construed even more narrowly to refer only to light scatted by the *edges* of the micromirrors of the SLM. The intrinsic evidence favors this further limitation.

i. The written description only discloses edge scattering.

Scattered light is discussed in only one part of the written description in connection with a preferred embodiment depicted in Figure 24 of the '687 Patent:

> While the blocked or deleted channels are directed along the optical path 610, some **scattered light** of the blocked optical channels propagate along the first optical path 92. This **edge scattering** from the micro-mirrors limits the extinction of the blocked channels that can be received. By properly choosing the angle of incidence of the signal light onto the spatial light modulator, the **coherent scattering** from the blocked channel mirrors can be directed away from the return path 94 and provide the highest blocked channel extinction.

'687 Patent col. 12:55-65 (emphasis added). Nistica argues that this disclosure clearly indicates that "scattered light" is limited to edge scattering by the micromirrors. Def.'s Br. 8-9. Finisar contends that this is a single embodiment and that it would be improper to import the limitation from this embodiment into the broader language of claims 1 and 49. Pl.'s Br. 8; Pl.'s Reply 3. Moreover, Finisar argues that even this example refers to "coherent" scattering, which is a broader umbrella concept that includes edge scattering but also other types of predictable scattering. Pl.'s Reply 3.

While the parties do not dispute that edge scattering is a subset of coherent scattering, Finisar cannot satisfactorily explain what other types of coherent scattering are addressed by the

disputed limitation. To be sure, there are no words of limitation in the claim language itself. However, the plain reading of the quoted passage above indicates that "scattered light," "edge scattering," and "coherent scattering" are used interchangeably, at least with respect to the preferred embodiment at Figure 24. As discussed below, the prosecution history of the '687 Patent links the limitation in Figure 24 to the rest of the patent.

ii. The prosecution history supports the conclusion that "scattered light" is limited to edge scattering.

"Where an applicant argues that a claim possesses a feature that the prior art does not possess in order to overcome a prior art rejection, the argument may serve to narrow the scope of otherwise broad claim language." *Seachange Int'l, Inc. v. C-COR, Inc.*, 413 F.3d 1361, 1372-73 (Fed. Cir. 2005) (citing *Rheox, Inc. v. Entact, Inc.*, 276 F.3d 1319, 1325 (Fed. Cir. 2002)). This is because, "by distinguishing the claimed invention over the prior art, an applicant is indicating what the claims do not cover," and therefore "he is by implication surrendering such protection." *Ekchian v. Home Depot, Inc.*, 104 F.3d 1299, 1304 (Fed. Cir. 1997). However, such disavowal of claim scope must be clear and unambiguous, *Omega Eng'g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1323–25 (Fed. Cir. 2003), and not "subject to more than one reasonable interpretation," *SanDisk Corp. v. Memorex Prods., Inc.*, 415 F.3d 1278, 1287 (Fed. Cir. 2005).

As Nistica points out, the prosecution history indicates that the "scattered light" term was added to claims 1 and 49 in order to overcome an obviousness rejection. Decl. of C. Gideon Korrell, Exhs. A-D, ECF 100. In response to the patent examiner's finding that certain claims of what would eventually become the '687 Patent were obvious in view of the combination of two earlier issued patents (*Aksyuk* and *Riza*), the applicant indicated that "neither *Aksyuk et al.*, *Riza* nor the proposed combination thereof either recognizes the 'back scattering or edge scattering' problem in the art, or suggests a solution to this problem." *Id.* Exhs. A, B at 2. Finisar argues here that "edge" and "back" scattering are different problems. Pl.'s Reply 4. The Court disagrees because the patentee, in his own words, defined the problem as follows:

> "When dropping bands or channels from an optical signal using a micromirror device, some of the light from the dropped bands or channels may be scattered along the **edge** of the micromirrors and

> reflected **back** with the remaining bands of channels along an optical return bath. **This problem in the art is known as "back scattering" or "edge scattering"**, which in turn limits the extinction of the blocked bands or channel that can be achieved."

Korrell Decl. Exh. B at 3 (emphasis added). As such, the patentee defined "back scattering" and "edge scattering" as alternative terms for the same problem: the reflection back of light scattered by the edges of the micromirrors. Contrary to Finisar's assertion, this is not "unsubstantiated lawyer argument" by Nistica's lawyers that back and edge scattering are the same—this is the patentee's own understanding of the terms. Pl.'s Reply 4.[7]

In his response to rejection, the patentee further pointed to Figure 24 as an example of the inventive "double bounce technique" that "substantially eliminates or reduces this edge scattering effect." Korrell Decl. Exh. B at 4. When the examiner responded that the claims, as then-drafted, did not include the features upon which the patentee relied for its "argument that the references fail to recognize the 'back or edge scattering' problems," *id.* Exh. C, the patentee amended claims 1 and 49 to add the disputed limitation, *id.* Exh. D. Finisar argues that the claims were allowed because of the double bounce *feature*, and not because of the problem that the applicant identified as missing from the prior art. Pl.'s Reply 4-5. The sequence of events previously described, Finisar's arguments notwithstanding, clearly links the identified edge scattering problem with the solution embodied in the disputed limitation and amounts to a disavowal of claim scope. *See Seachange*, 413 F.3d at 1374 (rejecting similar argument and concluding that "[a]n applicant's argument made during prosecution may lead to a disavowal of claim scope even if the Examiner did not rely on the argument"); *Andersen Corp. v. Fiber Composites, LLC*, 474 F.3d 1361, 1374 (Fed. Cir. 2007) ("an applicant's argument that a prior art reference is distinguishable on a particular ground can serve as a disclaimer of claim scope even if the applicant distinguishes the reference on other grounds as well"); *see also SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys., Inc.*, 242 F.3d 1337, 1342–45 (Fed. Cir. 2001) (drawing the "inescapable conclusion," from reading together portions of the intrinsic record, that the inventor disavowed claim scope).

[7] For this same reason, the Court rejects Finisar's argument that the patent examiner understood edge and scattering to be "separate and distinct" problems. *Id.* The patentee's own words merit more weight than a wayward "s" from the patent examiner.

Even if there was not an unambiguous disavowal of claim scope, the patentee's arguments distinguishing his invention over prior art is evidence of the patentee's description of his own invention that may be used "as support for the construction already discerned form the claim language and confirmed by the written description." *800 Adept, Inc. v. Murex Securities, Ltd*, 539 F.3d 1354, 1364-65 (Fed. Cir. 2008). The Court has already determined that the claim language refers to light scattered by the micromirrors that eliminate a signal, and the written description further indicates that the scattering occurs at the edges of the micromirrors. The prosecution history reinforces this conclusion.

For the foregoing reasons, the Court adopts Nistica's construction with a slight rewording to eliminate ambiguity and to give effect to the patentee's own words. Accordingly, the disputed phrase "scattered light from a dropped signal is directed onto the micromirror device to reflect away from the return path" is construed to mean "light from a dropped signal that is scattered along the edge of the micromirrors used to block that signal is directed onto the micromirror device to reflect away from the return path."

C. The '740 Patent: "the spatial light modulator having a first set of micromirrors programmed to perform a first overall optical function on the first optical input signal, and having a second set of micromirrors programmed to perform a second overall optical function on the second optical input signal"

Finisar's Proposal	Nistica's Proposal[8]	Court's Construction
plain and ordinary meaning	the spatial light modulator having a first set of micromirrors programmed to perform a first set of one or more optical function(s) on a first optical input signal, and a second set of micromirrors programmed to perform a second set of one or more optical function(s) on the	plain and ordinary meaning

[8] Nistica's proposal originally read "the spatial light modulator having a first set of micromirrors programmed to perform a first set of one or more optical function(s) on a first optical input signal *as it transits the reconfigurable multifunctional optical device*, and a second set of micromirrors programmed to perform a second set of one or more optical function(s) on the second optical signal *as it transits the reconfigurable multifunctional optical device*." At the claim construction hearing, Nistica agreed to drop the "as it transits the reconfigurable multifunctional optical device" portions because they were intended only to clarify. Hr'g Tr. 158:4-12.

	second optical signal	

This limitation appears in Claim 1 of the '740 Patent, which reads:

> 1. A reconfigurable multifunctional optical device comprising:
> an optical arrangement for receiving a first optical input signal and a second optical input signal, each of the first and second optical input signals having optical bands or channels, the optical arrangement having a free optics configuration with a light dispersion element for spreading each of the first and second optical input signals into respective optical bands or channels on separate portions of a spatial light modulator having an array of micromirrors and being programmable to perform separate optical functions on each of the first and second optical signals;
> **the spatial light modulator having a first set of micromirrors programmed to perform a first overall optical function on the first optical input signal, and having a second set of micromirrors programmed to perform a second overall optical function on the second optical input signal**, wherein the first overall optical function and second overall optical function are different.

The dispute centers on the proper construction of "overall optical function" in contrast to just an "optical function." Problematically, the entire disputed phrase only appears in the language of claim 1 and nowhere else in the '740 Patent.[9] The written description indicates only that "[t]he separate optical functions include [list of types of functions], or some combination thereof. . . . The scope of the invention is also intended to include performing an optical function on one optical input signal, and performing a second optical function on the output signal from the first optical function." '740 Patent col. 3:1-14.

In support of its more limited construction, Nistica relies on the above quoted passage from the written description and again turns to the prosecution history, which indicates that the disputed phrase was added to overcome a rejection for anticipation by the *Aksyuk* prior art patent previously mentioned. Def.'s Br. 13-14; Korrell Decl. Exhs. E-F. Nistica contends that the applicant amended claim 1 by distinguishing between "separate and different optical functions" from "a single overall function" and by arguing that "*Aksyuk* merely discloses a single overall function of a WDM add/drop device." Def.'s Br. 14; Korrell Decl. Exh. E at 20. As such, the disputed phrase must necessarily mean that "overall function" is different from "optical function" and accordingly,

[9] The phrase "overall optical function" appears in dependent claim 50.

"'overall' optical function refers to the set of optical functions performed on a signal in the device." Def.'s Br. 14.

The problem with Nistica's argument is that Finisar does not appear to disagree that "'overall optical function' encompasses all of the optical functions performed on a particular signal." *Id.* at 13. At the *Markman* hearing, Finisar argued that "overall optical function" referred to the "net modulation" of each signal by the SLM—which could mean the total effect of multiple optical functions—and that the "overall optical functions" are different if the mirror configurations of the respective portions of the SLM are different. Hr'g Tr. 143:6-144:10. This argument was not advanced in Finisar's briefing, but helps to highlight what appears to be the real dispute between the parties: what test to apply in determining that the first overall optical function is different from the second overall optical function. That question is not before the Court, nor is Nistica's proposed construction helpful in resolving that dispute.[10]

At bottom, despite the length of Nistica's proposed construction, there does not appear to be much more than a semantic difference between the parties' understandings of the word "overall." Moreover, Nistica's proposal is not helpful in resolving claim scope because it permits the "overall optical function" to be "one or more optical functions," and presumably each of the "overall" optical functions could be just one optical function. As such, not much is served by defining "overall" as a "set of one or more" optical functions in lieu of adhering to a plain, dictionary understanding of the word "overall." The Court therefore finds that the phrase "the spatial light modulator having a first set of micromirrors programmed to perform a first overall optical function on the first optical input signal, and having a second set of micromirrors programmed to perform a second overall optical function on the second optical input signal" should have its plain and ordinary meaning.

[10] The Court notes that "separate optical functions," which also appears in claim 1, are defined in the written description as a list of types of optical functions "or some combination thereof." '740 Patent col. 3:1-8. This may indicate that the "separate optical functions" must be of different types, although it is not clear whether "separate optical functions" are equivalent to "overall optical functions."

D. Disputed Terms in the '980 Patent

The parties dispute the proper construction of two limitations that appear in independent claim 1 of the '980 Patent, which reads:

> 1. An optical signal manipulation system including:
> a series of ports for carrying a series of optical signals to be manipulated;
> **a spatial separating means for simultaneously spatially separating at least a first and a second group of light from said series of optical signals**, each of said first and second group including a multiplicity of independent wavelength channels, with the wavelength channels of the first group having overlapping wavelength ranges of the wavelength channels of the second group;
> a wavelength dispersion element subsequently spatially separating the multiplicity of wavelength channels of said first and second group and projecting them onto a wavelength processing means; and
> **wavelength processing means for separately processing each of the separated wavelengths of said first and second group**, with each of wavelength channels of the first and second group being processed independently at a separated spatial location, said wavelength processing means having a series of independent wavelength processing elements, with separate wavelength processing elements simultaneously processing the wavelength channels having overlapping wavelength ranges of the first and second group.

The parties agree that both disputed limitations are means-plus-function terms subject to the requirements of 35 U.S.C. § 112, ¶ 6. Under § 112, ¶ 6, a means-plus-function claim "shall be construed to cover the corresponding structure, material, or acts described in the specification of equivalents thereof." 35 U.S.C. § 112, ¶ 6. In construing a means-plus-function claim term, the Court must first determine the claimed function then identify the "corresponding" structure that is necessary to performing the claimed function. *JVW Enters., Inc. v. Interact Accessories, Inc.*, 424 F.3d 1324, 1330 (Fed. Cir. 2005) ("Determining a claimed function and identifying structure corresponding to that function involve distinct, albeit related, steps that must occur in a particular order."). The Federal Circuit has held that the "structure disclosed in the specification is 'corresponding' structure *only* if the specification or prosecution history clearly links or associates that structure to the function recited in the claim. This duty to link or associate structure to function is the *quid pro quo* for the convenience of employing § 112, ¶ 6." *B. Braun Med., Inc. v. Abbott Labs.*, 124 F.3d 1419, 1424 (Fed. Cir. 1997); *see also Saffran v. Johnson & Johnson*, 712 F.3d 549,

562 (Fed. Cir. 2013).

i. "spatial separating means for simultaneously spatially separating at least a first and a second group of light from said series of optical signals"

Finisar's Proposal[11]	Nistica's Proposal	Court's Construction
Function: simultaneously spatially separating at least a first and a second group of light from said series of optical signals Structure: polarization manipulation element and/or series of optical power elements, as limited to: a polarization manipulation element, consisting of one or more components selected from the group of: walk off crystal (115), birefringent wedge element (130), walk-off crystal (215), composite λ/2 waveplate (220), CBRW (230), polarization equalization element (320), Faraday rotator (8:25-26); and/or a series of optical power elements consisting of two or more components selected from the group of: microlens array (110), cylindrical mirror (140), cylindrical lens (160), spherical microlens array (210), cylindrical mirror (240), and cylindrical lens (260); and equivalents thereto.	Function: simultaneously spatially separating at least a first and a second group of light from said series of optical signals Structure: compensating birefringent wedge (CBRW)	Function: simultaneously spatially separating at least a first and a second group of light from said series of optical signals Structure: walk off crystal (115 or 215) and/or compensating or non-compensating birefringent wedge element (130 or 230) or the combination of walk off crystal (115 or 215) and/or compensating or non-compensating birefringent wedge element (130 or 230) and a series of optical power elements consisting of two or more components selected from the group of: microlens array (110), cylindrical mirror (140), cylindrical lens (160), spherical microlens array (210), cylindrical mirror (240), and cylindrical lens (260); and equivalents thereto.

At first blush, it appears that the parties agree on the function described in this term and

[11] As revised, following the Court's request at the claim construction hearing.

only dispute the corresponding structure. However, the parties' arguments at the claim construction hearing unearthed a more fundamental dispute: though they agree on the wording of the claimed function, they actually disagree on what those words mean. Finisar argues that the function of "simultaneously spatially separating" includes both the function of creating spatial separation between two groups of light and of maintaining that separation. Hr'g Tr. 174:25-177:4. Finisar's proposed corresponding structures therefore include both elements that separate and elements that maintain spatial separation. Nistica, by contrast, reads the function of "simultaneously spatially separating" as the initial creation of spatial separation. Based on that interpretation of the claimed function, Nistica contends that the CBRW is a necessary corresponding structure. *Id.* at 198:7-202:10.

The appropriate construction of the claimed function was not briefed, though the parties addressed the issue succinctly in their post-*Markman* letter briefs. Pl.'s Ltr. 2; Def.'s Ltr. 1-2. The Court must therefore define the proper scope of the claimed function before proceeding to identify corresponding structure.

a. Function

A court may not construe a means-plus-function limitation "by adopting a function different from that explicitly recited in the claim." *Micro Chem., Inc. v. Great Plains Chem. Co.*, 194 F.3d 1250, 1258 (Fed. Cir. 1999); *see also Generation II Orthotics Inc. v. Med. Tech. Inc.*, 263 F.3d 1356, 1365 (Fed. Cir. 2001); *JVW Enterprises*, 424 F.3d at 1331. It is, however, also erroneous to construe function "by importing the functions of a working device into the[ ] specific claims, rather than reading the claims for their meaning independent of any working embodiment." *Rodime PLC v. Seagate Tech., Inc.*, 174 F.3d 1294, 1303 (Fed .Cir. 1999).

Here, the claimed function of "simultaneously spatially separating at least a first and a second group of light from said series of optical signals" is susceptible to several meanings: the creation of separation, the maintenance of separation, or the creation *and* maintenance of separation. Finisar's proposed structure using the conjunction "and/or" injects ambiguity and may be read in the disjunctive to suggest that the function can be that of either creating *or* maintaining

spatial separation.[12] This confusing ambiguity was noted by Nistica at the *Markman* hearing and in its post-*Markman* letter brief. *See, e.g.*, Def.'s Ltr. 1.

The Court finds that the '980 Patent does not disclose or even hint at an embodiment where the only act of "simultaneously spatially separating" is in maintaining spatial separation. Every embodiment in the patent shows, at a minimum, the creation of spatial separation. *See* '980 Patent Figs. 3, 6; col. 10:65-11:46, 14:1-15:15. Nor, within the context of the claim language, does it make sense to interpret "simultaneously spatially separating" to broadly include within its ambit solely the maintenance of separation in the absence of a preceding act of imparting spatial separation between two groups of light. Thus, although the claimed function may include maintaining separation, it contains an implicit requirement that, at a minimum, the function must involve the creation of spatial separation. The parties do not appear to disagree on this point. As such, the Court need not further construe the function language to which both parties have agreed, other than to note that it only encompasses creating spatial separation or the combination of creating *and* maintaining spatial separation.

b. Corresponding Structure

In identifying the corresponding structure in a means-plus-function claim, the Court must be cognizant that the Patent Act does not "permit incorporation of structure from the written description beyond that necessary to perform the claimed function." *Micro Chem.*, 194 F.3d at 1258 (citing *Rodime*, 174 F.3d at 1302). "A means-plus-function claim encompasses all structure in the specification corresponding to that element and equivalent structures," and is not limited to a preferred embodiment. *Id.*

Here, the parties' divergent proposals are either overly narrow or potentially overly broad. Nistica's identification of the corresponding structure is impermissibly narrow, as it ignores the disclosure in the written description of alternatives to the *compensating* birefringent wedge

[12] Finisar argued at the *Markman* hearing that the series of optical power elements identified in its proposed construction are needed to focus and maintain the spatial separation throughout the claimed device. Hr'g Tr. 172:15-175:7. Finisar did not argue, nor is it this Court's understanding based on the lack of any such disclosure in the '980 Patent, that the series of optical power elements are independently capable of creating spatial separation between two groups of light.

(CBRW). The written description indicates that "[t]he beams then enter a birefringent wedge (BRW) element 130 which is shown as a compensating element (CBRW) . . . . In other embodiments, the CBRW 130 can be a simple non-compensating element." '980 Patent col. 11:5-13, 14:51-53. The corresponding structure that imparts angular offset is thus a birefringent wedge that can be either compensating or non-compensating. Moreover, at the *Markman* hearing, Nistica admitted that walk off crystal 115 and 215 also cause spatial separation and should be included among the claimed structures. Hr'g Tr. 201:1-14. As such, Nistica's proposal must be expanded to include all structures that are necessary to performing the claimed function.

With that being said, Finisar's proposal is potentially overbroad. As an initial matter, the Court rejects Finisar's selection of "composite λ/2 waveplate (220), polarization equalization element (320), Faraday rotator (8:25-26)" as necessary corresponding structures because the written description indicates that they are polarization equalization elements that do not contribute to the creation or maintenance of spatial separation. *See* '980 Patent col. 11:35-47, 15:9-15, 15:43-16:49. Furthermore, and as previously discussed, the use of "and/or" in Finisar's construction could be interpreted to permit the only corresponding structure to be a series of optical elements for maintaining spatial separation. In support of its construction, Finisar relies upon a single passage in the '980 Patent, which reads: "[t]he spatial separating means preferably can include a polarisation manipulation element . . . . The spatial separating means *can also* preferably include a series of optical power elements." *Id.* col. 5:4-14 (emphasis added); *see* Pl.'s Reply 10; Pl.'s Ltr. 2; *see also* '980 Patent cls. 2 and 3.[13] Finisar interprets this to mean that "the corresponding structure for the "spatial separating means" may be *at least one* polarization manipulation element *and/or two or more* optical power elements." Pl.'s Ltr. 2 (emphasis in original). To eliminate any ambiguity, the Court finds the better interpretation of this passage to be that the spatial separating means can additionally include a series of optical power elements on top of the polarization manipulation

[13] To the extent Finisar's reliance at the *Markman* hearing on claims 2 and 3 of the '980 Patent was an argument for a broader identification of structures based on the doctrine of claim differentiation, that presumption is overcome by the construction mandated by application of § 112, ¶ 6. *Cross Med. Prods., Inc. v. Medtronic Sofamor Danek, Inc.*, 424 F.3d 1293, 1304 (Fed. Cir. 2005) (citing *Laitram Corp. v. Rexnord, Inc.*, 939 F.2d 1533, 1538 (Fed. Cir. 1991)).

element. As this Court earlier noted, this understanding of the corresponding structure would be more consistent with the disclosures in the patent, which do not contemplate an embodiment wherein the only spatial separating means employed are optical power elements for maintaining spatial separation. With one minor modification to clarify that understanding, and eliminating the unnecessary structures discussed above, Finisar's proposed construction better encompasses all of the disclosed structures necessary to performing the claimed function.

For the foregoing reasons, the Court construes the disputed phrase "spatial separating means for simultaneously spatially separating at least a first and a second group of light from said series of optical signals" to be a means-plus-function term pursuant to 35 U.S.C. § 112, ¶ 6 wherein the function is "simultaneously spatially separating at least a first and a second group of light from said series of optical signals" with its corresponding structure being "walk off crystal (115 or 215) and/or compensating or non-compensating birefringent wedge element (130 or 230) or the combination of walk off crystal (115 or 215) and/or compensating or non-compensating birefringent wedge element (130 or 230) and a series of optical power elements consisting of two or more components selected from the group of: microlens array (110), cylindrical mirror (140), cylindrical lens (160), spherical microlens array (210), cylindrical mirror (240), and cylindrical lens (260); and equivalents thereto."

ii. "wavelength processing means for separately processing each of the separated wavelengths of said first and second group"

Finisar's Proposal[14]	**Nistica's Proposal**	**Court's Construction**
Function: separately processing each of the separated wavelengths of said first and second group [of light] Structure: a spatial light modulator having a plurality of independently addressable pixels, as limited to:	Function: separately processing each of the separated wavelengths of the first and second group of light from the series of optical signals Structure: a liquid crystal on silicon Optical Phased Matrix Coupling device having two series of elongated cell regions	Function: separately processing each of the separated wavelengths of said first and second group [of light] Structure: a spatial light modulator having a plurality of independently addressable pixels, as limited to: liquid crystal on silicon spatial

[14] As revised, following the Court's request at the claim construction hearing.

liquid crystal on silicon spatial light modulator (LCOS SLM) (180); liquid crystal spatial light modulator (OPMC) (280); optical phased-matrix coupling (OPMC) device (520); liquid crystal display device having a series of light modulating pixels formed thereon (col. 5:53-55); and equivalents thereto.		light modulator (LCOS SLM) (180); liquid crystal spatial light modulator (OPMC) (280); optical phased-matrix coupling (OPMC) device (520); liquid crystal display device having a series of light modulating pixels formed thereon (col. 5:53-55); and equivalents thereto.

a. Function

Although the parties' proposed functions differ in language, they do not differ in scope. At the *Markman* hearing, Nistica confirmed that is proposal is intended merely to be a clarifying restatement of the function of "separately processing each of the separated wavelengths of said first and second group [of light]." Hr'g Tr. 254:6-25. Accordingly, the Court adopts Finisar's statement of the function, which is taken directly from the claim language: "separately processing each of the separated wavelengths of said first and second group [of light]."

b. Corresponding Structure

As ordered by the Court, Finisar has submitted a revised proposal that clearly identifies the corresponding structures disclosed in the '980 Patent that it contends perform the claimed function. *See* Pl.'s Ltr. 2. Nistica has not responded or objected to Finisar's revised identification of corresponding structure. On review of Finisar's revised proposal, the Court finds that each structure is clearly linked to the claimed function of "separately processing each of the separated wavelengths of said first and second group [of light]." *See* '980 Patent col. 12:47-50, 12:63-66, 18:32-35, 18:43-60; *see generally id.* col. 17:50-18:54. These various structures all appear to describe what is essentially an optical phased matrix coupling (OPMC) device that is an LCOS SLM. Nistica's additional limitation that the LCOS OPMC device have "two series of elongated cell regions" is not justified by the written description, which only mentions this configuration in describing "preferred implementations" of the OPMC device. *Id.* col. 17:50-53, 18:35-38; Def.'s Br. 23. This description is not sufficient to limit all configurations of the OPMC device to having "two series of elongated cell regions."

For the foregoing reasons, the Court construes the disputed phrase "wavelength processing means for separately processing each of the separated wavelengths of said first and second group" to be a means-plus-function term pursuant to 35 U.S.C. § 112, ¶ 6 wherein the function is "separately processing each of the separated wavelengths of said first and second group [of light]" and the corresponding structure is "a spatial light modulator having a plurality of independently addressable pixels, as limited to: liquid crystal on silicon spatial light modulator (LCOS SLM) (180); liquid crystal spatial light modulator (OPMC) (280); optical phased-matrix coupling (OPMC) device (520); liquid crystal display device having a series of light modulating pixels formed thereon (col. 5:53-55); and equivalents thereto."

V. ORDER

For the reasons set forth above, the Court construes the disputed terms as follows:

Claim Terms	Court's Construction
displaceable reflectors	reflectors that move generally perpendicular to the plane of their reflective surface
scattered light from a dropped signal is directed onto the micromirror device to reflect away from the return path	light from a dropped signal that is scattered along the edge of the micromirrors used to block that signal is directed onto the micromirror device to reflect away from the return path
the spatial light modulator having a first set of micromirrors programmed to perform a first overall optical function on the first optical input signal, and having a second set of micromirrors programmed to perform a second overall optical function on the second optical input signal	plain and ordinary meaning
spatial separating means for simultaneously spatially separating at least a first and a second group of light from said series of optical signals	Means-plus-function term subject to 35 U.S.C. § 112, ¶ 6 Function: simultaneously spatially separating at least a first and a second group of light from said series of optical signals Structure: walk off crystal (115 or 215) and/or compensating or non-compensating birefringent wedge element (130 or 230) or the combination of

	walk off crystal (115 or 215) and/or compensating or non-compensating birefringent wedge element (130 or 230) and a series of optical power elements consisting of two or more components selected from the group of: microlens array (110), cylindrical mirror (140), cylindrical lens (160), spherical microlens array (210), cylindrical mirror (240), and cylindrical lens (260); and equivalents thereto.
wavelength processing means for separately processing each of the separated wavelengths of said first and second group	Means-plus-function term subject to 35 U.S.C. § 112, ¶ 6 Function: separately processing each of the separated wavelengths of said first and second group [of light] Structure: a spatial light modulator having a plurality of independently addressable pixels, as limited to: liquid crystal on silicon spatial light modulator (LCOS SLM) (180); liquid crystal spatial light modulator (OPMC) (280); optical phased-matrix coupling (OPMC) device (520); liquid crystal display device having a series of light modulating pixels formed thereon (col. 5:53-55); and equivalents thereto.

IT IS SO ORDERED.

Dated: October 1, 2014

BETH LABSON FREEMAN
United States District Judge