UNITED STATES DISTRICT COURT
DISTRICT OF NEW HAMPSHIRE

SignalQuest, Inc.

v.

Civil No. 11-cv-392-JL
Opinion No. 2016 DNH 099

Tien-Ming Chou,
OneQue Corporation, and
Bravotronics Corporation

MEMORANDUM ORDER

The parties to this patent infringement action dispute the construction of the claims in three reissued patents for an omnidirectional tilt and vibration switch. Plaintiff and counterclaim defendant SignalQuest commenced this action seeking declaratory judgment that its products did not infringe defendant Ten-Ming Chou's U.S. Patent No. 6,706,979.[1] It later amended its complaint to assert the three related patents in question here -- United States Patent Nos. 7,067,748C1, 7,326,866C1, and 7,326,867C1 (collectively, the "SignalQuest patents") -- against defendants and counterclaimants OncQue Corporation, Bravotronics Corporation, and Chou, who is an officer of both companies. This court has subject-matter

[1] The court construed the claims of the '979 patent in a previous order. See document no. 75.

jurisdiction over this action pursuant to 28 U.S.C. §§ 1338(a) (patents) and 1331 (federal question).

The SignalQuest patents were granted originally on June 27, 2006, and February 5, 2008. They claim an omnidirectional tilt and vibration sensor, which can be used to switch an electrical circuit ON or OFF. Tilt the sensor one way, and a free-moving conductive element comes in contact with two terminals, completing a conductive path and turning the circuit ON; tilt it another way, and the conductive element moves out of contact with one or both of the terminals, disrupting the conductive path and turning the circuit OFF.

After SignalQuest amended its complaint to accuse the defendants of infringing these patents, the USPTO instituted an ex parte reexamination at the defendants' request. This court stayed the instant action as to these patents while the USPTO reexamined them. All three patents ultimately reissued in October 2014, though SignalQuest cancelled some claims, rewrote or amended others, and added still other claims in the process. The court lifted the stay after the patents reissued and held a hearing on the parties' proposed claim constructions on January 26, 2016.[2]

[2] At the same time, the court also heard the parties' arguments on defendants' motion for summary judgement, which the

The parties differ over the meanings of a number of terms that appear in several claims of the SignalQuest patents. After reviewing the parties' submissions and conducting a hearing in accordance with Markman v. Westview Instruments, Inc., 517 U.S. 370, 388 (1996), the court construes the disputed claim terms as set forth below.

I. Applicable legal standards

"[A] patent claim is that 'portion of the patent document that defines the scope of the patentee's rights.'" Teva Pharm. USA, Inc. v. Sandoz, Inc., 135 S. Ct. 831, 835 (2015). The proper construction of a patent's claims is a question of law, albeit one with "evidentiary underpinnings," that falls "exclusively within the province of the court." Id. at 837-38 (quoting Markman, 517 U.S. at 372). "[T]he words of a claim are generally given their ordinary and customary meaning," i.e., "the meaning that the term would have to a person of ordinary

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court ultimately denied. See document no. 111. The defendants have moved the court to reconsider that decision. See document no. 112. The court is not persuaded that it committed a manifest error of law in concluding, based on Halo Elecs., Inc. v. Pulse Elecs. Inc., 769 F.3d 1371, 1381 (Fed. Cir. 2014) and Transocean Offshore Deepwater Drilling, Inc. v. Maersk Contractors USA, Inc., 617 F.3d 1296, 1309 (Fed. Cir. 2010), that the location of a sale or offer for sale under 35 U.S.C. § 271 is not limited to the location where title transfers. Accordingly, the defendants' motion is denied.

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) (quotation marks omitted). The court may depart from the claim's plain meaning under limited circumstances, such as when the patentee acts as his own lexicographer, id. at 1316-17, or clearly disclaims or disavows the claim's scope in the specification or during prosecution, id. at 1317.

The court does not perform this analysis in a vacuum, but construes the claim terms in the context of the intrinsic record, that is, the claims themselves, the patent specification, and the prosecution history. Id. at 1313-14. At the same time, "[w]hen consulting the specification to clarify the meaning of claim terms, courts must take care not to import limitations into the claims from the specification." Abbott Labs. v. Sandoz, 566 F.3d 1282, 1288 (Fed. Cir. 2009). Though "less significant than the intrinsic record" to this inquiry, the court may also "rely on extrinsic evidence, which consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises." Phillips, 415 F.3d at 1317 (quotation marks omitted).

II. Analysis

The parties dispute the meaning of 19 terms as they appear in several independent and dependent claims across all three SignalQuest patents.[3] The court resolves those disagreements as follows, construing certain terms together as the parties proposed or as seems appropriate to the court.

A. "Diameter" terms

The parties dispute the construction of the terms "diameter," "first diameter," and "second diameter." These terms appear in, for example, claim 22 of the '748 patent, which recites, among other limitations:

> a first electrically conductive element having a **first diameter** on a proximate portion of the first electrically conductive element and a **second diameter** on a distal portion of the first electrically conductive element, where the **second diameter** is smaller than the **first diameter** . . . .

Drawing on the expertise of Merriam-Webster, SignalQuest proposes that "diameter" should be construed as "the distance

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[3] While the specifications of the three related SignalQuest patents are not identical, they are quite similar. Neither party contends that differences in the specifications bear on the construction of the claim terms at issue here -- reasonably so, as the specifications appear to the court to be substantively identical in those particulars relied on by the parties and relevant to the terms at issue. The court draws its examples from the specification of the '748 patent.

through the center of something from one side to the other," and that "[a] first diameter is different from a second diameter in the claims." The defendants request that all three of these terms be construed to cover "any diameter, inside or outside." Finding the plaintiff's definition of "diameter" to comport with the intrinsic evidence, the court adopts it as the meaning of that term.

The parties do not disagree that a shape's diameter is the measurement of a line drawn from one side of a shape -- often, but not necessarily, a circle -- to another, running through the center.[4] Rather, they dispute its scope. O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co., 521 F.3d 1351, 1362-63 (Fed. Cir. 2008) (Markman requires district courts to resolve disputes between the parties as to claim terms' meaning or scope). Specifically, the defendants contend that SignalQuest's proposed construction would limit the measurement to the "outside" diameter -- that is, the distance measured through the center from one external surface to the other. Accordingly, defendants argue, the court ought to clarify that the diameters of the elements recited in the claims of the SignalQuest patents may be

[4] The defendants agreed to this much of the plaintiffs' definition of the term "diameter." See Defendants' Reply Brief (document no. 101) at 1-2.

measured from one internal surface to another (an "inside" diameter) or from one external surface to another (an "outside" diameter) -- and that the term "diameter" as used in the SignalQuest patents encompasses both of these measurements.

In support of their proposed definitions, both parties point to Figure 2 of the '748 patent and the accompanying written description.

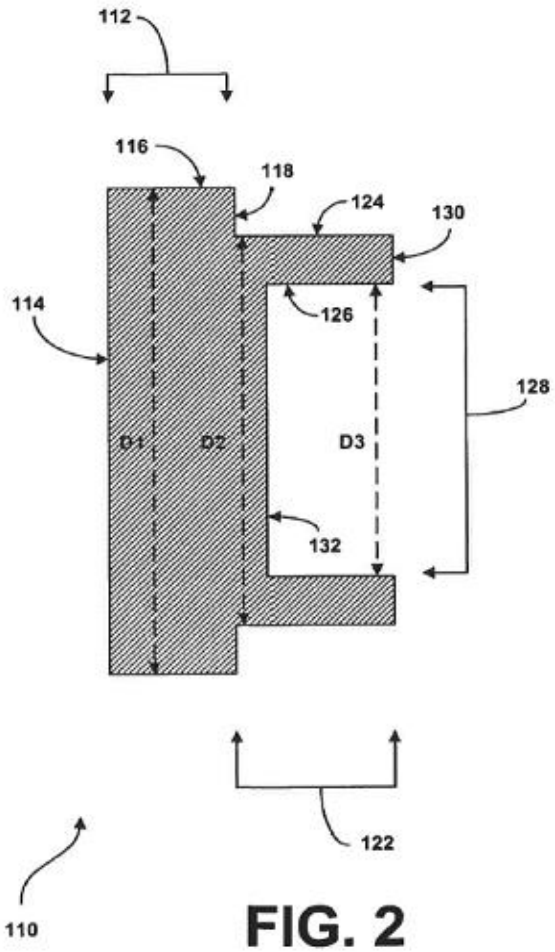

FIG. 2

Defendants contend that D3 in this figure describes an "inside" diameter of the distal portion of the first end cap, whereas D2

and D1 describe the "outside" diameters of the distal and proximate portions, respectively. As SignalQuest points out, the specification distinguishes between D2, the diameter of the distal portion, and D3, the diameter of the "cylindrical gap," which is, itself, "located central to the distal portion of the first end cap." Id. at 4:66-5:7. The specification further describes the distal portion as containing an "inner surface, the diameter of which is equal to or smaller than the diameter D3 of the cylindrical gap." Id. at 5:26-30. Figure 4 reflects a similar layout for the second end cap. See, e.g., id. fig. 4; id. at 6:14-44. Accordingly, when invoking the term "diameter," the specification indicates which portions of which elements should be measured. The claims do likewise. E.g., id. at claims 22, 32, 43, 55.

Neither the claims nor the specification refer to an "inside" or "outside" diameter but rather, as these references make clear, describe the diameters of specific elements of the sensor. None of the intrinsic evidence here suggests that the patentee intended to depart from the traditional, geometric definition of the term. Cf. SkinMedica, Inc. v. Histogen Inc., 727 F.3d 1187, 1203-04 (Fed. Cir. 2013) (redefinition requires at least implicit disclaimer of plain and ordinary meaning). Accordingly, the court adopts the plaintiff's proposed

construction as the plain and ordinary meaning of the term "diameter."

As for the "first diameter" and "second diameter" terms, using "first" and "second" "is a common patent-law convention to distinguish between repeated instances of an element or limitation." 3M Innovative Properties Co. v. Avery Dennison Corp., 350 F.3d 1365, 1371 (Fed. Cir. 2003). The patentee appears to have done so here. As an example, claim 22 of the '748 patent recites a "a first electrically conductive element having a first diameter on a proximate portion [of that element] and a second diameter on a distal portion [of that element], where the second diameter is smaller than the first diameter." Other claims also recite a "first diameter" and "second diameter" in similar manner. See, e.g., '748 patent claims 43, 55; '866 patent claims 20, 28, 42; '877 patent claims 26, 46, 49. The claim language is thus unambiguous that the "first diameter," the diameter of the proximate portion of the electrically conductive element, is distinct from the "second diameter," the diameter of the distal portion of that element. Under the plain language of the claims, the second diameter must be smaller than the first.

The court accordingly construes the claim language to mean that the "first diameter" is distinct from the "second

diameter." The court need not read the first and second diameters' respective lengths into that constructions; the claims themselves do so with sufficient clarity.

B. "Electrically conductive element"

The parties also dispute the meaning of the term "electrically conductive element." Again, claim 22 of the '748 patent is illustrative. It recites, among other limitations, a sensor having:

> a first **electrically conductive element** having a first diameter on a proximate portion of the first **electrically conductive element** and a second diameter on a distal portion of the first **electrically conductive element**, where the second diameter is smaller than the first diameter;
>
> a second **electrically conductive element** having a first diameter on a proximate portion of the second **electrically conductive element** and a second diameter on a distal portion of the second **electrically conductive element**, where the second diameter is smaller than the first diameter . . . .

SignalQuest asks the court to construe this term as "an element able to conduct electricity." The defendants seek a construction that incorporates this meaning ("any object that conducts electricity across the object") but also adds the limitation that "all parts of element need not be entirely conductive." In short, the parties differ over whether the electrically conductive element as claimed in SignalQuest's patents need be entirely conductive. Finding no support in the

intrinsic evidence or the evidence presented for limiting the claim as requested by the defendants, the court adopts the plaintiff's proposed construction: "an element able to conduct electricity."

This construction is supported by the specification. It describes the sensor as containing "an electrically conductive element embodied as the first end cap, . . . [and] a second electrically conductive element embodied as the second end cap . . . ." '748 patent at 4:14-18. The specification is not devoid of guidance as to the composition of the electrically conductive end caps. It suggests that they "may be constructed from a composite of high conductivity and/or low reactivity metals, a conductive plastic, or any other conductive material." Id. at 4:23-26; 6:10-13. The specification further explains that this element's "main function" is to "to provide a connection to allow an electrical charge introduced to the first end cap to traverse the conductive spheres and be received by the second end cap . . . ." Id. at 4:52-55. In order to perform that function, the element in question must be conductive -- that is, able to conduct electricity. Id. at 4:56-58 ("[M]any different shapes and sizes of end caps may be used as long as the conductive path is maintained."). On this much, the parties agreed at oral argument.

They disagree about whether every part of the electrically conductive elements must necessarily be made of a conductive material. As defendants point out, nothing in the description recited above explicitly requires as much. But the converse is equally true: this description also does not explicitly state that something less than every part of this element must be made of conductive material. It is, in fact, silent on this point. In the face of that silence, the court generally will not read such a limitation into the claim language. Renishaw PLC v. Marposs Societa' per Azioni, 158 F.3d 1243, 1249-50 (Fed. Cir. 1998) (a court generally will not "add a narrowing modifier before an otherwise general term that stands unmodified in a claim.").

Nor does failing to do so necessarily, as defendants suggest, "read[] in the word 'entirely' before electrically conductive element." Defendants' Reply (document no. 101) at 3. Indeed, absent such an added limitation, the electrically conductive element may be made completely of conductive material, or it may not -- so long as it is able to conduct electricity. "The patentee is free to choose a broad term and expect to obtain the full scope of its plain and ordinary meaning unless the patentee explicitly redefines the term or disavows its full scope." Thorner v. Sony Computer Entm't Am.

LLC, 669 F.3d 1362, 1367 (Fed. Cir. 2012). Defendants point to no evidence that the patentee narrowed this term. The court, accordingly, will "construe the claim to cover all types of that structure that are supported by the patent disclosure," id., and adopts the plaintiff's proposed construction.

C. "Electrically insulative element"

The parties also dispute the meaning of the term "electrically insulative element." This term, too, appears -- for purposes of illustration -- in claim 22 of the '748 patent, which recites:

> an **electrically insulative element** connected to the first electrically conductive element and the second electrically conductive element, where the distal portion of the first electrically conductive element fits within a proximate end of the **electrically insulative element**, [and] where the distal portion of the second electrically conductive element fits within a distal end of the **electrically insulative element**. . . .

SignalQuest proposes that this term means "an element that prevents or reduces the transmission of electricity." The defendants do not object to this meaning of the term per se, but ask the court to add, as a further limitation, that "[i]f [the] claims are somehow valid," the electrically insulative element has a "cylindrical not square exterior shape." They argue that an express disclaimer during reexamination precludes SignalQuest from claiming an electrically conductive element with a square-

shaped exterior.[5] See Defendants' Opening Claim Construction Brief at 13-16.

During the reexamination of the SignalQuest patents, the examiner initially objected to the claims at issue as obvious in light of a variety of combinations of prior art. SignalQuest traversed that objection as to the majority of its revised claims by submitting evidence of the commercial success of its SQ-SEN-200 sensor, the exterior of which is in the shape of a circular cylinder.[6] SignalQuest did not submit evidence of commercial success in support of, and thus did not traverse the examiner's objection to, dependent claim 14 of the '748 patent, dependent claim 15 of the '866 patent, and dependent claim 16 of the '867 patent, each of which recited "[t]he sensor of claim 1,

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[5] The defendants first raised this estoppel argument in their motion for summary judgment of invalidity. As the court explained in denying that motion, this argument is better taken up in the context of construing the claim at issue than on a motion for summary judgment before claim construction. SignalQuest v. Chou, 2016 DNH 35, 17-19; see also Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., 535 U.S. 722, 733 (2002) ("Estoppel is a rule of patent construction that ensures that claims are interpreted by reference to those that have been cancelled or rejected." (internal quotations omitted)).

[6] As defendants' counsel conceded at oral argument, a cylinder need not necessarily be circular, though the term "cylinder" commonly brings the circular variety to mind.

wherein the electrically insulative element . . . is square-like in shape."

Defendants argue that this cancellation acts as a complete disclaimer of a non-circular shaped electrically insulative element, even as to the allowed independent claims. At the time it withdrew those claims, SignalQuest explained only that those claims "have been cancelled, without prejudice, to expedite allowance." E.g., Defendants' Ex. I (document no. 99-10) at 13. SignalQuest now explains that it did so, foregoing its appeal, "because other claims that were allowed made no mention of shape and therefore broadly covered all shapes, including square shapes." Plaintiff's Reply Brief (document no. 102) at 4.

The court "assess[es] whether a patentee relinquished a particular claim construction based on the totality of the prosecution history, which includes amendments to claims and arguments made to overcome or distinguish references." Rheox, Inc. v. Entact, Inc., 276 F.3d 1319, 1326 (Fed. Cir. 2002). Generally, "[a] patentee who narrows a claim as a condition for obtaining a patent disavows his claim to the broader subject matter . . . ." Festo Corp., 535 U.S. at 737. Similarly, "[w]hen the patentee makes clear and unmistakable prosecution arguments limiting the meaning of a claim term in order to overcome a rejection, the courts limit the relevant claim term

to exclude the disclaimed matter." SanDisk Corp. v. Memorex Products, Inc., 415 F.3d 1278, 1286 (Fed. Cir. 2005). In either case, the disclaimer "must be clear and unambiguous." Seachange Int'l, Inc. v. C-COR Inc., 413 F.3d 1361, 1373 (Fed. Cir. 2005).

This one is not. SignalQuest neither narrowed a claimed nor made a clear and unmistakable prosecution argument to overcome the obviousness rejections. Rather, SignalQuest cancelled a dependent claim during reexamination. The defendants have not offered, and the court has been unable to find, support for the proposition that cancellation of a dependent claim necessarily limits the scope of an unamended independent claim.

Furthermore, the prosecution history itself demonstrates that an amendment reciting a specific shape would not have overcome the examiner's obviousness objection. To the contrary, the examiner rather explicitly excluded considerations concerning the "size, shape, cost, [and] complexity" of the sensor from the "explicit teachings of the references" that he found rendered the claims obvious. E.g., Defendants' Ex. E (document no. 99-6) at 13. Nor did the examiner invoke the shape of the SignalQuest SQ-SEN-200 sensor when he found the requisite nexus between the claims and the sensor's commercial success. That is, so far as the court can tell, the examiner

did not find that the "sales were a direct result" of the shape of the product. See In re Huang, 100 F.3d 135, 140 (Fed. Cir. 1996) (evidence of commercial success "is relevant in the obviousness context only if there is proof that the sales were a direct result of the unique characteristics of the claimed invention"). Nor did he need to, as the independent claims ultimately allowed are silent as to the shape of the electrically insulative element. Accordingly, SignalQuest did not clearly disclaim a square-shaped electrically insulative element to overcome prior art or obtain the claims that were allowed.

The defendants' reliance on Rheox is misplaced. In that case, the patentee directed claim 2 of its patent for a method of treating lead contaminated soil to using TSP as an agent and, in claim 18, recited an agent selected from a group that included TSP, phosphate rock, and hydroxyapatite. After an anticipation rejection, the patentee cancelled claim 2 and amended claim 18 to remove the reference to TSP, explaining that it did so to distinguish the invention from prior art. The Federal Circuit Court of Appeals concluded, in light of these amendments and the patentee's statement to the examiner, that the patentee disclaimed use of TSP. Rheox, 276 F.3d at 1327. Here, as discussed supra, though SignalQuest withdrew its

dependent square-shaped claim in the face of an obviousness rejection, there is no indication that it did so to overcome that objection. Nor is there any suggestion that the examiner rejected SignalQuest's claims on the basis that the prior art taught the shape of the electrically insulative element. To the contrary, the examiner explained that any argument concerning size would "not address the explicit teachings of the [prior art] references." E.g., Defendants' Ex. E (document no. 99-6) at 13.

Finally, the fact that SignalQuest submitted evidence of the commercial success of only a sensor with a circularly cylinder is not dispositive here. When traversing an obviousness objection using evidence of commercial success, a patentee need not introduce evidence of every conceivable embodiment. In re Huai-Hung Kao, 639 F.3d 1057, 1069 (Fed. Cir. 2011). "It seems unlikely" to this court, as it does to the Federal Circuit Court of Appeals, "that a company would sell a product containing multiple, redundant embodiments of a patented invention." In re Glatt Air Techniques, Inc., 630 F.3d 1026, 1030 (Fed. Cir. 2011). Where, as here, the shape of the sensor was not a factor in the obviousness analysis, SignalQuest's failure to submit evidence of its own square- or otherwise-shaped embodiment does not, itself, implicate a disavowal.

In the absence of a "clear and unambiguous" disavowal, the court cannot conclude that SignalQuest disclaimed a square-shaped electrically insulative element by cancelling claim 14 of the '748 patent, claim 15 of the '866 patent, and claim 16 of the '867 patent. See Genentech v. Trustees of the Univ. of Penn., No. 10-cv-2037, 2011 WL 2259114, at *10-11 (N.D. Cal., May 9, 2011) (no disclaimer where prosecution history was ambiguous as to reason for claim's cancellation). SignalQuest's proffered explanation for cancelling the claims in question is not unreasonable, and the record here is less clear than that in Rheox, on which defendants rely. Accordingly, the court construes "electrically insulative element" to mean "an element that prevents or reduces the transmission of electricity" and declines to import the defendants' limitation that it be "cylindrical not square" in shape.

D. "Distal" and "proximate" terms

The parties further dispute the meaning and definiteness of the terms "distal end," "distal portion," "distal surface," "proximate end," "proximate portion," and "proximate surface." As an example, independent claim 22 of the '748 patent invokes the described ends and portions in the following limitations:

> a first electrically conductive element having a first diameter on a **proximate portion** of the first electrically conductive element and a second diameter

> on a **distal portion** of the first electrically conductive element, where the second diameter is smaller than the first diameter,
>
> a second electrically conductive element having a first diameter on a **proximate portion** of the second electrically conductive element and a second diameter on a **distal portion** of the second electrically conductive element, where the second diameter is smaller than the first diameter,
>
> an electrically insulative element connected to the first electrically conductive element and the second electrically conductive element,
>
> where the **distal portion** of the first electrically conductive element fits within a **proximate end** of the electrically insulative element,
>
> where the **distal portion** of the second electrically conductive element fits within a **distal end** of the electrically insulative element, and
>
> where the **proximate portion** of the first electrically conductive element and the **proximate portion** of the second electrically conductive element are located external to the electrically insulative element . . . .

The aforementioned surfaces appear in dependent claim 38 of the '748 patent, which recites:

> [t]he sensor of claim 37, wherein the electrically insulative element has a **proximate surface** and a **distal surface**, wherein the **proximate surface** and the **distal surface** are substantially parallel to each other and at axially opposite ends of the electrically insulative element, . . .

Invoking dictionary definitions, and in particular the dictionaries' general agreement that the terms "distal" and "proximate" connote opposites, the plaintiff would have the

court construe the "distal" terms as "a [portion/end/surface] opposite in location to a proximate [portion/end/surface]" and the "proximate" terms as "a [portion/end/surface] opposite in location to a distal [portion/end/surface]." Also relying on dictionary definitions, the defendants contend that these terms are indefinite as used in the SignalQuest patents.

A claim is indefinite "if its language, when read in light of the specification and prosecution history, 'fails to inform, with reasonable certainty, those skilled in the art at the time the patent was filed about the scope of the invention.'" Eidos Display, LLC v. AU Optronics Corp., 779 F.3d 1360, 1364 (Fed. Cir. 2015) (quoting Nautilus, Inc. v. Biosig Instruments, Inc., 134 S. Ct. 2120, 2124 (2014)). The defendants here, as "the part[ies] challenging the patent[,] bear[] the burden of proving invalidity by clear and convincing evidence." Takeda Pharm. Co. v. Zydus Pharm. USA, Inc., 743 F.3d 1359, 1366 (Fed. Cir. 2014) (citing Microsoft Corp. v. i4i Ltd. P'ship, 564 U.S. 91, 95 (2011)). The defendants have not carried that burden as to these terms.

Both parties offer similar dictionary definitions that, they propose, would coincide with the understanding of a person of ordinary skill in the art as to the meaning of "distal" and "proximate." See Plaintiff's Opening Claim Construction Brief

(document no. 100) at 9; Defendants' Opening Claim Construction Brief (document no. 99) at 17. According to these dictionaries, "distal" means "situated away from the centre of the body, or from the point of origin . . . ." Oxford English Dictionary, http://www.oed.com (May 19, 2016); accord "distal," Merriam-Webster's Collegiate Dictionary 337 (10th ed. 1998). "Proximate," in this context, takes on the meaning of "proximal,"[7] which means "next to or nearest the point of attachment or orientation, central point, or the point of view." Merriam-Webster at 941; accord "proximal," Oxford English Dictionary, http://www.oed.com (May 19, 2016). The dictionaries invoked by both sides agree that "distal" and "proximal" are frequently used to connote opposites. See, e.g., Merriam-Webster at 337, 941; "distal," Oxford English Dictionary, http://www.oed.com (May 19, 2016); see also Lamoureux v. AnazaoHealth Corp., 669 F. Supp. 2d 227, 259 (D. Conn. 2009) (finding ordinary meaning of "distal" to be "'remote from the point of view,' or 'the far' end, the opposite of proximal");

[7] The court does not find persuasive the defendants' argument that use of the term "proximate" instead of "proximal" renders the claim term indefinite. See Defendants' Opening Claim Construction Brief (document no. 99) at 21. Even the dictionary upon which the defendants rely for a definition of "proximal" equates it with "proximate." Merriam-Webster at 941.

EVM Sys., LLC v. Rex Med., L.P., No. 6:13-CV-184, 2015 WL 4911090, at *5 (E.D. Tex. Aug. 17, 2015) ("'Distal end' merely refers to one of the two ends on a device -- i.e., opposite the proximal end").

The defendants contend that the terms are indefinite because, when modifying the claimed "portions," the SignalQuest patents use "distal" when they should use "proximate," and vice-versa. That is, defendants argue, the "proximate portion" of claim 22 references the portion of the electrically conductive elements that is away from the center of the apparatus and so should be "distal," while the "distal portion" of the same references the portion of the electrically conductive elements that is closer to the center, and so should be "proximate." See Defendants' Opening Claim Construction Brief (document no. 99) at 17-18. This argument presupposes that the terms "proximate" and "distal" are construed so that the center of the entire apparatus (not just the electrically conductive element, or some other element) serves as the reference point from which any portion is near or far. As discussed above, however, the dictionary definitions of the terms allow for other reference points, such as a point of origin, attachment, view, or the opposite side.

The lack of a specified reference point from which a portion is "distal" or "proximate" does not condemn these terms to indefiniteness. The claims and specification consistently describe the "distal portion" as having a smaller diameter than the "proximate portion." See, e.g., '748 patent claim 22; id. fig. 2; id. at 4:29-31, 4:66-5:1, 6:16-20, 6:36-38. The patents further describe the "distal portion" of the "end caps" -- the electrically conductive elements -- as "an extension of the proximate portion" of the same. E.g. id. at 5:22-24, 6:60-63. Accordingly, the court concludes, a person of ordinary skill in the art would be able to study the disclosed device, in light of the SignalQuest patents, and determine which portion of the electrically conductive device is "proximate" and which is "distal" with reasonable certainty.

The same goes for the "proximate end" and "distal end" of the electrically insulative element. The defendants argue that these terms are likewise indefinite because neither the "proximate end" nor the "distal end" of the electrically insulative element of claim 22 is more "distal" or "proximate" from the center than the other end. This, again, presumes the center of the apparatus as the relevant frame of reference. Here, the electrically insulative element is disclosed as having only two ends -- one "proximal" and one "distal." See, e.g.,

'748 patent claim 22; '748 patent at 5:34-37. The distal portion of one electrically conductive element "fits within" one of those ends; the distal portion of a second electrically conductive element "fits within" the other. '748 patent claim 22. In this context, the patent employs the terms "distal" and "proximal" in a manner similar to "first" and "second," and by them appears to merely differentiate two identical ends of a cylindrical electrically insulative element. See '748 patent figs. 1 and 3; '748 patent at 5:34-43. Accordingly, the court concludes that the defendants have not shown that the terms "distal end" and "proximal end" fail to inform a person of skill in the art of the claims' scope with "reasonable certainty." Eidos Display, 779 F.3d at 1364 (Fed. Cir. 2015); see also EVM Sys., 2015 WL 4911090, at *5 (concluding that, where the apparatus disclosed had only two ends, "[a] person of ordinary skill in the part would be able to study an apparatus in light of the '670 Patent and determine which end is the 'distal end'.").

As for the "proximate surface" and "distal surface" recited in, for example, claim 38 of the '746 patent, the defendants fail to support their argument that it is "certainly impossible to determine" which surface is which, and that invoking the terms "distal" and "proximate" in connection with those surfaces

"make[s] no sense." Because the defendants "point[] to no evidence showing that skilled artisans would find [these terms] lacking reasonable certainty in . . . scope," Apple Inc. v. Samsung Elecs. Co., 786 F.3d 983, 1003 (Fed. Cir. 2015), the court cannot conclude that they are indefinite.

The court therefore concludes that the terms "distal end," "distal portion," "distal surface," "proximate end," "proximate portion," and "proximate surface" are not indefinite, and adopts SignalQuest's proposed constructions.

E. "Surface" terms and "cylindrical lip"

The parties also dispute several terms appearing in, for example, claims 28 and 35 of the '748 patent. Several of these terms relate to various "surfaces" of the elements of the claimed invention, including the terms "top surface," "outer surface," "bottom surface," "single internal surface," and "flat end surface." They also dispute the term "cylindrical lip," which is an element defined by certain of the disputed surfaces. The court addresses each of these terms in turn.

1. "top surface," "outer surface," and "bottom surface"

The defendants contend that the terms "top surface," "outer surface," and "bottom surface" are indefinite. SignalQuest contends they are not, and proposes constructions. The terms

appear, for example, in claim 28 of the '748 patent, which recites:

> The sensor of claim 22, wherein the distal portion of the first electrically conductive element further comprises:
>
> a first **top surface**;
>
> a first **outer surface**; and
>
> a first **bottom surface**, wherein the first **top surface**, the first **outer surface**, and the first **bottom surface** form a first **cylindrical lip** of the first electrically conductive element, and
>
> wherein the distal portion of the second electrically conductive element further comprises:
>
> a second **top surface**;
>
> a second **outer surface**; and
>
> a second **bottom surface**, wherein the second **top surface**, the second **outer surface**, and the second **bottom surface** form a second **cylindrical lip** of the second electrically conductive element.

In arguing that these "surface" terms are indefinite, the defendants disassociate these terms from the claim language and the specification. Absent any point of reference, and invoked in a vacuum, the terms "top surface," "bottom surface," and "outside surface" mean little. But the court construes the claim language in the context of the claims and the specification. See CardSoft, (assignment for the Benefit of Creditors), LLC v. VeriFone, Inc., 807 F.3d 1346, 1350 (Fed. Cir. 2015) ("The person of ordinary skill in the art is 'deemed

to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent,' including the specification and the prosecution history." (quoting Phillips, 415 F.3d at 1313)). A claim term is only indefinite if, read in that context, it fails to inform a person of skill in the art at the relevant time of the claim's scope. Eidos Display, 779 F.3d at 1364. In that context, these terms accomplish that aim.

For example, the term "top surface" is used in the claims to refer to a surface of the proximate portion of the electrically conductive elements, a surface of the distal portion of the same, and a surface of the electrically insulative element. E.g., '748 patent claims 28, 30, 35. In each instance, the surface described is that on the outer circumference of a cylinder or disk. See, e.g., id. figs. 1-4; id. at 4:29-40 (the "top surface" of the proximate portion of the electrically conductive element, which is shaped like a disk, is the surface that "runs perpendicular to the flat end surface" and the "internal surface" thereof), 5:8-14 ("Progression from the proximate portion of the first end cap to the distal portion of the first end cap is defined by a step where a top portion of the step is defined by the top surface of the proximate portion, . . . and a bottom portion of the step is

defined by the top surface of the distal portion."), 5:34-51 ("the top surface of the central member," which may be "tube-like in shape," "defines the outer surface of the central member").

Similarly, the claims invoke a "bottom surface" to refer to the surface that is on the inner circumference of the distal portion of the electrically conductive element and the electrically insulative element -- that is, the hollow center of both of those cylindrically-shaped elements.[8] E.g., '748 patent claims 28, 29, 31. The specifications support this interpretation. See, e.g., id. figs. 1-4; id. at 5:1-6 ("The bottom surface of the distal portion defines an exterior portion of a cylindrical gap located central to the distal portion of the first end cap"), 5:44-48 ("the bottom surface of the central member defines a hollow center").

Finally, the claims recite an "outer surface" of the distal portion of the electrically conductive element. E.g., '748 patent claim 28. The specification describes this "outer surface" as one "that joins the top surface and the bottom surface" of that portion of the electrically conductive element.

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[8] As noted supra, a cylinder in this context need not necessarily have a circular cross-section.

E.g., '748 patent at 5:15-17; see also id. figs. 2 and 4; id. at 5:24-26.

Defendants argue that these terms lack clarity because independent claim 22, from which claim 28 depends, places that "distal portion of the . . . electrically conductive element[s] . . . inside the electrically insulative element." That is, according to the defendants, because the surfaces of the distal portion of the electrically conductive element are inside the electrically insulative element, a person of ordinary skill in the art would not understand them to be "outside," "top," or "bottom" surfaces of the electrically conductive element. Taking these terms in a vacuum, divorced from that evidence, the court understands how defendants' counsel may be confused by this description of the "top surface" of the electrically insulative element as an "outer surface." But the patentee does not recite these terms in a vacuum. As discussed above, the intrinsic evidence consistently describes each "surface" with respect to and relative to the structure it, in part, circumscribes. In the context of the patent as a whole, see CardSoft, 807 F.3d at 1350, the court concludes that a person of ordinary skill in the art at the time of the invention would be able to ascertain the positions of the claimed surfaces with

reasonable certainty. Therefore, the court cannot find these terms indefinite.

At the same time, the plaintiff's constructions, drawn from dictionary definitions, do nothing to clarify the relative positions of these surfaces. Instead, they suffer from the malady against which the Federal Circuit Court of Appeals cautioned in Phillips, where "heavy reliance on the dictionary divorced from the intrinsic evidence risks transforming the meaning of the claim term to the artisan into the meaning of the term in the abstract, out of its particular context, which is the specification." 415 F.3d 1321. In the absence of a construction from the defendants, and unconvinced by the plaintiff's dictionary definitions, the court exercises its "independent obligation to determine the meaning of the claims, notwithstanding the views asserted by the adversary parties," Exxon Chem. Patents, Inc. v. Lubrizol Corp., 64 F.3d 1553, 1555 (Fed. Cir. 1995), draws on the intrinsic evidence, and construes the term "top surface" to mean "the surface of the outer circumference," the term "bottom surface" to mean "the surface of the inner circumference," and the term "outer surface" to mean "the surface that joins the top surface and the bottom surface."

2. "Single internal surface"

The parties also dispute the meaning of the term "single internal surface." It appears, for example, in claim 35 of the '748 patent, which recites:

> The sensor of claim 22, wherein a top surface of the distal portion of the first electrically conductive element and a top surface of the proximate portion of the first electrically conductive element are connected to each other by only a **single internal surface** that is substantially perpendicular to both the top surface of the distal portion of the first electrically conductive element and the top surface of the proximate portion of the first electrically conductive element, ...

SignalQuest proposes that a "single internal surface" is "one interior surface." Defendants propose, instead, that it means the "[p]ortions of conductive element connected by only one surface and that surface is covered by insulative element."

Though the defendants propose a construction, they offer no argument on its behalf.[9] Rather, they draw on their indefiniteness arguments as to the other "surface" terms, arguing that use of the word "interior" with respect to this surface is inconsistent with use of the terms "outer surface" and "top surface" in, for example, claim 28 of the '748 patent.

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[9] Even if they had, defendants' proposed construction relates to the portions of the electrically conductive element connected to the "single internal surface," not that term itself.

As discussed supra Part II.E.1, the court has rejected the defendants' indefiniteness argument with respect to the terms "outer surface" and "top surface" because a person of ordinary skill in the art, reading the claims in light of the specification and the patent as a whole, would be able to ascertain the positions of these surfaces with reasonable certainty. The court rejects defendants' position here for the same reason.

As with the top, bottom, and outer surface terms, the specification describes the position of the "internal surface" relative to both the proximate portion and distal portion of the electrically conductive elements. The specification describes the "internal surface" in question as follows: "The proximate portion [of the end caps] also contains an internal surface located on a side of the proximate portion that is opposite to the flat end surface, where the top surface runs perpendicular to the internal surface." E.g., '748 patent at 4:35-39, 6:22-26. It further explains:

> Progression from the proximate portion of the [end caps] to the distal portion of the [end caps] is defined by a step where a top portion of the step is defined by the top surface of the proximate portion, a middle portion of the step is defined by the internal surface of the proximate portion, and a bottom portion of the step is defined by the top surface of the distal portion.

E.g., '748 patent at 5:8-14, 6:45-52. Also as with the other surface terms, plaintiff's proposed construction offers little more than synonyms for the words of this term -- "one" for "single" and "interior" for "internal." In the context of the SignalQuest patents, however, the surface in question is more specifically defined by the intrinsic evidence as "one surface on a side of the proximate portion of the electrically conductive element that is opposite to the flat end surface." The court adopts that construction.

3. "Flat end surface"

Claim 24 recites "[t]he sensor of claim 22, wherein the first electrically conductive element further comprises a **flat end surface** located on a side opposite the distal portion of the first electrically conductive element . . . ." Relying primarily on dictionary definitions of "flat" and "end," SignalQuest proposes that the "flat end surface" of this claim must be "[a] boundary surface that is smooth, level, or even." At oral argument, the defendants agreed to this construction. The court, accordingly, adopts it.

4. "Cylindrical lip"

The parties initially requested that the court construe the term "cylindrical lip," which appears, for example, in claim 28

of the '748 patent. At oral argument, however, counsel for the defendants agreed that, should the court conclude that the "surface" terms lacked ambiguity, the "cylindrical lip" is the shape described by the top, bottom, and outer surfaces, as recited in claim 28 of the '748 patent, claim 26 of the '866 patent, and claim 31 of the '867 patent. Defendants' counsel also conceded that the cylindrical lip need not be "circular," and expressly withdrew that portion of their proposed construction. Plaintiff's counsel likewise agreed that the intrinsic evidence -- specifically, the claim language and the specification -- defines this term with sufficient clarity.

For the reasons discussed supra Part II.E.1, the court has concluded that the "surface" terms are not indefinite. In light of that determination, the defendants' concessions and plaintiff's agreement appear to the court to resolve any actual dispute between the parties as to the proper scope of the term "cylindrical lip." In the absence of such a dispute, the court need not, and accordingly does not, construe the claim term. Cf. O2 Micro Int'l, 521 F.3d at 1362-63 (Fed. Cir. 2008) (Markman requires district courts to resolve disputes between the parties as to claim terms' meaning or scope).

F. "Equal in dimension"

The parties also disagree over the meaning of the term "equal in dimension" in the context of the SignalQuest patents. This term appears in, for example, dependent claim 26 of the '748 patent, which recites "[t]he sensor of claim 22, wherein the first electrically conductive element and the second electrically conductive element are **equal in dimension**." Plaintiff proposes that this term means that the described elements must be "[l]ike or alike in measurable extent of some kind, such as length, breadth, depth, or height." Defendants contend that it means that "[a]ny two dimensions are the same."

As for the term "dimension," at oral argument, the parties agreed that, in this context, it refers to geometric dimensions, such as length, breadth, depth, height, etc. The specification supports this construction. It explains that, in the preferred embodiment, "dimensions of the second end cap are preferably the same as dimensions of the first end cap," so as to allow the distal portions of the end caps -- the electrically conductive elements -- "to fit within the hollow center of the central member," that is, the electrically insulative element. E.g., '748 patent at 5:44-48, 7:5-11. The suggestion that the two end caps having equal dimensions would allow a portion of both to fit within the opposite ends of the same hollow cylinder

suggests that the dimensions in question are measurable and of the geometric variety.

The term "equal" does not require a construction beyond its plain and ordinary meaning. SignalQuest invokes its dictionary definition ("like or alike") in an effort to avoid defining the term with itself. The defendants agreed, at oral argument, to SignalQuest's construction so long as "like or alike" means "equal." Invoking the symmetric property of equality[5] (as seems particularly appropriate here), the court concludes that the parties agree that "equal" means just that -- equal.

The parties' disagreement lies, then, in whether the claim requires the electrically conductive elements to have more than one equal dimension. Plaintiff suggests that the "any kind" of the dimensions must be equal. Defendants propose that "any two of the dimensions" must be the same. Finding no support for the latter proposition in the intrinsic evidence, and the defendants having offered none, the court declines to import this limitation into the construction of this term. See Thorner 669 F.3d at 1367 ("The patentee is free to choose a broad term and expect to obtain the full scope of its plain and ordinary meaning unless the patentee explicitly redefines the term or

[5] If a = b, then b = a. See William T. Parry & Edward A. Hacker, Aristotelian Logic 255 (1991).

disavows its full scope."). Accordingly, the court construes the term "equal in dimension" to mean "equal in any geometric dimension."

G. "Plastic"

The parties dispute the meaning of the term "plastic." It appears in, for example, claim 27 of the '748 patent, which claims "[t]he sensor of claim 22, wherein the electrically insulative element is fabricated from a material selected from the group consisting of **plastic** and glass." SignalQuest proposes that plastic, in this context, is a "substance or material easily shaped or molded," while defendants suggest it is "[a]ny moldable material."

Both parties base these constructions on dictionary definitions. Both zero in on the adjectival definition of "plastic," which connotes that "plastic" is "capable of being molded." See "plastic," Merriam-Webster at 890-91. Both ignore, however, the definitions of "plastic" in its noun form: a "synthetic material made from a wide range of organic polymers, such as polyethylene, PVC, nylon, etc., that can be moulded into shape while soft, and then set into a rigid or slightly elastic form." Oxford University Press Dictionary, http://www.oxforddictionaries.com (Jan. 22, 2016). See also "plastic," Merriam-Webster at 890-91 ("any of numerous organic

synthetic or processed materials that are mostly thermoplastic or thermosetting polymers of high molecular weight and that can be made into objects, films, or filaments.").

In construing claim terms, the court looks to the intrinsic evidence before turning to dictionary definitions and may adopt such definitions only if they comport with the intrinsic evidence. See Phillips, 415 F.3d at 1320-23. Here, the plain language of the claims, as well as the specifications, suggest that the patent uses the term "plastic" to indicate from what substance the element in question is made, not to describe the particular characteristics of that substance.

Starting with the claim language, claim 27 of the '748 patent recites an electrically insulative element "fabricated from a material selected from the group consisting of plastic or glass." A definition of "plastic" that encompassed "glass" would render "glass" superfluous in this claim. This would violate the canon of claim construction that prefers "[a] claim construction that gives meaning to all the terms of the claim . . . over one that does not do so." Merck & Co. v. Teva Pharm. USA, Inc., 395 F.3d 1364, 1372 (Fed. Cir. 2005). It appears to the court that both parties' proposed constructions, which broadly focus on the moldability of the substance, would encompass a wide variety of materials not commonly considered

"plastic," including glass. As SignalQuest's counsel acknowledged at oral argument, at a high enough temperature, glass, and even metal, can be molded. Injecting the term "easily" into the construction does not remedy this shortcoming.

The patents' specifications similarly discuss "plastic" parts in the context of other materials. For example, they suggest that the first and second end caps -- the electrically conductive elements -- "may be constructed from a composite of high conductivity and/or low reactivity metals, a conductive plastic, or any other conductive material." E.g., '748 patent at 4:22-26, 6:10-13. Similarly, the central member -- the electrically insulative element -- "may be made of plastic, glass, or any other nonconductive material" or of "a material having a high melting point that is above that used by commonly used soldering materials." E.g., id. at 5:61-67. "Plastic," in these contexts, connotes the substance that the element is made of, not the specific properties of how that substance is or was made.

Here, neither of the parties' proposed constructions find support in the intrinsic evidence. In such a circumstance, as discussed supra, it is incumbent on the court to independently determine the claims' meaning. Exxon Chem. Patents, 64 F.3d at 1555. The court concludes that, based on that evidence, it is

not the moldability of the substance that informs a person of skill in the art that the substance referred to in the claims is a plastic, but rather the composition of that substance. The court accordingly adopts the definition of the noun form of the word "plastic," as "a synthetic material made from a wide range of organic polymers, such as polyethylene, PVC, nylon, etc., that can be molded into shape while soft, and then set into a rigid or slightly elastic form."

III. Conclusion

For the reasons set forth above, the court adopts the following constructions of the disputed claim terms:

Term	Construction
Diameter	the distance through the center of something from one side to the other
First diameter and second diameter	the first diameter is distinct from the second diameter
Electrically conductive element	an element able to conduct electricity
Electrically insulative element	an element that prevents or reduces the transmission of electricity
Distal surface	a surface opposite in location to a proximate surface
Distal portion	a portion opposite in location to a proximate portion
Distal end	an end opposite in location to a proximate end
Proximate surface	a surface opposite in location to a distal surface
Proximate portion	a portion opposite in location to a distal portion

Proximate end	an end opposite in location to a distal end
Top surface	the surface of the outer circumference
Outer surface	the surface of the inner circumference
Bottom surface	the surface that joins the top surface and the bottom surface
Single internal surface	one surface on a side of the proximate portion of the electrically conductive element that is opposite to the flat end surface
Flat end surface	a boundary surface that is smooth, level, or even
Cylindrical lip	no construction
Equal in dimension	equal in any geometric dimension
Plastic	a synthetic material made from a wide range of organic polymers, such as polyethylene, PVC, nylon, etc., that can be molded into shape while soft, and then set into a rigid or slightly elastic form

SO ORDERED.

Joseph N. Laplante
United States District Judge

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