

United States District Court,
N.D. California.

MONSTER CABLE PRODUCTS, INC,
Plaintiff.

v.

The QUEST GROUP d/b/a/ Audioquest,
Defendant.

No. C 04-0005 MHP

March 18, 2005.

Ian N. Feinberg, Michael A. Molano, Mayer Brown LLP, Palo Alto, CA, Joshua Michael Masur, Fish & Richardson PC, Redwood City, CA, for Plaintiff.

Michael David Lisi, Christopher T. Holland, Krieg Keller Sloan Reilley & Roman LLP, San Francisco, CA, for Defendant.

Claim Construction Memorandum and Order for United States Patent No. 5,307,416

MARILYN HALL PATEL, District Judge.

On January 5, 2004, plaintiff Monster Cable, Inc. brought a patent infringement action against defendant The Quest Group, d/b/a/ AudioQuest ("Quest"). Plaintiff's complaint alleges infringement of United States Patent Number 5,307,416 ("416 Patent"), a patent directed to audio cable technology. The invention advances a method for applying voltage across a cable in order to reduce the noise in electrical signals transferred between electrical devices, particularly audio components. Defendants timely answered plaintiff's complaint. They counterclaim for declaratory judgment that the patent is invalid and unenforceable as to Quest or any other entity, and further assert that plaintiff had unclean hands with respect to the patent file history. Now before the court are the parties' memoranda regarding claim construction of disputed patent terms. The court has considered fully the parties' arguments and submissions, and for the reasons set forth below, the court enters the following memorandum and order.

BACKGROUND

The patent at issue in this infringement action relates to an audio cable technology patent developed by Demian Martin in 1991 and 1992. FN1 The ' 416 Patent, issued on April 26, 1994, describes a "bias circuit for cable interconnects." The patent discloses a circuit and method for improving the accuracy of electrical signals communicated between electrical devices. The invention is especially applicable to electrical equipment that reproduces audio signals, such as high fidelity stereo equipment. In order to improve sound quality, the patent is directed to reducing noise when an audio signal approaches and passes through zero.

FN1. Martin obtained the patent in 1992, while working as an audio engineer at Crosby Audio Works. Shortly after Martin moved to Monster Cable in 1996, the company purchased the patent from Crosby Audio Works.

The '416 Patent describes two methods or embodiments: a circuit apparatus embodiment (claim 1) and a biased cable apparatus embodiment (claims 2 through 5). The first method involves applying a bias voltage across the first and second conductors of a cable connecting two electrical devices and isolating these devices from the bias voltage. The second method applies a bias voltage with respect to ground to the conductive shield of a coaxial cable. The patent explains that the invention improves signal accuracy by creating an electrostatic effect at the electron level, or based on mechanical force exerted by the electrostatic bias.

In 1990, Martin joined Crosby Audio Works, the first assignee of the '416 Patent. Crosby manufactured and marketed the circuit apparatus embodiment of the invention during the early to mid-1990s. Neither Crosby nor Monster Cable, a subsequent owner of the patent, built the biased cable apparatus embodiment. In the present action, Monster Cable alleges that Quest has begun marketing biased cables which infringe on the biased cable apparatus of the '416 Patent, defined in claim 2 and dependent claims 3 to 5.

In relevant part, the '416 Patent makes the following claims (disputed claim terms are highlighted):

2. A biased cable apparatus for communicating a voltage varying electrical signal from an output of a first electrical signal to an input of a second electrical device on a **coaxial cable** having a **center conductor** and a **conductive shield**; said electrical signal being provided by a single line and an approximately constant **ground reference voltage**, the apparatus comprising: means for applying the electrical signal from the single line to the center electrode; ground reference means for maintaining the output of the first electrical device and the input to the second electrical device at approximately the same ground reference voltage; and **bias means for applying an approximately constant bias voltage to the conductive shield of the coaxial cable** with respect to the ground reference voltage said bias voltage being larger than any peak-to-peak voltage of the voltage varying electrical signal.

3. The biased cable apparatus of claim 2 wherein the ground reference means includes a ground reference line connected between the output of the first electrical device and the input of the second electrical device.

4. The biased cable apparatus of claim 2 wherein the bias means includes a voltage source coupled between the conductive shield and the ground reference line.

5. The biased cable apparatus of claim 2 wherein the bias means includes **means for supplying a bias voltage that is greater than the peak or peak voltage of the electrical signal**.

'416 Patent, col. 9, lines 27-29, col. 10, lines 1-29

The parties have jointly agreed to the construction of ten claim terms and four means plus function elements. They dispute the construction of four claim terms and two means-plus-function elements.

LEGAL STANDARD

I. Claim Construction

Under *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996), the court construes the scope and meaning of disputed patent claims as a matter of law. *Id.* at 389-90. The first step of this analysis requires the court to consider the words of the claims. *Teleflex, Inc. v. Ficosca N. Am.*, 299 F.3d 1313, 1324 (Fed.Cir.2002). According to the Federal Circuit, the court must "indulge a 'heavy presumption' that a claim term carries its ordinary and customary meaning." *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed.Cir.2002). To determine the ordinary meaning of a disputed term, the court may review a variety of sources, including the claims themselves, other intrinsic evidence including the written description and prosecution history, and dictionaries and treatises. *Teleflex*, 299 F.3d at 1325. The court must conduct this inquiry not from the perspective of a lay observer, but rather "from the standpoint of a person of ordinary skill in the relevant art." *Id.* (citing *Zelinski v. Brunswick Corp.*, 185 F.3d 1311, 1316 (Fed.Cir.1999)).

Among the sources of intrinsic evidence, the specification is "the single best guide to the meaning of a disputed term." *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed.Cir.1996). By expressly defining terms in the specification, an inventor may "choose[] to be his or her own lexicographer," thereby limiting the meaning of the disputed term to the definition provided in the specification. *Johnson Worldwide Assocs., Inc. v. Zebco Corp.*, 175 F.3d 985, 990 (Fed.Cir.1999). In addition, "[e]ven when guidance is not provided in explicit definitional format, 'the specification may define claim terms 'by implication' such that the meaning may be 'found in or ascertained by a reading of the patent documents.' " *Irdeto Access, Inc. v. Echostar Satellite Corp.*, 383 F.3d 1295, 1300 (Fed.Cir.2004) (quoting *Bell Atl. Network Servs., Trie v. Covad Communications Group, Inc.*, 262 F.3d 1258, 1268 (Fed.Cir.2001)). "The specification may also assist in resolving ambiguity where the ordinary and accustomed meaning of the words used in the claims lack sufficient clarity to permit the scope of the claim to be ascertained from the words alone." *Teleflex*, 299 F.3d at 1325. At the same time, the Federal Circuit has cautioned that the written description "should never trump the clear meaning of the claim terms." *Comark Communications, Inc. v. Harris Corp.*, 156 F.3d 1182, 1187 (Fed.Cir.1998) (citations omitted); *see also Tate Access Floors, Inc. v. Maxess Techs., Inc.*, 222 F.3d 958, 966 (Fed.Cir.2000) ("Although claims must be read in light of the specification of which they are part, ... it is improper to read limitations from the written description into a claim ...").

Prior art cited in the patent is another form of intrinsic evidence. *See Kumar v. Ovonic Battery Co., Inc.*, 351 F.3d 1364, 1368 (Fed.Cir.2003) (holding that "prior art cited in a patent or cited in the prosecution history of the patent constitutes intrinsic evidence"). Patents cited by the inventor can assist in construing claim terms, "because it may indicate not only the meaning of the term to persons skilled in the art, but also that the patentee intended to adopt that meaning." *Id.*

Likewise, the prosecution history may demonstrate that the patentee intended to deviate from a term's ordinary and accustomed meaning. *Teleflex*, 299 F.3d at 1326. "Arguments and amendments made during the prosecution of a patent application and other aspects of the prosecution history, as well as the specification and other claims, must be examined to determine the meaning of terms in the claims." *Southwall Techs., Inc. v. Cardinal IG Co.*, 54 F.3d 1570, 1576 (Fed.Cir.), *cert. denied*, 516 U.S. 987, 116 S.Ct. 515, 133 L.Ed.2d 424 (1995). "In particular, 'the prosecution history (or file wrapper) limits the interpretation of claims so as to exclude any interpretation that may have been disclaimed or disavowed during prosecution in order to obtain claim allowance.' " *Teleflex*, 299 F.3d at 1326 (quoting *Standard Oil Co. v. American Cyanamid Co.*, 774 F.2d 448, 452 (Fed.Cir.1985)).

Dictionary definitions and other objective reference materials available at the time that the patent was issued may also provide evidence of the ordinary meaning of a claim. *Texas Digital Sys., Inc. v. Telegenix, Inc.*, 308 F.3d 1193, 1202 (Fed.Cir.2002). Such reference materials "are objective resources that serve as reliable sources of information on the established meanings that would have been attributed to the terms of the claims by those of skill in the art." *Id.* at 1202-03. Thus, district courts "are free to consult such resources at any time in order to better understand the underlying technology and may also rely on dictionary definitions when construing claim terms, so long as the dictionary definition does not contradict any definition found in or ascertained by a reading of the patent documents." *Vitronics*, 90 F.3d at 1584, n. 6.

Federal Circuit decisions take a less favorable view of other forms of extrinsic evidence, such as expert testimony and prior art not cited in the specification or the prosecution history, noting that "claims should preferably be interpreted without recourse to extrinsic evidence, other than perhaps dictionaries or reference books, and that expert testimony should be received only for the purpose of educating the judge." *EMI Group N. Am., Inc. v. Intel Corp.*, 157 F.3d 887, 892 (Fed.Cir.1998), *cert. denied*, 526 U.S. 1112, 119 S.Ct. 1756, 143 L.Ed.2d 788 (1999). Although "extrinsic evidence in general, and expert testimony in particular, may be used ... to help the court come to a proper understanding of the claims[,] it may not be used to vary or contradict the claim language Indeed, where the patent documents are unambiguous, expert testimony regarding the meaning of a claim is entitled to no weight." *Vitronics*, 90 F.3d at 1584.

II. Means-Plus-Function Claims

Section 112 para. 6 of the Patent Act, 35 U.S.C. s. 112 para. 6, provides that an element in a claim "may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof." Claims expressed in this way "shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof." *Id.* By allowing for a patentee to recite "means-plus-function" claim elements, section 112 para. 6 permits the inventor to describe an element of his or her invention by the result accomplished or the function served rather than describing the item or element to be used. *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 28, 117 S.Ct. 1040, 137 L.Ed.2d 146 (1996). Although the claim limitation need not recite the structure, material, or acts that comprise the means for carrying out the claimed function, the applicant must describe in the patent specification some structure which performs that function. 35 U.S.C. s. 112 para. 6; *Odetics, Inc. v. Storage Tech. Corp.*, 185 F.3d 1259, 1266-67 (Fed.Cir.1999).

Where an element is expressed as a "means" to perform a particular function, a presumption arises that the claim element should be construed as a means-plus-function claim under section 112 para. 6. *Al- Site Corp. v. VSI Int'l, Inc.*, 174 F.3d 1308, 1318 (Fed.Cir.1999). Conversely, a claim term that does not use the words "means" or "step for" is presumptively not governed by section 112 para. 6. *CCS Fitness*, 288 F.3d at 1369. This presumption "is a strong one that is not readily overcome." *Lighting World, Inc. v. Birchwood Lighting, Inc.*, 382 F.3d 1354, 1358 (Fed.Cir.2004). However, even in the absence of express means-plus-function language, a claim may be construed to include a means-plus-function element if the proponent of the means-plus-function construction demonstrates that "the claim term fails to 'recite sufficiently definite structure for performing that function.'" *CCS Fitness*, 288 F.3d at 1369 (quoting *Watts v. XL Sys., Inc.*, 232 F.3d 877, 880 (Fed.Cir.2000)). In making this determination, the court must assess whether the "term, as a name for a structure, has a reasonably well understood meaning in the art." *Greenberg v. Ethicon Endo-Surgery, Inc.*, 91 F.3d 1580, 1583 (Fed.Cir.1996).

DISCUSSION

I. The '416 Patent: *Non Means Plus Functions Claims*

Apart from means-plus-function claims, the parties' Joint Claim Construction Statement identifies five terms of the '416 Patent that require construction by the court: (1) "coaxial cable," (2) "center conductor" of a "coaxial cable," (3) "conductive shield" of a "coaxial cable," (4) "ground reference voltage," (5) "applying an approximately constant bias voltage to the conductive shield of the coaxial cable." Each term is addressed separately below.

A. "Coaxial Cable"

The term "coaxial cable" is found in independent claim 2 of the '416 Patent, as well as in dependent claims 3 through 5. Claim 2 describes "[a] biased cable apparatus for communicating a voltage varying electrical signal from an output of a first electrical device to an input of a second electrical device on a coaxial cable having a center conductor and a conductive shield." '416 Patent, col. 9, lines 27-29; col. 10, lines 1-2.

Plaintiff contends that "coaxial cable," as the term is used in the '416 Patent, means an "electrical cable that has two or more conductors that share an axis." Quest proposes a construction of the term as a "transmission cable consisting of two concentric conductors—a 'center conductor' and an outer 'conductive shield'—with the space between them being filled with dielectric." The crux of the parties' disagreement thus turns on whether the apparatus includes "two" or "two or more" conductors, whether the conductors must be concentric, or simply "share an axis," and whether the added specification regarding the space between them is necessary.

1. Two, or two or more conductors

In construing claims, the court looks first at the language of the claim itself. *SmithKline Diagnostics, Inc. v. Helena Lab., Corp.*, 859 F.2d 878, 882 (Fed.Cir.1988). Claim 2 specifically references "a coaxial cable *having* a center conductor and *a* conductive shield." '416 Patent, col. 10: 1-2 (emphasis added). The claim goes on to describe the apparatus as "comprising" various means and elements, including "*the* center electrode" (agreed by the parties to mean "center conductor") and "*the* conductive shield." Monster Cable argues that the intermittent references to "a" center conductor and "a" conductive shield means that there can be one or more conductors, and that any use of "the" merely cross-references the element's antecedent basis as a synonym for "said."

Monster Cable offers the correct general rule for indefinite articles where they follow the open-ended transition word "comprising," namely that "the article 'a' receives a singular interpretation only in rare circumstances when the patentee evinces a clear intent to so limit the article." *KCJ Corp. v. Kinetics Concepts, Inc.*, 223 F.3d 1351, 1356 (Fed.Cir.2000). "[T]he claim limitation 'a,' without more, requires at least one," and "disclosure of a preferred or exemplary embodiment does not disclaim a plural element." *Id.* Applied to this patent, however, this argument astonishingly belies the fact that "having," rather than "comprising," is the transitional word preceding the disputed elements of a "coaxial cable." '416 Patent, col. 10: 1-2. The Federal Circuit has distinguished the two terms, holding that " 'having' does not convey the open-ended meaning as strongly as 'comprising,' " and holding that " 'having,' for instance, does not create a presumption that the body of the claim is open." *Crystal Semiconductor Corp. v. Tritech*, 246 F.3d 1336, 1348 (Fed.Cir.2001). Where the word "having" is used to transition to claim terms, the court should examine the claim in its full context to determine whether "having" limits the claim to its recited elements. *Id.* Monster Cable is not entitled to a presumption of "one or more" in assessing the claim context. *Id.*

Throughout the specifications, the patent names two conductors in a coaxial cable: a center conductor or

electrode and an outer conductor or conductive shield. Figure 9, which depicts the preferred embodiment of claims 2-5, depicts a coaxial cable with two conductors: one center conductor and one conductive shield. Mirroring the language of claims 2 through 5, the written description of the biased cable apparatus uses the definite article "the" in reference to both "the center conductor" and "the outer conductor," as well as the indefinite article "a." FN2 *Compare* ' 416 Patent, col. 7, lines 22, 26, 27, 29, 31 *with* ' 416 Patent, col. 2, lines 62-63. The patent does not include any references-directly or indirectly-to more than two conductors.

FN2. The parties have agreed that the "outer conductor" and the "conductive shield" are used interchangeably.

The '416 Patent's use of the definite article "the" after the term "comprising" and elsewhere in the patent specifications creates the inference that the patentee intentionally limited the element. *See* *Insituform Technologies, Inc. v. Cat Contracting, Inc.*, 99 F.3d 1098, 1105 (Fed.Cir.1996) (holding that repeated references to both "a cup" and "the cup" indicated that only one cup was involved). Though it promulgated a seemingly more strict standard in *KCJ*, the Federal Circuit expressly did not overrule the basis in *Insituform* for holding that the inventor intended to limit the claim to "one" where he used both "a" and "the." *See* *KCJ*, 223 F.3d at 1357. Rather, the court referred approvingly to *Insituform*'s determination that the claim was restricted to one cup, even though in that case, as here, the patent had referred to "a cup" and "the cup" without ever specifying the number of cups as "one."

Monster Cable's argument that the depiction of the coaxial cable (marked by a free-standing arrow) inclusively refers to the ground reference line as a third conductor is specious.FN3 The coaxial cable label in figure 9 cannot include the ground reference line, because that line does not share an axis with the center conductor and the conductive shield. If it does not share an axis, then it cannot be counted as a conductor under Monster Cable's proposed construction of "two or more conductors that share an axis." FN4 If its conductors share an axis, which they clearly must, the preferred embodiment of a coaxial cable in the ' 416 Patent necessarily excludes the ground reference line from the count of conductors.FN5

FN3. The arrow marking element 184 (defined as the "coaxial cable") cannot refer to the entirety of figure 9. Rather, arrow 184 refers to "a coaxial cable illustrated generally," which is specified as follows: "In addition to the center conductor 182, the coaxial cable 184 includes an outer conductor 186 and a dielectric 188." '416 Patent, col. 7, lines 23-28.

FN4. Monster Cable's own brief concedes this point by acknowledging the contradiction between their proposed definition of coaxial cable and an argument that it might include the ground reference line depicted in the patent specification. "Because coaxial cable 184 can include at least ground reference line 192, the specification discloses an embodiment with more than two conductors and where *one or more conductors might not share an axis*." Reply at 11, n. 4 (emphasis added).

FN5. At the claim construction hearing, Monster Cable argued offhandedly that the "dielectric" could be construed as a third conductor in the coaxial cable depicted in figure 9. They gave no evidence, however, that "dielectric" is a conductor, and in fact in his tutorial, their own expert described "dielectric" as a *property* which intensifies electrostatic fields and can degrade signal quality, not an independent conductor.

Prior art, which is also part of the intrinsic record of a patent for the purposes of claim construction, confirms a two-conductor reading of the term "coaxial cable." *See* Kumar, 351 F.3d at 1368 (holding that "prior art cited in a patent or cited in the prosecution history of the patent constitutes intrinsic evidence"). The prior art references cited in the '416 Patent distinguish between multiple-conductor cables and coaxial cables, and each "coaxial cable" they describe has two conductors. The '416 Patent cited U.S. Patent No. 4,538,023, an audio cable in which "a plurality of outer conductors" surround "at least one inner conductor." *See* U.S. Patent No. 4,538,023, Behun Decl., Exh. E, col. 4, lines 2-5. The '023 Patent does not refer to this cable as a coaxial cable, but rather calls it a "multi-conductor audio cable." *Id.*, col. 1, lines 11-14.

By contrast, two patents also cited as prior art describe so-called "coaxial cables" that have one center conductor and one conductive shield. *See* U.S. Patent No. 4,954,787, Masur Decl., Exh. K; U.S. Patent No. 4,622,638, Behun Decl., Exh. F. The first of these, the '787 Patent cited by Monster Cable, does not claim technology specifically involving a coaxial cable, however the embodiments described in the specifications employ a coaxial cable "compris[ing] an inner conductor [] and an outer conductor," which are also repeatedly referred to as "the inner conductor" and "the outer conductor." *See* U.S. Patent No. 4,954,787, Masur Decl., Exh. K, col. 5, lines 19-29, 49. The latter '638 Patent does not state the elements of a coaxial cable in its claims or specifications, however it depicts two coaxial cables embodied as a center conductor line running through a conductive shield. *See* U.S. Patent No. 4,622,638, Behun Decl., Exh. F, figures 1-2. While this second patent could not be limited to two conductors based on its preferred embodiment, the prior art record as a whole lends support to an interpretation of the term "coaxial" as specifically having two conductors.

On the basis of the language of the claims, the specifications, and the prior art, this court is satisfied that the claim for "coaxial cables" in the '416 Patent is limited to two conductors. Technical dictionaries provided by the parties provide little assistance in confirming this reading of the disputed term, because they are clearly weighted towards cable technology in the context of computer networking, television, and radio. *See* Texas Digital, 308 F.3d at 1202 (holding that technical dictionary definitions can provide important evidence of the ordinary meaning of a term to persons skilled in the art). However in general, these technical dictionary definitions are overwhelmingly consistent with a two-conductor understanding of coaxial cables. Vitronics, 90 F.3d at 1584, n. 6. The Illustrated Dictionary of Electronics, the McGraw-Hill Dictionary of Scientific and Technical Terms, the Dictionary of Electronics, and the New IEEE Standard Dictionary of Electrical and Electronics Terms all specify that coaxial cables have two conductors. *See* Behun Decl., Exhs. B, C, D; Villasenor Decl., Exh. B. The definition provided in the John Douglas-Young Illustrated Encyclopedic Dictionary of Electronics defines a "triaxial cable" to include three conductors, but the fact that this is defined as a species of "coaxial cable" given a distinct name only proves the point that "coaxial" ordinarily refers to two-conductor cables. Masur Decl., Exh. F.

Only one technical dictionary raised before this court, the Penguin Dictionary of Electronics, defines the term to include "two or more" conductors. Masur Decl., Exh. E. If this court were to use dictionaries as the principal mode of construction, this broad definition might prevail. However, given the Federal Circuit's relative clarity about the secondary status of dictionaries in relation to the language of the patent itself, this court errs in favor of the terms of the patent and the intent of the inventor as expressed therein. *See* Nystrom v. Trex Co., Inc., 374 F.3d 1105, 1112, n. 2 (Fed.Cir.2004) (holding that claim terms encompass all dictionary definitions not inconsistent with the intrinsic record). The term "coaxial cable" as used in the '416 Patent thus incorporates the overwhelming weight of dictionary evidence that is consistent with the claim terms and patent specifications limiting the term "coaxial cable" to encompass one center conductor and one

conductive shield.

Extrinsic evidence need not be considered in construing the number of conductors understood to constitute a "coaxial cable." Inventor and expert witness testimony are forms of extrinsic evidence admissible only where the intrinsic evidence proves insufficient to enable the court to construe disputed claims. *Vitronics*, 90 F.3d at 1584. The ordinary meaning of "coaxial cable" refers to a species of cable with two conductors.

2. "*Concentric*" or "*Share an Axis*"

The '416 Patent does not specify whether the two conductors within the coaxial cable described must be concentric, nor does it specify any form of symmetry in their arrangement. However, the patent makes three references to the relative locations of the two conductors: (1) one conductor is referred to alternately as the "inner conductor" and the "center conductor," (2) the second conductor is alternately referred to as the "conductive shield" and the "outer conductor," and (3) figure 9 depicts the coaxial cable to have the center conductor running concentrically through the conductive shield. '416 Patent, figure 9. The dispute between the parties turns on whether these three aspects of the specifications amount to a requirement of concentricity.

The parties do not contest that the inner and outer conductors of a "coaxial" cable "share an axis," and indeed, that this is the ordinary meaning of that term. *See, e.g., McGraw-Hill Dictionary of Scientific and Technical Terms*, Masur Decl., Exh. D (defining "coaxial" as "sharing the same axes"). A coincident axis is consistent with the preferred embodiment of claim 2, which depicts a conductor running through the center of the conductive shield. *See* '416 Patent, figure 9; col. 7, lines 19-33.

By definition, concentric conductors would share an axis; however, as *Monster Cable* articulates, the terms "concentric" and "share an axis" are not synonyms. The '416 Patent never refers to the conductors of the coaxial cable as concentric. It does, however, specifically refer to the inner conductor as the "center conductor" or "center electrode." *See, e.g.,* '416 Patent, col. 10, lines 1, 6. Standing alone, this parlance is inconclusive: the ordinary meaning of the adjective "center" can be read broadly to suggest that the inner conductor is merely in the "middle part" of the outer conductor, or narrowly to mean that the inner conductor is "equidistant" at all points from the outer conductor. *See Webster's Third New International Dictionary* 362 (1986) (defining "center" as either "[a] point equidistant from all points on a circumference" or "middle part in contrast to sides, boundaries, outskirts, circumference, or peripheral features"). The depiction in figure 9 of the center conductor as concentric with the conductive shield would support this latter construction, however, this court is obliged to grant the broadest construction of a term which is consistent with the written description. *Nystrom*, 374 F.3d at 1111, n. 1 (noting that "[i]f everything in the specification were required to be read into the claims, or if structural claims were to be limited to devices operated precisely as a specification-described embodiment is operated, there would be no need for claims").

Patent '787, part of the prior history and thus the intrinsic record of Patent '416, provides strong support for a broader reading of the term "coaxial." Its preferred embodiment depicts and describes a "coaxial cable" that includes an "outer conductor" around an "inner" or "center conductor." *See* U.S. Patent 4,954,787, figure 3; col. 5, lines 19-28. The outer conductor of the coaxial cable depicted in the diagram is helically wrapped rather than forming a cylindrical tube around the inner conductor. Such a spiral conductor is not a circle, cylinder, or sphere. *See McGraw-Hill Dictionary*, Masur Decl., Exh. D, at 406 (defining "concentric" as "pertaining to the relationship between two different-sized circular, cylindrical, or spherical shapes when the smaller one is exactly centered within the larger one"). In essence, it is not concentric with the inner

conductor, because in cross section, a spiral is a point in space rather than a circle.FN6 The helical shape does not mean that the outer and inner conductor are not symmetrical. A helical outer conductor sharing an axis with an inner conductor would render the two shapes radially symmetrical.

FN6. Quest argues in its opposition brief that a "helical conductor as a whole is still concentric with the inner conductor." Opp'n at 32. Yet as discussed, because a helix is not a cylinder, a helical conductor surrounding a center conductor would not fall within the ordinary definition of concentric. Quest has provided no intrinsic or dictionary-based evidence that a helical conductor should be read "as a whole" to be a cylinder, nor that the ordinary meaning of concentricity should include the concept of a helix.

On the basis of the intrinsic record, this court agrees with Monster Cable that adding the requirement of concentricity to the two-conductor cable system would impermissibly limit the claim language. Though most of the technical dictionaries submitted to this court describe coaxial cables as having concentric conductors,FN7 the court must "giv[e] a claim term the full range of its ordinary and customary meaning, consistent with the written description and prosecution history." *See Nystrom v. Trex Co., Inc.*, 374 F.3d 1105, 1113 (Fed.Cir.2004). This court reads dictionary definitions that require concentricity to be more restrictive than the patent terms, perhaps because of their orientation towards other forms of cable technology.

FN7. The Penguin Dictionary of Electronics defines coaxial cable without the specification of concentricity, defining the terms as "[a] cable formed from two or more coaxial cylindrical conductors insulated from each other ..." Masur Decl., Exh. E at 74. Other definitions provided by the parties, however, specify concentricity. Definitions of coaxial cable included in the New IEEE Standard Dictionary of Electrical and Electronics Terms refer to the two-conductor system of the cable as "concentric" or as a "cable with two conductors where one completely surrounds the other ." *See Villasenor Decl., Exh. B*, at 201. The Illustrated Dictionary of Electronics also specifies the concentricity of the two conductors, defining coaxial cables as consisting of "two concentric conductors." Behun Decl., Exh. C, at 144. The Dictionary of Electronics defines a coaxial cable to have a "transmission line formed between two conductors, one a wire and the other a cylinder concentric with the wire." Behun Decl., Exh. D, at 53. The McGraw-Hill Dictionary of Scientific and Technical Terms defines a coaxial cable as "a transmission line in which one conductor is centered inside and insulated from [the second conductor]," and its lists of synonyms for the term coaxial cable includes "concentric cable; concentric line; concentric transmission line." *See Villasenor Decl., Exh. D*, at 373.

A construction of the term "coaxial cable" that requires radial symmetry along a shared axis would encompass all cables with concentric conductors without grafting the limitation of concentricity onto the patent where such a limitation was not evidenced in the intrinsic record. A recent case from the Federal Circuit is instructive. The court construed the term "card" in a patent describing an "electronic multi-function card" that would synthesize multiple "credit cards, or the like," and that had the advantage of "the outer dimensions of a usual credit or check card." *See E-Pass Technologies, Inc. v. 3-Com Corp.*, 343 F.3d 1364, 1369 (Fed.Cir.2003). The circuit held the references in the specifications to the "standardized dimensions" of the "card" were not "lexicographic," because the statements about the size of the card "suggest[ed] a preferred aspect of the invention subject to variability rather than a precise definition." *Id.* Vacating the grant of summary judgment of noninfringement, the circuit remanded to the district court for further proceedings on infringement by the accused device, a palm pilot with 58 times the volume and 25

times the thickness of a credit card. *Id.* at 1366, 1371. In the case of the '416 Patent, the inventor did not even arguably add limitations regarding concentricity onto the meaning of coaxial cable. The meaning of the term thus must be protected in its broadest form to include conductors that share an axis, whether or not they are concentric.

Therefore, this court determines that the two conductors of a coaxial cable must share an axis, but they need not be concentric.

3. "The Space Between Them Being Filled with a Dielectric"

The claim language of the '416 Patent does not specify what fills in the space between the two conductors of a coaxial cable. In the specifications of the preferred embodiment, however, the patent describes that "[i]n addition to the center conductor 182, the coaxial cable 184 includes an outer conductor 186 and a dielectric 188." '416 Patent, col. 7, lines 26-28. Quest argues that this specification should be imported into the construction of the term coaxial.

This court has no reason to believe that adding the specification "the space between [the conductors] being filled with a dielectric" would limit the term coaxial, but nor is there any reason to believe that such specification is necessary to the construction of the term. While the inventor articulated that a dielectric would lie between the inner and outer conductors in his preferred embodiment of the bias cable apparatus, there is no evidence that he was limiting the term "coaxial" to carry that specification. Only one technical dictionary definition provided by the parties specifically describes the space between the two conductors. *See* The Dictionary of Electronics, Behun Decl., Exh. D, at 53; Masur Decl., Exh. H at 53 (defining a coaxial cable as two conductors, "the space between them being filled with a dielectric"). Other dictionary definitions of "coaxial cable" are silent on the issue of the space between the conductive shield and the inner conductor, suggesting that such a fact is unnecessary for an ordinary understanding of that term. *See* Masur Decl., Exhs. D, E, I; Behun Decl., Exh. C., at 144. On the basis that the claim terms themselves do not carry a limitation regarding the dielectric, and the lack of alternate indications that the ordinary meaning of term would include this limitation, the court finds that this information is unnecessary to the term's construction.

Thus, for the reasons stated above, the court construes "coaxial cable" as a **"cable with two conductors that share an axis."**

B. The "Center Conductor" of a "Coaxial Cable"

The biased cable apparatus described in Claim 2, and incorporated in claims 3 through 5, describes a "coaxial cable having a center conductor and a conductive shield." Monster Cable captures the meaning of the reference to the "center conductor" as merely "a material which readily transfers voltage, that is surrounded by a 'conductive shield.'" Quest seeks the predictably more restricted construction of "a conductive material that runs through the middle of the 'coaxial cable,' is concentric with the outer 'conductive shield' of the 'coaxial cable' and carries the voltage varying 'electrical signal.'" The parties thus dispute whether the center conductor must be concentric with, or merely enclosed by, a conductive shield, and whether the center conductor must (or merely may) carry a voltage varying electrical signal.

1. Concentricity of the Center Conductor and Conductive Shield

As discussed in the analysis of "coaxial cable" above, the "center conductor" need not be concentric with the outer conductor. "Center" can be read broadly as in the "middle part" rather than representing a point

equidistant from all points on the conductive shield. *See Webster's Third New International Dictionary* 362 (1986) (defining "center" as either "[a] point equidistant from all points on a circumference" or "middle part in contrast to sides, boundaries, outskirts, circumference, or peripheral features"). Other than the reference to this conductor as the "center conductor" and the preferred embodiment of the bias cable apparatus depicted in figure 9, the patent contains nothing that would limit the meaning of "center" to the more narrow definition requiring equidistance. The fact that the inventor chose the term "center conductor" rather than "inner conductor" in some instances does not make the inventor "his or her own lexicographer" of the term "center," as there is no indication that the patentee disclaimed a broader meaning of the word. *See Texas Digital*, 308 F.3d at 1204 (to interpret terms as inconsistent with their ordinary meaning, the patentee must disavow or disclaim a broader scope of coverage by using words of "manifest exclusion or restriction").

As a matter of law, Monster Cable is entitled to the broader meaning of "center." *See NTP, Inc. v. Research in Motion, Ltd.*, 392 F.3d 1336, 1346 (Fed.Cir.2004) (holding that "[i]n the absence of an express intent to impart a novel meaning to the claim terms, the words take on the full breadth of the ordinary and customary meanings attributed to them by those of ordinary skill in the art"); *Linear Technology Corp. v. Impala Linear Corp.*, 379 F.3d 1311, 1324 (Fed.Cir.2004) (holding that where "simultaneously" can mean both "occurring" and "existing" at the same time, the term must be construed to encompass both definitions); *Brookhill-Wilk 1, LLC v. Intuitive Surgical Inc.*, 326 F.3d 1215, 1222-23 (Fed.Cir.2003) (holding that the term "remote location" could refer not only to locations far apart and distant from one another, but to locations "separate by intervals greater than usual," including two locations within a single room).

"Center conductor" is thus construed on the basis of the clarity of the intrinsic record and the ordinary meaning alone. To capture the concept of the non-equidistant center (i.e., "the middle part in contrast to sides"), this court construes the "center conductor" to be "enclosed by" the conductive shield.FN8

FN8. Plaintiff's proffered construction of a center conductor "surrounded by" an outer conductor would confuse rather than illuminate coaxial cables where a helical conductor is involved, such as in the '787 Patent.

2. Voltage Varying Electrical Signal

The claim terms expressly state that the voltage communicated along the center conductor is a "voltage varying electrical signal." '416 Patent, col. 9, lines 27-28. Based on a reading of the term "coaxial cable" as including at least two conductors, Monster Cable argues that there can be additional center conductors which do not carry the electrical signal. This reading of the patent is foreclosed by the court's construction of coaxial cable, described above, as limited to two conductors. There can be no question that the voltage communicated across the center conductor is a "voltage-varying electrical signal," as this reflects the specific invention claimed by the patentee. *Id.* Though the patent specifications refer repeatedly to "digital electrical signals" and "digital signals," claims 2 through 5 refer to a "voltage varying electrical signal" as the antecedent for "said electrical signal." *See* '416 Patent, col. 9, line 28; col. 10, line 2. *See also* '416 Patent, col. 2, lines 60, 63-4, 66-7; col. 3, line 38. In describing the specifications in figure 9, the patent states that the digital signal "has a voltage that changes with respect to an approximately constant ground reference voltage," i.e., a signal that is "voltage varying." *See* '416 Patent, col. 7, lines 24-6. In addition, the bias means described in claim 2 and incorporated in claims 3 to 5 refers to "bias voltage being larger than any peak-to-peak voltage of the voltage varying electrical signal." *Id.*, col. 10, lines 15-17.

This reading of the patent is supported by the prosecution history, in which the inventor amended the preamble of what became claim 2. *See* Teleflex, 299 F.3d at 1326 (holding that the prosecution history can influence claim interpretation). In response to Office Action by the United States Patent and Trademark Office rejecting all of the inventor's claims, the patentee amended the claim for the biased cable apparatus to add the language "voltage varying." Req. for Judicial Notice at MON 7. "The prosecution history gives insight into what the applicant originally claimed as the invention, and often what the applicant gave up in order to meet the Examiner's objections." *Elkay Mfg. Co. v. Ebco Mfg. Co.*, 192, 978 F.3d 973 (Fed.Cir.1999) (quoting *Lemelson v. General Mills, Inc.*, 968 F.2d 1202, 1206 (Fed.Cir.1992)). By amending his claim to add "voltage varying" in accordance with the Examiner's instructions, the inventor of the '416 Patent gave up his right to claim that his apparatus used any form of "voltage."

Thus, for the reasons stated above, the court construes "center conductor" as **"a conductive material which is enclosed by the conductive shield of a coaxial cable and which carries the voltage varying electrical signal."**

C. The "Conductive Shield" of a "Coaxial Cable"

The meaning of "conductive shield" is the final dimension of the parties' dispute over the meaning of a "coaxial cable having a center conductor and a conductive shield." Plaintiff proposes that "conductive shield" simply means "an enclosing conductor that reduces interference." Quest describes the shield as "an outer conductive tube that is concentric with the 'center conductor' and reduces the effect of external electrical interference on the voltage varying electrical signal transmitted on the 'center conductor.'" FN9 The parties thus dispute whether the conductive shield must be a concentric conductive tube or can merely be an enclosing or outer conductor.

FN9. In their responsive brief, Quest offered the compromise construction of "reduces the effect of ...," a modification of their earlier construction that the conductive shield "minimizes the effect of ..." and Monster Cable has agreed to this clause.

The claim language does not describe the conductive shield as a tube. Rather, it only requires that the conductive shield is outside and surrounding the center conductor. The ordinary meaning of the relational terms "inner" and "outer" used in the claims, combined with this court's claim construction that conductors must share an axis, makes it clear that the center conductor passes through the conductive shield. However, the patent or the intrinsic evidence thereto does not include any further specification about the shape of the conductive shield. Nor does the ordinary meaning of the word "shield" in the context of audio electrical engineering specify that the outer conductor must be a tube or that it must be concentric with the inner conductor. *See, e.g.*, The Audio Dictionary, Masur Decl., Exh. J (defining "shield" as "an enclosure which protects its contents against the influence of magnetic fields or electrostatic fields or both"). The outer conductor thus need not be shaped as a tube.

Adding a further limitation onto the relative location of the inner conductor or the shape of the conductive shield based on the preferred embodiment or other assumptions about the standard shape of a conductive shield would attach unwarranted limitations into the patent claims. *See* E-Pass Technologies, 343 F.3d at 1364 (holding that where "preferred aspects" of an invention are subject to variability, references to them should not be understood as limitations on the ordinary meaning of claim terms). As discussed, the lack of a concentricity limitation on the coaxial cable element, particularly in light of the presence of the helical shape

of the outer conductor in the '787 Patent's coaxial cable, demonstrates that the conductive shield need not be concentric with the inner conductor.

Thus, for the reasons stated above, the court construes the conductive shield as an **"outer conductor that reduces the effect of external electrical interference on the voltage varying electrical signal transmitted on the center conductor."**

D. "Ground Reference Voltage"

Monster Cable has proposed a compromise construction of "ground reference voltage" which Quest has accepted. Adopting this construction, the court construes "ground reference voltage" as **"the approximately zero voltage level or potential against which the 'electrical signal' and 'bias voltage' are established and measured."**

E. "Applying an Approximately Constant Bias Voltage to the Conductive Shield of the Coaxial Cable"

Once the terms "bias voltage," "conductive shield" and "coaxial cable" have been construed, Monster Cable argues that the words remaining in the phrase "applying an approximately constant bias voltage to the conductive shield of the coaxial cable" are plain English that do not require further construction. Quest argues that this court should construe the term "applying" as "placing in direct contact." If construction is deemed necessary, Monster Cable seeks a construction of "applying" as "conducting the voltage or signal to the relevant conductors" or "bringing into nearness or contact with, or conducting them to, the relevant conductors."

Indeed, as Monster Cable points out, the term appears in the constructions of other claims and means-plus-functions agreed to by the parties. *See* Joint Claim Const. Statement at 1-2 (agreeing to constructions of the term "single line" and the means-plus-function element of "means for applying the electrical signal"). The parties do not dispute that the essence of the term is that voltage is passed to the conductive shield. The preferred embodiment of the patent demonstrates bias voltage connected to the conductive shield via an intermediate conductor. *See* '416 Patent, figure 9. Quest does not contest that "applying" voltage to the conductive shield described in the '416 Patent would typically involve one or more intermediate conductors. *See* Villasenor Decl., para. 46 ("While it is true that an intermediate conductor would typically carry that bias voltage from the voltage source [to] the conductive shield ... that intermediate conductor nonetheless places the shield in direct contact with the bias voltage.") "Directness," central to Quest's definition, is therefore not a valid measure of the voltage conduction in this technology. Both parties agree that the function may be accomplished through an intermediate conductor, which in ordinary terms would constitute indirect contact.

Monster argues that if claim construction should be necessary, the proper barometer of contact should be "nearness" rather than "directness." However, there is no reason that distance-the vector of "nearness"-is relevant to the connection between the voltage and the conductive shield. Rather, the relevant concept is that voltage is "conducted" to the outer conductive shield. Both parties' proposed constructions are thus unsatisfying, and the court finds that "applying" does not require further construction. It will be clear to a jury that "applying" simply means that voltage is conducted to the conductive shield.

This court thus declines to further construe the phrase "applying an approximately constant bias voltage to the conductive shield of the coaxial cable."

II. Means-Plus Function Claims

The court's obligation to construe disputed claim terms extends to terms expressed as a "means or set for performing a specified function without the recital of structure, material, or acts in support thereof." 35 U.S.C. s. 112 para. 6. Where a claim term is expressed in this "means-plus-function" format, section 112 para. 6 of the Patent Act, 35 U.S.C. s. 112 para. 6, provides that "such a claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof." *Id.* Accordingly, section 112 para. 6 permits the inventor to describe an element of his or her invention by the result accomplished or the function served rather than describing the item or element to be used. *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 28, 117 S.Ct. 1040, 137 L.Ed.2d 146(1996).

In this district, Patent Local Rule 4 requires that the parties identify any claim element that either party contends to be governed by section 112 para. 6. Patent L.R. 4.2(a). Upon a finding that section 112 para. 6 applies, the court must construe the disputed term as a matter of law. *Cardiac Pacemakers, Inc. v. St. Jude Med., Inc.*, 296 F.3d 1106, 1113 (Fed.Cir.2002). Construction of a means-plus-function claim term is a two-step process. *Med. Instrumentation & Diagnostics Corp. v. Elektra AB ("MIDCO")*, 344 F.3d 1205, 1210 (Fed.Cir.2003), *cert. denied*, 541 U.S. 959, 124 S.Ct. 1715, 158 L.Ed.2d 400 (2004). The court must first identify the claimed function recited by the disputed means-plus-function element. *Id.* In the second step, the court looks to the specification and identifies the structure that corresponds to that function. *Id.* A structural element "corresponds" to the claimed function only if that element is necessary to perform the function recited in the claim and is clearly linked to that function by the disclosure in the specification. *Asyst Techs., Inc. v. Empak, Inc.*, 268 F.3d 1364, 1370 (Fed.Cir.2001); *see also* *Micro Chem., Inc. v. Great Plains Chem. Co.*, 194 F.3d 1250, 1258 (Fed.Cir.1999). This inquiry "necessitates consideration of that disclosure from the viewpoint of one skilled in the art." *Budde v. Harley-Davidson, Inc.*, 250 F.3d 1369, 1376 (Fed.Cir.2001).

In the present action, two means-plus-function claim elements are contested. The first appears in claim 2, which describes a "bias means for applying an approximately constant bias voltage to the conductive shield of the coaxial cable with respect to the ground reference voltage said bias voltage being larger than any peak-to-peak voltage of the voltage varying electrical signal." '416 Patent, col. 10, lines 12-17. The second means-plus-function term appears in dependent claim 5, which describes that the aforementioned "bias means includes means for supplying a bias voltage that is greater than the peak voltage of the electrical signal." This latter phrase, "means for supplying ..." is the second contested means-plus-function. *See id.*, col. 10, lines 26-28. Because of the interdependent nature of the two means-plus-function terms, the court will adopt the parties' decision to evaluate the two terms' functions and corresponding structures together.

A. The function of the "bias means" and "means for applying a bias voltage"

Monster Cable and Quest have agreed to the following claimed function of a "bias means": "applying an approximately constant 'bias voltage' to the 'conductive shield' of the 'coaxial cable,' with respect to the 'ground reference voltage' said 'bias voltage' being larger than any 'peak-to-peak voltage' of the 'voltage varying electrical signal.'" They have also agreed that the claimed function of the "means for supplying a bias voltage" in claim 5 is "supplying a bias voltage that is greater than the peak voltage of the electrical signal."

This resolves the first step in means plus function analysis. *See* *Med. Instrumentation*, 344 F.3d at 1210.

B. Structures Corresponding to Means-Plus-Functions

As discussed, the reference in claim 5 to a "means for supplying a bias voltage ..." is "include[d]" in the "bias means" described in claim 2. The structures corresponding to the agreed functions are therefore linked. The parties agree that in figure 9 of the '416 Patent, the voltage source, the conductors connecting the voltage source to the conductive shield, and the ground reference line are structures "clearly linked or associated" with both means-plus-functions. Monster Cable claims that in addition to these structures, the voltage sources and connecting devices in figures 2, 3, and 5 FN10 can also perform the two means-plus-functions of applying or supplying a bias voltage that is greater than the "peak voltage" or "peak-to-peak voltage" of the electrical signal. Quest argues that these structures do not connect voltage to a conductive shield, and therefore do not correspond to either means-plus-function.

FN10. Monster Cable inexplicably oscillates in its argument of structures corresponding to the means-plus-function elements. In its joint claim construction and prehearing statement and in oral arguments at the claim construction hearing, Monster Cable listed structures in figures 2, 3, 5, 7, 8, and 10 as corresponding to the contested means-plus-function elements. In their opening brief and reply, however, they only discuss and argue for inclusion of structures associated with figures 2, 3, and 5. Because it makes no difference to the holding herein, and because Monster Cable implicitly conceded the point in their papers before this court, the court discusses their claimed structures in terms of figures 2, 3, and 5.

Figures 2, 3, and 5 indicate structures that apply or supply a bias voltage of the specified nature, i.e., greater than the "peak voltage" or "peak to peak voltage." Monster Cable has effectively proposed that this court's analysis cease at this point. However, structures that supply such voltage would not necessarily perform the complete function agreed to by the parties. Monster Cable's proposed construction of these means-plus-function claim elements would effectively eviscerate an important aspect of claim 2's express and agreed function. Claim 2 refers to the application of the specified voltage "to the conductive shield of the coaxial cable." *Id.*, col. 10, lines 12-13. This phrase effectively limits the application of voltage to a certain destination, namely a coaxial cable's conductive shield. Although claim 5 does not expressly repeat this limitation, it is subject to this same specification for two reasons. First of all, claim 5 is dependent on claim 2, incorporating by reference the "bias cable apparatus" of claims 2 and 3. Secondly, the express statement in claim 5 that the "bias means" described in claim 2 "includes" the "means for supplying a bias voltage ..." expressly imports the structures for receiving the voltage that are described in claim 2.

Once the complete function of the "bias means" and "means for supplying ..." are read fairly and completely, Monster Cable's proposed structures in figures 2, 3, and 5 cannot correspond to the means-plus-function claim elements. The structures depicted in figures 2, 3, and 5 do not involve conductive shields of coaxial cables and thus cannot perform the agreed function of applying or supplying a bias voltage greater than the "peak-to-peak voltage" or "peak voltage" of the electrical signal "to *the conductive shield of the coaxial cable.*" *See id.*, col. 10, line 13 (emphasis added). *See also id.*, col. 4, lines 42-45; col. 5, lines 46-50; col. 6, lines 17-20. These embodiments clearly refer to the apparatus described in claim 1, which specifies an apparatus involving "a cable" rather than "a coaxial cable" as specified in claims 2 through 5.

Therefore, only the agreed structures depicted in figure 9-namely the voltage source, conductors connecting the voltage source to the conductive shield, and the ground reference line-are structures which perform the "bias means" and "means for supplying a bias voltage that is greater than the peak voltage of the electrical signal."

CONCLUSION

For the foregoing reasons, the court construes the disputed claims in the manner described above.

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Monster Cable Products, Inc. v. Quest Group

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