

# United States Court of Appeals for the Federal Circuit

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**BIOSIG INSTRUMENTS, INC.,**  
*Plaintiff-Appellant*

v.

**NAUTILUS, INC.,**  
*Defendant-Appellee*

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2012-1289

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Appeal from the United States District Court for the Southern District of New York in No. 10-CV-7722, Judge Alvin K. Hellerstein.

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Decided: April 27, 2015

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MARK DAVID HARRIS, Proskauer Rose LLP, New York, NY, argued for plaintiff-appellant. Also represented by PAUL MILCETIC, Villanova, PA; TODD KUPSTAS, Kessler Topaz Meltzer & Check, LLP, Radnor, PA; DANIEL C. MULVENY, Barnes & Thornburg LLP, Wilmington, DE; JOHN E. ROBERTS, Proskauer Rose LLP, Boston, MA.

JOHN D. VANDENBERG, Klarquist Sparkman, LLP, Portland, OR, argued for defendant-appellee. Also represented by JAMES E. GERINGER, PHILIP J. WARRICK, JEFFREY S. LOVE.

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Before NEWMAN, SCHALL, and WALLACH, *Circuit Judges*.  
WALLACH, *Circuit Judge*.

This case is before us on remand from the United States Supreme Court. Biosig Instruments, Inc. (“Biosig”) is the assignee of U.S. Patent No. 5,337,753 (“the ’753 patent”), directed to a heart rate monitor associated with an exercise apparatus and/or exercise procedures. Biosig brought a patent infringement action against Nautilus, Inc. (“Nautilus”) in district court alleging that Nautilus infringed claims 1 and 11 of the ’753 patent. After claim construction, Nautilus filed a motion for summary judgment seeking, in relevant portion, to have the ’753 patent held invalid for indefiniteness. The district court granted Nautilus’s motion, and Biosig appealed. This court found the claims at issue were not invalid for indefiniteness, and reversed and remanded for further proceedings. Nautilus petitioned for certiorari, and the Supreme Court vacated and remanded this court’s decision. On remand, we maintain our reversal of the district court’s determination that Biosig’s patent claims are indefinite.

#### BACKGROUND

The facts of this case were recited in detail in this court’s previous opinion and need not be repeated in full here. *Nautilus, Inc. v. Biosig Instruments, Inc. (Nautilus I)*, 715 F.3d 891, 898 (Fed. Cir. 2013) In summary, the ’753 patent is directed to a heart rate monitor that purports to improve upon the prior art by effectively eliminating “noise” signals during the process of detecting a user’s heart rate. ’753 patent col. 1 ll. 5–10. The ’753 patent discloses an apparatus preferably mounted on exercise equipment that measures heart rates by, inter alia, processing electrocardiograph (“ECG”) signals from

which electromyogram (“EMG”) signals are substantially removed. *Id.* col. 1. ll. 36–41. Claim 1 is representative and recites, in relevant part:

1. A heart rate monitor for use by a user in association with exercise apparatus and/or exercise procedures, comprising:

an elongate member;

electronic circuitry including a difference amplifier having a first input terminal of a first polarity and a second input terminal of a second polarity opposite to said first polarity;

said elongate member comprising a first half and a second half;

a first live electrode and a first common electrode mounted on said first half *in spaced relationship* with each other;

a second live electrode and a second common electrode mounted on said second half *in spaced relationship* with each other;

said first and second common electrodes being connected to each other and to a point of common potential . . . .

*Id.* col. 5 ll. 17–36 (emphases added).

Biosig sued Nautilus for infringement of the ’753 patent in August 2004. After several reexamination proceedings, Biosig reinstated a patent infringement action against Nautilus on October 8, 2010. On August 11, 2011, the district court conducted a *Markman* hearing, and on September 29, 2011, issued its order construing certain disputed claim terms. On November 10, 2011, Nautilus moved under Federal Rule of Civil Procedure 56 for summary judgment on two issues: infringement and invalidity for indefiniteness. On February 22, 2012, the district court granted Nautilus’s motion, holding the ’753

patent's "spaced relationship" term as recited in claim 1 was indefinite as a matter of law. The court did not decide the issue of infringement.

On appeal, this court reversed and remanded. Citing precedent, we stated that a claim is indefinite "only when it is 'not amenable to construction' or 'insolubly ambiguous.'" *Nautilus I*, 715 F.3d at 898 (quoting *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1347 (Fed. Cir. 2005)). Under that standard, we determined the '753 patent survived indefiniteness review. Considering the "intrinsic evidence," we found that it provided "certain inherent parameters of the claimed apparatus, which to a skilled artisan may be sufficient to understand the metes and bounds of 'spaced relationship.'" *Id.* at 899.

The Supreme Court granted certiorari, 134 S. Ct. 896 (2014), and, rejecting our "not amenable to construction or insolubly ambiguous" standard, vacated and remanded. *Nautilus, Inc. v. Biosig Instruments, Inc. (Nautilus II)*, 134 S. Ct. 2120 (2014). In its decision, the Court articulated the standard to be applied: "[W]e hold that a patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with *reasonable certainty* those skilled in the art about the scope of the invention." *Id.* at 2124 (emphasis added).

This court has jurisdiction pursuant to 28 U.S.C. § 1295(a)(1) (2012).

## DISCUSSION

### I. Standard of Review & Legal Framework

A patent must "conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as [the]

invention.” 35 U.S.C. § 112 ¶ 2 (2006).<sup>1</sup> A claim is invalid for indefiniteness if its language, when read in light of the specification and the prosecution history, “fail[s] to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus II*, 134 S. Ct. at 2124. We review the district court’s indefiniteness determination de novo. *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1370 (Fed. Cir. 2014).

A patent is presumed valid under 35 U.S.C. § 282 and, “consistent with that principle, a [fact finder is] instructed to evaluate . . . whether an invalidity defense has been proved by clear and convincing evidence.” *Microsoft Corp. v. i4i Ltd. P’ship*, 131 S. Ct. 2238, 2241 (2011).

“In the face of an allegation of indefiniteness, general principles of claim construction apply.” *Enzo Biochem, Inc. v. Applera Corp.*, 599 F.3d 1325, 1332 (Fed. Cir. 2010) (internal quotation marks and citation omitted). “In that regard, claim construction involves consideration of primarily the intrinsic evidence, *viz.*, the claim language, the specification, and the prosecution history.” *Id.* Though the ultimate construction of a claim term is a legal question reviewed de novo, underlying factual determinations made by the district court based on extrinsic evidence are reviewed for clear error. *Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 842 (2015). In contrast, “when the district court reviews only evidence intrinsic to the patent (the patent claims and specifications, along with the patent’s prosecution history), the judge’s determination will amount solely to a

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<sup>1</sup> Paragraph 2 of 35 U.S.C. § 112 was replaced with newly designated § 112(b) when § 4(c) of the Leahy–Smith America Invents Act (“AIA”), Pub. L. No. 112–29, took effect on September 16, 2012. Because the application resulting in the patent was filed before that date, we will refer to the pre-AIA version of § 112.

determination of law, and the Court of Appeals will review that construction de novo.” *Id.* at 841.

When a “word of degree” is used, the court must determine whether the patent provides “some standard for measuring that degree.” *Enzo Biochem*, 599 F.3d at 1332; *Seattle Box Co., Inc. v. Indus. Crating & Packing, Inc.*, 731 F.2d 818, 826 (Fed. Cir. 1984). Recently, this court explained: “[w]e do not understand the Supreme Court to have implied in [*Nautilus II*], and we do not hold today, that terms of degree are inherently indefinite. Claim language employing terms of degree has long been found definite where it provided enough certainty to one of skill in the art when read in the context of the invention.” *Interval Licensing*, 766 F.3d at 1370. Moreover, when a claim limitation is defined in “purely functional terms,” a determination of whether the limitation is sufficiently definite is “highly dependent on context (*e.g.*, the disclosure in the specification and the knowledge of a person of ordinary skill in the relevant art area).” *Halliburton Energy Servs., Inc. v. M-I LLC*, 514 F.3d 1244, 1255 (Fed. Cir. 2008).

Prior to the Supreme Court’s decision in this case, a claim was indefinite when it was “insolubly ambiguous” or “not amenable to construction.” *Datamize*, 417 F.3d at 1347 (internal quotations and citations omitted). In *Nautilus II*, the Supreme Court observed that § 112, ¶ 2 requires “a delicate balance.” 134 S. Ct. at 2128 (quoting *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 731 (2002)). On one hand, the Court noted, the definiteness requirement must take into account the inherent limitations of language. “Some modicum of uncertainty,” the Court recognized, is the “price of ensuring the appropriate incentives for innovation.” *Id.* (quoting *Festo Corp.*, 535 U.S. at 741). On the other hand, the Court explained, a patent must be precise enough to afford clear notice of what is claimed, thereby “appris[ing] the public of what is still open to them. Otherwise there

would be a zone of uncertainty which enterprise and experimentation may enter only at the risk of infringement claims.” *Id.* at 2129 (internal quotation marks and citations omitted). The Court further explained the policy rationale: “absent a meaningful definiteness check . . . patent applicants face powerful incentives to inject ambiguity into their claims.” *Id.*

Balancing these competing interests, the Supreme Court held that “[t]o determine the proper office of the definiteness command, . . . we read § 112, ¶ 2 to require that a patent’s claims, viewed in light of the specification and prosecution history, inform those skilled in the art about the scope of the invention with *reasonable certainty*.” *Id.* (emphasis added). “The standard adopted” by the Supreme Court “mandates clarity, while recognizing that absolute precision is unattainable.” *Id.* at 2129. It also accords with opinions of the Court stating that “the certainty which the law requires in patents is *not greater than is reasonable*, having regard to their subject-matter.” *Id.* (quoting *Minerals Separation, Ltd. v. Hyde*, 242 U.S. 261, 270 (1916) (emphasis added)).

## II. The Sole Issue Presented Here Is Indefiniteness

On remand from the Supreme Court, the sole issue presented to this court is whether the district court erred in holding the ’753 patent invalid for indefiniteness. In particular, the district court held that “spaced relationship” as recited in claim 1, and referring to the spacing between the common and live electrodes, was not distinctly pointed out and particularly claimed in the patent in violation of 35 U.S.C. § 112, ¶ 2.

Before this court, Nautilus and Biosig dispute whether the Supreme Court articulated a new, stricter standard or whether, in rejecting the phrases “insolubly ambiguous” and “amenable to construction,” the Court was primarily clarifying that a patent’s claims must

inform those skilled in the art with “reasonable certainty” of what is claimed.

Nautilus argues the Supreme Court’s mandate requires this court to find the term “spaced relationship” indefinite because “the original intrinsic evidence point[s] in two opposite directions, leaving the claims’ boundaries—and thus the potential avenues for follow-on innovation—fundamentally uncertain.” Nautilus’s Supp. Br. 14. According to Nautilus, “spaced relationship” could mean “a special spacing critical in some way to the recited result” or it could mean the opposite, that it is not limited or linked by the recited result. *Id.* at 14, 17.

Biosig counters that “reasonable certainty” is not a new standard; it is the degree of clarity in patent claiming that has governed for nearly one hundred years.” Biosig’s Supp. Br. 3. According to Biosig, “the Supreme Court did not indicate that [this court, in *Nautilus I*,] had been led astray by either of the disapproved phrases. Its main concern, rather, was that the use of those phrases by the Federal Circuit could send the wrong message to district courts and the patent bar.” *Id.* at 4 (citing *Nautilus II*, 134 S. Ct. at 2130 & n.8).

### III. Reasonable Certainty Under *Nautilus II* Is a Familiar Standard

As the Supreme Court emphasized in *Nautilus II*, § 112 “requires that a patent specification ‘conclude with one or more claims particularly pointing out and distinctly claiming the subject matter’” of the invention. 134 S. Ct. at 2124. The Court found too imprecise our “insolubly ambiguous” standard, and instead held that “a patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, *fail to inform, with reasonable certainty*, those skilled in the art about the scope of the invention.” *Id.* (emphasis added).



The Court has accordingly modified the standard by which lower courts examine allegedly ambiguous claims; we may now steer by the bright star of “reasonable certainty,” rather than the unreliable compass of “insoluble ambiguity.”

Reasonableness is the core of much of the common law, and “reasonable certainty” has been defined in broad spectra of the law. *See, e.g., Palsgraf v. Long Island R.R. Co.*, 162 N.E. 99 (N.Y. 1928) (explaining the “reasonable [person]” foreseeability standard in tort); *cf. Jay v. Sec’y of Dep’t of Health & Human Servs.*, 998 F.2d 979, 984 (Fed. Cir. 1993) (discussing whether a reasonable person could conclude a certain vaccine caused the child’s death). The Supreme Court has articulated a spectrum for interpretation of the phrase “reasonable certainty.”<sup>2</sup>

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<sup>2</sup> Prior to *Nautilus II*, the Court discussed “reasonable certainty” on numerous occasions. *See, e.g., Kelo v. City of New London*, 545 U.S. 469, 487–88 (2005) (where petitioners argued the Court should require “reasonable certainty” that expected public benefits in a takings case would actually accrue, the Court declined to impose that “heightened form of review”); *Allentown Mack Sales & Serv., Inc. v. Nat’l Labor Review Bd.*, 522 U.S. 359, 369 (1998) (express disavowals by more than half of an employee bargaining unit would establish reasonable certainty of union nonsupport); *Coffy v. Republic Steel Corp.*, 447 U.S. 191, 197–99 (1980) (explaining “there must be a reasonable certainty that the benefit would have accrued if the employee had not gone into the military service”); *Ala. Power Co. v. Davis*, 431 U.S. 581, 587–88, 591 (1977) (reasonable certainty requirement for accrual of benefits in veteran’s reemployment case satisfied where work history demonstrates veteran “would almost certainly have accumulated accredited service”); *Tilton v. Mo. Pac. R.R. Co.*, 376 U.S. 169, 180–81 (1964); *Boyce Motor Lines v. United States*, 342 U.S. 337, 340

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(1952) (notice of conduct required by criminal statute must be sufficiently definite to guide its application, however “[t]he requirement of reasonable certainty does not preclude the use of ordinary terms to express ideas which find *adequate interpretation* in common usage and understanding”) (emphasis added) (citation omitted); *United States v. Penn. Foundry & Mfg. Co.*, 337 U.S. 198, 207–08 (1949) (declining to accept the Court of Claims “rough estimate” as providing the reasonable certainty required for establishing damages); *United Carbon Co. v. Binney & Smith Co.*, 317 U.S. 228, 234 (1942) (“What on first impression [in a patent infringement action] appears to be reasonable certainty of dimension disappears when we learn that ‘approximately one-sixteenth of an inch in diameter’ includes a variation from approximately 1/4th to 1/100th of an inch. So read, the claims are but *inaccurate suggestions* of the functions of the product.”) (emphasis added); *Palmer v. Conn. Ry. & Lighting Co.*, 311 U.S. 544, 558, 561 (1941) (“Certainty in the fact of damage is essential. [Reasonable] [c]ertainty as to the amount goes no further than to require a basis for a reasoned conclusion.”); *Sheldon v. Metro-Goldwyn Pictures Corp.*, 309 U.S. 390, 404 (1940) (analogizing copyright damages to patent infringement, the Court found a reasonable certainty requirement satisfied not with “mathematical exactness,” but only a “reasonable approximation”); *Sproles v. Binford*, 286 U.S. 374, 393 (1932) (“The requirement of reasonable certainty does not preclude the use of ordinary terms to express ideas which find adequate interpretation in common usage and understanding.”); *Hamilton-Brown Shoe Co. v. Wolf Bros. & Co.*, 240 U.S. 251, 261–62 (1916) (analogizing trademark damages to patent damages and holding “[t]he difficulty lies in ascertaining what proportion of the profit is due to the trademark . . . and as this cannot be ascertained with any reasonable certainty, it is more consonant with reason and justice that the owner of the

Following the issuance of *Nautilus II*, this court applied the reasonable certainty standard in *DDR Holdings, LLC v. Hotels.com*, 773 F.3d 1245, 1260–61 (Fed. Cir. 2014). (after analogizing to facts from prior cases and applying a “reasonable certainty” standard, finding the term “look and feel” had an established meaning in the art as demonstrated by the trial record, thus informing those skilled in the art with reasonable certainty). In *Interval Licensing*, the “reasonable certainty” test was applied to determine whether one of the embodiments provided “a reasonably clear and exclusive definition,” with a focus on the “relationship” between the embodiments and the claim language, and whether the embodiments created “objective boundaries” for those skilled in the art. 766 F.3d at 1371. The court also stated:

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trademark should have the whole profit than that he should be deprived of any part of it by the fraudulent act of the defendant”); *Ont. Land Co. v. Yordy*, 212 U.S. 152, 157 (1909) (“The first requisite of an adequate description is that the land shall be identified with reasonable certainty; but the degree of certainty required is always qualified by the application of the rule that that is certain which can be made certain.”) (quoting Jones on Law of Real Property in Conveyancing § 323); *Hetzel v. Balt. & Ohio R.R. Co.*, 169 U.S. 26, 38 (1898) (“In many cases [proof which excludes the possibility of a doubt] cannot be given, and yet there might be a reasonable certainty, founded upon inferences legitimately and properly deducible from the evidence . . . .”); *United States v. Smith*, 18 U.S. 153, 160–62 (1820) (the crime of piracy is defined by the law of nations with reasonable certainty); cf. *Bell Atl. Corp. v. Twombly*, 550 U.S. 544, 578 n.5 (2007) (Stevens, J., dissenting); *Boyde v. California*, 494 U.S. 370, 393 n.2 (1990); *Thor Power Tool Co. v. Comm’r*, 439 U.S. 522, 543–44 (1979); *Pub. Util. Comm’n v. United States*, 355 U.S. 534, 552 (1958).

We do not understand the Supreme Court to have implied in *Nautilus II*, and we do not hold today, that terms of degree are inherently indefinite. . . . Although absolute or mathematical precision is not required, it is not enough as some of the language in our prior cases may have suggested to identify “*some standard* for measuring the scope of the phrase.” . . . The patents’ “unobtrusive manner” phrase is highly subjective, and, on its face, provides little guidance to one of skill in the art. . . . The patents contemplate a variety of stimuli that could impact different users in different ways. As we have explained, a term of degree fails to provide sufficient notice of its scope if it depends on the unpredictable vagaries of any one person’s opinion.

*Id.* at 1371–72 (citations omitted); *see also Augme Techs. v. Yahoo!, Inc.*, 755 F.3d 1326, 1340 (Fed. Cir. 2014) (A limitation “clear on its face” “unquestionably meets [the *Nautilus II*] standard.”).

In the wake of *Nautilus II*, judges have had no problem operating under the reasonable certainty standard. For example, Judge Bryson, sitting by designation in Texas, stated: “Indefiniteness is a legal determination; if the court concludes that a person of ordinary skill in the art, with the aid of the specification, would understand what is claimed, the claim is not indefinite.” *Freeny v. Apple Inc.*, No. 2:13-CV-00361-WCB, 2014 WL 4294505, at \*4 (E.D. Tex. Aug. 28, 2014) (describing the question as whether “a person of ordinary skill can discern from the claims and specification what the bounds of the claim are with reasonable certainty”). After listing numerous fact-specific examples, Judge Bryson noted that “[c]ontrary to the defendant’s suggestion, [the *Nautilus II*] standard does not render all of the prior Federal Circuit and district court cases inapplicable” and “all that is required is that the patent

apprise [ordinary-skilled artisans] of the scope of the invention.” *Id.* at \*5.<sup>3</sup>

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<sup>3</sup> Prior to *Nautilus II*, a number of our cases applied a reasonable certainty standard in various contexts. See, e.g., *ICU Med., Inc. v. Alaris Med. Sys.*, 558 F.3d 1368, 1375 (Fed. Cir. 2009) (discussing the importation of limitations from the specification into the claims, noting that “the line between construing terms and importing limitations can be discerned with reasonable certainty and predictability if the court’s focus remains on how a person of ordinary skill in the art would understand the claim terms”) (quoting *Phillips v. AWH Corp.*, 415 F.3d 1303, 1323 (Fed. Cir. 2005) (en banc)). In a lost profits damages analysis, we noted the amount “need not be proved with unerring precision” and held that lost profits had been proved with reasonable certainty and that a district court finding to the contrary was clearly erroneous where the dealer profit margin was “roughly twenty-five percent of the dealer price.” *Ryco, Inc. v. Ag-Bag Corp.*, 857 F.2d 1418, 1428 (Fed. Cir. 1988) (citations omitted). In *In re Clarke*, 356 F.2d 987, 992 (CCPA 1966), our predecessor court held that “where it can be concluded that facts . . . in support of a general allegation of conception and reduction to practice . . . would persuade one of ordinary skill in the art to a reasonable certainty that the applicant possessed so much of the invention as to encompass the reference disclosure, then that showing should be accepted as establishing a prima facie case of inventorship.” Finally, our predecessor noted, in *Young v. Bullitt*, 233 F.2d 347, 351 (CCPA 1956), that in a priority contest in a patent interference, “[t]he question generally is whether, when all the circumstances are considered together, there is a reasonable certainty as to the identity of the product. Proof beyond a reasonable doubt is not necessary where applications were copending.”

#### IV. Biosig's Claims Inform a Skilled Artisan With Reasonable Certainty

Considering this background, and the Supreme Court's articulated concerns in *Nautilus II* (the necessarily inexact balance between "the inherent limitations of language" and the "modicum of uncertainty" which is "the price of ensuring the appropriate incentives for innovation," on the one hand, and, on the other, enough precision "to afford clear notice of what is claimed"), we conclude that Biosig's claims inform those skilled in the art with reasonable certainty about the scope of the invention. *Nautilus II*, 134 S. Ct. at 2128–29 (internal quotation marks and citations omitted). As we have stated in the past, "[t]he degree of precision necessary for adequate claims is a function of the nature of the subject matter." *Miles Labs., Inc. v. Shandon, Inc.*, 997 F.2d 870, 875 (Fed. Cir. 1993) (citing *Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1375 (Fed. Cir. 1986)).

On certiorari, the Supreme Court "express[ed] no opinion on the validity of the patent-in-suit" but rather instructed this court "to decide the case employing the standard we have prescribed." *Nautilus II*, 134 S. Ct. at 2124.

As an initial matter, since our decision in *Nautilus I*, the Supreme Court determined in *Teva Pharmaceuticals USA v. Sandoz* that "when the district court reviews only evidence intrinsic to the patent (the patent claims and specifications, along with the patent's prosecution history), the judge's determination will amount solely to a determination of law, and the Court of Appeals will review that construction de novo." 135 S. Ct. at 841. However, "when the district court looks beyond the intrinsic evidence and consults extrinsic evidence, for example to understand the relevant science, these subsidiary fact findings are reviewed for clear error."

*Enzo Biochem Inc. v. Applera Corp.*, No. 2014-1321, 2015 WL 1136421, at \*4 (Fed. Cir. Mar. 16, 2015).

Our prior analysis primarily relied on intrinsic evidence and we found the “extrinsic evidence underscores the intrinsic evidence.” *Nautilus I*, 715 F.3d at 901. We revisit the intrinsic evidence here to make clear that a skilled artisan would understand with reasonable certainty the scope of the invention.

In relevant part, we noted an ordinarily skilled artisan would be able to determine this language requires the spaced relationship to be neither infinitesimally small nor greater than the width of a user’s hands. Specifically, we stated:

[T]he district court is correct that the specification of the ’753 patent does not specifically define “spaced relationship” with actual parameters, e.g., that the space between the live and common electrodes is one inch. Nevertheless, the ’753 patent’s claim language, specification, and the figures illustrating the “spaced relationship” between the live and common electrodes are telling and provide sufficient clarity to skilled artisans as to the bounds of this disputed term. For example, on the one hand, the distance between the live electrode and the common electrode cannot be greater than the width of a user’s hands because claim 1 requires the live and common electrodes to independently detect electrical signals at two distinct points of a hand. On the other hand, it is not feasible that the distance between the live and common electrodes be infinitesimally small, effectively merging the live and common electrodes into a single electrode with one detection point. *See* ’753 patent col. 3 ll. 26–31 (describing how each hand is placed over the live and common electrodes so that they are

“in physical and electrical contact with both electrodes”).

*Nautilus I*, 715 F.3d at 899.

The prosecution history further illustrates that the term is not indefinite. In *Nautilus I*, we considered the functionality of the claimed heart rate monitor as recited in claim 1, “which provided the basis for overcoming the PTO’s office action rejections during the reexamination.” *Id.* Specifically, claim 1 provides, in part:

whereby, a first electromyogram signal will be detected between said first live electrode and said first common electrode, and a second electromyogram signal, of substantially equal magnitude and phase to said first electromyogram signal will be detected between said second live electrode and said second common electrode; so that, when said first electromyogram signal is applied to said first terminal and said second electromyogram signal is applied to said second terminal, the first and second electromyogram signals will be subtracted from each other to produce a substantially zero electromyogram signal at the output of said difference amplifier.

*Id.* col. 5 ll. 48–61. This “whereby” clause describes the function of substantially removing EMG signals that necessarily follows from the previously-recited structure consisting of the elongate member, the live electrode, and the common electrode. *Id.* col. 5 ll. 42–47. As we described in *Nautilus I*,

[t]he EMG signal is detected between the live and common electrodes, which are in a “spaced relationship” with each other. Even more significantly, the PTO examiner found this function to be “crucial” as a reason for overcoming the cited prior art and confirming the



patentability of the asserted claims upon reexamination. J.A. 139–46. Thus, the recitation of this function in claim 1 is highly relevant to ascertaining the proper bounds of the “spaced relationship” between the live and common electrodes. *See Hoffer v. Microsoft Corp.*, 405 F.3d 1326, 1329 (Fed. Cir. 2005) (per curiam) (“[W]hen the ‘whereby’ clause states a condition that is material to patentability, it cannot be ignored in order to change the substance of the invention.”).

*Nautilus I*, 715 F.3d at 900. Not only is the recitation of this function in claim 1 “highly relevant” to ascertaining the boundaries of the “spaced relationship” between the live and common electrodes, it shows

a skilled artisan could apply a test and determine the “spaced relationship” as pertaining to the function of substantially removing EMG signals. Indeed, the test would have included a standard oscilloscope connected to both the inputs and outputs of the differential amplifier to view the signal wave forms and to measure signal characteristics. With this test, configurations could have been determined by analyzing the differential amplifier input and output signals for detecting EMG and ECG signals and observing the substantial removal of EMG signals from ECG signals while simulating an exercise.

*Id.* at 900–1.

As discussed in detail in *Nautilus I*, during prosecution, Biosig also presented evidence in the form of a declaration by the inventor, Mr. Gregory Lekhtman. *See 01 Communique Lab., Inc. v. LogMeIn, Inc.*, 687 F.3d 1292, 1298 (Fed. Cir. 2012) (considering statements made during reexamination as intrinsic evidence for purposes of claim construction). Mr. Lekhtman argued that when “configuring the claimed heart rate monitor, skilled

artisans can determine the ‘spaced relationship’ between live and common electrodes by calculating the point in which EMG signals are substantially removed.” *Nautilus I*, 715 F.3d at 900. As we explained, Mr. Lekhtman testified:

[T]he strength of an EMG signal measurement is proportional to the space between the active and ground electrode and the size of the electrodes. J.A. 194–95. . . . [I]t was common knowledge for skilled artisans in 1992 that EMG potentials on each hand would be different, and that the ’753 patent requires a configuration of the detectors that produce equal EMG signals from the left and right hands. J.A. 200. This equalization or balancing . . . is achieved by detecting EMG signals on the left and right palms, which are delivered to a differential amplifier in the EMG measuring device. Available design variables are then adjusted until the differential output is minimized, i.e., close to zero, and the ECG to EMG ratio is determined to be sufficient for an accurate heart rate determination. J.A. 200–01.

*Id.*

In this case, a skilled artisan would understand the inherent parameters of the invention as provided in the intrinsic evidence. The term “spaced relationship” does not run afoul of “the innovation-discouraging ‘zone of uncertainty’ against which [the Supreme Court] has warned,” and to the contrary, informs a skilled artisan with reasonable certainty of the scope of the claim. *Interval Licensing*, 766 F.3d at 1374 (quoting *Nautilus II*, 134 S. Ct. at 2130).

#### CONCLUSION

We conclude the “spaced relationship” phrase “inform[s] those skilled in the art about the scope of the

invention with reasonable certainty.” The claims that include that phrase comply with Section 112 ¶2.

**REVERSED AND REMANDED**

**COSTS**

Each party shall bear its own costs.