

No. _____

IN THE
Supreme Court of the United States

UNIVERSAL LIGHTING TECHNOLOGIES, INC.,

Petitioner,

v.

LIGHTING BALLAST CONTROL LLC,

Respondent.

ON PETITION FOR A WRIT OF CERTIORARI TO
THE UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

PETITION FOR A WRIT OF CERTIORARI

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QUESTION PRESENTED

This petition presents the following important and unsettled question of federal patent law on the rules governing construction of patent claims:

When and how can expert testimony or other extrinsic evidence be used to avoid the construction of a patent claim otherwise dictated by the patent's intrinsic record, including in particular to avoid the restrictions imposed by 35 U.S.C. §112 ¶ 6 on functional claiming?¹

¹ Section 112 was revised during the course of this litigation in ways that are not material to this petition, including by redesignating Section 112 ¶ 6 as § 112(f). Because the rulings below refer to the statutory provision as § 112 ¶ 6, this petition will do so as well.

CORPORATE DISCLOSURE STATEMENT

Petitioner Universal Lighting Technologies, Inc. is a wholly-owned subsidiary of Panasonic Lighting Americas, Inc., which in turn is a wholly-owned subsidiary of Panasonic Corporation. There is no parent corporation or publicly-held corporation that owns 10 percent or more of the interest of Panasonic Corporation.

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INTRODUCTION

This petition presents an important question of federal patent law that the Court addressed, but did not resolve, in *Teva Pharmaceuticals USA, Inc. v. Sandoz, Inc.*, 574 U.S. ___, 135 S. Ct. 831 (2015). In holding that a “clear error” standard of review applies to “subsidiary factfinding” in claim construction, the *Teva* Court observed that, “[i]n some cases, . . . the district court will need to look beyond the patent’s intrinsic evidence and to consult extrinsic evidence in order to understand, for example, the background science or the meaning of a term in the relevant art during the relevant time period.” *Id.* at 841. But for years there has been inconsistency and confusion as to when and how expert testimony or other extrinsic evidence may be used in construing patent claims, despite the Federal Circuit’s effort to elucidate the issue in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). Indeed, as many commentators and even Federal Circuit judges have acknowledged, that court’s post-*Phillips* claim construction rules remain “ill-defined and inconsistent.” *Retractable Techs., Inc. v. Becton, Dickinson & Co.*, 659 F.3d 1369, 1370 (Fed. Cir. 2011) (Moore, J., and Rader, C.J., dissenting from the denial of reh’g en banc); *see, e.g.*, Thomas Krause & Heather Auyang, *What Close Cases and Reversals Reveal About Claim Construction at the Federal Circuit: The Sequel*, 13 J. Marshall Rev. Int. Prop. L. 525, 527 (2014) (identifying “at least three distinct camps as to claim construction approach”).

This case illustrates the inconsistency and confusion in the lower courts regarding the role of expert

testimony in claim construction. The courts below issued no fewer than five rulings that addressed the proper construction of the “voltage source means” limitation in the sole patent-in-suit, U.S. Patent No. 5,436,529 (the “529 patent”): two district court rulings in August and December 2010, respectively, a January 2013 Federal Circuit panel opinion, a February 2014 en banc Federal Circuit opinion, and a second panel opinion in June 2015.

Three of those rulings concluded that the limitation is governed by 35 U.S.C. §112 ¶ 6, notwithstanding Respondent’s expert declaration opining that the limitation “suggests sufficient structure” to avoid the statute. In rejecting Respondent’s reliance on the expert declaration, both the first district court claim construction ruling and the January 2013 Federal Circuit panel opinion (later affirmed by the en banc court) found that (1) the term “voltage source means” is not a term of art commonly used in the relevant field, and (2) the term can be used to describe multiple different types of structure that could perform the function recited in the limitation, even though in most applications it would be understood to refer it to be a rectifier for converting an AC to a DC voltage source. App. 245a-246a, App. 139a-140a. As a result, these rulings invalidated the asserted claims as indefinite under 35 U.S.C. §112 ¶ 2, because the ‘529 patent specification does not disclose any “corresponding structure” for the claimed “voltage source means,” as required by §112 ¶ 6.

The two other rulings below came to the opposite conclusion—i.e., construction of the “voltage source means” limitation is not governed by 35 U.S.C. §112

¶ 6, and the asserted claims are not indefinite-based on the same underlying facts, none of which has ever been in dispute. In a second claim construction ruling, entered on a motion for reconsideration, the district court stated that its “prior ruling unduly discounted the unchallenged expert testimony, in light of unspecified Federal Circuit precedent on the issue.” App. 208a. Without receiving any additional evidence or altering any prior factual findings, the district court vacated its first claim construction ruling and concluded that the “voltage source means” limitation was not subject to §112 ¶ 6 based on the opinions offered by Respondent’s expert. The June 2015 Federal Circuit panel opinion, issued on a GVR order from this Court following its January 2015 decision in *Teva*, accepted the district court’s reliance on Respondent’s declaration and deferred to the district court’s final claim construction “because the extrinsic evidence was ‘not used to contradict claim meaning that is unambiguous in light of the intrinsic evidence.’” App. 16a (quoting *Phillips*, 415 F.2d at 1324). But allowing an expert declaration to determine the ultimate meaning of a claim term such as “voltage source means,” which admittedly is *not* a term of art, and thereby to determine whether a limitation is subject to §112 ¶ 6, runs counter to a basic premise underlying this Court’s holding in *Teva*. 135 S. Ct. at 841.

The above decisions make clear that the different reliance and weight accorded Respondent’s expert declaration in each ruling was outcome determinative of the validity of the patent and ultimately on this litigation. They also illustrate the widely recognized lack of clarity and consistency in Federal Circuit de-

cisions on claim construction. *See, e.g.*, J. Jonas Anderson & Peter S. Menell, *Informal Deference: An Historical, Empirical, and Normative Analysis of Patent Claim Construction*, 108 Nw. U. L. Rev. 1, 5 (2013) (“the source of uncertainty in claim construction is the Federal Circuit itself: the court’s jurisprudence is difficult to understand and at times contradictory. . . . According to the academic studies following *Phillips*, very little has changed – the high reversal rate persists and the Federal Circuit’s claim construction methodology remains unclear.”). That the same district court judge could apply the same Federal Circuit law to the same set of facts on two different days and come to diametrically opposite results evidences that lack of clear direction—and in some respect contrary directions—in *Phillips* and other Federal Circuit precedents on the use of extrinsic evidence in claim construction. The situation requires this Court’s direction, particularly given the importance of claim construction to the fair and efficient administration of justice in thousands of patent cases across over 90 district courts each year.

The question presented by this petition is of particular importance because it implicates the proper limits on functional claiming. This Court has long recognized the dangers of allowing patentees to define their inventions by the functions performed without specifying the structures used. *O’Reilly v. Morse*, 56 U.S. (15 How.) 62, 113-114 (1853); *Gen. Elec. Co. v. Wabash Appliance Corp.*, 304 U.S. 364, 371 (1938); *Halliburton Oil Well Cementing Co. v. Walker*, 329 U.S. 1, 11-12 (1946). Congress enacted § 112 ¶ 6 in 1952 to allow for functional claim limitations that do not “recit[e] structure, material, or acts,” but with a

quid pro quo that such limitations extend only to “the corresponding structure, material, or acts described in the specification and equivalents thereof.” But patentees continue to try to claim in broad functional terms while attempting to avoid application of § 112 ¶ 6. *See, e.g., Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1349 (Fed. Cir. 2015) (discussing persistent problem of the “proliferation of functional claiming untethered to § 112 ¶ 6 and free of the strictures set forth in the statute”).

The lack of clear limits on the use of expert testimony in claim construction provides a clear path to free even more functional claims from the strictures of § 112 ¶ 6. It is undisputed that the “voltage source means” limitation is expressed as a “means” for performing a function and does not include any term of art understood at the time of patenting as the name for definite structure. Yet the Federal Circuit held that a patentee may avoid § 112 ¶ 6 with testimony that the term “suggests” possible structures to those of skill in the art. Under this precedent, functional claims would become utterly malleable; putty in the hands of litigants by selecting whatever “suggested” structure best fits their litigation strategy and making claim construction a proverbial battle of experts.

Accordingly, Petitioner Universal Lighting Technologies, Inc. prays that this Court grant a writ of certiorari to review the judgment of the Court below.

OPINIONS BELOW

The August 2010 claim construction opinion of the United States District Court for the Northern District

of Texas is unreported but available at *Lighting Ballast Control, LLC v. Philips Electronics North Am. Corp. et al.*, No. 7:09-CV-29-O, 2010 U.S. Dist. LEXIS 85770 (N.D. Tex. Aug. 19, 2010) and reproduced at App. 230a-245a (“*Lighting Ballast I*”).

The December 2010 amended district court claim construction opinion is unreported but available at *Lighting Ballast Control, LLC v. Philips Electronics North Am. Corp.*, No. 7:09-CV-29-O, 2010 WL 4946343 (N.D. Tex. Dec. 2, 2010) and reproduced at App. 184a-229a. (“*Lighting Ballast II*”).

The January 2, 2013 Federal Circuit panel opinion is reported at *Lighting Ballast Control LLC v. Philips Electronics N.A. Corp.*, 498 F. App’x. 986 (Fed. Cir. 2013) and reproduced at App. 129a-143a (“*Lighting Ballast III*”).

The February 21, 2014 en banc opinion reinstating the *Lighting Ballast III* panel decision is reported at *Lighting Ballast Control LLC v. Philips Electronics N.A. Corp.*, 744 F.3d 1272 (Fed. Cir. 2014) (en banc) and reproduced at App. 26a-67a (“*Lighting Ballast IV*”).

The June 23, 2015 opinion of the Federal Circuit on remand from this Court is reported at *Lighting Ballast Control LLC v. Philips Electronics N.A. Corp.*, 790 F.3d 1329 (Fed. Cir. June 23, 2015) and reproduced at App. 1a-25a (“*Lighting Ballast V*”).

JURISDICTION

The Federal Circuit judgment below was entered June 23, 2015. On September 11, 2015, the court of appeals denied Petitioner's petition for rehearing en banc. App. 255a. An application for an extension of time until January 11, 2016 to file the instant Petition was granted on December 1, 2015. This Court has jurisdiction under 28 U.S.C. §1254(1).

STATUTORY PROVISIONS

35 U.S.C. § 112 ¶ 6 provides:

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

STATEMENT OF THE CASE

Respondent Lighting Ballast Control LLC ("LBC") sued Petitioner Universal Lighting Technologies, Inc. ("ULT") in February 2009 in the Northern District of Texas for patent infringement. LBC is a non-practicing, patent assertion entity and a subsidiary of Acacia Research Corporation ("Acacia"), a California company that owns over two hundred such entities. In 2008, Acacia acquired rights to enforce the '529 patent, which was issued in 1995, and claims a circuit for use in an electronic ballast. In early 2009,

Acacia formed LBC as a Texas corporation, transferred the right to sue under the patent, and through LBC sued ULT in the Northern District of Texas.

ULT is an industry leader in lighting ballast design and manufacture. LBC's Complaint also named as defendants three other ballast manufacturers, each of which settled in advance of claim construction. Following claim construction, the case between LBC and ULT proceeded to trial in June 2011, at the end of which a jury returned verdicts for ULT on the claim of willful infringement and for LBC on the issues of infringement and validity, and it awarded LBC damages of \$3 million.

Central to this petition is the parties' dispute over the construction of the "voltage source means" limitation of independent claim 1 of the '529 patent, which recites a:

voltage source means providing a constant or variable magnitude DC voltage between the DC input terminals.

App. 7a.² Each lower court claim construction decision is discussed separately below.

² LBC's Complaint asserted both claims 1 and 18 of the '529 patent, each of which includes the same "voltage source means" limitation. Before trial, LBC consented to summary judgment of non-infringement on claim 18, and thus only claim 1 remained in the case when judgment was entered below.

1. *Lighting Ballast I*: Initial District Court Claim Construction.

Claim construction below was based solely on written submissions. The district court did not hold an evidentiary hearing or receive any other form of in-court *Markman* presentation. On the “voltage source means” limitation, when the parties’ submitted their initial Joint Claim Construction Statement, ULT took the position that the term was governed by 35 U.S.C. §112 ¶ 6, because it is expressed as “a means . . . for performing a specified function,” and it further argued that the term was invalid as indefinite because the ’529 patent’s specification failed to disclose a corresponding structure for the claimed means. LBC responded by filing with its opening claim construction brief, a declaration from an expert witness, Victor Roberts, whom it had retained to work on the litigation. App. 257a. LBC also designated deposition testimony from the ’529 patent’s inventor, Andrew Bobel, which Dr. Roberts reviewed and relied on in his declaration. App. 261a-266a³

The Roberts declaration speaks directly to Dr. Roberts’ understanding and construction of language of the “voltage source means” limitation. After setting forth biographical and background information, the Roberts declaration notes that Dr. Roberts is “not an

³ The decisions below addressed the Bobel testimony as part of their discussion of the Roberts declaration. As indicated, Mr. Bobel advanced the same points as the Roberts declaration, and no additional points relevant to this petition. It thus is not discussed further here.

attorney” but nonetheless has “a general understanding of the law regarding claim construction,” including nine listed “principles of claim construction” that he had reviewed as potentially applicable to his opinion in this case. App. 262a. Based on his review of those of the intrinsic record and other materials relevant to claim construction, Dr. Roberts summed up his opinion as follows:

Stated otherwise, the “voltage source” limitation, when read in the context of the specification and claims, suggests to me a sufficient structure, or class of structures, namely: a rectifier (if converting AC from a “power line source” to DC for a “DC supply voltage”) or, in a very few specialized applications, a battery (if providing the DC supply voltage directly to the DC input terminals).

App. 267a. Later in the case, Dr. Roberts amplified this position by stating in deposition testimony that, in addition to a battery, multiple other structures that provide DC voltage (e.g., a generator or a solar cell) could also serve as the “voltage source means” of the limitation. App. 140a.

In *Lighting Ballast I*, the district court resolved the parties’ dispute in favor of ULT and ruled that the “voltage source means” limitation must be construed pursuant to §112 ¶ 6 and, further, that the asserted claims therefore are invalid as indefinite because the ’529 patent specification fails to disclose “corresponding structure,” as required by the statute. App. 230a.

In reaching that conclusion, the court first acknowledged that the intrinsic evidence—in particular the use of “means” in the limitation itself—created a presumption that construction of the limitation is governed by the rule in §112 ¶ 6, under a long and consistent line of precedent. App. 191a-192a (citing *Lighting World, Inc. v. Birchwood Lighting, Inc.*, 382 F.3d 1354, 1358 (Fed. Cir. 2004)). The district court concluded that LBC could not avoid application of §112 ¶ 6 for a number of reasons, including:

First, Lighting Ballast does not point the Court to any evidence, intrinsic or extrinsic, that the term “voltage source” is commonly used in the electronic ballast industry to mean a rectifier. . . . Secondly, Lighting Ballast admits that a rectifier is not the only structure capable of providing a DC voltage, pointing out that a battery also would suffice. There is no indication that “voltage source” is often used synonymously with the term “rectifier” by those of ordinary skill in the electronic ballast industry. . . . Lastly, neither the language of claim 1 or claim 18 describes the function of a rectifier. Rather, the recited function, “providing a constant or variable magnitude DC voltage between the DC input terminals,” refers only inferentially to the function of a rectifier.² App. 245a.

² Dr. Roberts appears to acknowledge this fact when he states in his declaration that “one skilled in the art would immediately ascertain and implement the structure

necessary to supply DC supply voltage.

None of the above findings was ever amended by the district court or set aside by the court of appeals. Nor has LBC ever sought to retract the concessions made in the district court that “voltage source” is not a term of art or a phrase used in the lighting ballast industry to identify a specific structure, such as a rectifier, or that many different structures in addition to a rectifier could perform the recited function of the limitation. As a result, the Roberts declaration contradicts LBC’s position that the claim language itself constitutes a “recital of structure,” as required by § 112 ¶ 6 to avoid application of the statutory rule, notwithstanding that Dr. Roberts opined that the claim language “suggests sufficient structure” to him. *Id. Accord, e.g., Aristocrat Techs. v. Int’l Game Tech.*, 521 F.3d 1328, 1336 (Fed. Cir. 2008) (presumption that a limitation using “means” is governed by § 112 ¶ 6 is overcome only if the claim recites a “particular structure that performs the function and to which the means-plus-function claim is necessarily limited”); *Biomedino LLC v. Waters Techs. Corp.*, 490 F.3d 946, 953 (Fed. Cir. 2007) (“The inquiry is whether one of skill in the art would understand the specification itself to disclose a structure, not simply whether that person would be capable of implementing a structure”).

After ruling that § 112 ¶ 6 governs construction of the limitation, the district court ruled that the patent’s specification does not describe a “corresponding structure” for the claimed “voltage source means.” App. 246a-252a. The court rejected LBC’s attempt to rely on the Roberts declaration to show that “one

skilled in the art is capable of implementing a structure after reading the specification” and concluded that LBC had failed to identify a “corresponding structure” because it was “unable to point the Court to language in the specification disclosing a structure. App. 251a. Neither the district court nor the court of appeals has ever amended or set aside that ruling.

2. *Lighting Ballast II*: Amended District Court Claim Construction.

In response to a motion for reconsideration, on December 2, 2010, the district court issued *Lighting Ballast II*, which amended its earlier claim construction and concluded that “voltage source means” was not subject to § 112 ¶ 6. LBC’s motion presented no new evidence or law in support of its request for reconsideration. Thus, in reversing itself, the district court looked at the same uncontested evidence and facts, specifically the Roberts declaration. And it cited the same portions of the Federal Circuit’s en banc *Phillips* decision on the proper use of expert testimony in claim construction that it had cited in *Lighting Ballast I*. App. 188a-190a, 233a-235a. But in *Lighting Ballast II*, the court stated that its earlier ruling had “unduly discounted the unchallenged expert testimony, in light of Federal Circuit precedent on the issue.” App. 208a. Without explaining why Federal Circuit precedent requires more or different weight be given to the Roberts declaration, the district court concluded in *Lighting Ballast II* that LBC’s extrinsic evidence trumped the intrinsic evidence of the claim language “means,” thereby overcoming the presumption that the “voltage source means” limitation is governed by § 112 ¶ 6.

In explaining its 180-degree change in position, the district court deferred to Dr. Roberts' reading and opinion of the *intrinsic* evidence of the '529 patent itself. App. 215a (discussing the description provided by Dr. Roberts of "the preferred embodiment of the '529 Patent," and his opinion that the patent specification's reference to a "power line source" indicates that the claim language would be read by a person of ordinary skill to refer to a rectifier). Although the court did not identify what Federal Circuit precedent required it to defer to a litigation expert's reading of the intrinsic record of the patent, its reliance on Dr. Roberts in *Lighting Ballast II* was dramatically different than in its prior claim construction ruling. Indeed, in *Lighting Ballast I*, the court rejected the very same portion of Roberts declaration and found that it "bolsters" the court's conclusion that the specification's "references to a power line source and a DC supply voltage do not connote structure; rather they require the person skilled in the art to implement one." App. 252a.⁴

⁴ ULT raised the construction of "voltage source means" again in a summary judgment motion following discovery and directed the district court to Dr. Roberts' deposition testimony confirming that numerous classes of structures *other* than rectifiers can be used to perform the recited function of the "voltage source means" limitation. The district court denied the motion summarily, stating that it would not "address the same issue a third time." App. 181a.

3. *Lighting Ballast III*: First Federal Circuit Panel Decision.

The first Federal Circuit panel to review this case reversed *Lighting Ballast II* and held that the “voltage source means” limitation is governed by § 112 ¶ 6 and that the remaining asserted claim was invalid as indefinite because the specification identifies corresponding structure, as required by the statute. App. 129a. Employing a purely *de novo* standard of review, consistent with then-Circuit precedent, *Cybor Corp. v. FAS Techs. Inc.*, 138 F.3d 1448 (Fed Cir. 1998) (en banc), the panel concluded that the Roberts declaration and LBC’s other extrinsic evidence did not rebut the presumption triggered by use of the word “means” in the patent claim.

In reaching that conclusion, the panel first analyzed the intrinsic evidence and found that “the claim only sets out an indication of what the element ‘does, not what it is structurally.’” App. 138a-139a (quoting *Laitram Corp. v. Rexnord, Inc.*, 939 F.2d 1533, 1536 (Fed Cir. 1991)). It then acknowledged that “[i]n some circumstances, expert testimony may be probative of whether a claim term itself corresponds to sufficiently definite structure,” citing *Rembrandt Data Techs, LP v. AOL*, 641 F.3d 1331, 1340-41 (Fed. Cir. 2001), where such testimony was relied on for the meaning of terms “commonly used in publications to identify *defined* algorithms (i.e., structure) known in the art.” (Emphasis in original). *Id.* The panel then explained

that the Roberts declaration could not “cure the absence of structural language in the claim itself” and in particular that it failed to:

. . . establish that the term “voltage source” was used synonymously with a defined class of structures at the time the invention was made, unlike the testimony in *Rembrandt*. In fact, Lighting Ballast’s record testimony suggests a lack of a defined class of structures. While a rectifier and a battery may be examples of structures that commonly perform the recited function, there are many other ways to provide DC voltage, including “generators” and “solar voltaic cells,” as Lighting Ballast’s expert admitted.

Id. The panel thus refused to accept Dr. Roberts’ opinion on how to read the intrinsic evidence of the ’529 patent.

4. *Lighting Ballast IV*: En Banc Federal Circuit Decision.

The en banc Federal Circuit court granted LBC’s petition for rehearing to address whether the purely *de novo* standard of review established in *Cybor* should be overruled. *Lighting Ballast Control LLC v. Philips Elecs. N.A. Corp.*, 500 F. App’x 951 (Fed. Cir. 2013). On February 21, 2014, the en banc court upheld *Cybor* and reinstated the *Lighting Ballast III* panel decision. Pet. App 26a-67a.

5. *Lighting Ballast V: Post-Teva* GVR Federal Circuit Panel Decision.

On June 20, 2014, LBC petitioned for writ of certiorari and asked this Court to hold its petition pending the Court's disposition of *Teva*, in which the Court had recently granted certiorari to consider the standard of review for claim construction rulings established in *Cybor*. After issuing its *Teva* decision on January 20, 2015, the Court granted LBC's petition, vacated the *Lighting Ballast IV* judgment, and remanded for further consideration in light of *Teva*'s holding on the proper standard of review for claim construction rulings. *Lighting Ballast Control LLC v. Universal Lighting Techs.*, 135 S. Ct. 1173 (2015).

On June 23, 2015, a second Federal Circuit panel affirmed the district court's post-trial judgment on all issues. The panel deferred to the district court's rulings that the language of "voltage source means" limitation would be understood by persons of skill in the art to "connote a class of structures, namely a rectifier, or structure to rectify the AC power line into DC voltage for the DC input terminals." App. 16a. And it reasoned that "[u]nder the circumstances, it was not legal error for the district court to rely on extrinsic evidence, because the extrinsic evidence was 'not used to contradict claim meaning that is unambiguous in light of the intrinsic evidence.'" *Id.*

The panel further stated that the *Lighting Ballast II* claim construction was supported by Dr. Roberts' declaration on how the "voltage source means" limitation should be construed in the context of the specification:

Dr. Roberts explained the “voltage source means” limitation suggests to him a sufficient structure or class of structures, namely a rectifier if converting AC from a “power line source” to DC for a “DC supply voltage.” . . . This expert testimony supports a conclusion that the limitations convey a defined structure to one of ordinary skill in the art” and consequently that the district court correctly concluded that “voltage source means” was not subject to § 112 ¶ 6. See *Rembrandt Data Techs. LP v. AOL*, 641 F.3d 1331, 1341 (Fed Cir. 2011).

App. 17a. The panel did not explain why it disregarded the distinction between the Roberts declaration and the expert testimony in *Rembrandt*, as explained in *Lighting Ballast III*. Nor did it address the other reasons given in *Lighting Ballast III* for why Dr. Roberts’ testimony, even if properly relied on, actually “suggests a lack of a defined class of structures,” and thus contradicts the district court’s construction.

REASONS FOR GRANTING THE WRIT

This Court should grant the petition to give badly needed direction to the lower courts on the proper use of expert testimony in construing patent claims and to prevent claim construction from becoming a battle of experts. This issue is of particular importance in enforcing § 112 ¶ 6’s restrictions on functional claiming against efforts to swear around the statute, as illustrated by this case.

A. This Court’s Direction Is Required To Settle The Important Question Of How Extrinsic Evidence May Be Used In Construing Patent Claims.

In recent terms, this Court has addressed a number of issues of federal patent law directed at improving the consistency and predictability of how patent claims may be understood and enforced. As a number of commentators have observed, however, the progress that can be made in improving this aspect of the patent system is limited unless and until the rules that specifically govern how the lower courts construe patent claims are made clearer and more uniform. *See, e.g.*, Greg Reilly, Commentary, *Completing the Picture of Uncertain Patent Scope*, 91 Wash. U. L. Rev. 1353, 1362 (2014) (observing that decision in *Nautilus Inc. v. Biosig Instruments, Inc.*, 522 U. S. ___, 134 S. Ct. 2120, 2130 (2014) on indefiniteness could more productively have focused on “an obvious first step” of “correct[ing] the Federal Circuit’s claim construction failures”); Thomas Krause & Heather Auyang, *What Close Cases and Reversals Reveal About Claim Construction at the Federal Circuit*, 12 J. Marshall Rev. Int. Prop. L. 583, 585 (2013) (presenting empirical data to show that a lack of consistency in claim construction is a “bigger problem” than the standard of review issue addressed in *Teva*); Greg Reilly, *Improviently Granted: Why the En Banc Federal Circuit Chose the Wrong Claim Construction Issue*, 80 Univ. Chi. L. Rev. Dialogue 43 (2013) (same). This petition presents an ideal opportunity for the Court to address head-on one important source of confusion in how lower courts construe patent claims, the

proper use of expert testimony and other forms of extrinsic evidence to alter or avoid claim constructions otherwise dictated by a patent's intrinsic record.

There is no reason to believe that the Federal Circuit will clarify this issue or, more broadly, the proper methodology for claim construction. The leading Federal Circuit decision on claim construction, the en banc *Phillips* decision, was issued over a decade ago. *Phillips* endorsed a claim construction methodology, sometimes characterized as the “holistic” approach, which gives priority to reading claims in the context of a patent's entire intrinsic record, particularly its written description or specification, and limiting the use of extrinsic evidence. *Phillips* further expressly disfavored the competing “procedural” methodology associated with the panel decision in *Texas Digital, Inc. v. Telegenix, Inc.*, 308 F.3d 1193 (Fed. Cir. 2002). See, e.g., Lee Petherbridge, *The Claim Construction Effect*, 15 Mich. Telecomm. Tech. L. Rev. 215, 247 (2008). In particular, the en banc majority in *Phillips* criticized (without reversing) *Texas Digital* because “the methodology it adopted placed too much reliance on extrinsic sources” and unduly limited the role of the specification to being “consulted only after a determination is made” of a claim term's “ordinary meaning” from extrinsic sources. 415 F.3d at 1320.

Despite *Phillips* announcement of a single approach to claim construction that gives priority to intrinsic over extrinsic evidence, a plethora of commentators have observed and produced empirical analyses on a continued use of two or more “polarized methodological approaches” by different judges and

from case to case. Petherbridge, *supra*, 15 Mich. Telecom. Tech. L. Rev. at 237; Anderson & Menell, *supra*, 108 Nw. U. L. Rev. at 5. (“Numerous scholars have argued that the source of uncertainty in claim construction is the Federal Circuit itself.”)⁵ The Federal Circuit has resisted calls for clarification of its claim construction jurisprudence, “[d]espite the crucial role that claim construction plays in patent litigation,” and a recognition that “our rules are still ill-defined and inconsistently applied, even by us”). *Retractable Techs.*, 659 F.3d at 1370 (Moore, J., and Rader, C.J., dissenting from the denial of reh’g en banc); *id.* at 1375 (O’Malley, J. dissenting from the denial of reh’g en banc) (noting “need to rethink our approach to” claim construction); *see also Arlington Indus. v. Bridgeport Fittings, Inc.*, 632 F.3d 1246, 1258 (Fed. Cir. 2011) (Lourie, J., concurring in part and dissenting in part) (noting Federal Circuit’s “muddy, conflicting, and overly formulaic rules” on claim construction). District court judges have made similar observations. *See, e.g., MacDermid Printing Solutions, Inc. v. Cortron Corp.*, No. 3:08cv1649 (MPS), 2014 WL 3943629, at *8 (D. Conn. Aug. 12, 2014) (noting that “disagreement [among judges] on construction issues has injected a widely lamented strain of uncertainty into patent infringement cases”);

⁵ *Accord, e.g.,* Jeremy W. Bock, *Restructuring the Federal Circuit*, 3 NYU J. Intell. Prop. & Ent. L. 197, 200 (2014) (“the Federal Circuit’s conflicting claim construction methodologies lead to panel-dependent outcomes”); Krause & Auyang, *supra*, 13 J. Marshall Rev. Int. Prop. L. at 527 (“Federal Circuit judges still fall into at least three distinct camps as to claim construction approach”).

Hon. James F. Holderman, *The Patent Litigation Predicament in the United States*, 2007 U. Ill. J.L. Tech. & Pol’y 1, 7 (2007) (“[T]he Federal Circuit’s precedential opinions seem to provide conflicting views in the nuances of the [claim construction] task and the value we are to ascribe to each factor that we consider.”)

Given the enduring inconsistency in claim construction methodologies at the Federal Circuit, district courts are confused and often pursue different approaches to various aspects of claim construction. Moreover, the guidance provided by *Phillips* on the use of extrinsic evidence is inadequate to assist district courts in reaching reasoned and consistent decisions. The subsection of the en banc *Phillips* decision devoted to the subject, 415 F.3d at 1317-19, consists of generalized statements or platitudes that courts should avoid obviously bad practices and rely on extrinsic evidence with care. And such statements often are preceded or followed by observations that can be read to point in a different general direction or to allow for exceptions. For example, *Phillips*, warns that “conclusory, unsupported assertions by experts as to the definition of a claim term are not useful to a court,” but that statement follows on the heels of the court’s pronouncement that “extrinsic evidence in the form of expert testimony can be useful to a court for a variety of purposes . . .” *Id.* at 1318. There are few if any concrete rules or guidelines on when or for what purposes reliance on expert testimony is appropriate or precluded.

The instant case illustrates the problems caused by the lack of clarity in the current state of the law. As a threshold matter, it should be noted that the

principal source of extrinsic evidence presented to the district court in this case—in the form of a declaration from LBC’s litigation expert, Dr. Roberts—is directed to an analysis and argument of the *intrinsic* record of the ’529 patent. As discussed *infra* at 9-14, and as made clear by the Roberts declaration itself, App. 257a-268a, the extrinsic evidence at issue in this case did not address “the meaning of a term in the relevant art during the relevant time period” or other matters identified by this Court in *Teva* as proper subjects of extrinsic evidence. 135 S. Ct. at 834. Indeed, as LBC has conceded, and both the district court and Federal Circuit have observed, App. 138a-139a, 245a, “voltage source” is not a term of art, and nothing in the Roberts declaration addresses issues relating to any understanding in the relevant field during the relevant time period of invention and patenting. Instead, the declaration discussed Dr. Roberts’ familiarity with “the law regarding claim construction,” including nine “principles” drawn from *Phillips* and other court decisions. App. 262a. It then expressed opinions on the meaning of the “voltage source means” limitation, “read in the context of the specification and claims” of the ’529 patent. App. 266a-267a. In short, the Roberts declaration undertook precisely the claim construction analysis that the district court was charged with undertaking and attempted to reduce that legal analysis to expert testimony.

The Roberts declaration thus merely tracked the arguments made by LBC’s legal counsel, presenting the same arguments drawn from a current, subjective (rather than historical, art-based) understanding of the written intrinsic record. The basis for Dr. Roberts’ opinion that the “voltage source limitation” “suggests

to me a sufficient structure, or class of structures” were drawn from his own reading of the intrinsic record. The declaration did not cite to any industry publication, historic information, or other documentation outside the intrinsic record to support his opinion, nor did he offer any support other than his own say-so for how other of skill in the art would understand the “voltage source means” limitation.⁶

The use of this type of extrinsic evidence would appear to be contrary to this Court’s discussion in *Teva*, 135 S. Ct. at 841 (“[e]xperts may be examined to explain terms of art, and the state of the art, at any given time,’ . . . they cannot be used to prove ‘the proper or legal construction of any instrument of writing.’” *Id.* (quoting *Winans v. N.Y. & Erie R. Co.*, 21 How. 88, 100-101 (1859)). Although *Phillips* generally warns district courts that “extrinsic evidence consisting of expert reports and testimony generated at the time and for the purpose of litigation” may “suffer from bias,” it does not preclude district court reliance on such evidence, even when it merely presents arguments based on the expert’s current, subjective views on how the intrinsic record should be read. As a result, the district court below was left to determine whether and how to rely on or reject the Roberts declaration, despite the fact that Dr. Roberts did little more than express his personal view on the ultimate legal issues before the court, rather than addressing

⁶ The Roberts declaration similarly tracked LBC’s alternative legal arguments that, “if the Court determines that § 112, ¶ 6 applies, then the specification discloses corresponding structure—namely a rectifier—to perform the function of converting AC ‘from a power line source.’” App. 267a.

the meaning of any terms of art or providing any perspective beyond that available to the court and litigants from their reading of the intrinsic record.

In *Lighting Ballast I*, the district court focused its construction of the “voltage source means” limitation first and foremost on the intrinsic evidence, which showed that the patentee had elected to use “means” in his expression of the claim and that the specification did not mention the limitation or say anything to suggest that it referred to any particular class of structure. With that in mind, the court concluded that the Roberts declaration could not overcome the presumption that such a limitation is governed by § 112 ¶ 6, despite Dr. Roberts’ stated opinion that he found the limitation to “suggest sufficient structure.” See *infra* at 8-12. In fact, the court concluded that the Roberts declaration actually contradicts LBC’s argument that the limitation recited sufficient structure to avoid § 112 ¶ 6 and “bolsters” the court’s conclusion that nothing in the patent identifies structure for the limitation. App. 245a, 252a.

In contrast, in *Lighting Ballast II*, the district court began its analysis by stating that its prior ruling had “unduly discounted” the Roberts declaration “in light of Federal Circuit precedent on the issue.” See *infra* at 12-14. The district court did not specifically identify what “precedent” it was referring to or how its earlier ruling had run afoul of it, but the *Lighting Ballast II* decision cited to precisely the same portions of the *Phillips* decision on the use of extrinsic evidence that the court had cited in *Lighting Ballast I*. App. 188a-190a, 233a-235a. Moreover, although it did not

identify any particular claim construction methodology it was employing (or whether it was even aware of competing methodologies), the district court's first ruling is consistent with the limited use of extrinsic evidence favored by the *Phillips* majority and the "holistic" approach, while the later ruling places primary reliance on extrinsic evidence and, in particular, the Roberts declaration, consistent with a "procedural" or *Texas Digital* approach. As discussed above, both approaches have currency with at least some judges on the Federal Circuit. As a result, it is difficult to obtain meaningful review of the district court's selection of either methodology or its decision to discount or not discount an expert declaration of the type proffered by LBC in this case.

This case also illustrates a concern raised by some commentators that the problems associated with district court confusion and the lack of clarity in the law governing claim construction may become worse in the wake of this Court's *Teva* decision. See Krause & Auyang, *supra*, 13 J. Marshall Rev. Intell. Prop. L. at 527 ("giving more deference to district court claim construction will likely make things worse, not better"). In *Lighting Ballast III*, the first Federal Circuit panel to review the case corrected the district court's overreliance on the opinion expressed by Dr. Roberts on the ultimate legal issue (i.e., whether the claim recited "sufficient structure" to overcome the presumption created by its use of "means" claiming). See *infra* at 14-15. But in *Lighting Ballast V*, the panel (comprised of two of the three same judges as the earlier panel) ruled that *Teva* required it to defer to the district court's reliance on the Roberts declaration, because the panel found "no legal error" in that "the

extrinsic evidence was ‘not used to contradict claim meaning that is unambiguous in light of the intrinsic evidence.’” App. 16a (quoting *Phillips*, 415 F.2d at 1324).

The *Lighting Ballast V* panel thus found no authority that made it legal error for the district court to rely on extrinsic evidence, such as the Roberts declaration, that advances claim construction arguments based on the expert’s own reading of the intrinsic record. Absent direction from this Court precluding the use of such extrinsic evidence—and freeing the Federal Circuit from deferring to district court findings based on such evidence—*Teva* may open the door to increased use of retained expert witnesses to buttress claim construction arguments. Briefing filed with the Court by *amici* in *Teva* warned of turning claim construction into a “battle of experts,” and the decision in *Lighting Ballast V*, unless reviewed by this Court, will provide strong incentive for litigants to engage in such battles. *See, e.g.*, Brief for *Amicus Intel Corp. et al.*, at 28, *Teva Pharms. USA, Inc. v. Sandoz, Inc.*, 574 U.S. ___, 135 S. Ct. 831 (2015) (No. 13-854) (predicting “strong incentives” for litigants to proffer detailed expert reports that “simply marshal all of the party’s claim-construction arguments in the form of a purported expert opinion”).

Finally, the use of expert evidence in claim construction for reasons beyond proving the historical meaning of terms of art and similar purposes will significantly erode the public notice function of the patent system. The public should not be required to wait until litigation is filed and experts are hired to testify about how they read the intrinsic record on behalf of

the parties that retain them to begin to evaluate how a patent is likely to be construed. Again, this is an issue that was briefed to the Court by *amici* in *Teva*. See, e.g. Brief for *Amicus* Google Inc. et al., at 11-12, *Teva Pharms. USA, Inc.*, 574 U.S. ___, 135 S. Ct. 831 (No. 13-854) (noting “very real danger that courts will use the evidence ‘to change the meaning of claims’ and ‘thereby undermin[e] the public notice function of patents’”) (citation omitted); Brief for *Amicus* Intel Corp. et al., at 16, *Teva Pharms. USA, Inc.*, 574 U.S. ___, 135 S. Ct. 831 (No. 13-854) (“the patentee, its competitors, and the public all require clear and certain demarcation of the rights granted by the patent if they are to be expected to order their affairs around it.”)

This Court has identified some guidelines on the appropriate use of extrinsic evidence in claim construction based on how courts construe written instruments generally. See, e.g., *Teva* 135 S. Ct. at 837-38 (quoting *Great N. R. Co. v. Merchants Elevator Co.*, 259 U.S. 285, 291 (1922) and citing 12 R. Lord, *Williston on Contracts* §§34.1 (4th ed. 2012)). The *Teva* Court, for example, directed that extrinsic evidence “may help to ‘establish a usage of trade’” for a term in a written instrument, *id.* at 837, but cannot be used to prove ‘the proper or legal construction of any instrument of writing.’” *Id.* at 841 (quoting *Winans*, 21 How. at 100-101). But the statements in *Teva* on the role of expert testimony and other extrinsic evidence were dicta for the Court’s holding on the standard of review to be applied by the Federal Circuit in appeals from district court claim constructions. And the Court’s statements on the subject understandably were not offered or intended as comprehensive or complete.

For these reasons, this Court must clarify the rules for when and how lower courts may rely on expert testimony or other extrinsic evidence in construing patent claims and, relatedly, whether any deference is owed on appeal to “subsidiary factfindings” that conflict with those rules.

B. UNCERTAINTY IN THE RULES GOVERNING CLAIM CONSTRUCTION, IN PARTICULAR, THREATENS TO UNDERMINE § 112 ¶ 6’S LIMITS ON FUNCTIONAL CLAIMING.

This case more specifically illustrates how the lower courts’ inconsistent use of extrinsic evidence in claim construction undermines the core public notice function with respect to patents that employ functional claiming. Functional claiming has posed significant and recurring problems almost since the birth of our patent laws. In 1840, Samuel Morse, best known for inventing the telegraph, obtained a patent claiming all “use of ... electro-magnetism, however developed, for marking or printing intelligible characters, signs, or letters, at any distances....” *O’Reilly v. Morse*, 56 U.S. (15 How.) 62, 112 (1853). While an accomplished inventor, Mr. Morse did not invent fax machines, remote printers, or e-mail in 1840—yet his functional claim would cover all these futuristic technologies not yet contemplated. David J. Kappos & Christopher P. Davis, *Functional Claiming and the Patent Balance*, 18 Stan. Tech. L. Rev. 365 (2015), available at <https://journals.law.stanford.edu/sites/default/files/stanford-technology-law-review/online/functionalclaiming.pdf>. This Court upheld Morse’s claims to telegraph technology, but invalidated this functional claim as “too broad, and not

warranted by law.” *Morse*, 56 U.S. at 113. The Court has since spoken to the concerns of functional claiming in invalidating later attempts to use such claims without providing sufficient structural definition. *Gen. Elec. Co. v. Wabash Appliance Corp.*, 304 U.S. 364, 371 (1938) (description in terms of function “[i]s insufficient, and, if allowed, would extend the monopoly beyond the invention”); *Halliburton Oil Well Cementing Co. v. Walker*, 329 U.S. 1, 11-12 (1946) (holding invalid “broad functional claims” that do not limit the “means” to “any specific structural alternative”).

Following *Halliburton*, Congress enacted § 112 ¶ 6 in 1952 to permit functional claiming, but only in specific circumstances. The statute allows claim elements expressed as a “means” for performing a function, “without the recital of structure,” but such claims “shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.” The statute provides a trade-off for patentees: they may claim in functional language, but only if they describe structure for performing that function, and they are not allowed to claim any and all structures capable of performing the function. Yet, as exemplified by *Lighting Ballast V*, whether the statute applies may depend entirely on whether a court, years after the patent issues, credits made-for-litigation testimony from an expert or fact witness as to how he or she believes the claim language should be read—an outcome that cannot be predicted with any reasonable certainty by either patentees or potential infringers.

Federal Circuit precedent that is not questioned by any party to this case establishes dual presumptions based on the patent claim language to determine if a limitation is governed by § 112 ¶ 6: when a claim element expressly recites a “means” for performing a function, § 112 ¶ 6 presumptively applies; when it does not, the opposite presumption applies. *Williamson*, 792 F.3d at 1348-49. These rules would seem to provide clarity as to whether a claim element falls within the statute. But both presumptions are rebuttable; whether “means” is in the claim or not, according to the Federal Circuit the ultimate test is “whether the words of the claim are understood by persons of ordinary skill in the art to have a sufficiently definite meaning as the name for structure.” *Id.*

As with the use of extrinsic evidence in claim construction generally, see *infra* 18-28, at present there is no clear precedent as to when and how this test may be met by use of expert testimony. The statute says that the claim must “recit[e] structure” to avoid § 112 ¶ 6, and some Federal Circuit cases seem to follow this rubric, holding that an expert’s opinion that the claim language “connotes structure” to one of ordinary skill in the art does not suffice to remove claim language from the ambit of § 112 ¶ 6. *E.g.*, *Williamson*, 792 F.3d at 1350-51. Likewise, the Federal Circuit has rejected efforts to infer structure from expert testimony that one skilled in the art would understand which structure or structures could perform the claimed function in a given application. *E.g.*, *id.*; *Biomedino*, 490 F.3d at 953. But another line of cases holds that the claim language need only “connote” or “suggest” some structure or class of structures to one skilled in the art.

E.g., *Apex Inc. v. Raritan Comp., Inc.*, 325 F.3d 1364, 1373 (Fed. Cir. 2003). And, as shown by *Lighting Ballast II* and *Lighting Ballast V*, expert testimony that the claim limitation “connotes sufficient structure,” lacking any other intrinsic or extrinsic evidence, may be viewed by some court as enough to overcome the presumption. *Id.*

The inconsistency is illustrated by the differing outcomes in *Lighting Ballast V* and *Williamson*, issued just ten days apart. When two Federal Circuit panels⁷ faced with the same type expert declaration (i.e., opining that claim language suggests sufficient structure) can reach opposite conclusions on the applicability of § 112 ¶ 6, it is not possible for future courts, litigants, and patent drafters or readers to understand how such claims should be understood. See David Stein, *Lighting Ballast and Williamson: Functional Claim Language In Focus*, USPTO Talk (June 24, 2015), www.usptotalk.com/lighting-ballast-and-williamson-functional-claim-language-in-focus/ (describing *Lighting Ballast V* as “logically irreconcilable” with *Williamson*).⁸ If the difference in outcomes is explained by pointing to the deference *Lighting*

⁷ The portion of *Williamson* construing this claim term was a panel decision.

⁸ That *Lighting Ballast V* cannot be reconciled with *Williamson* is particularly clear given that the § 112 ¶ 6 presumptions ran in opposite directions to the outcomes of the appeals. In *Lighting Ballast V*, the Roberts declaration was deemed sufficient to trump the statute’s presumptive application, while in *Williamson* a similarly worded expert declaration was insufficient to do so, even though the claim there did not recite “means” and thus was presumed *not* to invoke § 112 ¶ 6.

Ballast V accorded the district court’s decision under *Teva* that only underscores the need for clear claim construction rules. Parties should not need to wait until a district court ruling to understand whether § 112 ¶ 6 applies to functional claim language. *See Nautilus*, 134 S. Ct. at 2130 (recognizing that claim scope should be clear in “the understanding of a skilled artisan at the time of the patent application, not that of a court viewing matters *post hoc*.”)

The unclear case law in this area creates a perpetual “zone of uncertainty which enterprise and experimentation may enter only at the risk of infringement claims.” *See Nautilus Inc.*, 134 S. Ct. at 2129 (citation omitted). The en banc Federal Circuit recently acknowledged that there has been a “proliferation of functional claiming untethered to § 112 ¶ 6 and free of the strictures set forth in the statute.” *Williamson*, 792 F.3d at 1349. Absent clarity on how to construe functional claims, and in particular the proper use of expert testimony in “finding” structure in such limitations, these claims will continue to proliferate. Patentees will be incentivized to strategically avoid claiming clear and limited structures, and then later attempt to avoid § 112 ¶ 6 in litigation, as occurred here. The public will not be able to know whether a claim term is subject to section § 112 ¶ 6—or what structure(s) are within its scope—until a judge finds “facts” about what a term “conveys” or “suggests” to litigation witnesses. Existing uncertainty in patent claims has already resulted in many of the current problems with the patent system. *See, e.g.*, Brief for *Amicus Intel Corp. et al.*, at 25, *Teva Pharms. USA, Inc. v. Sandoz, Inc.*, 574 U.S. ___, 135 S. Ct. 831 (2015) (No. 13-854) (noting courts required

to ““expend more judicial resources resolving the ambiguities created by unclear boundaries””); Brief for *Amicus* Google Inc. et al., at 26-27, *Teva Pharms. USA, Inc. v. Sandoz, Inc.*, 574 U.S. ___, 135 S. Ct. 831 (2015) (No. 13-854) (uncertainty leads to increased litigation costs, citing study estimating costs of patent assertion entity suits in 2011 totaled \$29 billion and that the number of such lawsuits has quadrupled since 2005).

Accordingly, there is a particularly acute need for this Court to address and clarify the proper use of extrinsic evidence in determining whether the claim construction rule codified in § 112 ¶ 6 applies.

CONCLUSION

For the foregoing reasons, this Court should grant the petition for a writ of certiorari.

Respectfully submitted,

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Date: January 11, 2016

APPENDIX A

**United States Court of Appeals
for the Federal Circuit**

LIGHTING BALLAST CONTROL LLC,
Plaintiff-Appellee

v.

**PHILIPS ELECTRONICS NORTH AMERICA
CORPORATION,**
Defendant

**UNIVERSAL LIGHTING TECHNOLOGIES,
INC.,**
Defendant-Appellant

2012-1014

Appeal from the United States District Court for
the Northern District of Texas in No. 09-CV-0029,
Judge Reed O'Connor.

Decided: June 23, 2015

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PETER S. MENELL, University of California Berkeley School of Law, Berkeley, CA, for *amicus curiae* Peter S. Menell.

Before LOURIE, O'MALLEY, and REYNA, *Circuit Judges*.¹

¹ Pursuant to Fed. Cir. Internal Operating Procedure 15 ¶ 2(b)(ii), Circuit Judge Lourie was designated to replace Randall R. Rader, now retired, on this panel.

REYNA, CIRCUIT JUDGE.

This case returns to us on remand from the Supreme Court of the United States and was returned to the panel for reconsideration in light of *Teva Pharmaceuticals USA, Inc. v. Sandoz, Inc.*, 574 U.S. ___, 135 S. Ct. 831 (2015). Appellant Universal Lighting Technologies, Inc. (“ULT”) appeals four issues. We *affirm*.

I

A. BACKGROUND OF THE TECHNOLOGY

High levels of current are required to cause a fluorescent lamp to emit visible light. As the panel explained in the initial panel opinion in this case, *Lighting Ballast Control LLC v. Philips Elecs. N. Am. Corp.* (“*Lighting Ballast I*”), 498 Fed. App’x 986 (Fed. Cir. 2013), fluorescent lamp fixtures typically include an electronic ballast to regulate electric current flow. An electronic ballast is a device that maintains current levels high enough to start the lamp but that prevents current from reaching destructive levels. When a lamp is removed from its holders or when a filament is broken, current provided by the ballast suddenly ceases to flow through the lamp and dissipates back into the ballast circuitry. The dissipated current can destroy the ballast and create an electric shock hazard for someone servicing the lamp.

U.S. Patent No. 5,436,529 (“the ’529 patent”), assigned to Lighting Ballast LLC (“Lighting Ballast”), discloses an electronic ballast with the ability to

shield itself from destructive levels of current when a lamp is removed or becomes defective. '529 patent col. 2 ll. 39-47.

Claim 1 recites:

1. An energy conversion device employing an oscillating resonant converter producing oscillations, having DC input terminals producing a control signal and adapted to power at least one gas discharge lamp having heatable filaments, the device comprising:

voltage source means providing a constant or variable magnitude DC voltage between the DC input terminals;

output terminals *connected to* the filaments of the gas discharge lamp;

control means capable of receiving control signals from the DC input terminals and from the resonant converter, and operable to effectively initiate the oscillations, and to effectively stop the oscillations of the converter; and *direct current blocking means* coupled to the output terminals and operable to stop flow of the control signal from the DC input terminals, whenever at least one gas discharge lamp is removed from the output terminals or is defective.

'529 patent col. 11 ll. 49-68 (emphasis added to relevant terms).

B. PROCEDURAL HISTORY

On February 24, 2009, Lighting Ballast filed suit against ULT asserting infringement of the '529 patent. The parties engaged in claim construction briefing and the court held a hearing thereon. ULT argued that the term “voltage source means” is governed by 35 U.S.C. § 112 ¶ 6 and that the claims are invalid under 35 U.S.C. § 112 ¶ 2 as indefinite because the specification fails to disclose what structure corresponded to the “voltage source means” limitation. The district court initially agreed with ULT.

Lighting Ballast filed a motion for reconsideration. The district court reversed course, finding that its initial construction of “voltage source means” was incorrect. The district court noted that its prior ruling “unduly discounted the unchallenged expert testimony” and “exalted form over substance and disregarded the knowledge of a person of ordinary skill in the art.” *Lighting Ballast Control, LLC v. Philips Elecs. N. Am. Corp.*, No. 7:09-CV-29, 2010 WL 4946343, at *12 (N.D. Tex. Dec. 2, 2010). The district court cited testimony from an expert for Lighting Ballast, Dr. Victor Roberts, and the inventor, Andrzej Bobel, both of whom testified that one of skill in the art would understand the claimed “voltage source means” to correspond to a rectifier, which converts alternating current (“AC”) to direct current (“DC”), or other structure capable of supplying useable voltage to the device. Thus, the district court concluded that the term “voltage source means” had sufficient structure to avoid the strictures of § 112 ¶ 6 and denied ULT’s motion.

Thereafter, ULT renewed its argument that the asserted claims are invalid as indefinite, this time couched as a motion for summary judgment. J.A. 62. The district court noted that “ULT presents no additional basis for holding the asserted claims invalid.” *Id.* The district court, thus, declined to revisit the issue for a third time and adopted its prior findings and analysis regarding the definiteness of the asserted claims. *Id.*

Starting on June 13, 2011, the district court held a jury trial on the issue of whether ULT’s accused lighting ballast products infringe claims 1, 2, and 5 of the ’529 patent. The jury returned a verdict finding the ’529 patent valid and infringed and awarded \$3 million in damages to Lighting Ballast.

ULT moved for judgment as a matter of law (“JMOL”) on three grounds, as relevant to this appeal: 1) the record does not contain legally sufficient evidence that the accused ULT products meet the “direct current blocking means” limitation of claim 1 of the ’529 patent; 2) the record does not contain legally sufficient evidence that the accused ULT products meet the “connected to” limitation of claim 1 of the ’529 patent; 3) the record does not contain legally sufficient evidence that the accused products meet the “control means” limitation. The district court denied the relevant portions of ULT’s JMOL. ULT appealed.

After an initial panel decision reversing the judgment of the district court regarding indefiniteness of the asserted claims based on the “voltage source means” limitation, *Lighting Ballast I*,

this court granted Lighting Ballast’s petition for rehearing en banc, *Lighting Ballast Control LLC v. Philips Elecs. N. Am. Corp.*, 500 Fed. App’x 951 (Fed. Cir. 2013), in order to reconsider the holding in *Cybor Corp. v. FAS Technologies, Inc.*, 138 F.3d 1448 (Fed. Cir. 1998) (en banc), establishing the standard of appellate review of district court claim construction decisions. The case was heard en banc on September 13, 2013. The court issued an opinion affirming that claim construction is an issue of law that this court reviews de novo. *Lighting Ballast Control LLC v. Philips Elecs. N. Am. Corp.* (“*Lighting Ballast II*”), 744 F.3d 1272 (Fed. Cir. 2014) (en banc). Lighting Ballast filed a petition for a writ of certiorari with the Supreme Court.

Before the Supreme Court acted on the petition, it issued an opinion in *Teva Pharmaceuticals USA, Inc. v. Sandoz, Inc.*, 574 U.S. ___, 135 S. Ct. 831 (2015). In that case, the Supreme Court reversed a decision from this court, holding that while the ultimate question of the proper construction of a claim is a legal question that this court reviews de novo, there may be underlying “subsidiary” factual findings by the district court related to the extrinsic record that are reviewed for clear error. The Supreme Court held that this conclusion flows from Rule 52 of the Federal Rules of Civil Procedure and the Supreme Court’s prior opinions, such as *Markman v. Westview Instruments, Inc.*, 517 U.S. 370 (1996).

Thereafter the Supreme Court granted Lighting Ballast’s petition for a writ of certiorari, vacated the en banc opinion, and remanded it to this court for further consideration in light of *Teva*.

II

A. “VOLTAGE SOURCE MEANS”

As noted above, the district court initially construed the “voltage source means” limitation in claim 1 of the ’529 patent as a means-plus-function limitation. Based on this conclusion, the court looked for a disclosed structure in the specification to correspond to the voltage source function, but found none. These combined conclusions rendered the patent invalid as indefinite. After Lighting Ballast filed a motion for reconsideration, the district court reversed course, finding that its initial construction of “voltage source means” was incorrect. The district court noted that its prior ruling “unduly discounted the unchallenged expert testimony” and “exalted form over substance and disregarded the knowledge of a person of ordinary skill in the art.” *Lighting Ballast Control, LLC v. Philips Elecs. N. Am. Corp.*, No. 7:09-cv-29, 2010 WL 4946343, at *10, *12 (N.D. Tex. Dec. 2, 2010). The district court cited testimony from an expert for Lighting Ballast, Dr. Victor Roberts, and the inventor, Andrzej Bobel, both of whom testified that one of skill in the art would understand the claimed “voltage source means” to correspond to a rectifier, which converts alternating current (“AC”) to direct current (“DC”), or other structure capable of supplying useable voltage to the device. Thus, the district court concluded that the term “voltage source means” had sufficient structure to avoid the strictures of § 112 ¶ 6. The district court reconfirmed this finding when it denied ULT’s motion for summary judgment of invalidity, expressly stating it would not consider the question again.

ULT argues that the district court erred when it held that the term “voltage source means” is not governed by § 112 ¶ 6, both in response to Lighting Ballast’s motion for reconsideration and in response to ULT’s later motion for summary judgment. ULT contends that the extrinsic evidence presented by Lighting Ballast and accepted by the district court cannot overcome the presumption that the term is in means-plus-function format for two reasons. First, ULT believes that Lighting Ballast failed to identify intrinsic evidence showing that a person of ordinary skill in the art would understand “voltage source means” to be structural. Second, ULT contends that, at best, “voltage source means” refers to any structure capable of performing that function rather than the definite structure of a rectifier, as employed in ULT’s products. ULT contends that, because the written description of the specification fails to disclose structure corresponding to the claimed function of the “voltage source means” and the extrinsic evidence offered did not adequately identify a single structure, the asserted claims are invalid.

Citing Rule 51 of the Federal Rules of Civil Procedure, Lighting Ballast argues that ULT waived any argument regarding the proper construction of “voltage source means” by failing to raise the issue in either its pre- or post-verdict motions for judgment as a matter of law. Lighting Ballast also argues that *Ortiz v. Jordan*, 562 U.S. 180 (2011), prevents ULT from appealing the denial of ULT’s summary judgment motion regarding indefiniteness because *Ortiz* forbids a party from appealing from an order denying summary judgment after a full trial on the merits. In the alternative, Lighting Ballast argues

that the district court's construction was correct because this court's precedent allows "use of even purely functional claim language to show that the limitation as a whole suggests structure." Appellee's Resp. Br. at 40. Lighting Ballast contends that a person of ordinary skill in the art would immediately recognize the implicit disclosure of a rectifier in the "voltage source means" limitation. Lighting Ballast concludes that ULT cannot show clear error in the district court's consideration of the extrinsic evidence in reaching the conclusion that ULT failed to meet its burden to prove the '529 patent invalid as indefinite.

As a preliminary matter, we reject Lighting Ballast's argument that ULT waived its argument regarding "voltage source means" because ULT was not required to object to claim construction under Rule 51 after ULT made its claim construction position clear to the court and the court rejected it. We disagree that *Ortiz v. Jordan* controls here. *Ortiz* addressed a circumstance in which a trial court denied summary judgment on grounds that material issues of fact prevented judgment as a matter of law. In those circumstances, the defendant remained obliged to present its argument to the trier of fact and failure to do so prevented raising it on appeal. While the third and final time the district court addressed the issue of indefiniteness based on the term "voltage source means" was in the context of summary judgment, the issue of whether a claim term is governed by § 112 ¶ 6 is a claim construction issue. *Personalized Media Comm'n, LLC v. Int'l Trade Comm'n*, 161 F.3d 696, 702 (Fed. Cir. 1998) ("[w]hether certain claim language invokes 35 U.S.C. § 112, ¶ 6 is an exercise in claim construction"); *see*

also *Robert Bosch, LLC v. Snap-On Inc.*, 769 F.3d 1094, 1098 (Fed. Cir. 2014) (“[d]etermining whether certain claim language invokes § 112, ¶ 6 is an exercise in claim construction”) (internal quotations omitted). And claim construction is an issue for the court, not the jury. *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 391 (1996). When the district court denied ULT’s motion for summary judgment, it did not conclude that issues of fact precluded judgment; it effectively entered judgment of validity to Lighting Ballast.

We conclude that ULT did not waive its argument that the asserted claims are invalid for indefiniteness. It is generally accepted that a district court’s claim construction order is within the class of decisions that do not terminate litigation and yet may be appealed upon resolution of the case and issuance of a final judgment. *See, e.g., O2 Micro Int’l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1359 (Fed. Cir. 2008) (holding that under Fifth Circuit law the appellants’ arguments on appeal regarding claim construction were not waived even though appellants did not object to the jury instructions because the arguments were made clear to the district court and the district court did not clearly indicate that it was open to changing its claim construction) (citation omitted); *Creo Prod., Inc. v. Presstek, Inc.*, 305 F.3d 1337, 1346 (Fed. Cir. 2002) (finding that party preserved its indefiniteness argument regarding the application of § 112 ¶ 6 for appeal because the district court resolved the issue prior to appeal). As ULT points out in its brief, ULT argued before the district court that the asserted claims were indefinite under § 112 ¶ 2 because the term “voltage source means” was

governed by § 112 ¶ 6 and lacked corresponding structure in the written description. The district court addressed this issue during claim construction proceedings. The district court initially accepted ULT's position, J.A. 804-15, reversed itself thereafter, *id.* at 16-24, and declined to resolve the issue a third time when ULT moved for summary judgment on this issue, *id.* at 62. This is sufficient to preserve the issue for appeal.

Rule 51 does not change this result where a party's position on claim construction is made clear before the district court and the district court has rejected that position. *See Taita Chem. Co., Ltd. v. Westlake Styrene, LP*, 351 F.3d 663, 667-68 (5th Cir. 2003) (stating that a party may be excused from objecting to a jury charge under Rule 51 of the Federal Rules of Civil Procedure where the party's position is clear from the record and the district court made clear that a further objection would be unavailing, such as where a party previously filed objections and the district court made clear no more objections would be heard); *Lang v. Texas & P. Ry. Co.*, 624 F.2d 1275, 1279 (5th Cir. 1980) (“[Rule 51 of the Federal Rules of Civil Procedure] is not without exceptions, [] and the failure to object [to the jury charge] may be disregarded if the party's position has previously been made clear to the court and it is plain that a further objection would have been unavailing.”); *see also Cardiac Pacemakers, Inc. v. St. Jude Medical, Inc.*, 381 F.3d 1371, 1381 (Fed. Cir. 2004) (“When the claim construction is resolved pre-trial, and the patentee presented the same position in the *Markman* proceeding as is now pressed, a further objection to the district court's pre-trial ruling may indeed have

been not only futile but unnecessaryObjection under Rule 51 [of the Federal Rules of Civil Procedure] was not required to preserve the right to appeal the *Markman* ruling.”) (under Seventh Circuit law). ULT was not required to object to the jury instructions to preserve this issue for appeal because it made clear to the district court its position on the issue and the issue was finally resolved by the district court prior to trial.

Having addressed the preliminary issue of waiver, we now move to the merits. The district court made findings of fact based on extrinsic evidence. *See Teva*, 574 U.S. at ___, 135 S. Ct. at 842. Under the circumstances, it was not legal error for the district court to rely on extrinsic evidence, because the extrinsic evidence was “not used to contradict claim meaning that is unambiguous in light of the intrinsic evidence.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1324 (Fed. Cir. 2005). For example, the district court determined that “while the ‘voltage source means’ term does not denote a specific structure, it is nevertheless understood by persons of skill in the lighting ballast design art to connote a class of structures, namely a rectifier, or structure to rectify the AC power line into a DC voltage for the DC input terminals.” J.A. 22. The district court went on to note that the language following “voltage source means” in the claim—“providing a constant or variable magnitude DC voltage between the DC input terminals”—“when read by one familiar with the use and function of a lighting ballast, such as the one disclosed by the 529 Patent, [sic] would understand a rectifier is, at least in common uses, the only structure that would provide ‘a constant or variable

magnitude DC voltage”. *Id.* at 23. The district court further noted that “[i]t is clear to one skilled in the art that to provide a DC voltage when the source is a power line, which provides an AC voltage, a structure to rectify the line is required and is clear from the language of the ‘voltage source means’ term.” *Id.* We defer to these factual findings, absent a showing that they are clearly erroneous.

The district court’s factual findings are supported by the record. Specifically, these factual findings are supported by the testimony of Dr. Roberts and Mr. Bobel. Mr. Bobel testified in his deposition that the “voltage source means” limitation connotes a rectifier to one skilled in the art. Mr. Bobel further explained that a battery could likewise provide the necessary DC supply voltage described in the patent. Similarly, Dr. Roberts explained that the “voltage source means” limitation suggests to him a sufficient structure, or class of structures, namely a rectifier if converting AC from a “power line source” to DC for a “DC supply voltage” or a battery if providing the DC supply voltage directly to the DC input terminals. This expert testimony supports a conclusion that the limitations convey a defined structure to one of ordinary skill in the art. *See Rembrandt Data Techs., LP v. AOL, LLC*, 641 F.3d 1331, 1341 (Fed. Cir. 2011). Because the district court’s factual findings demonstrate that the claims convey sufficient structure, the district court was correct to conclude that the term “voltage source means” is not governed by § 112 ¶ 6. As such, we affirm the district court’s decision concerning “voltage source means.”

B. “DIRECT CURRENT BLOCKING MEANS”

The district court initially construed the term “direct current blocking means” to be governed by § 112 ¶ 6. The district court then determined that a capacitor or diode was the disclosed corresponding structure. The district court later amended this construction to indicate that this term requires that each set of output terminals be connected to a DC blocking capacitor. J.A. 58.

ULT argues that the district court erred when it modified its construction of the “direct current blocking means” term by improperly adding a requirement that each set of output terminals be connected to a DC blocking capacitor. ULT argues that without this limitation on the claim, it is clear that the asserted claims are anticipated by two prior art references: JP 1-157099 (“JP ’099”) and JP 61-153997 (“JP ’997”).

Lighting Ballast counters that ULT failed to preserve any issues related to JP ’099 for appeal by not raising JP ’099 before the jury. Lighting Ballast also contends that ULT’s arguments fail on the merits.²

² Lighting Ballast also makes a summary argument without citation that ULT waived any arguments regarding dependent claims 2 and 5 by failing to appeal the judgment of validity of these claims. We decline to address this arguments given the insufficient explanation and lack of legal basis supporting the argument.

As noted above, where the issue raised in a motion for summary judgment is a pure question of law or, as in the case of claim construction, an issue for the court to decide, the denial of a party's motion for summary judgment generally results in a reciprocal grant of summary judgment to the other party. For issues of fact like anticipation, on the other hand, the denial of a motion for summary judgment usually only indicates that there are questions of fact to be resolved. In this case, the parties treated the district court's denial of ULT's motion for summary judgment of invalidity as though it was a grant of a motion for summary judgment of no anticipation based on JP '099, *see* J.A. 5234, even though no such motion was ever filed. Anticipation is a question of fact that is ultimately for the jury to decide. While ULT argues it could not have prevailed on its anticipation defense if operating under the district court's amended claim construction, we have no factual record upon which to assess that argument. We conclude that, absent a stipulation between the parties regarding anticipation, ULT had to present the question to the jury in order to preserve its right to raise it before us.

We turn to the issue of anticipation by JP '997. The district court construed "direct current blocking means" as requiring a capacitor or diode at every output terminal. Because JP '997 does not disclose a capacitor or diode at every output terminal, the district court concluded that a material fact existed as to whether JP '997 anticipates the claims. The parties disputed the issue at trial, and the jury returned a verdict of no anticipation.

The parties agree that the term “direct current blocking means” is governed by § 112 ¶ 6. The parties also agree that the corresponding structure is a collection of capacitors or diodes. The only point of disagreement is whether the structure requires a capacitor/diode coupled to every set of output terminals or only those through which the DC control signal passes and whether, under the correct construction, JP ’997 anticipates the asserted claims.

ULT has failed to show reversible error in the district court’s construction of the term “direct current blocking means.” Claim 1 recites “output terminals” and a “direct current blocking means coupled to *the output terminals*” The plain language of the claims requires a direct current blocking means at every output terminal. Under the district court’s construction, the jury’s verdict is supported by substantial evidence. At trial, Dr. Zane testified that JP ’997 does not teach a DC blocking means attached to each of the output terminals. J.A. 13340-41. Dr. Giesselmann failed to offer any testimony regarding structural equivalency. As such, we hold that the district court’s construction of “direct current blocking means” was not erroneous, and that the jury’s verdict of no anticipation is supported by substantial evidence.

C. “WHENEVER ...DEFECTIVE”

We turn to the construction of “whenever at least one discharge lamp is removed from the output terminals or is defective.” The “direct current blocking means” recited in claim 1 is “operable to stop flow of the control signal from the DC input terminals,

whenever at least one gas discharge lamp ...is defective.”³ The district court construed “defective” to mean “whenever the direct current path between [two terminals] is broken.” A51. The court relied on the following language in the specification for support: “the [direct current blocking means] will be held discharged for any period of time as long as: (i) there is *an unbroken direct current path DCP between terminal B+ and terminal CTa*”

The district court’s construction is supported by the intrinsic record. The DC blocking means does not block control signal when a lamp is inserted into its holders and has a working filament. There is no need to block current in this instance because the circuit is closed, and there is no danger that current will dissipate into the ballast circuitry. As the district court recognized, on the other hand, the DC blocking means blocks control signal when a lamp is removed or when the lamp has a broken filament, i.e., when the direct current path between the relevant terminals (terminals B+ and CTa) is broken. As a result, the district court’s claim construction was not erroneous.

D. “CONNECTED TO”

Before trial, the parties did not propose that the district court construe the term “connected to.” ULT did not ask for its proposed construction until after trial. In resolving ULT’s motion for JMOL, the district

³ Lighting Ballast argues that ULT waived “whenever ...defective” arguments. We reject that argument for the reasons given in Part II.A of this opinion.

court construed the term to mean the same thing as “for connection to.”

ULT argues that its accused products do not include “output terminals connected to the filaments” of a lamp as required by claims 1, 2, and 5 because the term means something different from “for connection to.” Lighting Ballast argues that ULT waived this argument. We agree.

ULT waived its right to seek a new claim construction because ULT did not seek that construction until after trial. As in *Broadcom Corp. v. Qualcomm Inc.* this case “falls squarely within our holding in *Eli Lilly & Company v. Aradigm Corporation*, where a party ‘never requested that the district court construe any terms in the relevant claim and never offered a construction of that claim, but rather only after the presentation of all of the evidence to the jury ...even suggested that claim construction might be helpful to determine the proper scope of the claimed invention.’” 543 F.3d 683, 694 (Fed. Cir. 2008) (quoting *Eli Lilly*, 376 F.3d 1352, 1360 (Fed. Cir. 2004) (internal quotations and brackets omitted)). We hold that ULT has waived its right to request a construction of “connected to” and that ULT implicitly conceded that the meanings of “connected to” is clear and not in need of construction.

E. “CONTROL MEANS”

ULT argues that the district erred in denying JMOL on the basis of infringement of the “control means” limitation under the doctrine of equivalents. ULT contends that it does not infringe the asserted

claims because the control circuits in the accused products allow a ballast to continue to draw power after shutdown, a feature that differentiates the accused products from the “control means” limitation of claim 1. According to ULT, the ’529 patent disclaims circuits like the accused circuits that draw power after shutdown by distinguishing such circuits from the “control means” feature. ULT also highlights a number of other ways in which ULT’s products differ from the “control means” limitation of claim 1.

Lighting Ballast counters that substantial evidence supports the jury’s finding of equivalency. According to Lighting Ballast, claim 1 does not require the absence of power-draw from the *ballast* on shutdown. Rather, Lighting Ballast explains that the “control means” feature must be operable to stop oscillations of the converter, a feature that Lighting Ballast contends the accused products share with embodiments of the ’529 Patent. Lighting Ballast argues that ULT confuses power draw from the ballast with stopping oscillations of the converter. Accordingly, Lighting Ballast contends that because ULT does not challenge the jury’s implicit finding that the accused products stop oscillations of the converter, the jury’s verdict is supported by substantial evidence. We agree with Lighting Ballast.

A denial of a motion for JMOL is not unique to patent law, and thus, we apply the law of the applicable regional circuit, in this case the Fifth Circuit. *See Transocean Offshore Deepwater Drilling, Inc. v. Maersk Drilling USA, Inc.*, 699 F.3d 1340, 1346-47 (Fed. Cir. 2012). Under Fifth Circuit law, a district court’s decision on a motion for JMOL is

reviewed de novo, reapplying the JMOL standard. *Ford v. Cimarron Ins. Co.*, 230 F.3d 828, 830 (5th Cir. 2000). JMOL is appropriate when a party has been fully heard on an issue and there is no legally sufficient evidentiary basis for a reasonable jury to find for that party on that issue. Fed. R. Civ. P. 50(a)(1).

ULT seeks to have this court reverse the district court's opinion on JMOL regarding the "control means" term by reweighing the evidence produced at trial. We refuse to do so. The role of an appellate court is to review the final judgment issued by the district court. When final judgment is issued upon a jury verdict, this court can only look to whether there was substantial evidence to support the jury's verdict. We may not independently reweigh the evidence, as ULT asks this court to do.

We conclude that the jury's verdict is supported by substantial evidence. As outlined in the district court's opinion, Lighting Ballast's expert, Dr. Victor Roberts, identified the structure of the accused products and testified that such structures were equivalent to the "control means" of the '529 patent for infringement purposes. Dr. Roberts first identified where DC enters the "control means" and testified that the accused products perform the first function of the '529 patent "control means" of receiving a control signal from the DC input terminals. Dr. Roberts then testified that the accused products satisfy the second function of the "control means" limitation because they initiate oscillations and stop oscillations of the converter. Dr. Roberts explained that the signal flows down through the resistors,

through the discrete transistors and eventually over the integrated circuit into a pin labeled EN2, which enables oscillations. Dr. Roberts testified in detail as to the way in which the accused products meet the “control means” limitation. We find that this evidence is sufficient to support the jury’s verdict of infringement.

III

For these reasons, we affirm the judgment of the district court.

AFFIRMED

APPENDIX B

**United States Court of Appeals
for the Federal Circuit**

LIGHTING BALLAST CONTROL LLC,
Plaintiff-Appellee,

v.

**PHILIPS ELECTRONICS NORTH AMERICA
CORPORATION,**
Defendant,

AND

**UNIVERSAL LIGHTING TECHNOLOGIES,
INC.,**
Defendant-Appellant.

2012-1014

Appeal from the United States District Court for
the Northern District of Texas in case no. 09-CV-0029,
Judge Reed O'Connor.

Decided: February 21, 2014

ANDREW J. DHUEY, of Berkeley, California, argued for plaintiff-appellee on rehearing en banc. With him on the brief were JONATHAN T. SUDER and DAVID A. SKEELS, Friedman, Suder & Cooke, of Fort Worth, Texas; and ROBERT P. GREENSPOON, Flachsbart & Greenspoon, LLC, of Chicago, Illinois.

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ROGER L. COOK, of San Francisco, California, for *amicus* Ad Hoc Committee of Patent Owners in the Lighting Industry on rehearing en banc.

ON REHEARING EN BANC

Before RADER, *Chief Judge*, NEWMAN, LOURIE, DYK, PROST, MOORE, O'MALLEY, REYNA, WALLACH, and TARANTO, *Circuit Judges*.*

Opinion for the court filed by NEWMAN, *Circuit Judge*, with whom LOURIE, DYK, PROST, MOORE, and TARANTO, *Circuit Judges*, join.

Concurring opinion filed by LOURIE, *Circuit Judge*.

Dissenting opinion filed by O'MALLEY, *Circuit Judge*, with whom RADER, *Chief Judge*, and REYNA and WALLACH, *Circuit Judges*, join.

NEWMAN, *Circuit Judge*.

The court en banc granted the petition filed by patentee Lighting Ballast Control, in order to reconsider the holding in *Cybor Corp. v. FAS Technologies, Inc.*, 138 F.3d 1448 (Fed. Cir. 1998) (en banc) establishing the standard of appellate review of district court decisions concerning the meaning and scope of patent claims—called “claim construction.” Implementing the Supreme Court’s decision in *Markman v. Westview Instruments, Inc.*, 517 U.S. 370 (1996) (*Markman II*), *aff’g Markman v. Westview Instruments, Inc.*, 52 F.3d 967 (Fed. Cir. 1995) (en

* Circuit Judges Chen and Hughes took no part in the consideration or decision of the case.

banc) (*Markman I*), this court in *Cybor* held that patent claim construction receives *de novo* determination on appeal, that is, review for correctness as a matter of law. Such review is conducted on the administrative record and any additional information in the record of the district court, and is determined without deference to the ruling of the district court.

In the case now before us, a panel of this court followed the *Cybor* standard and revised the district court's claim construction, applying *de novo* the statutory requirements of 35 U.S.C. §112 ¶6 and §112 ¶2.¹ Briefly, the panel held that the claim term "voltage source means" is a means-plus-function term requiring corresponding structure in the specification. On this claim construction, the panel reversed the district court and held the claims invalid for indefiniteness. The patentee requests rehearing, stating that on deferential appellate review the district court would not or should not have been reversed. This court undertook rehearing en banc for the purpose of reconsidering the standard of appellate review of claim construction.

For the reasons we shall discuss, we apply the principles of *stare decisis*, and confirm the *Cybor* standard of *de novo* review of claim construction, whereby the scope of the patent grant is reviewed as a matter of law. After fifteen years of experience with

¹ *Lighting Ballast Control, LLC v. Philips Electronics North America Corp.*, No. 7:09-CV-29-O, 2010 WL 4946343 (N.D. Tex. Dec. 2, 2010), *rev'd*, 498 Fed. App'x 986 (Fed. Cir. 2013), *withdrawn*, 500 Fed. App'x 951 (Fed. Cir. 2013).

Cybor, we conclude that the court should retain plenary review of claim construction, thereby providing national uniformity, consistency, and finality to the meaning and scope of patent claims. The totality of experience has confirmed that *Cybor* is an effective implementation of *Markman II*, and that the criteria for departure from *stare decisis* are not met.

I
THE REHEARING ARGUMENTS

Lighting Ballast argues that *de novo* plenary determination of claim construction is improper appellate practice, stating that the interpretation of documents is fundamentally factual in nature, and that the district court's interpretation of patent claims requires deference on appeal. Lighting Ballast states that on deferential review the district court's claim construction for the patent in suit would be sustained, along with the ensuing judgment that the claims in suit are valid and infringed.

This en banc court agreed to reconsider the principle of *de novo* review of claim construction, and invited supplemental briefing and *amicus curiae* participation on the following questions:

- (1) Should this court overrule *Cybor*?
- (2) Should this court afford deference to any aspect of a district court's claim construction?
- (3) If so, which aspects should be afforded deference?

The parties as well as the *amici curiae* were not of one mind, but divided among three general views, all thoughtful and well presented.² The general positions are summarized:

The first view

The view favored by Lighting Ballast is that the *Cybor* decision is incorrect and should be entirely discarded. Lighting Ballast argues that this court in *Cybor* misapplied the Supreme Court's decision in

² Thirty-eight entities participated as *amici curiae* in twenty-one briefs. The participants are: Amazon.com, Inc.; American Bar Association; American Intellectual Property Law Association; Austin Intellectual Property Law Association; Association of the Bar of the City of New York; Association of University Technology Managers; Cisco Systems Inc.; Colorado State University Research Foundation; Connecticut Intellectual Property Law Association; Delaware Chapter of the Federal Bar Association; Dell Inc.; EMC Corporation; Federal Circuit Bar Association; Fédération Internationale Des Conseils En Propriété Intellectuelle; Google Inc.; Hewlett-Packard Co.; Intel Corporation; the Intellectual Property Institute of William Mitchell College of Law; the Intellectual Property Law Association of Chicago; the Intellectual Property Owner's Association; former Chief Judge (ret.) Paul R. Michel; Professor Peter S. Menell; Microsoft Corp.; New-South Innovations; NUTech Ventures, Inc.; Patent Owners in the Lighting Industry; Public Patent Foundation; Red Hat, Inc.; San Diego Intellectual Property Law Association; SAP America Inc.; SAS Institute Inc.; Sigram Schindler Beteiligungs GmbH; the Science & Technology Corporation at the University of New Mexico (STC.UNM); the University of Nebraska Medical Center Technology Transfer Corporation (UNeMed Corp.); Wisconsin Alumni Research Foundation; TEC Edmonton; the University of Pittsburgh; the United States; and Yahoo! Inc. At the court's invitation, the United States participated in the argument.

Markman II, in that the Court had focused only on whether questions of patent claim construction are subject to jury trial, or whether this issue should be decided solely by a judge. These proponents state that the Court in *Markman II*, in deciding the judge-jury question, did not change the traditional distinction between fact and law, recognized that there are factual aspects of claim construction, and did not address the standard of appellate review.

These proponents argue that the Court left intact the protocol of appellate deference to a district court's fact-based rulings, whether the facts relate to claim construction or any other issue, and whether the ruling is by a judge or by a jury. They state that the *Cybor* standard of plenary appellate review is incorrect, and remind us that the Court in *Markman II* described claim construction as a "mongrel practice" of law and fact with "evidentiary underpinnings," 517 U.S. at 378, 390. They argue that although the Court stated that "the interpretation of a so-called patent claim ...is a matter of law reserved entirely for the court," *id.* at 372, the Court did not strip claim construction of its essentially factual nature.

These proponents point out that in construing patent claims, expert testimony and documentary evidence may be presented to the district court. They argue that restoration of deferential appellate review on the clear error standard would not only respect the traditional trial/appellate relationship, but also is more likely to give weight to aspects involving credibility of witnesses. They point out that Federal Rule of Civil Procedure 52(a)(6) requires that the

district court’s factual findings receive review on the deferential clearly erroneous standard,³ citing *Pullman-Standard v. Swint*, 456 U.S. 273, 287 (1982) for its statement that Rule 52(a) “does not divide findings of fact into those that deal with ‘ultimate’ and those that deal with ‘subsidiary’ facts.”

These proponents argue that patent claim construction is most reasonably classified as a question of fact, and that the Court’s *Markman II* description of claim construction as better suited to determination by a judge rather than a jury does not affect the requirement of appellate deference to findings of fact made at the trial level. Thus Lighting Ballast urges that the *Cybor* standard of *de novo* review is incorrect and should be entirely discarded.

The second view

The second approach, favored by some *amici curiae* including the United States, may be viewed as a fusion or hybrid of *de novo* review and deferential review. These proponents acknowledge that the Court in *Markman II* described patents as “legal instruments” and stated that interpretation of patent claims is a “purely legal” matter, 517 U.S. at 391, but argue that the correct appellate approach is for the factual aspects of claim construction to be reviewed on the clearly erroneous standard, while the final

³ Rule 52 (a)(6) *Setting Aside the Findings*. Findings of fact, whether based on oral or other evidence, must not be set aside unless clearly erroneous, and the reviewing court must give due regard to the trial court’s opportunity to judge the witnesses’ credibility.

conclusion receives review as a matter of law. *See, e.g.,* Brief of *Amicus Curiae* United States at 4 (“Because *Cybor* fails to acknowledge that claim construction may involve factual findings entitled to deferential review under Rule 52(a), it should be overruled. But this Court should reaffirm that the ultimate construction of a patent claim is a legal conclusion subject to *de novo* review.”). The United States draws analogy to the ruling in the regulatory tariff case of *Great Northern Railway Co. v. Merchants’ Elevator Co.*, 259 U.S. 285, 292 (1922), that when ambiguity arises in the construction of certain legal instruments, the ambiguity is resolved as a question of fact.

Some of these *amici* recognize that difficulties may arise in practice, in knowing which aspects of the district court’s claim construction are subject to deferential review and which aspects receive *de novo* determination. They suggest a solution whereby the standard of review would depend on whether the district court’s claim construction drew solely from the record of the patent and its prosecution history (called “intrinsic evidence”), or whether external information or witness testimony was presented in the district court (that is, “extrinsic evidence”). Applying this distinction, some *amici* propose that claim constructions based on extrinsic evidence would receive clearly erroneous review, for such evidence may entail credibility or reliability findings, while constructions based solely on the patent document and prosecution history would receive *de novo* review.

The proponents of a hybrid form of appellate review argue that this approach comports with the

Court's position in *Markman II*, yet respects the traditional roles of trial and appellate courts. Thus it is proposed that the standard of review of claim construction should vary with the source and purpose of the evidence, drawing analogy to review of the determination of obviousness under 35 U.S.C. §103. See Brief of *Amicus Curiae* American Bar Association at 12 ("it is well settled that Rule 52(a) governs appellate review of the factual inquiries underlying the ultimate legal issue of obviousness").

The third view

The third view, supported by some *amici curiae*, is that *Cybor* is both reasonable and correct in view of the Court's rulings in *Markman II*. These proponents stress the Court's statements that claim construction is a "purely legal" matter, 517 U.S. at 391, and that "the interpretation of a so-called patent claim ...is a matter of law," *id.* at 372. They argue that *de novo* review of the scope and meaning of patent claims conforms to the rule that applies in all areas of law, that "interpreting a set of legal words ...in order to determine their basic intent" is a "purely legal matter." *Buford v. United States*, 532 U.S. 59, 65 (2001). They state that sufficient reason has not been shown to change this established and effective precedent in patent cases.

In *Markman II* the Court placed claim construction in historical context, quoting Professor Robinson's treatise:

The duty of interpreting letters-patent has been committed to the courts. A patent is a legal

instrument, to be construed, like other legal instruments, according to its tenorWhere technical terms are used, or where the qualities of substances or operations mentioned or any similar data necessary to the comprehension of the language of the patent are unknown to the judge, the testimony of witnesses may be received upon these subjects, and any other means of information be employed. *But in the actual interpretation of the patent the court proceeds upon its own responsibility, as an arbiter of the law, giving to the patent its true and final character and force.*

517 U.S. at 388 (quoting 2 W. Robinson, Law of Patents §732, pp. 481-83 (1890)) (emphasis the Court's). Proponents of retaining the *Cybor* standard point to the Court's emphasis that the judge is responsible for "the actual interpretation of the patent." *Id.* These proponents also point to the Court's citation to *Miller v. Fenton*, 474 U.S. 104 (1985) in support of the Court's ruling in *Markman II* that:

[W]hen an issue "falls somewhere between a pristine legal standard and a simple historical fact, the fact/law distinction at times has turned on a determination that, as a matter of the sound administration of justice, one judicial actor is better positioned than another to decide the issue in question." So it turns out here, for judges, not juries, are the better suited to find the acquired meaning of patent terms.

Markman II, 517 U.S. at 388 (quoting *Miller*, 474 U.S. at 114). These proponents argue that *Miller* confirms

that the Court in *Markman II* intended to decide—and effectively did decide—both the judge/jury question and the fact/law question, as well as the related question concerning appellate review.

The Court’s reliance on *Miller* in *Markman II* illustrates the Court’s recourse to general jurisprudence and practical considerations, suitably applied, in resolving patent issues. Proponents of adherence to *Cybor* point out that *Miller* reiterated the Court’s recognition in *Pullman-Standard* that no principle will “unerringly distinguish a factual finding from a legal conclusion.” *Miller*, 474 U.S. at 113 (quoting *Pullman-Standard*, 456 U.S. at 288). Proponents apply that observation to criticize departure from *Cybor* that would add, to the already complex laws of claim construction, a new and uncertain and contentious inquiry into which aspects of a particular construction fall on which side of the fact-law line. These proponents state that *Cybor* is not subject to these difficulties, and that there is not sufficient reason to impose this new area of dispute and peripheral litigation upon the trial and appeal of patent cases.

The proponents of *stare decisis* point to the courts’ and patent community’s fifteen years of experience with *Cybor*, and argue that this experience supports retention of the *Cybor* principle. Emphasizing the potential multi-case and multi-forum litigation of patents on today’s technologies, they argue that it is particularly important that this court be able to resolve claim construction definitively as a matter of precedent, rather than allow differing trial court constructions of the same patent, as may result from

deferential review of close questions. As the Court observed in *Markman II*, “treating interpretive issues as purely legal will promote (though it will not guarantee) intrajurisdictional certainty through the application of *stare decisis* on those questions not yet subject to interjurisdictional uniformity under the authority of the single appeals court.” 517 U.S. at 391.

Thus it is argued that the meaning and scope of a patent claim, which sets the boundaries of an exclusionary right good against the world at large, rather than only for parties to a voluntary transaction or only for the plaintiff and defendant in a particular case, should be construed based on publicly available materials in the record, and resolved for uniform application throughout the nation, as a matter of law. No party or *amicus* disputed that the only way to achieve uniform construction of the same claim, a goal recognized in *Markman II*, is by *de novo* appellate construction of the claim as a matter of law. There is no dispute as to the importance of national uniformity and finality of claim construction, for it is not unusual for different district courts to litigate the same patent against different parties and different assertions of infringement.

In sum, these proponents argue that the *Cybor* standard of review of claim construction reasonably and appropriately implements the Court’s ruling in *Markman II*, and urge this court to stand by *Cybor* and its fifteen years of experience. Proponents of stability through the principles of *stare decisis* stress that consistency of legal analysis and reliability of judicial process are foundations of not only legal systems generally, but also of the technological

advance and industrial commitment that are goals of the patent system. See Brief of *Amici Curiae* Cisco et al. at 15 (“Competing and inconsistent interpretations of patent claims obscure the boundaries of patents and deeply undermine their important notice function, inevitably resulting in more—rather than less—litigation.”); *id.* at 19 (“Clear scope is important to all potential market entrants. This kind of horizontal certainty is important to the entire industry.”).

The criticism of *Cybor* is not based on any demonstration that *de novo* claim construction is likely to be incorrect, but rather on concerns for judicial roles and relationships. We do not ignore these important concerns. However, as proponents of *stare decisis* point out, *Cybor* is narrowly focused on the threshold construction of a legal document, and does not affect the traditional deference to district court findings of infringement or validity or damages or any other question of fact in patent litigation. The proponents remind us that *Cybor* was adopted in implementation of the *Markman* decisions of this court and the Supreme Court, and is in accord with these rulings on the nature of the patent grant and the judicial obligation for correct determination of the legal scope of the patent grant.

Thus it is urged that the *Cybor* standard should not now be abandoned for a more costly and litigious standard, with diminished stability of procedure and diminished reliability of outcome, and no greater likelihood of correctness of result. These proponents point out that those who would change *Cybor*’s system of plenary review of claim construction have not

shown any benefit or advantage to the law or those served by the law. Thus it is argued that the values of *stare decisis* counsel against overturning *Cybor*.

II STARE DECISIS

The question now before this en banc court is not the same question that was before the en banc court in 1998 when *Cybor* was decided. The question now is not whether to adopt a *de novo* standard of review of claim construction, but whether to change that standard adopted fifteen years ago and applied in many hundreds of decisions. There has been extensive experience of *Cybor* in action, in the district court and on appeal. “Claim construction” has become the gateway issue in patent litigation, often decided in preliminary proceedings before trial and before discovery, and often subject to immediate appeal on summary judgment or injunction grounds. Such experience enriches the principle that courts will “stand by things decided” so that prior rulings may be relied upon.

Stare decisis is of “fundamental importance to the rule of law.” *Hilton v. S. Carolina Pub. Ry. Comm’n*, 502 U.S. 197, 202 (1991) (quoting *Welch v. Texas Dep’t of Highways & Pub. Transp.*, 483 U.S. 468, 494 (1987)). The doctrine of *stare decisis* enhances predictability and efficiency in dispute resolution and legal proceedings, by enabling and fostering reliance on prior rulings. *CSX Transp. Inc. v. McBride*, 131 S. Ct. 2630, 2641 (2011). By providing stability of law that has been decided, *stare decisis* is the foundation of a nation governed by law. The Supreme Court has

said: “we will not depart from the doctrine of *stare decisis* without some compelling justification.” *Hilton*, 502 U.S. at 202 (citing *Arizona v. Rumsey*, 467 U.S. 203, 212 (1984)); see *Dickerson v. United States*, 530 U.S. 428, 443 (2000) (“special justification” is needed to overrule precedent).

Stability in procedural as well as substantive law, on which the public and the courts can rely, guards against the expenditure of time and resources on aspects that have been resolved. These values come to the fore when a court undertakes to reexamine its own precedent, for *stare decisis* implements the “prudential and pragmatic considerations designed to test the consistency of overruling a prior decision with the ideal of the rule of law, and to gauge the respective costs of reaffirming and overruling a prior case.” *Planned Parenthood of S.E. Pa. v. Casey*, 505 U.S. 833, 854 (1992). The principles and policies of *stare decisis* operate with full force where, as here, the en banc court is considering overturning its own en banc precedent.

The presumption that a court will adhere to its prior rulings has “special force” for precedents that resolve non-constitutional issues, for “Congress remains free to alter what we have done.” *J.R. Sand & Gravel Co. v. United States*, 552 U.S. 130, 139 (2008) (quoting *Patterson v. McLean Credit Union*, 491 U.S. 164, 172-73 (1989)). In *Patterson* the Court observed that the same issue had previously divided the Court and that “[s]ome Members of this Court believe that [the precedent] was decided incorrectly”; the Court discussed the principles of *stare decisis*, and concluded that “no special justification has been

shown for overruling” the prior decision, for neither “the growth of judicial doctrine or further action taken by Congress ...have removed or weakened the conceptual underpinnings from the prior decision.” 491 U.S. at 171-173. The Court observed that no “later law has rendered the decision irreconcilable with competing legal doctrines or policies.” *Id.* at 173.

In *Hohn v. United States*, 524 U.S. 236, 253 (1998) the Court discussed its precedent in light of *stare decisis*, and stated that “[o]nce we have decided to reconsider a particular rule, however, we would be remiss if we did not consider the consistency with which it has been applied in practice.” In *Global-Tech Appliances, Inc. v. SEB S.A.*, 131 S. Ct. 2060, 2067-68 (2011) the Court observed that although its prior decision on the same issue was “badly fractured,” the majority holding “has become a fixture in the law,” warranting application of the doctrine of *stare decisis*.

The purposes of consistency and stability that underlie *stare decisis* led to the formation of the Federal Circuit, now thirty years past, to provide consistency and stability to the patent law: “The central purpose is to reduce the widespread lack of uniformity and uncertainty of legal doctrine that exist in the administration of patent law,” H.R. REP. 97-312, at 23 (1981), in view of the importance of technology-based advance to the nation’s economy, *id.*; S. REP. 97-275, at 6 (1981) (same). Legal doctrine in patent law starts with the construction of patent claims, for the claims measure the legal rights provided by the patent.

In the Federal Circuit decision that led to the Supreme Court's *Markman II* ruling, this court explained that reviewing claim construction as a matter of law assures "a true and consistent scope of the claims." *Markman I*, 52 F.3d at 979. The Court did not adjust or criticize that position, which forms the foundation of *Cybor*. *Cybor*, in carrying forward *Markman I* in light of *Markman II*, embodies the view that *de novo* review will "help institute a simplified and clarified method by which both trial and appellate courts address claim construction issues." *Cybor*, 138 F.3d at 1463 (Plager, J., concurring).

We do not ignore that neither *Cybor* nor the *Markman* decisions were free of contention, then as now. As we undertake this review of *Cybor*, we recognize that *stare decisis* is not an "inexorable command," *Agostini v. Felton*, 521 U.S. 203, 235 (1997). Thus we have considered whether there are sound reasons for this court now to depart from this precedent. We proceed with the guidance of history, experience, and the many *amici curiae*, while retaining awareness that to overturn an en banc ruling that has had long and wide application, there must be more than controversy about the prior rule. See *Watson v. United States*, 552 U.S. 74, 82 (2007) ("A difference of opinion within the Court ...does not keep the door open for another try ..."). As observed in *Morrow v. Balaski*, 719 F.3d 160, 181 (3d Cir. 2013) (Smith, J., concurring), "the very point of *stare decisis* is to forbid us from revisiting a debate every time there are reasonable arguments to be made on both sides."

However, departure from precedent may be appropriate when “subsequent cases have undermined [its] doctrinal underpinnings,” *Dickerson*, 530 U.S. at 443; or when the precedent has proved “unworkable,” *J.R. Sand & Gravel Co.*, 552 U.S. at 139; or when “a considerable body of new experience” requires changing the law, *Pearson v. Callahan*, 555 U.S. 224, 234 (2009).

Stare decisis embraces procedural as well as substantive precedent. *Vasquez v. Hillery*, 474 U.S. 254, 266 (1986) (considering whether procedures have so far developed as to have left the old rule “outdated, ill-founded, unworkable, or otherwise legitimately vulnerable to serious reconsideration”); *Swift & Co. v. Wickham*, 382 U.S. 111, 116 (1965) (overruling procedural precedent where “unworkable in practice,” among other problems). Procedures in the litigation-prone arena of patent rights can affect the cost, time, and uncertainty of litigation, and in turn affect economic activity founded on the presence or absence of enforceable patents. Courts should be “cautious before adopting changes that disrupt the settled expectations of the inventing community.” *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 739 (2002).

Applying these premises, we have reviewed the arguments for changing the *Cybor* procedure of *de novo* review of claim construction. First, we have looked for post-*Cybor* developments, whether from the Supreme Court, from Congress, or from this court, that may have undermined the reasoning of *Cybor*. None has been found, or brought to our attention. There has been no legislative adjustment of the *Cybor*

procedure, despite extensive patent-related legislative activity during the entire period of *Cybor*'s existence.

We have looked for some demonstration that *Cybor* has proved unworkable. No proponent of change has shown that *de novo* review of claim construction is unworkable—nor could they, after fifteen years of experience of ready workability. Nor has anyone shown that *Cybor* has increased the burdens on the courts or litigants conducting claim construction.

To the contrary, reversing *Cybor* or modifying it to introduce a fact/law distinction has a high potential to diminish workability and increase burdens by adding a new and uncertain inquiry, not only on appeal but also in the trial tribunal. No consensus has emerged as to how to adjust *Cybor* to resolve its perceived flaws. Despite probing questioning at the en banc hearing, and despite the extensive *amicus curiae* participation, there is no agreement on a preferable new mechanism of appellate review of claim construction; there is no analysis of how deference would be applied to the diversity of old and new technologies and modes of claiming, no clear exposition of fact or law as could be applicable to the millions of unexpired patents, each on a different new technologic advance. As will be discussed, no one, including the dissent, proposes a workable replacement standard for *Cybor*, no workable delineation of what constitutes fact and what constitutes law.

Disentangling arguably factual aspects, some in dispute and some not, some the subject of expert or other testimony and some not, some elaborated by documentary evidence and some not, some construed by the district court and some not, some related to issues to be decided by a jury and some not—and further disentangling factual aspects from the application of law to fact—is a task ripe for lengthy peripheral litigation. We are not persuaded that we ought to overturn the en banc *Cybor* decision and replace its clear *de novo* standard with an amorphous standard that places a new, cumbersome, and costly process at the gate, to engender threshold litigation over whether there was or was not a fact at issue. The principles of *stare decisis* counsel against such an unnecessary change.

No critic of *Cybor* has provided any analysis of specific claims or cases to show, or even to suggest, that deferential appellate review is more likely to achieve the correct claim construction. The principles of *stare decisis* counsel against overturning precedent when there is no evidence of unworkability and no clearly better resolution. The *amici curiae* agreed that modification of *Cybor* is unlikely to change many results, even if it could be defined well (which it has not been, by any *amicus* or by our colleagues in dissent).

Claim construction is a legal statement of the scope of the patent right; it does not turn on witness credibility, but on the content of the patent documents. The court may indeed benefit from explanation of the technology and the instruction of treatises, but the elaboration of experts or tutorial

explanation of technical subject matter does not convert patent claim construction into a question of fact. The type of evidence that may assist a lay judge in determining what a technical term meant to one of skill in the art does not transform that meaning from a question of law into a question of fact. Reference to technical understanding and usage at the time of enactment does not convert statutory interpretation from law to fact. *See, e.g., Corning Glass Works v. Brennan*, 417 U.S. 188, 202 (1974) (applying “the language of industrial relations” to statutory interpretation).

Courts routinely look to dictionaries and treatises to determine the meaning of a statute at the time it was written. *See, e.g., Sandifer v. U.S. Steel Corp.*, 134 S. Ct. 870 (2014) (looking to dictionaries to determine the meaning of “changing clothes” in the Fair Labor Standards Act at the time of enactment); *Comm’r v. Soliman*, 506 U.S. 168 (1993) (interpreting the tax code by looking to dictionary definitions at the time of enactment); *Chapman v. United States*, 500 U.S. 453 (1991) (using dictionaries to ascertain the ordinary meaning of “mixture” in the drug statute).

Similarly, experts in the science or technology may assist the court in understanding the meaning and usage of a claim term, but this does not morph the question into one of fact. *Cf. United States v. Stone & Downer Co.*, 274 U.S. 225 (1927) (relying on expert testimony on the meaning of the tariff term “clothing wool” in the custom of the trade). The Court stated in *Markman II*:

in theory there could be a case in which a simple credibility judgment would suffice to choose between experts whose testimony was equally consistent with a patent's internal logic. But our own experience with document construction leaves us doubtful that trial courts will run into many cases like that. In the main, we expect, any credibility determinations will be subsumed within the necessarily sophisticated analysis of the whole document, required by the standard construction rule that a term can be defined only in a way that comports with the instrument as a whole.

517 U.S. at 389. This expectation has proven accurate. The presentation of expert testimony on the meaning of a claim term does not transform the question from one of law to one of fact.

We have carefully considered the arguments for discarding or modifying *Cybor*, and conclude that they do not justify departing from the now well-established principles and procedures. Under any standard of review consistent with *Markman II*, most issues of claim construction are indisputably matters of law, and would receive *de novo* review. Even the critics of *Cybor* agree that any change would affect only a small number of claim construction disputes. Statements at the en banc hearing are edifying; e.g., Tr. at 1:14:10-1:14:35 (Appellant) (“This court could, in whatever it does with *Cybor*, make very clear that this battle of competing experts is rarely productive, rarely going to influence claim construction ...If you said to me, why doesn't *stare decisis* carry the day? I don't have a

good answer to that.”); *id.* at 55:15-55:20 (United States) (“this court’s law on claim construction requires very little modification”); *id.* at 1:06:50-1:07:30 (United States) (whether a term has special meaning in the art could be “meaningless ultimately” if inconsistent with the intrinsic record).

In response to a question at the hearing, *amicus curiae* United States could not identify any case that would have come out differently under the modified (hybrid) standard of review it proposed. Tr. at 1:07:30-1:08:00. Certainly *stare decisis* counsels against overturning en banc precedent where doing so would change our known, workable *de novo* standard to an undefined alternative, sure to engender peripheral litigation, and which most agree could affect the outcome of very few, if any cases. See *Pearson*, 555 U.S. at 236-37 (criticizing precedent that “sometimes results in a substantial expenditure of scarce judicial resources on difficult questions that have no effect on the outcome of the case”).

Claim construction is often a preliminary proceeding in the district court, before trial of infringement, validity, damages, etc. At the threshold, the court establishes the metes and bounds of the claims that define the patent right. The questions of claim construction are not questions of weight of evidence or credibility of witnesses, but of the claim scope as set forth in the patent documents.

Claim construction is the interpretation of a legal document that establishes a property right that applies throughout the nation. The question under review is whether this court, of nation-wide

jurisdiction, should continue to review claim construction *de novo* with national effect, or whether to change to a system whereby a district court's claim construction is reviewed on the deferential standard appropriate to findings of fact, with or without some sort of hybrid deference to the ultimate determination. The insistence of some *amici curiae* that some form of deferential review is required as well as superior, is not only contrary to the *Markman* holdings, but to the experience of fifteen years of *Cybor*.

In the increasingly frequent situation where the same patent is litigated in different forums against different defendants, differing district court rulings on close questions of claim construction could well warrant affirmance on deferential review. Because differing claim constructions can lead to different results for infringement and validity, the possibility of disparate district court constructions unravels the “uniformity in the treatment of a given patent” that the Court sought to achieve in *Markman II*. 517 U.S. at 390. It would restore the forum shopping that the Federal Circuit was created to avoid. Just as the Court in *Markman II* counted such consequences as negatives that its ruling overcame, they count as negatives in the *stare decisis* analysis.

The question that this court has now reconsidered is whether we should continue to review claim construction as a whole and *de novo* on the record, or whether we should change to a different system that at best would require us to identify any factual aspects and how the trial judge decided them, and review any found or inferred facts not for correctness

but on a deferential standard, with or without also giving deferential review to the ultimate determination of the meaning of the claims. We conclude that such changed procedure is not superior to the existing posture of plenary review of claim construction.

Over these fifteen years this court has applied *Cybor* to diverse subject matter, and the body of precedent has grown large. Deferential review does not promise either improved consistency or increased clarity. We have been offered no argument of public policy, or changed circumstances, or unworkability or intolerability, or any other justification for changing the *Cybor* methodology and abandoning *de novo* review of claim construction.

The proponents of overruling *Cybor* have not met the demanding standards of the doctrine of *stare decisis*. They have not shown that *Cybor* is inconsistent with any law or precedent, or that greater deference will produce any greater public or private benefit. We conclude that there is neither “grave necessity” nor “special justification” for departing from *Cybor*.

III

REMARKS ON THE DISSENT

Our colleagues in dissent offer a few arguments that warrant response. First, referring to “the materials submitted to the court,” the dissent states that “a substantial proportion of the legal community” believes that *Cybor* was “wrongly decided.” Diss. at 6. The materials tell a different tale.

As listed *ante*, at n.2, thirty-eight organizations and individuals filed twenty-one *amicus* briefs. Contrary to the dissent’s statements, all of the technology industries that offered advice to the court, urge retention of *Cybor*’s standard. These *amici curiae* include the largest technology companies in the nation, all involved with the system of patents, all frequent patent litigants both as plaintiffs and as defendants—unlike all of the other *amici*.⁴ The dissent dismisses these voices as merely “some *amici*” who support retention of *Cybor*, Diss. at 6, and offers no response to their concerns for stability, national uniformity, and predictability in claim construction.

The dissent appears unconcerned that the major industrial *amici* urge retention of the *Cybor* standard, and instead announces that “no one in the legal community—except perhaps the members of the majority—has come to believe that either the wisdom or vitality of *Cybor* is settled,” Diss. at 6. This conclusion is curious. For example, the *amicus* brief of Google, Amazon, Hewlett-Packard, Red Hat and Yahoo! states that departing from *Cybor* would “make worse” the uncertainty of claim construction:

[T]he root causes of uncertainty in claim construction are vaguely drafted claims and

⁴ Amazon.com, Inc., Cisco Systems, Inc., Dell Inc., EMC Corporation, Google Inc., Hewlett-Packard Co., Intel Corporation, Microsoft Corporation, SAP America Inc., Red Hat, Inc., and Yahoo! Inc. Other *amici* in support of preserving the full *Cybor* standard are the Austin Intellectual Property Lawyers Association and the Intellectual Property Institute at the William Mitchell College of Law.

contradictory claim-construction methodologies, not appellate review. Deference would not ameliorate those causes of uncertainty; it would make them worse.

* * *

[T]reating claim construction as a factual question subject to clear-error review would only aggravate the uncertainty and cost issues plaguing our patent-litigation system.

Brief of *Amicus Curiae* Google et al. at 4, 5.

The industrial *amici* also respond to the argument, pressed by the dissenters, that treating claim construction as a matter of law negates settlement and increases litigation cost. Diss. at 35. These litigants advise that the contrary is true:

[C]lassifying claim construction as being at least partly factual would make patent litigation even more costly by discouraging courts from resolving claim construction disputes at the outset. Early claim construction is essential to permit the parties to file summary judgment motions, or to engage in informed settlement discussions, before they have to incur potentially unnecessary discovery and other pre-trial costs—costs that force many defendants to settle even meritless cases solely because the exorbitant cost of litigating a case would exceed the settlement amount demanded by the plaintiff.

Google et al. Br. at 4-5. Even Appellant’s counsel at oral argument contradicted the cost-of-litigation and settlement arguments:

A lot of commentators have said *Cybor* is preventing settlements: I don’t believe that. I settle cases all the time. No one has ever focused primarily or even significantly on the standard of review on appeal. They’re focused on the jury. They’re focused on the cost of litigation. So a lot of what’s been put up as reasons to change *Cybor* I don’t think are there.

Tr. 1:14:40-1:15:05.

In the brief filed by Cisco, Dell, EMC, Intel, SAP, and the SAS Institute, these *amici curiae* suggest that the proponents of overturning *Cybor* incorrectly conflate concepts of uncertainty with appellate reversal rates. These *amici* explain that any possible uncertainty of affirmance on appeal is not the issue in claim construction; rather, the issue is how to generate accuracy and uniformity in claim construction, that is, how to construe claims correctly and predictably.

Clear scope is important to all potential market entrants. This kind of horizontal certainty is important to the entire industry. By contrast, the concern that *de novo* review increases the “duration” of a single patent litigation until a final decision is reached in that particular case (*Cybor*, 138 F.3d at 1476 (Rader, J., dissenting))—what might be called vertical uncertainty—matters only in the small fraction

of cases that reach an appeal. Vertical uncertainty is more visible than horizontal uncertainty, but, as often is the case, here it is the unseen effects that are greater. *Cf. Frédéric Bastiat, What Is Seen and What Is Not Seen* (1848), available at <http://www.econlib.org/library/Bastiat/basEss1.html>.

For this reason, it is not merely the overarching principles of claim construction, but their application, that must be consistent. In claim construction as elsewhere, “the relevant legal principle can be given meaning only through its application to the particular circumstances of a case.” *Miller*, 474 U.S. at 114.

Brief of *Amicus Curiae* Cisco et al. at 19.

The Cisco *amici* emphasize the Supreme Court’s recognition of “the importance of uniformity” in *Markman II*, 517 U.S. at 390, and stress that treating claim construction issues as “purely legal,” *id.* at 391, enables appellate review to supply that uniformity:

Federal Circuit review, and in particular this Court’s application of *stare decisis*, is critical to such uniformity. As the Supreme Court explained, “treating interpretive issues as purely legal” will allow *stare decisis* to be applied to those interpretive questions and thus promote uniformity among decisions of this Court (so-called “intra-jurisdictional certainty”).

Cisco et al. Br. at 5 (citing and quoting *Markman II*, 517 U.S. at 391). These *amici* also discuss the “hybrid” proposal of some theorists, and state:

“treating interpretive issues as purely legal”—not as a mixed question—is the proper approach.

Id. at 5 (quoting *Markman II*, 517 U.S. at 391).

Amicus Microsoft discusses another aspect of the *Cybor* treatment of claim construction, advising that *de novo* review

works well in practice because it allows the parties to address questions concerning claim scope in pre-trial hearings well in advance of the actual trial. Having a jury decide these redesignated factual matters could eliminate the current practice of pre-trial *Markman* hearings. This would exacerbate the expense and uncertainty in patent litigation and create new opportunities for forum shopping.

Brief of *Amicus Curiae* Microsoft at 3.

In sum, the *amici curiae* record of the nation’s major innovators is contrary to the dissent’s representation that “no one in the legal community—except perhaps the members of the majority—has come to believe that either the wisdom or vitality of *Cybor* is settled.” Diss. at 6. The *amici curiae* record is contrary to the dissent’s pronouncement that “the interests of stability and predictability are disserved” by *Cybor*’s access to final, uniform, national claim

construction. Diss. at 29. The nation's major innovators do not agree with the criticisms of *Cybor*, and so advised the court. These *amici* direct the court to the pragmatic value of *Cybor* as they have experienced it, and urge retention of that value.

Rather than respond to the concerns of the nation's technology industries, the dissent chastises certain judges of this court for not "acting on their long-term convictions." Diss. at 2. While it is comforting to know that our golden words of the past are not forgotten, those of us with the majority today who have questioned aspects of *Cybor* in the past, now decide this case on the record of the present and with an eye to the future. The dissent would discard the experience of the past fifteen years. However, the court is not now deciding whether to adopt a *de novo* standard in 1998. Today we decide whether to cast aside the standard that has been in place for fifteen years.

The dissent offers no superior alternative to *de novo* review, nor any workable standard for distinguishing between legal and factual components of claim construction. The dissent does not appear to adopt the proposal of several *amici* that appellate deference should depend on whether the district court relied on intrinsic or extrinsic evidence in construing a claim term. It is surely doubtful that such a distinction controls whether claim construction is fact or law. See *Phillips v. AWH Corp.*, 415 F.3d 1303, 1317 (Fed. Cir. 2005) (en banc) (discussing sources of evidence in claim construction, and stating "while extrinsic evidence 'can shed useful light on the relevant art,' we have explained that it is 'less

significant than the intrinsic record in determining ‘the legally operative meaning of claim language’”) (citing cases). We have come upon no rationale for denominating an issue of claim construction as one of fact or law depending on the source of the information considered by the judge.

The dissent seems to embrace (then expand upon) the “historical fact” notion proposed by Appellant, who states that the meaning a person of ordinary skill in the art would give a term at the time of the filing of the patent application ought to be treated as a question of fact. This is not a question of fact; it is the very inquiry which determines the claim construction in nearly all cases. Claim terms are given their ordinary meaning to one of skill in the art, unless the patent documents show that the patentee departed from that meaning. *See Phillips*, 415 F.3d at 1314; *Thorner v. Sony Computer Entm’t Am., LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012). Treating the ordinary meaning to a skilled artisan as requiring deference would mean deference on the controlling question of claim construction in nearly every case. All the more so with the dissent’s proposed treatment of still additional issues, such as prosecution disclaimer, as warranting deference. Diss. at 42.

Under the dissent’s approach, and even under the “historical fact” approach, deference would become of central significance in controlling the determination of claim construction, and hence of patent scope. The consequence would be heightened forum-shopping and the inability of the judicial system to arrive at a uniform, settled meaning for a patent’s scope. Those problems are grave ones given the increasingly

common situation of multiple cases involving the same patent.

The dissenters do not explain why they choose to abandon the benefits foreseen by the Court in *Markman II*, that “treating interpretive issues as purely legal” would have benefits of “intra-jurisdictional certainty.” 517 U.S. at 391. Nor have they successfully explained away the analysis in *Miller v. Fenton*, 474 U.S. at 113-14, that:

[T]he practical truth that the decision to label an issue a “question of law,” a “question of fact,” or a “mixed question of law and fact” is sometimes as much a matter of allocation as it is of analysis ... [T]he fact/law distinction at times has turned on a determination that, as a matter of the sound administration of justice, one judicial actor is better positioned than another to decide the issue in question.

(cited in *Markman II*, 517 U.S. at 388). The Court in *Miller* explained that the fact/law distinction is not immutable, and may invoke “the sound administration of justice,” *id.* at 114, leading to a similar acknowledgement in the *Markman II* ruling that claim construction is “a matter of law reserved entirely for the court.” 517 U.S. at 372.

In addition, the dissent downplays the gravity of overturning a previous en banc court in the absence of intervening Supreme Court or legislative action. Of the several decisions of the Federal Circuit that the dissent cites as setting a pattern of overturning precedent, all involve en banc review of panel

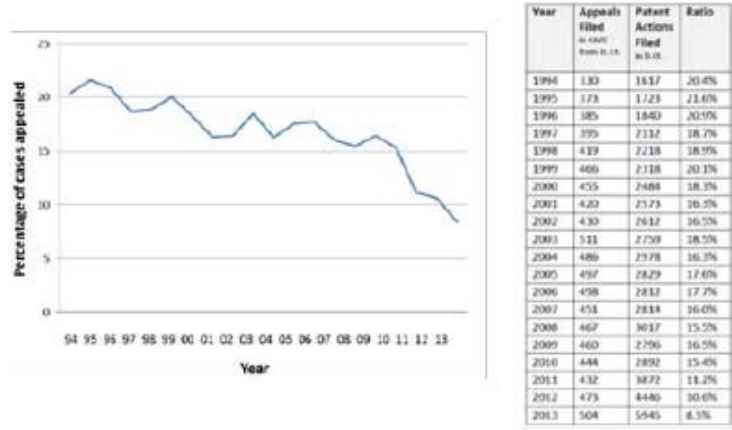
precedents, with the arguable exception of *Nobelpharma AR v. Implant Innovations, Inc.*, 141 F.3d 1059, 1068 & n.5 (Fed. Cir. 1998) (en banc in relevant part), where the court clarified that this court's law would govern the question of patent/antitrust immunity.

The major thrust of the dissent is that Federal Rule 52(a)(6) requires deferential review of district court decisions. But Rule 52(a) does not answer the question here. Rule 52(a) prescribes the standard of review of questions of fact, but courts must look outside the Rule to decide if a question is properly characterized as one of fact. As the Court stated in *Pullman-Standard*, 456 U.S. at 288, "Rule 52(a) does not furnish particular guidance with respect to distinguishing law from fact. Nor do we yet know of any other rule or principle that will unerringly distinguish a factual finding from a legal conclusion." The dissent's theory that Rule 52(a) demands abandonment of *de novo* review of claim construction is a simplistic disregard of the *Markman II* guidance that "treating interpretive issues as purely legal will promote (though it will not guarantee) intrajurisdictional certainty." 517 U.S. at 391.

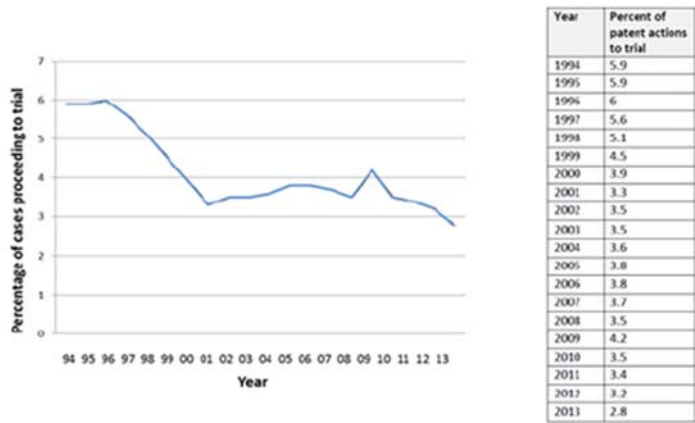
The dissent argues that *de novo* review produces a high reversal rate, although it is established that this is no longer true. The reversal rate indeed was a matter of concern, for in the early years of *Cybor*, this court's promulgation of claim construction law led to a higher rate of appellate adjustment. However, as consistency evolved and experience grew, rates of appellate reversal for claim construction came to match the norm for other grounds. We observe that

every *amicus* brief that complains about high reversal rates relies on data that are seven to ten or more years old, while the author of a recent study writes in his *amicus* brief that the data “document a significant drop in the claim construction reversal rate” since 2005, Brief of *Amicus Curiae* Professor Peter Menell at 15, and explains in his study that “[n]ow the reversal rate for claim construction appeals is much closer to that of other patent-related issues.” J. Jonas Anderson & Peter S. Menell, *Informal Deference: An Historical, Empirical, and Normative Analysis of Patent Claim Construction*, 108 Nw. U. L. Rev. (forthcoming), Sept. 9, 2013 manuscript at 37.

Our colleagues in dissent, citing the obsolete data, argue that the *de novo* standard “adds considerable uncertainty and expense to patent litigation,” Diss. at 4, stating that this standard increases appeals, discourages settlement, and increases the length and cost of litigation. No evidence of this effect is offered, and all of the *amici curiae* who are frequent litigants state the contrary position. The data published by the Administrative Office of the United States Courts point the other way. These data show a long, noticeable decline in the percentage of district court patent cases that are appealed, belying the argument that appeals have increased. The following data are from the Annual Reports of the Administrative Office for the years 1994 to 2013. The graph shows the ratio, as a percentage, of the number of patent appeals filed per year (Report Table B-8), against the number of district court patent cases filed in that year (Report Table C-2):



The Annual Reports also show the trend in the percentage of patent cases that proceed to trial in the district courts. The data from Table C-4 in the Reports show the percentage declining from 5.9% in 1994 to 2.8% in 2013:



The data do not support the dissent’s theory that *Cybor* has increased patent litigation and inhibited settlements. In contrast, the industrial *amici curiae* advise the court that the *Cybor* review procedure

assists in resolving litigation before full trial or extensive discovery, for it often leads to the grant of summary judgment and an immediate appeal. These *amici* stress that settlement is facilitated by final resolution of the scope of the claims. They also point out that if the claim construction is definitively resolved, any ensuing trial is on the final claim construction. The dissent does not comment on these values.

CONCLUSION

We have again considered the standard of review of district court claim construction rulings, in light of experience with the *Cybor* standard. The ever-enlarging importance of technology-based industry in the economy has reinforced the need for an optimum patent system.

On thorough review, we are not persuaded that discarding *de novo* review would produce a better or more reliable or more accurate or more just determination of patent claim scope. Those who urge change in the *Cybor* standard have identified no pattern of error, no indictment of inferior results. No ground has been shown for departing from the principles of *stare decisis*. Review of claim construction as a matter of law has demonstrated its feasibility, experience has enlarged its values, and no clearly better alternative has been proposed. There has arisen no intervening precedent, no contrary legislation, no shift in public policy, no unworkability of the standard.

We conclude that the criteria are not met for overruling or modifying the *Cybor* standard of *de novo* review of claim construction as a matter of law.

PANEL DECISION REINSTATED

No costs.

United States Court of Appeals
for the Federal Circuit

LIGHTING BALLAST CONTROL LLC,
Plaintiff-Appellee,

v.

PHILIPS ELECTRONICS NORTH AMERICA
CORPORATION,
Defendant,

AND

UNIVERSAL LIGHTING TECHNOLOGIES,
INC.,
Defendant-Appellant.

2012-1014

Appeal from the United States District Court for
the Northern District of Texas in Case No. 09-CV-
0029, Judge Reed O'Connor.

-
- LOURIE, *Circuit Judge*, concurring.

I fully agree with the majority opinion and join it.
I write separately to note what I believe are
additional reasons why retaining *Cybor* is wise.

First and foremost is that the Supreme Court has held that claim construction is a question for the court rather than the jury. Thus, for us to appear to be cutting back from that holding by giving formal deference on so-called fact-like questions, which normally would go to the jury, to the district court judge, would seem to me to be an attempt to partially retreat from the Court's holding, which is unwise.

We have held that claim construction is a question of law, going only minimally beyond the Court's explicit holding that it is only a question for the court. *Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448, 1454-55 (Fed. Cir. 1998) (en banc). The Court's holding, including its statement that it is a "mongrel" question, does not encourage fractionation of the process, making part of it subject to de novo review and part clearly erroneous review. The Court in *Markman* stated that construction of terms of art should be ceded to the judge "notwithstanding its evidentiary underpinnings." The "notwithstanding" applies to any factual as well as legal aspects of claim construction. Evidentiary underpinnings do not lean toward a clearly erroneous standard any more than they do to the jury.

Equally important, one of the purposes of Congress in creating our court was to achieve uniformity in the patent law. Consistent with that goal should be uniformity of interpretation in construction of patent claims. It is not rare that a patent is asserted against more than one defendant in different forums, with conflicting holdings on infringement. It would hardly promote uniformity of patent law for us to bless a claim construction in one

district court, based on that court's judging the credibility and demeanor of the expert witnesses in one case, when a different case might lead to a different result based on a different district judge's appraisal of different witnesses. We in fact might be confirming conflicting claim constructions, the antithesis of uniformity. This problem might increasingly exist in light of the AIA's limits on the number of accused infringers that can be joined as defendants in one lawsuit, thereby creating the possibility of more lawsuits on the same patent, and more inconsistency, than existed in the past. *See* 35 U.S.C. § 299(a); *In re EMC Corp.*, 677 F.3d 1351 (Fed. Cir. 2012).

By our deferring to those determinations, conceding our full review of the meaning of a claim term, which should be based on the patent's written description and prosecution history, not the witnesses, hampers our ability to interpret claims with full authority and hence to ensure uniformity.

Furthermore, claim construction is not a process that normally involves historical facts. It primarily involves reading the patent's written description as well as the prosecution history of the patent, and this court is quite as able to do that as any district court, sometimes better. It is true that there may be questions concerning what a particular claim term meant to one skilled in the art at a particular time, but, in my view, when the trial judge is subjected to dueling experts selected for their views, choosing which of them to credit hardly amounts to historical fact-finding. To the extent that it does, the relevant inquiry should be, not what the dueling experts say,

but what the inventor understood the term to mean when he or she filed the patent application containing the claim term in question. Courts should be reluctant to go beyond the written record to help answer that question. It is too subject to ex post facto thinking based on self-interest; the inventor had his chance to define his invention and should not be heard in later testimony to get another bite at the apple by redefining that language.

A realistic assessment of the problem in claim construction in litigation recognizes that the patenting process begins with an inventor and his or her attorney drafting a written description and claims to describe and specifically claim his or her invention. The claims will usually then get negotiated in the Patent Office. The issued claims are then used, pursuant to some perceived business need or desire, by a different lawyer who had no part in the drafting of the written description and claims, who then tries in front of a lay judge to shoehorn an accused infringer into claims that usually do not fit (or else claim construction and infringement would not be at issue).

Hired “experts,” supporting the parties’ theories of infringement or non-infringement take positions that are also distinct and isolated from (and often different from) those originally taken by the inventor and attorney, who knew what the invention was and what positions were taken in the Patent Office during prosecution. Thus, the problem lies, not with lack of deference to district court interpretation of claims by the Federal Circuit, but to the multiplicity of actors contending in a competitive economy. The actors striving to deal with a patent in district court are

often not those who made the invention, created the patent, and hence knew exactly what it meant. The solution does not lie in depriving the one institution charged with ensuring uniformity of part of its authority.

Much criticism has been directed at this court for allegedly ignoring all the fine work of district court judges in construing patent claims. That criticism is premised on the misperception that we do not give a district court's claim construction any deference. That is incorrect; perhaps one even might say "clearly erroneous."

The rubric governing issues of law unfortunately does read "no deference." But even though we all know that the rubric governing procedural errors is the harsh "abuse of discretion" language, all judges know that a finding of a procedural error does not normally justify the term "abuse." Similarly, the "no deference" language is simply established legal jargon for a holding that, having reviewed the record, we disagree. It has been stated in some *amicus* briefs before the court that there are truly factual issues involved in claim construction, particularly what a claim term meant to one skilled in the art at a particular time, and that such a determination should be given deference. But we should not complicate the law and change our precedent for such a situation. This court should rarely overturn a district court's claim construction on a finding of that nature.

This appellate court, when asked to interpret the claims of a patent carefully, notes and considers how the district court construed the claims. If we disagree,

it is not without a degree of informal deference. Claims are to be interpreted in light of the written description in the patent specification, and in light of the prosecution. The choice of expert witnesses by parties' counsel, and their demeanor, do not override those basic documents. Very few scientists called as expert witnesses will lie, hence the term "credibility," useful in more conventional fact determinations, such as whether a traffic light was red or not, should not be controlling in construing claim limitations in a patent.

Claim construction is analogous to interpretation of other legal instruments, such as contracts and legislation. Each of these determinations is for the court, not a jury, although each can be found to contain factual components (it should be noted though that, at least in patent prosecution, the intent of neither the inventor-attorney nor the patent examiner is usually at issue in claim construction). Thus, beyond what the Court has held in *Markman*, there is good analogical basis for considering claim construction as similar to interpretation of these other legal instruments. Moreover, to the extent that underlying considerations create the "mongrel" nature of claim construction, considering factual components to be subject to deference under a clearly erroneous rule would implicate the Seventh Amendment right to a jury trial on factual questions. Such a procedure would further threaten the uniformity that Congress intended in setting up this court as well as the Supreme Court's ruling that claim construction is not for the jury.

What the proponents of splitting construction into legal and factual issues are in essence contending for is that some issues in patent infringement are for the judge (some claim construction issues), some are also for the judge, but are of a factual nature, ordinarily as for a jury, and some clearly for the jury, *i.e.*, infringement. However, in claim construction, simpler is better—claim construction in all its aspects for the judge, subject to review by the appellate court, with sensible reliance on the prior work of the trial judge. Creating a formal distinction between fact-sounding issues subordinate to claim construction and the ultimate claim construction is a complication that we should not foist on this court.

A further point is that ultimately it should not matter whether claim construction has a factual component to which formal deference attaches or not. If, as I believe we should, and do, give proper informal deference to the work of judges of a subordinate tribunal, then we will or should affirm when affirmance is appropriate. If, on the other hand, we were to apply a more formal clearly erroneous standard, judgments of subordinate courts are still not unreviewable. If we were to find that the so-called factual component, based on our review of the intrinsic record, has been determined incorrectly, clearly we could find it to be incorrect even with a clearly erroneous standard. Thus, this is an argument that should not much matter.

Moreover, to the extent we were to overrule *Cybor*, or modify it, and give formal deference to district courts, but reserve the right to decide the ultimate issues of obviousness and validity as questions of law,

we would be engaging in a kind of sham, giving with one hand and taking back with the other. Doing so would bow to what amounts to a cosmetic public, or judicial, exercise in order to overcome the harsh rubric of “no deference.”

To the extent that critics assert that *de novo* review has not achieved the goal of uniformity, I believe that deferring to district court judges on subsidiary, extrinsic fact-related issues, and relying on experts hired for having positions favorable to particular parties would likely result in even less uniformity. At least under our current regime, claim construction in all its aspects is reviewed by one appellate court. And providing formal deference to district courts in evaluating fact-related issues would encourage migration away from reliance on the intrinsic written record of the patent specification and its prosecution history.

One should also make no mistake about it: if deference were to be given to rulings on complicated subject matter, intensive appellate review would fade away (how many appeals from the PTO are now reversed following *Zurko*'s increase in the degree of deference given to the relatively expert examining agency?), and so will uniformity. In addition, if determining whether an issue is fact or law would determine the degree of deference granted, parties would be arguing over that question, as in appeals in veterans cases, rather than the real merits of claim construction. As for the relatively high reversal rate of claim construction at this court, I very much doubt that it is primarily due to so-called issues of historical fact; they are primarily due to our court's review of

the claims in light of the specification, not to failure to judge the credibility of contending expert witnesses. Besides, the reversal rate on claim construction is apparently coming down. See J. Jonas Anderson & Peter S. Menell, *Informal Deference: An Historical, Empirical, and Normative Analysis of Patent Claim Construction*, 108 Nw. U. L. Rev. __, 1 (forthcoming 2014).

This case did not involve subsidiary findings resolving disputes of historical fact. What was involved was whether there was corresponding structure to support “voltage source means” for “providing a constant or variable magnitude DC voltage between the DC input terminals”. The panel found the means clause in the claim lacked sufficient structure, and the specification similarly was lacking, so it reversed the district court on the ground that the claims were indefinite. Historical fact-finding was not involved; reading the claims and written description was. The en banc court should arrive at the same conclusion, as the district court did not rely on any subsidiary findings of fact. How a means plus function term is construed under § 112, ¶ 6 is not fact, but claim construction, *i.e.*, law.

For the above reasons, in addition to the majority’s reliance on the doctrine of *stare decisis*, I support the court’s decision not to overrule *Cybor*.

United States Court of Appeals
for the Federal Circuit

LIGHTING BALLAST CONTROL LLC,
Plaintiff-Appellee,

v.

PHILIPS ELECTRONICS NORTH AMERICA
CORPORATION,
Defendant,

AND

UNIVERSAL LIGHTING TECHNOLOGIES,
INC.,
Defendant-Appellant.

2012-1014

Appeal from the United States District Court for
the Northern District of Texas in case no. 09-CV-0029,
Judge Reed O'Connor.

O'MALLEY, *Circuit Judge*, dissenting, with whom
RADER, *Chief Judge*, REYNA and WALLACH, *Circuit
Judges*, join.

District judges, both parties in this case, and the
majority of intellectual property lawyers and
academics around the country will no doubt be

surprised by today’s majority opinion—and for good reason. The majority opinion is surprising because it refuses to acknowledge what experience has shown us and what even a cursory reading of the Supreme Court’s decision in *Markman v. Westview Instruments, Inc.*, 517 U.S. 370 (1996), confirms: construing the claims of a patent at times requires district courts to resolve questions of fact. And, it puts itself at odds with binding congressional and Supreme Court authority when it refuses to abide by the requirements of Rule 52(a)(6) of the Federal Rules of Civil Procedure, which expressly instructs that, on appeal, *all* “findings of fact ...must not be set aside unless clearly erroneous.” It is also surprising because, having, for the third time, invited a broad swath of the intellectual property community to express opinions regarding the merits of *Cybor Corp. v. FAS Technologies, Inc.*, 138 F.3d 1448 (Fed. Cir. 1998) (en banc), we now premise our refusal to change its holding on principles of stare decisis—that, and a professed inability to come up with a workable alternative to de novo review.¹

Criticism of and debate over *Cybor* have been widespread since it issued—not only among legal scholars and patent practitioners, but also among members of this court. Despite this fact, the majority suggests, for the first time in the ongoing debate over it, that *Cybor* is too firmly established in our case law

¹ We invited and received input regarding the standard of review to be applied to claim construction in *Cybor* itself, in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc), and now in this case.

to be rethought. In fact, it appears that some members of today's 6-4 majority believe the pull of stare decisis is so strong that it prevents them from acting on their long-term convictions that *Cybor* was wrongly decided. No reasoned application of stare decisis principles supports that conclusion.

To the extent the majority is motivated not just by a resistance to change, but by concern over what standard we should change to, those concerns can be allayed by reference to Rule 52(a)(6) of the Federal Rules of Civil Procedure, the Supreme Court's case law governing that rule, and a realistic assessment of what the claim construction process entails.

Because principles of stare decisis do not justify retention of the rule of *Cybor* and the appropriate standard of review is dictated by Rule 52(a), I respectfully dissent.

I.

In *Cybor*, this court held that claim construction, "including any allegedly fact-based questions relating to claim construction," presents "a purely legal question" subject to de novo review. *Cybor*, 138 F.3d at 1456. We reached that conclusion even though, in *Markman*, the Supreme Court repeatedly acknowledged the factual component of claim construction. There, the Court: (1) labeled claim construction as a "mongrel practice," (2) suggested that construing a patent's claims "falls somewhere between a pristine legal standard and a simple historical fact," (3) indicated that "there could be a case in which a simple credibility judgment would

suffice to choose between experts whose testimony was equally consistent with a patent’s internal logic,” (4) discussed the need “to ascertain whether an expert’s proposed definition fully comports with the specification and claims,” and (5) described claim construction’s “evidentiary underpinnings.” *Markman*, 517 U.S. at 378, 388-90 (citation and internal quotation marks omitted). Despite being urged to do so by *both* parties, the Patent and Trademark Office, and multiple *amici*, the majority refuses to overturn *Cybor*.² The majority rests its judgment primarily on the principles of stare decisis. It asserts that our fifteen years of experience with *Cybor* teach that our continued de novo review of all claim construction determinations is needed to assure greater “reliability of outcome” and “interjurisdictional uniformity.” Maj. Op. at 14, 16.

Considerations of stare decisis, however, do not justify adhering to precedent that misapprehends the Supreme Court’s guidance, contravenes the Federal Rules of Civil Procedure, and adds considerable uncertainty and expense to patent litigation.

² The majority describes three views espoused by the parties and *amici*, giving substantially more attention to the one that is consistent with the result the majority reaches. Careful review of the materials submitted to the court, and of the many academic and legal writings regarding *Cybor* since its issuance, show that a substantial portion of the legal community to have considered the issue believes *Cybor* was wrongly decided and flies in the face of Rule 52 of the Federal Rules of Civil Procedure.

II.

Stare decisis is an important part of our jurisprudence, and departing from our precedent is not something we should do lightly. The doctrine “promotes the evenhanded, predictable, and consistent development of legal principles, fosters reliance on judicial decisions, and contributes to the actual and perceived integrity of the judicial process.” *Payne v. Tennessee*, 501 U.S. 808, 827 (1991). It also serves to guard against “arbitrary discretion.” *Hubbard v. United States*, 514 U.S. 695, 711 (1995) (citations and internal quotation marks omitted).

“*Stare decisis* is not an inexorable command[, however]; rather it ‘is a principle of policy and not a mechanical formula of adherence to the latest decision.’” *Payne*, 501 U.S. at 828 (quoting *Helvering v. Hallock*, 309 U.S. 106, 119 (1940)). Its force varies from case to case, moreover—carrying the most weight where reliance interests are at stake, but the least weight where the departure from precedent would not change substantive rights and would “not affect the way in which parties order their affairs.” *Pearson v. Callahan*, 555 U.S. 223, 233 (2009); see also *Payne*, 501 U.S. at 828. “Revisiting precedent is particularly appropriate where ...a departure would not upset expectations ...and experience has pointed up the precedent’s shortcomings.” *Pearson*, 555 U.S. at 233. The Supreme Court has noted that departing from precedent especially is appropriate “when governing decisions ...are badly reasoned.” *Payne*, 501 U.S. at 827 (“[W]hen governing decisions are unworkable or are badly reasoned, ‘this Court has never felt constrained to follow precedent.’” (quoting

Smith v. Allwright, 321 U.S. 649, 665 (1944)); *see also Helvering*, 309 U.S. at 119 (cautioning against blindly applying stare decisis when adhering to precedent would “involve[] collision with a prior doctrine more embracing in its scope, intrinsically sounder, and verified by experience”).

Consistent with this Supreme Court guidance, we have explained that stare decisis does not stand in the way of abrogating our case law—even entire bodies of it—in at least three circumstances: when we conclude our case law (1) was wrongly decided, *see, e.g., Wilson v. United States*, 917 F.2d 529, 536 (Fed. Cir. 1990) (en banc); (2) is at odds with congressional directives, *see, e.g., Akamai Technologies, Inc. v. Limelight Networks, Inc.*, 692 F.3d 1301, 1318 (Fed. Cir. 2012) (en banc); or (3) has had negative consequences, *see, e.g., Therasense, Inc. v. Becton, Dickinson & Co.*, 649 F.3d 1276, 1288 (Fed. Cir. 2011) (en banc). With these principles in mind, this court has not hesitated to revisit its own precedent. *See, e.g., Cardiac Pacemakers, Inc. v. St. Jude Medical, Inc.*, 576 F.3d 1348 (Fed. Cir. 2009) (en banc); *In re Seagate Tech., LLC*, 497 F.3d 1360 (Fed. Cir. 2007) (en banc); *Fisher v. United States*, 402 F.3d 1167 (Fed. Cir. 2005) (en banc); *Knorr–Bremse Systeme Fuer Nutzfahrzeuge GmbH v. Dana Corp.*, 383 F.3d 1337 (Fed. Cir. 2004) (en banc). Indeed, we have said that it is “[t]he province and obligation of the en banc court ...to review the current validity of challenged prior decisions.” *Robert Bosch, LLC v. Pylon Mfg. Corp.*, 719 F.3d 1305, 1316 (Fed. Cir. 2013) (en banc) (quoting *United States v. Aguon*, 851 F.2d 1158, 1167 n.5 (9th Cir. 1988) (en banc)). And, we have made clear that this includes overturning precedent set by

this court en banc when appropriate. See *Nobelpharma USA, Inc. v. Implant Innovations, Inc.*, 141 F.3d 1059, 1068 (Fed. Cir. 1998) (overruling *Atari, Inc. v. JS & A Grp., Inc.*, 747 F.2d 1422 (Fed. Cir. 1984) (en banc), by “chang[ing] our precedent and hold[ing] that whether conduct in procuring or enforcing a patent is sufficient to strip a patentee of its immunity from the antitrust laws is to be decided as a question of Federal Circuit law”).

Thus, both Supreme Court case law and our own teach that it is in cases like this one that stare decisis is weakest.

III.

Reversing *Cybor* will not “upset settled expectations on anyone’s part.” *Pearson*, 555 U.S. at 233. The one thing clear about *Cybor* is that no one in the legal community—except perhaps the members of the majority—has come to believe that either the wisdom or vitality of *Cybor* is settled. Whether one urges the retention of the holding in *Cybor* (as do some *amici*) or urges its revision (as do the parties, the Patent and Trademark Office, and the rest of the *amici*), it is hard to dispute that tumult has surrounded *Cybor* since it was decided. During its short life, *Cybor* repeatedly has been criticized as poorly reasoned. That criticism has come from members of this court, from district court judges, and from academics and practitioners across the country.

Our internal debate over *Cybor* has been heated, and has not abated over time. There were several ardent detractors from the rule announced in *Cybor*

at the time it was announced. *See, e.g., Cybor*, 138 F.3d at 1478, 1480 (Newman, J., additional views) (“By continuing the fiction that there are no facts to be found in claim interpretations, we confound rather than ease the litigation process ...However, the Supreme Court has relieved us of adherence to this fiction, by its recognition of the factual component of claim interpretation.”), *id.* at 1463 (Mayer, C.J., concurring in the judgment) (stating that the *Cybor* majority opinion “profoundly misapprehends” the Supreme Court’s decision in *Markman*); *id.* at 1473 (Rader, J., dissenting from the pronouncements on claim interpretation in the en banc opinion, concurring in the judgment, and joining part IV of the en banc opinion). Even some of the less vocal critics who concurred in the result in *Cybor* expressed hesitation regarding the wisdom of either the rule established or the legitimacy of its underpinnings. *See id.* at 1463 (Plager, J., concurring) (“Whether this approach to patent litigation will in the long run prove beneficial remains to be seen.”); *see also id.* at 1463 (Bryson, J., concurring) (“[W]e approach the legal issue of claim construction recognizing that with respect to certain aspects of the task, the district court may be better situated than we are, and that as to those aspects we should be cautious about substituting our judgment for that of the district court.”).

Since *Cybor*, our internal debate has continued. In *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc), the order granting rehearing en banc asked the parties to address whether it is “appropriate for this court to afford any deference to any aspects of trial court claim construction rulings.” *Id.* at 1328.

Despite receiving considerable input from the parties and *amici*, the *Phillips* majority, without explanation, “decided not to address that issue at this time.” *Id.* In dissent, however, Judge Mayer levied a pointed criticism of *Cybor*, (1) discussing “the absurdity[] of this court’s persistence in adhering to the falsehood that claim construction is a matter of law devoid of any factual component,” (2) stating that, “[i]n our quest to elevate our importance, we have ...disregarded our role as an appellate court ...undermin[ing] the legitimacy of the process, if not the integrity of the institution,” and (3) observing that “we are obligated by Rule 52(a) to review the factual findings of the district court that underlie the determination of claim construction for clear error.” *Id.* at 1330, 1332 (Mayer, J., dissenting).

We have revisited the question multiple times since then: (1) in 2006 in *Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 469 F.3d 1039 (Fed. Cir. 2006); (2) in 2011 in *Retractable Technologies, Inc. v. Becton, Dickinson & Co.*, 659 F.3d 1369 (Fed. Cir. 2011); and (3) even as recently as a year ago in *Highmark, Inc. v. Allcare Health Management Systems, Inc.*, 701 F.3d 1351 (Fed. Cir. 2012), where questions of claim construction were not even at issue. *See, e.g., Amgen*, 469 F.3d at 1043 (Newman, J., dissenting from denial of reh’g en banc) (“The Federal Circuit’s position that patent interpretation requires more rigorous appellate review than other fact/law issues has not withstood the test of experience. It is time to reopen the question and to rethink, *en banc*, the optimum approach to accuracy, consistency, and predictability in the resolution of patent disputes”); *id.* at 1046 n.3 (Moore, J., dissenting from denial of reh’g en banc)

(highlighting the problems *Cybor* has caused for district courts attempting to construe patent claims); *id.* at 1045 (Gajarsa, Linn, & Dyk, JJ., concurring in denial of reh’g en banc) (noting that the concurrence “should not be read as ...an unqualified endorsement of the en banc decision in *Cybor*”); *Retractable Techs.*, 659 F.3d at 1373 (Moore, J., dissenting from denial of reh’g en banc) (“The Supreme Court held that claim construction was a ‘mongrel practice.’ As such it is clearly a mixed question of law and fact and deference should be given to the factual parts ...[W]e must acknowledge the factual underpinnings of this analysis and there should be deference.” (citation omitted)); *Highmark*, 701 F.3d at 1362 (Moore, J., dissenting from denial of reh’g en banc) (citing to *Cybor* and stressing that “[w]e need to avoid the temptation to label everything legal and usurp the province of the fact finder with our manufactured *de novo* review”).

Notably, not once during this internal dialogue over the rule promulgated in *Cybor* did anyone contend that stare decisis alone should put an end to our debate. Two members of the current majority have been among the harshest critics of *Cybor*—contending on multiple, and even recent, occasions that it was poorly reasoned, impractical, and should be reversed. A third conceded that *Cybor*’s rule may be too broad and perhaps should not apply where, as here, the trial court was forced to resort to extrinsic evidence to assess the meaning of claim terms. In none of their discussions of *Cybor* was concern regarding stare decisis raised. It certainly was never exalted to the hard stop on further consideration of *Cybor*’s merits that the majority now finds it to be.

And, the debate over *Cybor* has not all been internal to our court. The external debate has been both consistent and widespread. *See, e.g., Amicus Br. of United States, Retractable Techs., Inc. v. Becton, Dickinson & Co.*, No. 11-1154, 2012 WL 5940288, at *20-21 (U.S. Nov. 28, 2012) (setting out the Solicitor General’s observation that (1) “some claim-construction decisions will depend on a district court’s resolution of factual questions,” (2) this court’s “decision in *Cybor* does not identify any reason that such factual findings should not be given the deference ordinarily required by Federal Rule of Civil procedure 52(a),” and (3) “appellate courts routinely defer to factual findings made by district courts and juries”). District judges have opposed de novo review, describing it as ill conceived and illogical. *See, e.g., Amgen, Inc. v Hoechst Marion Roussel, Inc.*, 339 F. Supp. 2d 202, 226 n.23 (D. Mass. 2004) (describing the “conundrum” our claim construction jurisprudence has created by “discouraging resort to extrinsic evidence while at the same time urging courts to begin claim construction by considering the plain and customary meaning of a term *as understood by one skilled in the art*”); Judge James F. Holderman & Halley Guren, *The Patent Litigation Predicament in the United States*, Univ. Ill. J.L., Tech. & Pol’y 1, 6-7, 14-15 (2007) (noting that “claim construction involves many of what one would consider to be factual determinations,” stressing that the Supreme Court in *Markman* “said nothing ...about the de novo standard of review,” and calling for a more deferential review of district court claim constructions); *The Honorable William G. Young & Professor R. Carl Moy, Panel Discussion, High Technology Law in the*

Twenty-First Century: Second Annual High Technology Law Conference, 21 Suffolk Transnat'l L. Rev. 13, 19 (1997) (statements of the Honorable William G. Young).

As have practitioners. See, e.g., Frederick L. Whitmer, *Claim Construction in Patent Cases: A Question of Law?*, 2 No. 6 Landslide 14, 16-17 (2010) (criticizing our court's interpretation of the Supreme Court's guidance in *Markman* and calling for recognition of "the constituent factual component of claim construction decision making"); Donald R. Dunner & Howard A. Kwon, *Cybor Corp v. FAS Technologies: The Final Say on Appellate Review of Claim Construction?*, 80 J. Pat. & Trademark Off. Soc'y 481, 492 (1998) ("[N]otwithstanding its decision that claim construction was an issue for the judge and not the jury, the Court in *Markman II* seemed to consider the issue a mixed question of law and fact—a characterization that would resist straightforward application of the de novo standard."); Luke L. Dauchot, *The Federal Circuit's De Novo Review of Patent Claim Construction: A Need for a More Balanced Approach*, 18 Am. Bar Ass'n Sec. Pub. I.P.L. 1, 4 (1999) ("A proper approach recognizes that patent claim interpretation is 'a mongrel practice' and delegates the fact-finding process to trial courts ...").

Academics have been particularly harsh in their criticism of *Cybor* and have suggested that we reverse it. See, e.g., J. Jonas Anderson & Peter S. Menell, *Informal Deference: An Historical, Empirical, and Normative Analysis of Patent Claim Construction*, 108 Nw. U. L. Rev. (forthcoming), Sept. 9, 2013 manuscript at *57-59 (arguing that *Cybor*

“misapprehends” Supreme Court precedent, “deprive[s] the district court of critical evidence bearing on claim meaning,” and “undermines the appellate process” by leaving “[t]he parties, the public, and the appellate court” with an “anemic record—typically limited to the intrinsic evidence”); Eileen M. Herlihy, *Appellate Review of Patent Claim Construction: Should the Federal Circuit Be Its Own Lexicographer in Matters Related to the Seventh Amendment?*, 15 Mich. Telecomm. Tech. L. Rev. 469, 515 (2009) (“A de novo standard of review ...runs contrary to the repeated and consistent word choices made by the Court indicating that the Court considers claim construction to be a mixed issue of fact and law.”); Kimberly A. Moore, *Markman Eight Years Later: Is Claim Construction More Predictable?*, 9 Lewis & Clark L. Rev. 231, 231 (2005) (observing the “concern among the bench and bar that the Federal Circuit’s de novo review of district court claim construction decisions ...ha[s] caused considerable unpredictability”); John R. Lane & Christine A. Pepe, *Living Before, Through, and With Markman: Claim Construction as a Matter of Law*, 1 Buff. Intell. Prop. L.J. 59, 71 (2001) (“In *Markman II*, the Supreme Court did concede that there are factual underpinnings to claim construction determinations, raising the logical question of whether de novo review is the appropriate standard.” (footnote omitted)).

In short, the only expectation about *Cybor* that appears “settled” is the expectation that one day this court might recognize that *Cybor* is inconsistent with Supreme Court precedent, the Federal Rules of Civil Procedure, and the practical realities involved in the claim construction process, and would reverse it.

Parties do not make claim drafting decisions based on the standard of review we apply to trial court claim constructions. Nor could they given the panel-dependent nature of our own determinations. See Donald R. Dunner, *A Retrospective of the Federal Circuit's First 25 Years*, 17 Fed. Cir. B.J. 127, 130 (2007) (noting that many believe “that Federal Circuit predictability is not what it should be and that its decisions are often panel-dependent and result-oriented”); R. Polk Wagner & Lee Petherbridge, *Is the Federal Circuit Succeeding? An Empirical Assessment of Judicial Performance*, 152 U. Pa. L. Rev. 1105, 1112 (2004) (“Our findings ...indicate that claim construction at the Federal Circuit is panel dependent.”). It is difficult to accept the proposition that our claim construction jurisprudence is a measure against which litigants make important business or innovation decisions. Claim construction disputes are very fact specific—patents do not follow a formulaic structure, or even contain oft repeated language. Claims are drafted, redrafted, and amended in ways intended to reflect and capture particular inventions in a particular field, to avoid very specific prior art, and to respond to the rejections of the unique patent examiner involved in the application process. It is rare that any two claims we review contain the same phrasing, and even more rare that the context in which the phrasing is used would not alter the meaning of even almost identical words.³ Compare *Baldwin Graphic Sys., Inc. v.*

³ There are, of course, some common patent terms that have been given universal meanings, or been characterized as open-ended, rather than exclusive. These are terms like “comprising,” “consisting of,” and “consisting essentially of.” The meanings of

Siebert, Inc., 512 F.3d 1338, 1342-43 (Fed. Cir. 2008) (finding that, as a general rule, the words “an” or “a” in a patent claim carry the meaning of “one or more”), *with TiVo, Inc. v. EchoStar Commc’ns Corp.*, 516 F.3d 1290, 1303 (Fed. Cir. 2008) (finding that “whether ‘a’ or ‘an’ is treated as singular or plural depends heavily on the context of its use” and concluding that “claims and written description in this case make clear that the singular meaning applies”). Combining the uniqueness of each claim term to be reviewed with the variations in rationale employed by the divergent members of this court, provides little practical guidance regarding how any claim construction dispute might be resolved in this forum—and certainly not the uniform reliability of outcome with which the majority now credits our jurisprudence in this area.

The fact that we have been engaging in a flawed practice for too long does not, alone, create the type of settled expectations *stare decisis* is meant to protect. Because settled expectations will not be disrupted and no substantive rights will be reordered, *stare decisis* simply does not stand in the way of this court addressing the merits of *Cybor* and acknowledging that the rule of law pronounced therein is an incorrect one.

most of these transitional terms were common to the patent drafting art well before this Circuit was formed. And, litigants and district courts are well aware of these conventions.

IV.

It is also clear that stare decisis does not stand in the way of overturning *Cybor* because *Cybor* is predicated on a mischaracterization of the Supreme Court's guidance in *Markman* and ignores the claim construction process we have ordered district courts to employ. In short, it need not be followed because its premises are wrong. *See Wilson*, 917 F.2d at 536 (overruling precedent that misconstrued congressional intent).

As noted above, *Cybor* misapprehends the Supreme Court's decision in *Markman*, ignoring numerous instances where the Court acknowledged that claim construction can present factual questions. The Supreme Court did not base its conclusion on the fact that a patent is a legal instrument whose construction presents a *pure* question of law. If it had, there would have been no need for the Court to conduct such a thorough analysis of whether the Seventh Amendment required a jury to resolve issues of claim construction. That question would have needed no discussion if claim construction were purely an issue of law because juries have never been tasked with resolving purely legal questions. *See Markman*, 517 U.S. at 376-84; *see also Cybor*, 138 F.3d at 1464 (Mayer, C.J., concurring in the judgment) ("Though it could have done so easily, the Court chose not to accept our formulation of claim construction: as a pure question of law to be decided *de novo* in all cases on appeal. If it had, there would have been no need for its extensive exegesis about the Seventh Amendment and whether juries must construe claims that have evidentiary underpinnings

or whether the importance of uniformity is best served by giving these evidentiary questions of meaning to a judge.” (footnote omitted)).

While *Cybor* dismissed *Markman*’s discussion of the factual aspects of claim construction as mere “prefatory comments,” 138 F.3d at 1455, and insisted that, under *Markman*, claim construction is a completely legal exercise subject to de novo review, *id.* at 1456, that conclusion does not flow from *Markman*. There, the Supreme Court not only acknowledged claim construction’s factual aspects, it also said nothing to suggest that a de novo standard of review would be appropriate. See *Retractable Techs.*, 659 F.3d at 1373 (Moore, J., dissenting from denial of reh’g en banc) (“The Supreme Court held that claim construction was a ‘mongrel practice.’ As such it is clearly a mixed question of law and fact and deference should be given to the factual parts.” (citation omitted)). *Markman*’s holding was limited to the Court’s determination “that the construction of a patent, including terms of art within its claims, is exclusively within the province of the court.” *Markman*, 517 U.S. at 372. There are many circumstances in which trial judges act as triers of both fact and law; in all of those, deference to the factual components of that decision-making is undoubtedly due. “Stating that something is better decided by the judge is not the same as saying it is a matter of law.” *Highmark*, 701 F.3d at 1362 (Moore, J., dissenting from denial of reh’g en banc).⁴ And even

⁴ This mistake is one repeated in some of the *amicus* briefs that support retention of *Cybor*, stating that *Cybor* must be retained so as to avoid having to submit claim construction issues to the

saying something is a matter of law does not answer the question of the standard of review an appellate court should apply. *See Pierce v. Underwood*, 487 U.S. 552, 560, 562 (1988) (observing that, “[i]n some cases, such as the present one, the attorney’s fee determination will involve a judgment ultimately based on a purely legal issue governing the litigation,” but concluding that “sound judicial administration counsels[] deferential review of a district court’s decision regarding attorney’s fees” despite its legal character).

Those *amici* who find great significance in the Supreme Court’s citation to *Miller v. Fenton*, 474 U.S. 104 (1985), in *Markman* miss the mark. That citation does not, as those *amici* claim, decide the fact/law question or the question of the appropriate level of appellate review of claim construction determinations. In *Miller*, the Supreme Court

jury. *See Amicus Br. of Microsoft Corp.* at 4-5; *Amicus Br. of Intellectual Prop. Inst. of William Mitchell Coll. of Law* at 10-12. But, the Supreme Court made clear in *Markman* that it had institutional efficiency reasons for taking claim construction away from the jury, unhampered as it was by Seventh Amendment concerns; the decision to give claim construction to trial judges did not turn on a fact/law distinction. *See Markman*, 517 U.S. at 384 n.10 (“Because we conclude that our precedent supports classifying the question as one for the court, we need not decide either the extent to which the Seventh Amendment can be said to have crystallized a law/fact distinction ...or whether post-1791 precedent classifying an issue as one of fact would trigger the protections of the Seventh Amendment if (unlike this case) there were no more specific reason for decision.” (citations omitted)). Because the views of these *amici* are based on this legally flawed premise, undue reliance on them is misplaced.

concluded that the ultimate question of whether a confession was sufficiently voluntary to comport with due process, while a mixed question of fact and law, was subject to independent federal review. As the Court noted in *Markman*, it had concluded in *Miller* that, where a question “falls somewhere between a pristine legal standard and a simple historical fact,” the conclusion as to which judicial actor is best positioned to decide a question at times turns on the sound administration of justice, rather than a pure fact/law distinction. 517 U.S. at 388. Though, in *Miller*, the Court decided that the sound administration of justice supported the conclusion that the ultimate constitutional question of whether a confession was voluntary should be reserved for federal, rather than state, courts, *Miller* says nothing about the standard of review one federal tribunal should apply to the inquiries of another, or how the sound administration of justice would divvy up the responsibility of claim construction as between the trial and appellate courts.

In fact, in *Miller* itself, the Court concluded that a presumption of correctness still must be afforded to all “subsidiary factual questions” decided by the state courts. 474 U.S. at 112. And, the Court was careful to explain that its determination of what the sound administration of justice called for vis-à-vis the federal and state courts was reached in the absence of congressional directives to the contrary.

In *Markman*, the Supreme Court said that judicial efficiencies supported allocation of claim construction determinations to the court rather than the jury. It did not say that “subsidiary factual determinations”

made by trial courts ceased to be subject to the deference congressionally mandated by the Federal Rules of Civil Procedure, however. And, it did not say that it was *this court* and *only this court* to which the question should be allocated. Indeed, in *Cooter & Gell v. Hartmarx Corp.*, 496 U.S. 384 (1990), decided five years after *Markman*, the Court addressed the question of how the sound administration of justice can impact the standard of review of questions that involve both factual and legal components. There, while the Court acknowledged that some purely legal inquiries are involved in determinations pursuant to Rule 11 of the Federal Rules of Civil Procedure, it found that the entire determination must be reviewed by the courts of appeals under an abuse of discretion standard. *Id.* at 403-04. Returning to the same type of inquiry employed in *Miller*, the Supreme Court explained that where, as in a Rule 11 inquiry, the line between fact and law is difficult to divine and the trier of fact needs flexibility to decide unique facts that resist generalization, it is the trial judge who is the judicial actor best suited to decide the question. *Id.* In such instances, the Court found that the sound administration of justice to which it harkened in *Miller* and again in *Markman* mandated a fully deferential standard of review.

It is notable that at least one Supreme Court Justice on the Court when *Markman* was decided believes that, if *Markman* can be said to have decided the standard of review to be applied to claim construction determinations, it decided that question very differently than we did in *Cybor* and than we continue to do today. In *Gasperini v. Center for Humanities, Inc.*, 518 U.S. 415 (1996), dissenting

from the judgment there, Justice Stevens described the Court's decision in *Markman* as one of three that term in which courts of appeals were "assigned ...the task of independently reviewing similarly mixed questions of law and fact," and described the nature of that review as one in which appellate courts are required "to construe all record inferences in favor of the factfinder's decision and then to determine whether, on the facts found below, the legal standard has been met." *Id.* at 442-43 (Stevens, J., dissenting).

Markman's citation to *Miller*, accordingly, lends no support to the notion that *Markman* somehow dictated the result in *Cybor*. It only helped explain why the court, rather than the jury, was chosen as the appropriate decision maker. *Cybor* was not compelled by the Supreme Court's guidance; as explained in section V below, it is actually a wide departure from it.

Cybor also ignores the realities of the claim construction process. As our en banc court in *Phillips* observed:

[B]ecause extrinsic evidence can help educate the court regarding the field of the invention and can help the court determine what a person of ordinary skill in the art would understand claim terms to mean, it is permissible for the district court in its sound discretion to admit and use such evidence. In *exercising that discretion, and in weighing all the evidence bearing on claim construction, the court should keep in mind the flaws inherent in*

each type of evidence and *assess that evidence accordingly*.

415 F.3d at 1319 (emphases added). *Cybor* cannot be squared with this court's own well-respected description of the very claim construction process to which it purports to apply.

The majority concedes that claims are to be interpreted from the perspective of one of skill in the art at the time of the invention unless it appears from the surrounding record—the specification and prosecution history—that the patentee acted as his own lexicographer to provide a contrary meaning. Maj. Op. at 32 (citing *Phillips*, 415 F.3d at 1314). It concludes, however, that all we need to put ourselves into the shoes of a skilled artisan are the patent documents and, perhaps (though not necessarily), some explanation regarding the technology at issue and a dictionary or treatise. It believes we do not need to hear from experts regarding the state of the known science or art at the time of the invention, the commonly understood meaning, if any, of the particular terms or phrases employed, the level of education and skill one reading such a patent would have, or whether there are particular treatises or dictionaries to which a skilled artisan would have turned at the time. *See id.* at 22. And, it believes that the conclusions it gleans from the patent documents, including the entirety of the prosecution history, expert descriptions of the technology, and dictionaries are all legal conclusions; that no finding made by any judicial officer in the process of claim construction constitutes a subsidiary factual one. *See id.* at 22-23.

The majority justifies these conclusions by analogizing the claim construction process to the interpretation of statutes, where courts routinely consider contemporaneous dictionaries or even the testimony of historians to help determine the meaning of words and phrases therein. *See id.* The analogy is not a sound one, however.

Statutes are duly enacted laws of broad applicability. Their interpretation by an appellate court is binding on all who would be impacted by that statute in that circuit, whether parties to the original action or not. They are drafted by those with congressional authority to enact such laws and are to be given a meaning common to all. Patents are drafted *ex parte*, are revised in a closed-door examination process, their terms are, as noted before, unique to the invention at issue, and are assertable only against individual infringers in private actions. The two are simply not of the same ilk. *See Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 998 n.8 (Fed. Cir. 1995) (Mayer, J., concurring in the judgment) (“Patents cannot be baby statutes”); *Amgen*, 469 F.3d at 1040-41 (Michel, C.J., dissenting from denial of reh’g en banc) (observing that, in statutory interpretation, a judge construes terms from the perspective of a skilled legal artisan looking at the words only, not from the perspective of a different individual—one skilled in the relevant field of technology in light of the intrinsic and extrinsic record).

The parties agree that there were disputed factual questions in this case that required examination of extrinsic evidence. In the proceedings before the

district court and again on appeal, the parties disputed whether the claim term “voltage source means” should be treated as a means-plus-function limitation under 35 U.S.C. § 112, ¶ 6. *Lighting Ballast Control LLC v. Philips Elecs. N. Am. Corp.*, 498 F. App’x 986, 989-90 (Fed. Cir. 2013). The use of the word “means” triggers the presumption that the limitation is a means-plus-function term, but that presumption “may be rebutted if the claim itself recites sufficient structure for performing the function.” *Id.* at 990. The parties focused on whether “voltage source means” denoted a particular structure to those of skill in the art (i.e., whether the term had a specific meaning used by those of skill in the art to describe a defined structure or specific class of structures). *See id.* If skilled artisans understood “voltage source means” to refer to a defined structure, it would not be considered a means-plus-function limitation. *Id.* The specification and prosecution history, however, did not resolve the question. Thus, it became necessary and appropriate to look outside the intrinsic record and to consider the testimony of Lighting Ballast’s expert, Dr. Roberts. *See id.*; *see also Rembrandt Data Techs., LP v. AOL, LLC*, 641 F.3d 1331, 1341 (Fed. Cir. 2011) (“When determining whether a claim term recites sufficient structure, we examine whether it has an understood meaning in the art.”). When situations like this arise, it is appropriate—and sometimes necessary—to make findings based on extrinsic evidence that relate to the meaning of a disputed term. Resolution of these fact-intensive disputes is an area where district courts’ expertise deserves the deference that Rule 52(a)(6) requires.

Both parties, the PTO, and most *amici* agree that there are factual components to claim construction. Even among the *amici* that favor retaining *Cybor*'s de novo review of all aspects of claim construction, most readily identified factual questions that arise during claim construction. Microsoft Corp., for instance, advocated retaining *Cybor*, but nonetheless listed numerous factual questions that it concedes could arise during claim construction and would require the court to:

determin[e] the field[s] of the invention and the knowledge of a person having ordinary skill in the art; determin[e] the art-accepted meanings of terms used in an issued claim and also used in the specification and/or prior art; determin[e] the date of the invention and/or the effective filing date of the patent application; determin[e] whether a proposed construction would exclude all embodiments in the specification or, conversely, whether any embodiment supports the construed issued claim; identifying explicit or implicit definitions in the specification; [and] determin[e] the disclosure of cited prior art references (which are part of the 'intrinsic evidence' for claim construction) asserted as invalidating prior art and/or distinguished in the prosecution history.

Amicus Br. at 4-5. Similarly, the Austin Intellectual Property Law Association observed that "district courts are charged with taking evidence of specialized meanings in ...patent interpretation." *Amicus* Br. at 8. Likewise, the brief filed by Cisco Systems, Inc. et

al. acknowledged that a case could arise where “a question of meaning peculiar to a trade or profession [could] turn[] on the resolution of contested questions of historical fact.”

Amicus Br. at 24-26 (citation and internal quotation marks omitted).

In sum, it is hard to understand how either the majority in *Cybor* or the majority here can dispute that claim construction sometimes requires a district court to resolve contested factual issues. *Cybor* is, thus, based on a faulty premise—that claim construction is a purely legal exercise. This reveals deep flaws in *Cybor*’s reasoning, justifying a departure from it. See *Payne*, 501 U.S. at 827 (permitting departure from decisions that prove “unworkable or are badly reasoned”).

V.

Stare decisis also must give way because, by refusing to acknowledge the factual component of claim construction, *Cybor* contravenes the clear directives of Federal Rule of Civil Procedure 52(a)(6). When a district court makes findings of fact—as claim construction sometimes requires—Rule 52(a)(6) provides clear instructions to this court: “Findings of fact, whether based on oral or other evidence, must not be set aside unless clearly erroneous ...” The rule is clear on its face, and decisions interpreting it show that it makes no exception with regard to fact-finding in the claim construction context. As the Supreme Court has observed, “Rule 52(a) broadly requires that findings of fact not be set aside unless clearly

erroneous. It does not make exceptions or purport to exclude certain categories of factual findings from the obligation of a court of appeals to accept a district court's findings unless clearly erroneous." *Pullman-Standard v. Swint*, 456 U.S. 273, 287 (1982); *see also Bose Corp. v. Consumers Union of U.S., Inc.*, 466 U.S. 485, 498 (1984) ("We have repeatedly held that ...Rule [52(a)] means what it says."). Thus, there is direct conflict between *Cybor*—which expressly calls for de novo review of "any allegedly fact-based questions relating to claim construction," 138 F.3d at 1456—and Rule 52(a)(6)—which requires deference to *all* fact-findings that are not clearly erroneous. *See Amicus Br. of United States* at 9-13 (noting that "[a]ppellate courts must defer to a trial court's factual findings under Rule 52(a)" and that, "[g]iven the clear command of Rule 52(a), no justification exists to treat claim construction any differently").

The law governing obviousness confirms Rule 52(a)'s broad applicability in patent disputes. Obviousness presents a question of law subject to de novo review, but it involves a number of subsidiary fact-findings. As the Supreme Court observed:

While the ultimate question of patent validity is one of law, ... the § 103 condition ...lends itself to several basic factual inquiries. Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art are resolved.

Graham v. John Deere Co. of Kansas City, 383 U.S. 1, 17 (1966). According to the Court, “[t]his description of the obviousness inquiry makes it clear that whether or not the ultimate question of obviousness is a question of fact subject to Rule 52(a), the subsidiary determinations of the District Court, at the least, ought to be subject to the Rule.” *Dennison Mfg. Co. v. Panduit Corp.*, 475 U.S. 809, 811 (1986); *see also Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1569 (Fed. Cir. 1987) (“Rule 52(a) is applicable to all findings on the four inquiries listed in *Graham*: scope and content of prior art; differences between prior art and claimed invention; level of skill; and objective evidence ...”). Importantly, one of the key fact questions in an obviousness inquiry is what a prior art reference teaches—often, what is claimed and described in a previously issued patent. *See Graham*, 383 U.S. at 17. And, all findings regarding the scope and content of the prior art are subject to clear error review. *See Panduit*, 810 F.2d at 1569. That we trust jurors to define the scope of patent claims in this context, but are less than comfortable allowing trial judges to do the same when considering the asserted patent claims is at least anomalous. *Cybor* is thus out of step with our other jurisprudence that faithfully applies Rule 52(a) in patent cases.

This conflict between *Cybor* and the Federal Rules of Civil Procedure means our case law must fall. As this court has observed,

The Federal Rules of Civil Procedure were promulgated by the Supreme Court pursuant to statutory authority and were implicitly adopted by Congress after transmission to

Congress in their proposed form. *See* 28 U.S.C. §§ 2071-2074. In light of this statutory promulgation scheme, the Supreme Court has held that the Federal Rules of Civil Procedure are deemed to have “the force [and effect] of a federal statute.”

Bright v. United States, 603 F.3d 1273, 1279 (Fed. Cir. 2010) (alteration in original) (quoting *Sibbach v. Wilson & Co.*, 312 U.S. 1, 13 (1941)). Our cases dealing with the application of stare decisis where statutory interpretation is at issue thus provide useful guidance.

We often have held that stare decisis does not prevent our court from overturning its precedent when we conclude our prior jurisprudence runs contrary to what we believe are a statute’s directives. *See, e.g., Akamai Techs., Inc. v. Limelight Networks, Inc.*, 692 F.3d 1301, 1306 (Fed. Cir. 2012) (en banc) (overruling multiple decisions of this court where “we held that in order for a party to be liable for induced infringement, some other single entity must be liable for direct infringement”); *Wilson v. United States*, 917 F.2d 529, 536 (Fed. Cir. 1990) (en banc) (overturning our earlier decision in *Ulmet v. United States*, 822 F.2d 1079 (Fed. Cir. 1987), saying: “We have revisited the legislative history of [10 U.S.C.] § 1163(d) in this case. Our examination has brought to light that the legislative history of the sanctuary provision demands a different result from that reached in *Ulmet.*”); *Cardiac Pacemakers, Inc. v. St. Jude Med., Inc.*, 576 F.3d 1348 (Fed. Cir. 2009) (en banc) (overruling prior case law because we believed that case law did not properly interpret 35 U.S.C. § 271(f)).

In all of these instances, we concluded that stare decisis did not provide a basis for adhering to precedent that ran counter to the dictates of a statute, as properly interpreted.

We should bring our case law in line with the directives of Rule 52(a)(6), as we are required to do, and as we have done with respect to numerous statutory commands in the past. *See Amicus Br. of United States* at 9-13 (urging the court to overturn *Cybor* because it runs counter to Rule 52(a)'s clear commands); *Amicus Br. of Am. Bar Ass'n* at 12-13 (same); *Amicus Br. of Prof. Peter Menell* at 17-20 (In light of Rule 52(a)'s commands, "the Federal Circuit must defer to trial judges' factual determinations in claim construction rulings."); *Amicus Br. of Am. Intellectual Prop. Law Ass'n* at 4-6, 6 n.6 ("There is no reason for the review of patent claim construction, where the trial court makes constituent determinations of fact, to be any different from review of other ultimate issues of law that have factual underpinnings."); *Amicus Br. of Fed. Cir. Bar Ass'n* at 7; *Amicus Br. of Intellectual Prop. Owners Ass'n* at 7 (stressing that Rule 52(a) requires deference to district courts' findings of claim construction facts); *Amicus Br. of Conn. Intellectual Prop. Law Ass'n* at 12 (faulting *Cybor* for "say[ing] that patent cases have their very own Fed. R. Civ. P. 52(a)(6)," even though there is "no legitimate reason to treat patent cases differently from other cases"); *Amicus Br. of Fed'n Internationale Des Conseils en Propriete Intellectuelle* at 12 (noting that de novo review of findings of claim construction facts "violates Federal Rule of Civil Procedure 52(a)(6)").

The majority discounts concerns about the dictates of Rule 52(a)(6) by citing the Supreme Court’s statement in *Pullman–Standard v. Swint* that Rule 52(a) does not provide a clear formula for distinguishing fact from law. Maj. Op. at 34 (citing *Pullman–Standard*, 456 U.S. at 288). As the Court made clear in *Pullman–Standard* itself when reversing the Fifth Circuit’s refusal to give deference to a trial court’s factual inquiry, the fact that our inquiry might be a difficult one does not excuse the failure to undertake it. *See Pullman–Standard*, 456 U.S. at 288-90. Indeed, the Supreme Court has on numerous occasions charged the courts of appeals with drawing distinctions between subsidiary or “historical facts” and the ultimate legal conclusion regarding the import of those facts, and with adjusting their standard of review accordingly. *See Cooper Indus., Inc. v. Leatherman Tool Grp., Inc.*, 532 U.S. 424, 440 n.14 (2001) (“While we have determined that the Court of Appeals must review the District Court’s application of the *Gore* test [set out in *BMW of North America, Inc. v. Gore*, 517 U.S. 559 (1996),] *de novo*, it of course remains true that the Court of Appeals should defer to the District Court’s findings of fact unless they are clearly erroneous.”); *Ornelas v. United States*, 517 U.S. 690, 699 (1996) (holding that “determinations of reasonable suspicion and probable cause should be reviewed *de novo* on appeal” but “hasten[ing] to point out that a reviewing court should take care both to review findings of historical fact only for clear error and to give due weight to inferences drawn from those facts by resident judges and local law enforcement officers”); *Thompson v. Keohane*, 516 U.S. 99, 110-12 (1995) (concluding that there are two

distinct inquiries—one purely factual and another a mixed question—involved in “[t]he ultimate ‘in custody’ determination for *Miranda* purposes,” with deference to findings on all factual components due). As the PTO explains, “Congress gave no indication in the patent laws that it intended to displace the fundamental principle of appellate review for clear error.” *Amicus Br. of United States* at 12.⁵

VI.

The “undesired consequences” flowing from this court’s claim construction jurisprudence also justify departing from the law set out in *Cybor*. *Cybor*, 138 F.3d at 1481 (Newman, J., additional views); *see also Pearson*, 555 U.S. at 233 (stating that revisiting case law is “particularly appropriate” where experience has revealed its shortcomings). By refusing to

⁵ The scope of this court’s obligation to abide by the dictates of Rule 52(a)(6) is currently before the Supreme Court. In *Highmark Inc. v. Allcare Health Management Systems, Inc.*, 687 F.3d 1300 (Fed. Cir. 2012), *cert. granted*, 134 S. Ct. 48 (Oct. 1, 2013) (No. 12-1163), the question presented is “[w]hether a district court’s exceptional-case finding under 35 U.S.C. § 285, based on its judgment that a suit is objectively baseless, is entitled to deference.” Petition for Writ of Certiorari, *Highmark Inc. v. Allcare Health Mgmt. Sys., Inc.*, 2013 WL 1209137, at *i (U.S. Mar. 25, 2013) (No. 12-1163). The petitioner asserts that deference must be given to all aspects of a district court’s § 285 determinations because, among other reasons, there are subsidiary findings of fact which Rule 52(a)(6) demands be reviewed for clear error. *See id.* at *19-20. If the Supreme Court premises its holding in *Highmark* entirely or even partially on the dictates of Rule 52(a)(6), such a ruling would make clinging to *Cybor* for no reason other than a resistance to change completely untenable.

acknowledge the factual component of claim construction, *Cybor* has made the claim construction process less transparent, accurate, predictable, and efficient, thereby imposing high “social costs.” See Anderson & Menell, *supra*, at *60-61; Whitmer, *supra*, at 16 (lamenting the “high reversal rate” with respect to claim construction that is the “consequence of the *Cybor* uncertainty principle”); Lane & Pepe, *supra*, at 71-73 (examining the uncertainty that results from de novo review).

A.

The primary interests furthered by stare decisis—a doctrine rooted in policy—support departing from *Cybor*, not adhering to it. See *Helvering*, 309 U.S. at 119 (observing that stare decisis “is a principle of policy”). Preserving the stability of the law and protecting the public’s ability to “rel[y] on judicial decisions” are the central interests furthered by stare decisis. *Payne*, 501 U.S. at 827. By withholding deference to district courts’ findings of claim construction facts, however, the interests of stability and predictability are disserved. See *Highmark*, 701 F.3d at 1362 (Moore, J., dissenting from denial of reh’g en banc) (“When we convert factual issues, or mixed questions of law and fact, into legal ones for our *de novo* review, we undermine the uniformity and predictability goals this court was designed to advance.”); see also *Amicus* Br. of Prof. Peter Menell at 15 (observing that “[t]he[] effects [of de novo review of claim construction determinations] continue to cast doubt on the predictability of patent litigation, discourage settlements following claim construction trial, delay resolution of patent disputes, and run up

the overall costs of patent litigation”). Indeed, our resistance to changing *Cybor* is directly contrary to the purposes of Rule 52(a)(6): to promote stability in the judicial system by (1) avoiding undermining the legitimacy of district courts and (2) preventing unnecessary appeals by discouraging appellate retrial of factual issues. *See* Fed. R. Civ. P. 52 advisory committee’s note (1985).

Under the *Cybor* regime, a district court can construe a claim term, and an entire trial can follow premised on that construction. When the district court’s judgment is appealed, however, we review every aspect of its claim construction de novo, leaving us largely free to reinterpret claims—both upsetting parties’ expectations and undoing a tremendous amount of parties’ and district courts’ work in the process. *See Cybor*, 138 F.3d at 1476 (Rader, J., dissenting from the pronouncements on claim interpretation in the en banc opinion) (“To get a certain claim interpretation, parties must go past the district court’s *Markman I* proceeding, past the entirety of discovery, past the entire trial on the merits, past post-trial motions, past briefing and argument to the Federal Circuit— indeed past every step in the entire course of federal litigation, except Supreme Court review.”). Once here, moreover, as noted earlier, “[c]ommentators have observed that claim construction appeals are ‘panel dependent’ which leads to frustrating and unpredictable results for both the litigants and the trial court.” *Retractable Techs.*, 659 F.3d at 1370 (Moore, J., dissenting from denial of reh’g en banc) (citations omitted). And, while the majority says that it is “no longer true” that there is a high reversal rate with respect to claim

constructions by district courts, Majority Opinion at 34, that is not what trial judges, litigants, and academics contend. As Professor Peter Menell says in his *amicus* brief before this court: “Although we document a significant drop in the claim construction reversal rate since the *Phillips* decision, there still remains a high reversal rate compared to other areas of federal practice.”⁶ *Amicus* Br. at 15; *see also Amicus* Br. of Ass’n of Bar of N.Y. (“The high reversal rate of the district court claim construction, documented in numerous studies, is universally acknowledged. It is not an overstatement to conclude that the reversal rate has had a detrimental effect on the parties, the court, and the credibility of the patent system generally.” (footnote omitted)). Departing from *Cybor* and reviewing claim construction findings for clear error would introduce *greater stability* and less expense, and would afford the appropriate respect for district courts’ factual determinations—respect that Rule 52(a)(6) demands. As a consequence, this case presents an instance where overturning this court’s precedent will lead to *greater stability* and predictability, not *less*.

⁶ The majority is incorrect that “every *amicus* brief that complains about high reversal rates relies on data that are seven to ten or more years old.” Maj. Op. at 34. Professor Menell’s *amicus* brief to this court describes his recent research with Professor Jonas Anderson, which reveals that de novo review of claim construction continues to contribute to “alarming levels of appellate reversals.” *Amicus* Br. at 13-14; *see also* Anderson & Menell, *supra*, at *6 (examining this court’s claim construction jurisprudence from 2000 through 2011).

B.

Refusing to acknowledge that claim construction has a factual component effectively “deprives th[is] court, and the parties, of the accumulated progress and experience of the trial, including the findings of the trial judge, and leaves us on appeal with an expurgated record and generally inferior basis of decision.” *Cybor*, 138 F.3d at 1481 (Newman, J., additional views). By affording zero deference to any aspect of a district court’s claim construction, we ignore the reality that we lack the tools that district courts have available to resolve factual disputes fairly and accurately. As Judge Rader observed in dissenting in part in *Cybor*,

the trial judge enjoys a potentially superior position to engage in claim interpretation. For the complex case where the claim language and specification do not summarily dispose of claim construction issues, the trial court has tools to acquire and evaluate evidence that this court lacks. Trial judges can spend hundreds of hours reading and rereading all kinds of source material, receiving tutorials on technology from leading scientists, formally questioning technical experts and testing their understanding against that of various experts, examining on site the operation of the principles of the claimed invention, and deliberating over the meaning of the claim language. If district judges are not satisfied with the proofs proffered by the parties, they are not bound to a prepared record but may

compel additional presentations or even employ their own court-appointed expert.

138 F.3d at 1478.

The Supreme Court has explained that “[t]he trial judge’s major role is the determination of fact, and with experience in fulfilling that role comes expertise.” *Anderson v. Bessemer City*, 470 U.S. 564, 574 (1985). The Court also reminds us that “deferential review of mixed questions of law and fact is warranted when it appears that the district court is better positioned than the appellate court to decide the issue in question or that probing appellate scrutiny will not contribute to the clarity of legal doctrine.” *Salve Regina Coll. v. Russell*, 499 U.S. 225, 233 (1991); *see also Cooter*, 496 U.S. at 403 (calling for deference to the decisions of “the judicial actor ...better positioned than another to decide the issue in question” (alteration in original) (quoting *Miller*, 474 U.S. at 114)). District courts should be encouraged to resolve the factual questions bearing on claim construction and to develop a thorough record setting out their findings and the evidence supporting their conclusions. When they do, we overstep the bounds of our duty under Rule 52(a)(6) by duplicating, or ignoring, rather than deferring to that process. *Anderson*, 470 U.S. at 573; *cf. Highmark*, 701 F.3d at 1365 (Reyna, J., dissenting) (urging that we “respect[] the enduring balance between the trial judge and the appellate panel in carrying out their distinct responsibilities” by applying clear error review to trial court findings).

The concurrence downplays the extent to which we usurp the trial court’s function by adherence to *Cybor* by arguing both that claim construction rarely involves credibility determinations and that we are “quite as able” as district courts—or “sometimes better” able—to review the relevant documents in the record, such as the patent’s prosecution history. Concurrence at 3. And the majority echoes these themes, contending that claim construction does not present questions of fact because it does not turn on credibility determinations and that leaving these questions to de novo review by our court assures greater correctness of result. The Supreme Court has made clear, however, that this narrow view of the trial court’s fact-finding function is an inaccurate one. The district court’s expertise is “not limited to the superiority of the trial judge’s position to make determinations of credibility,” but instead extends to all factual determinations. *Anderson*, 470 U.S. at 574. These determinations include findings “based on physical or documentary evidence or inference from other facts.” *Id.* The Supreme Court has explained that Rule 52(a) requires deference to these findings, as well as those that turn on witness credibility. *Id.* Indeed, the Court has rejected the concurrence’s reasoning with respect to Rule 52(a)(6), not only in its case law, but also through its rulemaking. In 1985, Rule 52(a) was amended, in part, because

[s]ome courts of appeal have stated that when a trial court’s findings do not rest on demeanor evidence and evaluation of a witness’[s] credibility, there is no reason to defer to the trial court’s findings and the appellate court more readily can find them to be clearly

erroneous. *See, e.g., Marcum v. United States*, 621 F.2d 142, 144-45 (5th Cir. 1980). Others go further, holding that appellate review may be had without application of the “clearly erroneous” test since the appellate court is in as good a position as the trial court to review a purely documentary record.

Fed. R. Civ. P. 52 advisory committee’s note (1985) (collecting cases). The Advisory Committee continued:

The principal argument advanced in favor of a more searching appellate review of findings by the district court based solely on documentary evidence is that the rationale of Rule 52(a) does not apply when the findings do not rest on the trial court’s assessment of credibility of the witnesses but on an evaluation of documentary proof and the drawing of inferences from it, thus eliminating the need for any special deference to the trial court’s findings. These considerations are outweighed by the public interest in the stability and judicial economy that would be promoted by recognizing that the trial court, not the appellate tribunal, should be the finder of facts. To permit courts of appeals to share more actively in the fact-finding function would tend to undermine the legitimacy of the district courts in the eyes of litigants, multiply appeals by encouraging appellate retrial of some factual issues, and needlessly reallocate judicial authority.

Id.

District court judges are provided training in all aspects of their duties, including claim construction in patent litigation under *Phillips*. They then employ that training repeatedly over the years, analyzing patents, their written descriptions, and prosecution histories, receiving testimony from inventors and experts, listening to tutorials on the relevant science, and probing counsel during hearings that sometimes last days. In this case, the trial court conducted a three-day evidentiary hearing. Because *Cybor* allows us to ignore these fact-intensive inquiries by its insistence on de novo review, it not only undermines the authority of district judges, it compromises the decision-making process on appeal. Our court is given free rein to interpret claim terms, but lacks the resources to do it right. See *Dunner & Kwon, supra*, at 497 (noting that “the Federal Circuit, by function and design, is ill-equipped to engage in the evidentiary evaluations relevant to claim construction that are the staple of district court judges”).

C.

Cybor also creates greater incentives for losing parties to appeal, thus discouraging settlements and increasing the length and cost of litigation. As Judge Rader observed in dissenting from the court’s pronouncements on claim interpretation in *Cybor*, “unfettered review authority” undercuts certainty and discourages settlement. 138 F.3d at 1475. It is not until “the parties know the meaning of the claims [that] they can predict with some reliability the likelihood of a favorable judgment, factor in the economics of infringement, and arrive at a settlement

to save the costs of litigation.” *Id.* But under *Cybor*, “the trial court’s early claim interpretation provides no early certainty at all, but only opens the bidding. The meaning of a claim term is not certain (and the parties are not prepared to settle) until nearly the last step of the process—decision by the Court of Appeals for the Federal Circuit.” *Id.* at 1476; *see also Amicus Br. of Prof. Peter Menell* at 3 (lamenting that *Cybor* “discourage[s] settlements following claim construction and trial, delay[s] resolution of patent disputes, and run[s] up the overall costs of patent litigation”); *Amicus Br. of Am. Intellectual Prop. Ass’n* at 8 (“*Cybor* thus fosters wasteful, expensive litigation and discourages timely settlement. That result unnecessarily ties up courts and increases expense to litigants.”); *Amicus Br. of Am. Bar Ass’n* at 10-11 (observing that *Cybor* discourages settlement); *Amicus Br. of Ass’n of Bar of N.Y.* at 15-16 (same); *Amicus Br. of Conn. Intellectual Prop. L. Ass’n* at 13 (“Even when a case goes to trial, the losing party has very little incentive to settle disputes, since there is a significant chance that at least some material part of the trial court’s decision will be reversed on appeal.”); *Amicus Br. of Fed’n Internationale Des Conseils en Propriete Intellectuelle* at 11 (same); *Amicus Br. of Paul R. Michel* at 4 (same).⁷

⁷ The majority cites data showing that a declining percentage of cases proceed to trial or are appealed. *See Maj. Op.* at 35-36. According to the majority, these trends show that “the *Cybor* review procedure assists in resolving litigation before full trial or extensive discovery,” thereby facilitating settlement and reducing litigation costs. *Id.* at 36. Nothing suggests that these declines can be attributed to this court’s de novo review of claim construction, however. Declining trial and appeal rates can

D.

Contrary to the majority's claim, moreover, *Cybor* does not unqualifiedly promote uniformity or predictability of outcome in the patent system. As noted previously, the claim construction issues presented in patent cases are mostly fact and case specific. A claim construction decision in a given case will provide little guidance on the words used in different patents. Their resolution will do no more than declare the boundaries of a patent as between the parties in suit. *See Blonder-Tongue Labs., Inc. v. Univ. of Ill. Found.*, 402 U.S. 313, 329-30 (1971) (observing that “[s]ome litigants—those who never appeared in a prior action—may not be collaterally estopped without litigating [an] issue”). And, there is no guarantee that panels of this court will construe like claims in a like manner, even when in the same

easily be attributable to other factors, including (1) the availability of parallel proceedings at the PTO and ITC where decisions in those tribunals might moot further activity before the district courts, or even prevent district court judgments from becoming final, (2) increased resort to and availability of sophisticated alternative dispute resolution mechanisms, including the increased involvement of retired district court judges with patent litigation experience in such procedures, (3) improved case management practices by trial judges who have become more practiced at handling patent litigation and who now often have the benefit of detailed local rules governing the same, (4) the fact that, once this court provided clear guidance regarding claim construction in *Phillips*, trial courts were given a better roadmap for undertaking the exercise of claim construction, and (5) the increased experience and expertise of trial courts that itself may be fostering settlements. The majority reads far too much regarding the wisdom of *Cybor* into these general statistics.

patent. *Compare CVI/Beta Ventures, Inc. v. Custom Optical Frames, Inc.*, 92 F.3d 1203 (Fed. Cir. 1996) (affirming the determination that “greater than 3% elasticity” did not require “complete recovery after a strain of greater than 3%” within the meaning of claim 1 of U.S. Patent No. 4,896,955), *with CVI/Beta Ventures, Inc. v. Tura LP*, 112 F.3d 1146, 1158 (Fed. Cir. 1997) (construing “greater than 3% elasticity” in claim 1 of U.S. Patent No. 4,896,955 as requiring complete recovery after being subjected to stress); *see also* Kimberly A. Moore, *Are District Court Judges Equipped to Resolve Patent Cases?*, 15 Harv. J.L. & Tech. 1, 18-21 (2001) (observing that “[t]he CVI/Beta cases create doubt about whether the Federal Circuit serves as a test of ‘accuracy’ of district court construction”).

In fact, our case law expressly holds that we are not bound by claim constructions we adopt on appeal from the grant or denial of a preliminary injunction when considering the *same* claims again upon the final judgment.⁸ *See Glaxo Grp. Ltd. v. Apotex, Inc.*,

⁸ It is curious that, when reserving the right to change our own claim constructions at later points in a single case, we justify that position on grounds that the greater fulsomeness of the record at the final judgment stage better informs our claim construction analysis. *Transonic Sys., Inc. v. Non-Invasive Med. Techs. Corp.*, 75 F. App’x 765, 774 (Fed. Cir. 2003) (“A district court therefore is at liberty to change the construction of a claim term as the record in a case evolves after a preliminary injunction appeal.”); *Jack Guttman, Inc. v. Kopykake Enters., Inc.*, 302 F.3d 1352, 1361 (Fed. Cir. 2002) (“District courts may engage in a rolling claim construction, in which the court revisits and alters its interpretation of the terms as its understanding of the technology evolves. This is particularly true where the issues involved are complex, either due to the nature of the technology

376 F.3d 1339, 1346 (Fed. Cir. 2004) (“An appellate court’s preliminary injunction opinion has no conclusive bearing at the trial on the merits and is not binding on a subsequent panel.” (citing *Univ. of Tex. v. Camenisch*, 451 U.S. 390, 395 (1981)); *Transonic Sys., Inc. v. Non-Invasive Med. Techs. Corp.*, 75 F. App’x 765, 774 (Fed. Cir. 2003) (“We have consistently followed the Supreme Court’s precedent by holding that a claim construction reached during an appeal from a grant of a preliminary injunction is tentative and is not binding on the district court in subsequent proceedings.”). We, thus, do not even have an internal structure that unerringly assures uniformity.

To the limited extent uniformity might be served by de novo review, moreover, any marginal benefit from that increased uniformity is more than offset by the decreased certainty caused by making district court decisions more vulnerable to reversal. *See Kelly Casey Mullally, Legal (Un)Certainty, Legal Process, and Patent Law*, 43 Loy. L.A. L. Rev. 1109, 1149-50 (2010) (examining how de novo review increases one kind of certainty at the cost of “mak[ing] district court judgments less certain” by “increas[ing] the probability that the lower court’s decision will be reversed”). And, as the PTO points out, “even if some marginal decrease occurred in this Court’s ability to ensure perfect uniformity in the interpretation of patent claims, that decrease would not provide a

or because the meaning of the claims is unclear from the intrinsic evidence.” (citation omitted)). If the trial record is effectively meaningless to the claim construction inquiry as we now hold, what more could we know about claim construction later in a case than we knew when we first visited it?

reason to ignore the clear mandate of Rule 52(a).” *Amicus Br. of United States* at 12.

We are not alone in the belief that *Cybor* does little to promote the uniformity with which the majority is now concerned. Indeed, “[i]n the government’s view, recalibrating the standard of review to reflect the trial court’s ‘institutional advantage’ in considering certain types of evidence in the claim-construction process, while preserving this Court’s ability to give *de novo* review to the trial court’s ultimate construction, would promote ‘interjurisdictional uniformity.’” *Amicus Br. of United States* at 12-13 (quoting *Markman*, 517 U.S. at 391). As several *amici* explain, there are numerous other ways to improve uniformity of claim construction scope and interpretation, including improvements to the patent prosecution process, use of post-grant review procedures, or even consolidation of cases addressing the same patents before a single trial judge through the already well-established multidistrict litigation practice. *See, e.g., Amicus Br. of Prof. Peter Menell* at 22-24. And, as the American Bar Association notes, it is more likely that uniformity will be served by greater reliance on the claim construction decisions of the skilled fact finders—the district court judges—than by adhering to *Cybor*’s *de novo* standard of review. *Amicus Br.* at 13.

Our case law teaches that *stare decisis* is not an obstacle when our law causes such negative consequences. The recent decision by our en banc court in *Therasense, Inc. v. Becton, Dickinson & Co.*, 649 F.3d 1276 (Fed. Cir. 2011) (en banc), is a clear example of this court’s willingness to change our law

where, as here, experience proves our past decisions were unwise. In *Therasense*, this court made drastic changes to the law with the aim of making claims of inequitable conduct more difficult to prove. *See id.* at 1290-91. In explaining why we did so, we noted that, over the years, we had “embraced ...reduced standards for intent and materiality to foster full disclosure to the PTO.” *Id.* at 1288. But, “[t]his focus on encouraging disclosure had numerous unforeseen and unintended consequences.” *Id.* Given the negative effects of our precedent, we wholly abrogated our decisions in *Orthopedic Equipment Co. v. All Orthopedic Appliances, Inc.*, 707 F.2d 1376 (Fed. Cir. 1983), *Driscoll v. Cebalo*, 731 F.2d 878 (Fed. Cir. 1984), and *American Hoist & Derrick Co. v. Sowa & Sons, Inc.*, 725 F.2d 1350 (Fed. Cir. 1984), and required a greater showing to demonstrate inequitable conduct. Even the dissent in *Therasense* had no problem with abrogating our body of case law on inequitable conduct, disputing only what new test should be adopted in its stead. *See Therasense*, 649 F.3d at 1302 (Bryson, J., dissenting) (urging adoption of a new standard, but one that differed from that proposed by the majority).

Likewise, in *Knorr–Bremse Systeme Fuer Nutzfahrzeuge GmbH v. Dana Corp.*, 383 F.3d 1337 (Fed. Cir. 2004) (en banc), we overturned case law because we felt it had problematic effects. There, we observed that “implementation of [our prior] precedent has resulted in inappropriate burdens on the attorney-client relationship.” 383 F.3d at 1343. Looking at the full range of consequences flowing from our case law, we concluded that “the conceptual underpinnings of this precedent have significantly

diminished in force.” *Id.* at 1344 (citation and internal quotation marks omitted). So, we changed the law. *Id.* (“The adverse inference that an opinion was or would have been unfavorable, flowing from the infringer’s failure to obtain or produce an exculpatory opinion of counsel, is no longer warranted. Precedent authorizing such inference is overruled.”).

Thus, we have made clear that stare decisis does not prevent our court from changing our law where, as here, there are compelling reasons to do so.

VII.

In short, while *Markman* instructs us that claim construction presents a question for the court to resolve, it also instructs us that claim construction is a “mongrel practice,” presenting a mixed question of law and fact. While we agree that the *ultimate question* of claim meaning should remain subject to de novo review, claim construction often requires district courts to resolve underlying issues of disputed fact. These include, among others: whether a claim term had a specialized meaning among those skilled in the art at the time; what texts, including treatises and dictionaries, demonstrate about how a person of skill in the art would interpret a claim term, and which contemporaneous tests are most relevant; whether to credit one expert’s testimony over another’s regarding issues bearing on claim construction; who qualifies as a person of ordinary skill in the art; what is the relevant field of invention; what prior art is relevant; what a person of skill in the art would glean from that prior art; and what inferences can be fairly drawn from the prosecution history, including whether a

disclaimer of claim scope has occurred.⁹ When a district court makes fact-findings needed to resolve claim construction disputes, Rule 52(a) requires us to defer to those findings unless they are clearly erroneous.

Cybor ignores both the realities of claim construction and Rule 52(a)'s demands. It is time we acknowledge the limitations of our appellate function and our obligation to comply with the Federal Rules of Civil Procedure, and give trial judges the deference their expertise and efforts deserve. *Stare decisis* is no bar to our doing so. Nor is concern about the fact that employing the proper standard of review in this context will not always be easy. For all these reasons, I respectfully dissent.

⁹ Notably, a district court's factual determinations, even those about the historical meaning of a claim term, *will not* resolve the legal question of what construction is to be afforded a claim term. This court would be free to conclude that a claim term has a different meaning than its historically common one based on the four corners of the patent itself, or on application of legal doctrines applicable to claim construction such as claim differentiation, meanings we have subscribed to common terms (e.g., "comprising"), or the concept of an inventor being permitted to act as his own lexicographer.

APPENDIX C

NOTE: This order is nonprecedential.

**United States Court of Appeals
for the Federal Circuit**

LIGHTING BALLAST CONTROL LLC,
Plaintiff-Cross Appellant,

v.

**PHILIPS ELECTRONICS NORTH AMERICA
CORPORATION,**
Defendant,

and

**UNIVERSAL LIGHTING TECHNOLOGIES,
INC.,**
Defendant-Appellant.

2012-1014, -1015

Appeals from the United States District Court for
the Northern District of Texas in case no. 09-CV-0029,
Judge Reed O'Connor.

Before RADER, *Chief Judge*, NEWMAN, LOURIE,
DYK, PROST, MOORE, O'MALLEY, REYNA, and
WALLACH, *Circuit Judges*.

PER CURIAM.

ORDER

125A

A petition for rehearing en banc was filed by Plaintiff-Cross Appellant Lighting Ballast Control LLC (“Lighting Ballast”), and a response thereto was invited by the court and filed by Defendant-Appellant Universal Lighting Technologies, Inc. (“ULT”).

The petition for rehearing was considered by the panel that heard the appeal, and thereafter the petition for rehearing en banc, response, and briefs of *amici curiae* were referred to the circuit judges who are authorized to request a poll of whether to rehear the appeal en banc. A poll was requested, taken, and the court has decided that the appeal warrants en banc consideration.

Upon consideration thereof,

IT IS ORDERED THAT:

(1) The petition for rehearing en banc of Plaintiff-Cross Appellant Lighting Ballast is granted.

(2) The court’s opinion of January 2, 2013, is vacated, and the appeal is reinstated.

(3) The parties are requested to file new briefs. The briefs should address the following issues:

a. Should this court overrule *Cybor Corp. v. FAS Technologies, Inc.*, 138 F.3d 1448 (Fed. Cir. 1998)?

b. Should this court afford deference to any aspect of a district court’s claim construction?

c. If so, which aspects should be afforded deference?

(4) This appeal will be heard en banc on the basis of the additional briefing ordered herein, and oral argument. An original and thirty copies of new en

banc briefs shall be filed, and two copies of each en banc brief shall be served on opposing counsel. ULT's en banc brief is due 45 days from the date of this order. Lighting Ballast's en banc response brief is due within 30 days of service of ULT's new en banc brief, and the reply brief within 15 days of service of the response brief. Briefs shall adhere to the type-volume limitations set forth in Federal Rule of Appellate Procedure 32 and Federal Circuit Rule 32.

(5) Briefing should be limited to claim construction and related issues set forth above.

(6) The court invites the views of the United States Patent and Trademark Office as *amicus curiae*. Other briefs of *amici curiae* will be entertained, and any such *amicus* briefs may be filed without consent and leave of court but otherwise must comply with Federal Rule of Appellate Procedure 29 and Federal Circuit Rule 29.

(7) Oral argument will be held at a time and date to be announced later.

FOR THE COURT

March 15, 2013
Date

/s/ Jan Horbaly
Jan Horbaly
Clerk

cc: Jonathan T. Suder, Esq.
Robert P. Greenspoon, Esq.
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Nathan K. Kelley, Esq.

APPENDIX D

NOTE: This disposition is nonprecedential.

**United States Court of Appeals
for the Federal Circuit**

LIGHTING BALLAST CONTROL LLC,

Plaintiff-Appellee,

v.

**PHILIPS ELECTRONICS NORTH AMERICA
CORPORATION,**

Defendant,

AND

**UNIVERSAL LIGHTING TECHNOLOGIES,
INC.,**

Defendant-Appellant.

2012-1014

Appeal from the United States District Court for
the Northern District of Texas in case no. 09-CV-0029,
Judge Reed O'Connor.

Decided: January 2, 2013

JONATHAN T. SUDER, Friedman, Suder & Cooke, of Fort Worth, Texas, argued for plaintiff-appellee. With him on the brief was ROBERT P GREENSPOON, Flachsbart & Greenspoon, LLC, of Chicago, Illinois.

STEVEN J. ROUTH, Orrick, Herrington & Sutcliffe LLP, of Washington, DC, argued for defendant-appellant. With him on the brief were STEN A. JENSON, JOHN R. INGE, T. VANN PEARCE, JR., and DIANA M. SZEGO.

Before RADER, *Chief Judge*, O'MALLEY and REYNA, *Circuit Judges*.

REYNA, *Circuit Judge*

Lighting Ballast Control LLC (“Lighting Ballast”) sued Universal Lighting Technologies, Inc. (“ULT”) for infringement of U.S. Patent No. 5,436,529 (the ‘529 Patent). The patented technology relates to control and protection circuits for electronic lighting ballasts commonly used in fluorescent lighting. The district court construed the term “voltage source means” as a means-plus-function limitation under 35 U.S.C. § 112, ¶ 6. *Lighting Ballast Control, LLC v, Philips Elecs. N. Am. Corp.*, 2010 U.S. Dist. LEXIS 127409, *26-41 (N.D. Tex. Dec. 2, 2010). Following a jury verdict in favor of Lighting Ballast, the district court entered final judgment of infringement and validity with respect to independent claim 1 and its dependent claims 2 and 5.

Because we find that the term “voltage source means” in the claims of the ’529 Patent is a means-plus-function limitation under § 112, ¶ 6, and because we find in the specification no corresponding structure, we hold the claims invalid for indefiniteness and reverse the judgment of the district court.

I. Patented Technology

High levels of electric current are required to start a fluorescent lamp. As a result, a fluorescent lamp fixture typically includes an electronic ballast to regulate current flow. The electronic ballast helps maintain a current level high enough to start the lamp while simultaneously preventing current from reaching destructive levels. When a lamp is removed from its holders or when a filament is broken, current provided by the ballast suddenly ceases to flow through the lamp and dissipates back into the ballast circuitry. The dissipating current can destroy the ballast and create an electric shock hazard for someone servicing the lamp.

The ’529 Patent discloses an electronic ballast with a number of improvements over the prior art, including an ability to shield itself from destructive levels of current when a lamp is removed or becomes defective. ’529 Patent col. 2 ll. 39-47. Claim 1 recites,

An energy conversion device employing an oscillating resonant converter producing oscillations, having DC input terminals producing a control signal and adapted to

power at least one gas discharge lamp having heatable filaments, the device comprising:

voltage source means providing a constant or variable magnitude DC voltage between the DC input terminals;

output terminals connected to the filaments of the gas discharge lamp;

control means capable of receiving control signals from the DC input terminals and from the resonant converter, and operable to effectively initiate the oscillations, and to effectively stop the oscillations of the converter; and direct current blocking means coupled to the output terminals and operable to stop flow of the control signal from the DC input terminals, whenever at least one gas discharge lamp is removed from the output terminals or is defective.

Id. col. 11 ll. 49-68 (emphasis added). The “control means” and the “direct current blocking means” correspond generally to circuits designed to prevent current from dissipating into the ballast circuitry when a lamp is removed or defective. *See, e.g., id.* col. 7 l. 45 to col. 8 l. 45. These two elements appear to be central features of the invention. *See* Joint App. 8147 (applicant describing the “particular arrangement of control means and direct current blocking means” as a key feature in a Response to the PTO). The “voltage source means” provides the device with useable DC voltage. *See id.*

II. Trial Proceedings

On motion for summary judgment, ULT argued that “voltage source means” is a means-plus-function limitation and that the claims are invalid under 35 U.S.C. § 112, ¶ 2, because the specification fails to disclose any structure capable of providing DC voltage to the device. The district court initially agreed with ULT’s assertion and found the asserted claims invalid for indefiniteness. *Lighting Ballast Control, LLC v. Philips Elecs. North Am. Corp.*, 2010 U.S. Dist. LEXIS 85570, *29-31 (N.D. Tex. Aug. 19, 2010).

On motion for reconsideration, the district court reversed its indefiniteness decision because its initial construction of “voltage source means” “exalted form over substance and disregarded the knowledge of a person of ordinary skill in the art.” *Lighting Ballast Control, LLC v. Philips Elecs. N. Am. Corp.*, 2010 U.S. Dist. LEXIS 127409, at *38 (N.D. Tex. Dec. 2, 2010). The court cited testimony from an expert for Lighting Ballast, Dr. Roberts, and the inventor, Andrew Bobel, both of whom testified that one of skill in the art would understand the claimed “voltage source means” to correspond to a rectifier (which converts AC to DC) or other structure capable of supplying useable voltage to the device. The district court thus found that means-plus-function claiming did not apply and construed the limitation according to its “ordinary meaning in the art.” The court found that, according to the limitation’s ordinary meaning, the claimed “voltage source means” corresponds to a class of structures: a rectifier for common applications in which the claimed device is used with an AC power

line; and a battery or the like for less commonly used applications in which a DC power line is used.

ULT again moved for summary judgment, renewing its argument that the term “voltage source means” invokes means-plus-function claiming and is indefinite. The district court responded that it had “twice addressed this limitation” and declined “to address the same issue a third time.” Joint App. 62. At the close of evidence, ULT moved for judgment as a matter of law (“JMOL”) under FRCP 50(a), but did not continue to dispute the court’s construction of “voltage source means.” The court denied ULT’s JMOL motion. The district court stated in its jury charge that the term “voltage source means” refers to “a rectifier.” ULT did not object to this aspect of the jury charge. After the jury found claim 1 and its dependent claims 2 and 5 valid and infringed. ULT renewed its JMOL motion under FRCP 50(b) but did not press its argument regarding the court’s construction of “voltage source means.” The district court denied ULT’s JMOL motion and entered final judgment in favor of Lighting Ballast.

ULT appeals. We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(1).

III. Waiver

We first address whether ULT waived the right to dispute the district court’s construction of the term “voltage source means.” Lighting Ballast argues that ULT waived its argument by failing to raise the argument in a JMOL motion during trial or in a renewed JMOL motion after the jury verdict, and by

failing to object to the jury instructions regarding the “voltage source means” limitation.

To determine whether a party waived a defense, we look to law of the applicable regional circuit, which in this case is the Fifth Circuit. *See Ultra-Precision Mfg. v. Ford Motor Co.*, 411 F.3d 1369, 1376 (Fed. Cir. 2005). In the Fifth Circuit, “[i]t is a well-settled rule of law that an appeal from a final judgment raises all antecedent issues previously decided.” *Exxon Corp. v. St. Paul Fire & Marine Ins. Co.*, 129 F.3d 781, 784 (5th Cir. 1997). “[O]nce a final judgment is entered, all earlier non-final orders affecting that judgment may properly be appealed.” *Id.* Thus, “a party may obtain review of prejudicial adverse interlocutory rulings upon his appeal from adverse final judgment, at which time the interlocutory rulings (nonreviewable until then) are regarded as merged into the final judgment terminating the action.” *Dickinson v. Auto Center Mfg. Co.*, 733 F.2d 1092, 1102 (5th Cir. 1983).

This is not a situation where a party has failed to raise an issue before the trial court that it seeks to have us review on appeal. ULT twice moved for summary judgment and argued its proposed construction of “voltage source means.” In response to ULT’s second motion for summary judgment, the district court denied the motion and ruled that it would not “address the issue a third time,” at which point the dispute surrounding the “voltage source means” became fully litigated. The district court’s final claim construction and indefiniteness ruling concerned only questions of law. *See Biomedino, LLC v. Waters Techs. Corp.*, 490 F.3d 946, 949 (Fed. Cir.

2007) (noting that an indefiniteness determination, like claim construction, is a question of law). Thus, the district court’s interlocutory ruling regarding the “voltage source means” merged into the final judgment terminating the action. *See Dickinson*, 733 F.2d at 1102.

Once ULT’s position regarding the “voltage source means” was made clear to the district court, ULT was not required to renew its arguments during jury instructions. *See O2 Micro Int’l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1359 (Fed. Cir. 2008) (“When the claim construction is resolved pre-trial, and the patentee presented the same position in the [pre-trial] proceeding as is now pressed, a further objection to the district court’s pretrial ruling may indeed have been not only futile but unnecessary.”). As a result, we find that ULT preserved its claim construction and indefiniteness argument with respect to “voltage source means” and that the issue is properly raised on appeal.

IV. Means-Plus-Function Claiming

Means-plus-function limitations are governed by 35 U.S.C. § 112, ¶ 6, which allows a patentee to express a claimed element as a “means or step for performing a specified function without the recital of structure, material, or acts in support thereof.” Such an element “shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.” § 112, ¶ 6. The statute thus establishes a *quid pro quo* whereby a patentee may conveniently claim an element using a generic “means” for performing a

function, provided the patentee's specification discloses structure capable of performing that function. *Atmel Corp. v. Info. Storage Devices, Inc.*, 198 F.3d 1374, 1381 (Fed. Cir. 1999). Whether a claim limitation invokes means-plus-function claiming under § 112, ¶ 6, is a matter of claim construction and therefore a question of law that we review without deference. *See Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448, 1454-55 (Fed. Cir. 1998) (en banc).

Our first step in analyzing a means-plus-function limitation is to determine whether § 112, ¶ 6, applies. *Kemco Sales, Inc. v. Control Papers Co.*, 208 F.3d 1352, 1361 (Fed. Cir. 2000). We start by considering whether the limitation includes the word “means,” “as the terms ‘means’ and ‘means for’ have become closely associated with means-plus-function claiming.” *Inuentio AG v. Thyssenkrupp Elevator Anis. Corp.*, 649 F.3d 1350, 1356 (Fed. Cir. 2011). The word “means” triggers a presumption that “the inventor used this term advisedly to invoke [means-plus-function claiming].” *York Prods., Inc. v. Central Tractor*, 99 F.3d 1568, 1574 (Fed. Cir. 1996) (citation omitted).

The presumption triggered by use of the word “means” may be rebutted if the claim itself recites sufficient structure for performing the function. *See Cole v. Kimberly-Clark Corp.*, 102 F.3d 524, 531 (Fed. Cir. 1996). In *Cole*, for example, we construed a claim directed to removable training pants for toddlers. 102 F.3d at 529. The claim recited a “perforation means extending from the leg band means to the waist band means through the outer impermeable layer means for tearing the outer impermeable layer means for

removing the training brief in case of an accident by the user.” *Id.* at 530. We held that the term “perforation means” did not invoke means-plus-function claiming because the claim described not only the structure for performing the tearing function (“perforation”) but also the structure’s location (extending from the leg band to the waist band) and extent (extending through the outer impermeable layer). *Id.* at 531. “An element with such a detailed recitation of its structure, as opposed to its function, cannot meet the requirements of [§ 112, ¶ 6].” *Id.*

By contrast, when a term only indicates what the recited means “*does*, not what it *is* structurally,” the claim is properly construed under § 112, ¶ 6. *Laitram Corp. v. Rexnord, Inc.*, 939 F.2d 1533, 1536 (Fed. Cir. 1991). For example, in *Biomedino*, we construed the phrase “control means for automatically operating said valving.” 490 F.3d at 949. We held that the term “control” failed to convey sufficient structure to rebut the presumption that means-plus-function claiming applied because “control’ is simply an adjective describing ‘means’: it is not a structure or material capable of performing the identified function.” *Id.* at 950.

Here, because claim 1 of the ’529 Patent recites a “voltage source *means*,” we start from the presumption that means-plus-function claiming under § 112, ¶ 6, applies. The claim goes on to recite the corresponding function: “providing a constant or variable magnitude DC voltage between the DC input terminals.” The term “voltage source” implies that voltage is provided, but the claim only sets out an indication of what the element “*does*, not what it *is*

structurally.” *Laitram*, 939 F.2d at 1536. The recited function implies no more structure than the term “voltage source” itself. While “DC input terminals” is a structural term, the input terminals receive rather than provide DC voltage. Thus, the claim does not contain structural language that is sufficient to remove “voltage source means” from the reach of § 112, ¶ 6.

In some circumstances, expert testimony may be probative of whether a claim term itself corresponds to sufficiently definite structure. In *Rembrandt Data Techs., LP v. AOL*, for example, we relied on expert testimony to confirm that the terms “fractional rate encoding” and “trellis rate encoding” were commonly used in publications to identify *defined* algorithms (i.e., structure) known in the art. 641 F.3d 1331, 1340-41 (Fed. Cir. 2001). Because the terms were “self-descriptive,” we held that the terms “fractional rate encoding means” and “trellis encoding means” were not governed by § 112, ¶ 6, notwithstanding the word “means.” *Id.* at 1340-41.

Lighting Ballast relies on expert testimony to support its argument that “voltage source means” *implies* structure and, as a result, means-plus-function claiming does not apply. Dr. Roberts, Lighting Ballast’s expert, testified that “[t]he ‘voltage source’ limitation connotes, or suggests, to me, and would connote to anyone skilled in the art, the structure of a rectifier ...” because “the only way for a [l]ighting [b]allast to convert AC (from a ‘power line source’ such as a wall outlet or other similar AC power source in a home or office) into DC (for use at the ‘DC supply voltage’) is through a rectifier.” Joint

App. 21. Dr. Roberts also stated that a battery could be used as the “voltage source means” if a DC power source was used. *Id.* at 21-22.

Lighting Ballast’s expert testimony suggests that some structure for performing the recited function is implied, but it does not cure the absence of structural language in the claim itself. Nor does the testimony establish that the term “voltage source” was used synonymously with a defined class of structures at the time the invention was made, unlike the testimony in *Rembrandt*. See *id.* at 1341. In fact, Lighting Ballast’s record testimony suggests a lack of a defined class of structures. While a rectifier and a battery may be examples of structures that commonly perform the recited function, there are many other ways to provide DC voltage, including “generators” and “solar voltaic cells,” as Lighting Ballast’s expert admitted. Joint App. 1623.

Lighting Ballast points to case law in which this Court declined to apply means-plus-function claiming in view of expert testimony and other extrinsic evidence showing that certain claimed elements implied sufficient structure. In those cases, however, we started from the presumption that means-plus-function claiming did not apply because the claim limitations at issue did not include the word “means.” See *MIT v. Abacus Software*, 462 F.3d 1344, 1353 (Fed. Cir. 2006) (“The phrase ‘colorant selection mechanism’ is presumptively not subject to 112 ¶ 6 because it does not contain the term ‘means.’); *Lighting World, Inc. v. Birchwood Lighting, Inc.*, 382 F.3d 1354, 1359 (Fed. Cir. 2004) (“Because the ‘connector assembly’ limitation does not contain the

term ‘means,’ we begin with the presumption that section 112 ¶ 6 does not apply to that limitation.”); *Apex Inc. v. Raritan Computer, Inc.*, 325 F.3d 1364, 1372 (Fed. Cir. 2003) (“As an initial matter, none of the claim limitations asserted by Raritan to be means-plus-function limitations contains the term ‘means,’ which, as noted, is central to the analysis.”); *Greenberg v. Ethicon Endo-Surgery, Inc.*, 91 F.3d 1580, 1583 (Fed. Cir. 1996) (construing the term “detent mechanism”; “means” did not appear in the claim.). In this case, we start with the presumption that means-plus-function claiming does apply because the claim limitation includes the word “means.” ULT failed to present sufficient evidence to overcome that presumption.

V. Indefiniteness

Once a court determines that a claim limitation invoiced means-plus-function claiming under § 112, ¶ 6, construction of the limitation involves two steps. First, the court must identify the claimed function. *Applied Med. Res. Corp. v. U.S. Surgical Corp.*, 448 F.3d 1324, 1332 (Fed. Cir. 2006). Second, the court must identify the structure described in the specification that performs the claimed function. *Id.* Here, the parties do not dispute the district court’s construction of the claimed function. The sole issue on appeal is whether the specification identifies sufficient structure to support the claimed function. We review a district court’s identification of the structure corresponding to a means-plus-function limitation without deference. *JVW Enters., Inc. v. Interact Accessories, Inc.*, 424 F.3d 1324, 1329 (Fed. Cir. 2005).

A patentee may use a generic “means” expression to describe a claim element, but “the applicant must indicate in the specification what structure constitutes the means.” *Biomedino*, 490 F.3d at 948. A patent must point out and distinctly claim the invention. *In re Donaldson Co.*, 16 F.3d 1189, 1195 (Fed. Cir. 1994) (en banc). Failure to disclose adequate structure to support a generic “means” expression amounts to impermissible functional claiming. *Med. Instrumentation & Diagnostics Corp. v. Elekta AB*, 344 F.3d 1205, 1211 (Fed. Cir. 2003). If the patentee fails to disclose adequate structure, the claim is invalid as indefinite under 35 U.S.C. § 112, ¶ 2. *See In re Donaldson*, 16 F.3d at 1195.

We hold that the ’529 Patent fails to disclose structure capable of “providing a constant or variable magnitude DC voltage between the DC input terminals.” The specification does not refer to a rectifier or any other structure capable of converting AC supply voltage into useable DC voltage. Nor does the specification disclose structure capable of supplying useable DC voltage directly from a DC supply voltage. Rather, the ’529 Patent mentions drawing power from a power line source and DC supply voltages without specifying a capable structure or class of structures. *See, e.g.*, ’529 Patent col. 1 l. 56, col. 2 l. 8, col. 3 ll. 6-7.

As already noted, Lighting Ballast relies on expert testimony to support its contention that one skilled in the art would readily ascertain structures capable of performing the recited function. But “testimony of one of ordinary skill in the art cannot supplant the total absence of structure from the specification.” *Default*

Proof Credit Card Sys., Inc. v. Home Depot U.S.A., Inc., 412 F.3d 1291, 1302 (Fed. Cir. 2005). Lighting Ballast’s testimony merely demonstrates that several different structures could perform the recited function, namely, a rectifier, battery, solar cell, or generator. The possibility that an ordinarily skilled artisan could find a structure that would work does not satisfy the disclosure requirements of means-plus-function claiming under § 112. *Ergo Licensing, LLC v. CareFusion 303, Inc.*, 673 F.3d 1361, 1363-64 (Fed. Cir. 2012); *see also Blackboard, Inc. v. Desire2Learn Inc.*, 574 F.3d 1371, 1385 (Fed. Cir. 2009) (“That ordinary skilled artisans could carry out the recited function in a variety of ways is precisely why claims written in ‘mean-plus-function’ form must disclose the particular structure that is used to perform the recited function.”).

Because we hold that the term “voltage source means” in claim 1 of the ’529 Patent invokes means-plus-function claiming under § 112, ¶ 6, and because we find in the specification no corresponding structure, we find the asserted claims invalid for indefiniteness under § 112, ¶ 2. We need not address the other issues raised by ULT. The judgment below is

REVERSED

COSTS

Each party shall bear its own costs.

APPENDIX E

**(A) IN THE UNITED STATES DISTRICT
COURT
FOR THE NORTHERN DISTRICT OF TEXAS
WICHITA FALLS DIVISION**

LIGHTING BALLAST
CONTROL, LLC,
Plaintiff,

v.

PHILIPS
ELECTRONICS NORTH
AMERICA CORP., et al.,
Defendants.

CIVIL ACTION NO.
7:09-CV-29-O

SUMMARY JUDGMENT ORDER

Before the Court is Defendant Universal Lighting Technologies, Inc.'s ("ULT") Motion for Summary Judgment or Partial Summary Judgment (ECF No. 127), along with its supporting brief and appendix. Also before the Court is Plaintiff Lighting Ballast Control, LLC's ("LBC") response brief and appendix. The Court will also consider the parties' respective objections, responses, and replies thereto. ULT moves for summary judgment of non-infringement, invalidity of the asserted claims for anticipation, and invalidity for indefiniteness. LBC opposes summary judgment on all grounds. After considering the arguments of the parties, the evidence, and the

applicable law, the Court will grant ULT's motion for summary judgment of non-infringement with respect to Claims 3, 4, and 18 and to all products in Groups 5, 7, 8, and 9. The Court will deny ULT's motion on all remaining grounds.

I. OVERVIEW OF THE '529 PATENT

At issue in this case is United States Patent 5,436,529 ("529 Patent") issued on July 25, 1995 and entitled "CONTROL AND PROTECTION CIRCUIT FOR ELECTRONIC BALLAST." Plaintiff LBC holds the exclusive right to enforce the '529 Patent. The inventor is Andrzej "Andrew" Bobel. The '529 Patent covers a lighting ballast that powers florescent lamps with heatable filaments. An electronic ballast practicing the '529 Patent operates in three different stages: (1) the initial start-up of the ballast, (2) the shut-down or sleep-mode of the ballast, and (3) the re-starting of the ballast after an inoperable lamp has been replaced. Pl.'s Opening Br. Cl. Const. 4, ECF No. 84. The invention was intended to address significant technical challenges facing the ballast industry in 1993; specifically, how to preserve the integrity of the ballast by not drawing power from a power line source when a lamp is removed or defective, and by not having to turn the power OFF and ON when the lamp is replaced. *Id.* at 6. The invention covered by the '529 Patent was intended to remedy these issues in a safe, energy efficient, and affordable manner. *Id.*

LBC sues Defendant ULT claiming infringement of the '529 Patent because ULT manufactures, uses, or sells electronic ballasts utilizing circuitry that monitors the voltage across

one or more lamps and provides end-of-life protection for multiple types of failures. Pl.'s Orig. Compl. 4, ECF No. 1. LBC identifies more than thirty allegedly infringing product schematics, several of which apply to more than one product or generation of products. ULT has grouped the accused products into fourteen groups, taking into account differences in LBC's infringement analyses and differences in the structure and operation of the accused products. ULT denies any infringement and seeks a finding of non-infringement and invalidity of the asserted claims.

II. LEGAL STANDARDS

Summary judgment is appropriate “if the movant shows that there is no genuine dispute as to any material fact and the movant is entitled to judgment as a matter of law.” Fed. R. Civ. P. 56(a). A dispute regarding a material fact is “genuine” where the evidence is such that a reasonable jury could return a verdict favor of the nonmoving party. *See Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 248 (1986). In considering a motion for summary judgment, a court must view all inferences drawn from the factual record in the light most favorable to the nonmoving party. *See Matsushita Elec. Indus. Co. v. Zenith Radio*, 475 U.S. 574, 587 (1986).

In a patent infringement case, a court first determines the proper construction of the patent claims by establishing, as a matter of law, the scope and boundaries of the subject-matter of the patent. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 976 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370, 384-85 (1996). Second, the trier of fact compares the

properly construed claims to the allegedly infringing device(s) and determines whether there has been an infringement. *Id.* Here, the latter question is at issue.

Pursuant to 35 U.S.C. § 112 ¶ 6 a patentee may express a claim limitation by reciting a function to be performed by a generic means, rather than reciting in the claim the actual structure for performing the particular function. Section 112, ¶ 6 provides:

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

Section 112, ¶ 6 thus “operates to restrict claim limitations drafted in such functional language to those structures, materials, or acts disclosed in the specification (and their equivalents) that perform the claimed function.” *Personalized Media Comm’ns, LLC v. Int’l Trade Comm’n*, 161 F.3d 696, 703 (Fed. Cir. 1999). “The point of the requirement that the patentee disclose particular structure in the specification and that the scope of the patent claims be limited to that structure and its equivalents is to avoid pure functional claiming.” *Aristocrat Techs. Australia Pty Ltd. v. Int’l Game Tech.*, 521 F.3d 1328, 1333 (Fed. Cir. 2008).

Literal infringement of a properly construed claim is a question of fact. *See Applied Med. Res. Corp. v. U.S. Surgical Corp.*, 448 F.3d 1324, 1332 (Fed. Cir. 2006). A means-plus-function claim term will literally cover an accused device when the relevant structure in the accused device performs the identical function recited in the claim and that structure is identical or equivalent to the corresponding structure in the specification. *See Intellectual Sci. & Tech., Inc. v. Sony Elecs., Inc.*, 589 F.3d 1179, 1183 (Fed. Cir. 2009). The proper test for equivalent structure “is whether the differences between the structure in the accused device and any [structure] disclosed in the specification are insubstantial.” *Chiuminatta Concrete Concepts v. Cardinal Indus.*, 145 F.3d 1303, 1309 (Fed. Cir. 1998). An insubstantial change is one which adds nothing of significance to the structure, material, or acts disclosed by the specification. *See Valmont Indus., Inc. v. Reinke Mfg. Co.*, 983 F.2d 1039, 1043 (Fed. Cir. 1993). One way to approach the question of equivalency is to ask whether the structures perform the same function in substantially the same way to achieve substantially the same result. *See IMS Tech., Inc. v. Haas Automation, Inc.*, 206 F.3d 1422, 1437 (Fed. Cir. 2000). Known interchangeability between the structure in the accused device and the disclosed structure is also an important factor, although it is not dispositive. *See id.* at 1435; *see also The Toro Co. v. Deere & Co.*, 355 F.3d 1313, 1324 (Fed. Cir. 2004).

The Federal Circuit has often applied a “reduced version” of the doctrine of equivalents test in the section 112, ¶ 6 context to determine whether the differences between the corresponding structure and

the structure in the accused device are substantial. *See IMS Tech.*, 206 F.3d at 1437. As under the doctrine of equivalents, the context of the invention should be taken into account in the section 112, ¶ 6 equivalence analysis. *See id.* at 1436. According to the Federal Circuit:

[T]wo structures that are equivalent in one environment may not be equivalent in another. More particularly, when in a claimed “means” limitation the disclosed physical structure is of little or no importance to the claimed invention, there may be a broader range of equivalent structures than if the physical characteristics of the structure are critical in performing the claimed function in the context of the claimed invention. Thus, a rigid comparison of physical structures in a vacuum may be inappropriate in a particular case. Indeed, the statute requires two structures to be equivalent, but it does not require them to be “structurally equivalent,” i.e., it does not mandate an equivalency comparison that necessarily focuses heavily or exclusively on physical structure.

Id. Therefore, the importance of the corresponding structure to the claimed invention should be considered in the equivalency comparison. *See id.*

Most of LBC’s infringement contentions are based on a theory of literal infringement. However, with

respect to accused products in Groups 5, 8, and 9, LBC asserts infringement under the doctrine of equivalents (“DOE”). ULT also seeks summary judgment on its counterclaims of invalidity of the asserted claims. The Court will address these matters below.

III. ANALYSIS

ULT moves for summary judgment against LBC as follows: (1) granting ULT a declaratory judgment counterclaim of non-infringement with respect to Claims 3, 4, and 18 of the ‘529 Patent and certain ULT products that LBC dropped from the case; (2) dismissing with prejudice all patent infringement claims against ULT and granting ULT’s declaratory judgment of non-infringement of the ‘529 Patent; and (3) ruling in favor of ULT’s first and third affirmative defenses and declaratory judgment of invalid for anticipation under 35 U.S.C. § 102 and invalid as indefinite. The Court will first address ULT’s motion with respect to LBC’s infringement claims, and secondly ULT’s invalidity arguments.

A. Infringement Claims

ULT first moves for summary judgment with regard to all infringement claims based on Claims 3, 4, and 18 of the ‘529 Patent. According to ULT, LBC’s expert on infringement, Dr. Roberts, has not offered any opinion related to these claims and admitted in his deposition that no ULT products infringe on these claims. Likewise, ULT argues that LBC has agreed that no Group 7 ULT products infringe on any asserted claims of the ‘529 Patent. LBC does not

dispute that summary judgment is appropriate with regard to all infringement claims related to Claims 3, 4, and 18 and all infringement claims related to ULT's Group 7 products. *See* Pl.'s Resp. Mot. Summ. J. 5, ECF No. 135 ("For those products that were initially accused of infringement but for which Dr. Roberts could not confirm infringement, those products have been dropped from this lawsuit."). In any event, LBC has presented no evidence in response to ULT's motion that any products infringe Claims 3, 4, and 18 or that any Group 7 products infringe any asserted claim of the '529 Patent. Therefore, summary judgment is appropriate with respect to any infringement claims based on these claims or products. Accordingly, the analysis below pertains only to LBC's remaining infringement claims based on Claims 1, 2, and 5 of the '529 Patent.

ULT also seeks summary judgment with regard to LBC's remaining claims of infringement of the '529 Patent. First, ULT argues that no accused product contains either the same or an equivalent structure as the claimed "control means" of Claim 1, which would also entitle ULT to summary judgment on dependent Claims 2 and 5. LBC agrees that the accused products do not contain the same structure and rests its infringement claims, with respect to the "control means" limitation, on an equivalent structure in the accused products. Specifically, ULT asserts that "LBC has not, and cannot, come forward with sufficient evidence to prove its infringement claim" because "Dr. Roberts' equivalency opinion . . . (a) fails to specify what structures perform the 'control means' functions and why they are equivalent, (b) improperly expands the scope of the claim to encompass *any*

electronic circuit that performs the claimed functions, and (c) ignores Bobel's distinction between his invention and the prior art." Def.'s Br. Supp. Mot. Summ. J. 13, ECF No. 127 (emphasis in original). ULT also argues that its "products are substantially different from the claimed 'control means,' both in the way they operate and in the results obtained." *Id.* For these reasons, ULT argues, summary judgment of non-infringement is appropriate because the accused products do not contain an equivalent structure to the "control means" limitation of Claims 1, 2, and 5.

LBC disputes ULT's assertions with regard to the "control means" and argues that it has introduced sufficient evidence to raise a fact issue on infringement. LBC begins by criticizing ULT's component-by-component analysis, arguing that "ULT seeks to transform each ...component of the recited control means, as described in the preferred embodiment and ...shown in Figure 1 of the '529 Patent, into an additional claim limitation." Pl.'s Resp. 16. LBC also disputes ULT's characterization of the sufficiency of Dr. Roberts's analysis in comparing the "control means" limitation and its corresponding structure to the equivalent structures in the accused products; "Dr. Roberts has established that the accused products literally infringe the 'control means' limitation through . . . an equivalent structure[, and] [a]t a minimum, he has created a fact issue[.]" *Id.* at 19. Lastly, LBC asserts that ULT misquoted and mischaracterized Bobel's statements distinguishing his invention from the prior art to distort their true meaning, which does not support ULT's position. LBC urges the Court to deny ULT's motion with regard to the "control means" limitation because a reasonable

jury could determine, based on the evidence, that ULT's products literally infringe this limitation.

In its Amended *Markman* order, the Court construed “control means capable of receiving control signals from the DC input terminals and from the resonant converter, and operable to effectively initiate the oscillations, and to effectively stop the oscillations of the converter” in accordance with section 112, ¶ 6, as reciting three functions with the corresponding structure being control circuit 58, described in the specification of the ‘529 Patent at column 3, line 59 through column 4, line 21. *See* Am. Mem. Op. Order 24-26, ECF No. 107. At the *Markman* stage the parties disputed only whether the specification of the ‘529 Patent disclosed a structure corresponding to the function of “capable of receiving control signals from the DC input terminals.” The Court found that the control circuit 58 corresponded to this function, as with the other two functions of the “control means” limitation. *See id.* In his expert report, Dr. Roberts, LBC’s infringement expert, further subdivides the functions of the “control means” limitations as follows: “(1) control means (a) capable of receiving a control signal from the DC input terminals and (b) operable to effectively initiate the oscillations, and (2) control means (a) capable of receiving a control signal from the resonant converter, and (b) operable to effectively stop the oscillations.” Infringement Report of Dr. Victor Roberts 29, Pl.’s App. Supp. Resp. Def.’s Mot. Summ. J. 38, ECF No.136. For purposes of summary judgment, the Court will adopt Dr. Robert’s formulation of the functions recited in the “control means” limitation, both for ease of reference and

because they are not inconsistent with the Court's construction of this limitation in the Amended *Markman* order.

The control circuit 58 is described in the '529 Patent as consisting of three control terminals and three series current paths between terminals CTa and CTb. The specification describes the control circuit 58 in full as follows:

A control circuit 58 has three control terminals CTa, CTb and CTc. The terminal CTa is connected to the intermediate terminal 27; the terminal CTb is connected to the terminal B-; and the terminal CTc is connected to the base electrode of the transistor 52.

The control circuit 58 has a first series current path between terminals CTa, CTb, and the path has a diode 39, a resistor 40, and a capacitor 42 connected in series, via a node 41 formed between the resistor 40 and the capacitor 42. A diac 44 is connected between the node 41 and the terminal CTc. A small signal npn transistor 43 is connected with its collector electrode to the node 41, and with its emitter electrode to the terminal CTb.

The control circuit 58 has a second series current path between terminals CTa, CTb, and the path has a diode 34, a resistor 35, and a capacitor 38 connected

in series via a node 36 formed between the resistor 35 and the capacitor 38. The transistor 43 has its base electrode connected to the node 36. A resistor 37 is connected between the node 36 and the terminal CTb.

The control circuit 58 has a third series current path between terminals CTA, CTb, and the path has a diode 29, a resistor 30, and a capacitor 33 connected in series via a node 31 formed between the resistor 30 and the capacitor 33. A resistor 32 is connected to the node 31 and to the terminal CTb.

A small signal npn transistor 48 has its collector electrode connected to the terminal CTc and its emitter electrode connected to the terminal CTb. A diac 45 is connected between the node 31 and a based electrode of the transistor 48.

‘529 Patent, Col. 3, l. 59-Col. 4, l. 21. Thus, the control circuit, as disclosed by the specification, performs the four functions using the various components arranged in three series current paths as described above.

All four functions of the “control means” deal with starting and stopping the oscillations of the resonant converter. The control signal from the DC input terminals communicates to the control circuit when to initiate oscillations. The signal from the resonant converter communicates to the control circuit when to stop oscillations. When the power is cycled on, or a

new fluorescent lamp is placed in the terminals, the DC control signal will start to flow in the direct current path DCP until it reaches the control circuit. Once in the control circuit, it will flow through the various components listed above in the first series current path. The current flow through the first series current path will trigger transistor 52 and allow alternating current to flow in the resonant circuit. After the lamp strikes, the DC current entering the control circuit will flow through the various components listed above in the second series current path. The current flow through the second series current path will trigger transistor 43 thereby discharging capacitor 42, in the first series current path, and preventing the transistor 52 from being triggered a second time, which would cause the circuit to fail.

When a fluorescent lamp is removed from its holders, a current will flow through the various components listed above in the third series current path. The current flow through the third series current path will trigger transistor 48 momentarily. The transistor 48 will turn off the device and the oscillations will cease. Oscillations will not begin again until direct current flows into the control circuit and through the first series current path.

The parties agree that the accused products do not utilize the same structure or structures as the control circuit to perform the functions of receiving control signals and initiating and stopping the oscillations of the resonant circuit. However, LBC contends that the accused products utilize an equivalent structure within the meaning of section 112, ¶ 6. In all accused

products, the alleged equivalent structure includes, as a component, either an integrated circuit or microprocessor to control, among other things, the oscillations of the resonant circuit. *See* Pl.’s Resp. 21. While the components of the equivalent structure may differ depending on the accused product at issue, in their briefing, the parties clearly focus on the integrated circuits or microprocessors relative to the control circuit 58 of the ‘529 Patent.¹ Thus, the point of dispute between the parties, for purposes of summary judgment, is whether any structure could be equivalent to the “control means” when it uses an integrated circuit or microprocessor to control the oscillations of the resonant circuit.

ULT criticizes Dr. Roberts’s equivalent structure analysis on this point. In its criticisms, ULT focuses primarily on one statement in the main body of his expert report where Dr. Roberts explains, at a high level, the substance of his section 112, ¶ 6 equivalent structure analysis. *See* Report 30-31, Pl.’s App. 39-40. ULT largely ignores the attachments to Dr. Roberts’s report. However, it is in these attachments, which include infringement charts, product schematics, data sheets for the integrated circuits, and source code for microprocessors, where the bulk of the details of Dr. Roberts’s analysis is contained. In these

¹ As noted *supra*, LBC accuses more than thirty allegedly infringing product schematics, many of which apply to more than one product or generation of products. To simplify discussion, ULT divided the accused products into fourteen groups which take into account both differences in Dr. Roberts’s infringement analysis and material differences in the products’ structure and operation. *See* Def.’s Br. Supp. 7.

attachments, Dr. Roberts details the specific components of the control circuitry in each of the accused products. He also explains how each of the components performs the functions of the “control means” limitation. The Court is satisfied that Dr. Roberts’s report, and the attachments thereto, suffice to raise a fact issue with regard to whether the accused products include an equivalent structure to the “control means” limitation.

ULT also argues that Dr. Roberts’s equivalent structure analysis fails to take into account certain statements, made by Bobel during prosecution, disclaiming similar control structures in prior art. Bobel’s full statement reads as follows:

Zuchtriegel, unlike the present invention, as positively defined by Claim 1, does not disclose a specific control means that is operable to effectively initiate and stop the oscillations of the resonant converter. Further, direct current blocking means coupled to the output terminals and operable to stop flow of the control signal from the DC input terminals whenever at least one gas discharge lamp is removed from the output terminals or is defective, is not taught. This particular arrangement of control means and direct current blocking means is neither taught nor suggested by **Zuchtriegel**.

Pl.’s App. 626-27. ULT’s quotations of this statement omit the second sentence above. The Court agrees

with LBC that this statement, when read in context, distinguishes the prior art by asserting that the '529 Patent includes a particular arrangement of the control means and direct current blocking means. This statement does not constitute a clear and unmistakable surrender of any subject matter or particular structure related to the "control means." See *Cordis Corp. v. Medtronic Ave, Inc.*, 511 F.3d 1157, 1177 (Fed. Cir. 2008).

Lastly, ULT argues that the alleged "control means" of the accused products are substantially different from the control circuit of the '529 Patent such that no reasonable jury could conclude that the accused products use an equivalent structure. In arguing this point, ULT submits evidence regarding the operation of the integrated circuits and microprocessors and how they are different from the components and operation of control circuit 58 in the '529 Patent. However, ULT's evidence is insufficient to conclude, as a matter of law, that no reasonable jury could find that a "control means" using an integrated circuit or microprocessor is equivalent structure to the "control means" disclosed in the '529 Patent. Additional considerations also counsel against holding that there is no genuine dispute of material fact as to whether the accused products utilize and equivalent structure to the "control means" of the '529 Patent.

First, the Court believes that there is sufficient evidence in the record to conclude that a person of ordinary skill in the art might consider an integrated circuit or microprocessor to be interchangeable with the control circuit 58. The evidence indicates that

both types of structures perform the functions of receiving control signals and controlling the oscillations of the resonant circuit. There is a genuine dispute of material fact as to whether an integrated circuit or microprocessor performs these functions in a substantially different way with substantially different results. Secondly, as Dr. Roberts has discussed in his report, the focus or true innovation of the '529 Patent is the unique manner in which it senses removal of, or certain defects in, a lamp and shuts down the ballast in response, keeping it from starting again until a new lamp is placed in the output terminals. The focus of the invention is not on the particular means by which it starts and stops the oscillations of the resonant circuit. Indeed the specification indicates that it may be equipped with all types of oscillatory circuits, including driven circuits, one type of which is an integrated circuit or microprocessor. *See* '529 Patent, Col. 11, ll. 34-39. Accordingly, reading the "control means" limitation in the context of the '529 Patent, it is appropriate to consider a broader range of equivalent structures to the control circuit 58. *See IMS Tech.*, 206 F.3d at 1437. Thus, resolving all doubts and inferences from the evidence in favor of the non-moving party, LBC, the Court finds that there is a genuine dispute of material fact as to whether the accused products include an equivalent structure to the "control means" of the '529 Patent. Therefore, summary judgment in favor of ULT that the accused products do not contain an equivalent structure to the "control means" limitation is inappropriate.

Next, ULT seeks summary judgment because the accused products do not include the "direct current

blocking means” limitation. According to ULT, “[u]sing the ordinary meaning of defective, ULT’s products do not infringe.” Def.’s Br. Supp. 29. ULT bases its argument on a new construction of the latter half of the “direct current blocking means” limitation, which reads “whenever at least one gas discharge lamp is removed from the output terminals or is defective[.]” ULT proffers a definition of “defective” that takes into account all types of fluorescent lamp defects. In sum, ULT argues that “the reference to a ‘defective’ lamp in claim 1, when construed in accord with its ordinary meaning, encompasses any lamps with a broken or defective filament as well as other types of defects where no filaments are broken or defective, such as degassed lamps.” *Id.* at 33. On the basis of this definition, ULT contends that none of the accused products infringe. “First, if the lamps are defective in any way that does not involve a broken or removed filament . . . the DC control signal path will not be stopped by the ‘direct current blocking means.’” *Id.* “Second, in several of the products, one or more of the filaments can be ‘open,’ that is, broken or removed, and yet the DC control signal path traced by Dr. Roberts will not be broken because it does not pass through that filament or filaments.” *Id.* at 34. For these reasons, ULT argues summary judgment is appropriate because the accused products do not include a “direct current blocking means” performing the function of “operable to stop the flow of the control signal from the DC input terminals, whenever at least one gas discharge lamp is removed from the output terminals or is defective[.]”

LBC argues that ULT’s proffered construction of the “direct current blocking means” “focuses on the

term ‘defective’ and tries to apply its plain ordinary meaning, devoid of any context.” Pl.’s Resp. 33 n.2. Rather, according to LBC, “a careful reading of [the specification of the ‘529 Patent], confirm[s] that the DC blocking means limitation is focused on the DC control path, such that the DC blocking means must be operable to stop the flow of the DC control signal whenever that path is broken.” Pl.’s Resp. 35. LBC proposes to construe the “whenever” clause of the “direct current blocking means” limitation as: the DC blocking means is operable to stop the flow of the DC control signal “whenever the DC control path through the filaments is broken due to lamp removal or a broken filament.” Pl.’s Resp. 25. LBC argues that its proffered construction is the only one that takes into account the meaning of the “direct current blocking means” in the context of the specification of the ‘529 Patent. Based on its construction, LBC asserts that there are genuine disputes of material fact whether the accused products infringe literally or, in some cases, under the Doctrine of Equivalents.

Since ULT’s non-infringement position is based on a newly proffered construction of the “direct current blocking means” limitation, the Court will begin by construing that term. The limitation reads in full: “direct current blocking means coupled to the output terminals and operable to stop flow of the control signal from the DC input terminals, whenever at least one gas discharge lamp is removed from the output terminals or is defective.” The Court previously construed this term in accordance with section 112, ¶ 6 as a means-plus-function limitation. *See* Am. Mem. Op. & Order 26-32. The Court found the recited function to be “operable to stop the flow of the control

signal from the DC input terminals, whenever at least one gas discharge lamp is removed from the output terminals or is defective[.]” *See id.* at 29-30, 33. As corresponding structure, the Court identified “a capacitor or diode within the control circuit[.]” *See id.* at 30-31, 33. The parties do not contest these settled constructions; rather, ULT seeks to further construe the meaning of the “whenever” clause of the “direct current blocking means” limitation.

ULT’s proposed construction focuses on the term “defective.” The gist of ULT’s construction of “defective,” as used in the “whenever” clause, is that the “direct current blocking means” should block the DC control signal when any fluorescent lamp connected to the ballast is defective in any way, whether it be a degassed lamp, broken filament, or otherwise.

LBC urges the Court to reject ULT’s construction because it seeks to construe the “whenever” clause without reference to the meaning of the clause in the context of the ‘529 Patent. LBC’s construction, as noted above, focuses on the DC control path: the DC blocking means is operable to stop the flow of the DC control signal whenever the DC control path through the filaments is broken due to lamp removal or a broken filament.

The Court agrees with LBC and adopts its proposed construction. A careful review of the specification of the ‘529 Patent reveals that it speaks in terms of blocking the DC control signal whenever the DC control path is broken. *See* ‘529 Patent, Col. 8, l. 13-18 (“When the voltage across the capacitor

reaches a level sufficient enough to turn ON the transistor 43, the capacitor 42 will be held discharged for any time period as long as: (i) there is an unbroken direct current path DCP between terminal B+ and terminal CTa ...”); Col. 8, l. 24-42 (“While the device is operation in Mode A, if the fluorescent lamp 16 is removed out of its holders ...[t]he direct current path DCP between terminal B+ and terminal CTa is broken due to missing filaments 12, 15 of lamp 16. The DC current will not flow through DC blocking circuits 57, 50 ...”); Col. 8, l. 47-50 (“The fluorescent lamp 16 is now re-inserted into its holders, that will complete the direct current path ...between terminal B+ and terminal CTa, and the device will start as in Mode A above.”); *see also* Col. 7, l. 51-53. The Court also agrees with LBC that “a careful reading of Column 8, line 51 through Column 9, line 3, along with Figures 1-3, confirm that the DC blocking means limitation is focused on the DC control path[.]” Pl.’s Resp. 35.

ULT fails to direct the Court to any language in the specification of the ‘529 Patent supporting its broad construction of the “whenever” clause.² *See Nazomi Commc’ns, Inc. v. Arm Holdings, PLC*, 403 F.3d 1364, 1368 (Fed. Cir. 2005) (Courts should look first to the intrinsic record of a patent, including the claims and specification, to determine the meaning of

² ULT points to two statements from the specification, however, both of these statements refer to faults sensed by the “control means” or the control signal from the resonant converter. *See* Col. 11, ll. 9-14; Col. 3, ll. 19-22. These statements are not relevant to defining defects sensed by the “direct current blocking means.”

words in the claims.). Rather, ULT relies primarily on extrinsic evidence, including a dictionary and expert testimony, to define the term “defective” independent of the claims and specification of the ‘529 Patent. This is not a proper claim construction. *See Interactive Gift Express, Inc. v. Compuserve, Inc.*, 256 F.3d 1323, 1332 (Fed. Cir. 2001) (“If the meaning of the claim limitations is apparent from the totality of the intrinsic evidence, then the claim has been construed.”). Since the specification makes clear that the patent defines “defective” in terms of a broken DC control signal path, it is not necessary to resort to extrinsic sources to define it.

While the Court understands that ULT’s construction of the “whenever” clause is entirely logical from a plain language standpoint, it does not take into account the teachings of the ‘529 Patent. To accept ULT’s construction the Court must define the term “defective” without reference to the specification’s discussion of the direct current flow through the ballast. Accordingly, the proper construction of the “direct current blocking means” is as follows: the direct current blocking means is operable to stop flow of the control signal from the DC input terminals, whenever the direct current path between terminal B+ and terminal CTa is broken. This construction does not disregard the actual language of claim, “whenever at least one gas discharge lamp is removed from the output terminals or is defective[,]” but defines “removed from the output terminals or is defective” based on the specification’s focus on the direct current control path. Thus, a defect may be defined as any condition that would break the direct current path, meaning either

lamp removal or a broken filament in the current path. The Court will consider ULT's non-infringement argument based on this construction of the "whenever" clause of the "direct current blocking means" limitation.

ULT argues that the accused products do not infringe the "direct current blocking means" limitation because none of them are operable to stop the flow of the control signal whenever at least one gas discharge lamp is removed or defective. However, this argument is predicated on ULT's proffered construction of defective, which was rejected above. This construction takes into account the fact that, in many of the accused products, the DC control signal will not be interrupted as a result of various faults; therefore, if the "direct current blocking means" is construed to require stopping the flow of the control signal in the event of any type of defect, the accused products, which do not do so, would not infringe. ULT offers no argument or evidence to support a contention that under the above-adopted construction of the "whenever" clause, the accused products do not infringe the "direct current blocking means" as a matter of law. Accordingly, summary judgment that none of the accused products literally infringe the "direct current blocking means" is inappropriate.

LBC also relies on the Doctrine of Equivalents ("DOE") to prove infringement of the "direct current blocking means" for accused products in Groups 5, 8, and 9. In these products the "direct current blocking means" does not stop the control signal but redirects it through a shunt resistor which has the effect of

substantially reducing the magnitude of the DC control current such that the “control means” can detect lamp removal or reinsertion. *See* Pl.’s Resp. 26-27 (quoting Report of Dr. Roberts). In his report, Dr. Roberts explains why he believes that these products infringe under the DOE and the basis for his opinion, including the structures used in the accused products, through infringement charts, and why he believes a person of ordinary skill in the art would believe the differences to be insubstantial. *See* Report of Dr. Roberts 34-35. The Court is satisfied that this evidence is sufficient to raise a fact issue as to whether the accused products in Groups 5, 8, and 9 infringe under the DOE. However, ULT also challenges the procedural propriety of LBC’s DOE infringement contentions.

ULT argues that the Court should strike LBC’s DOE infringement contentions and grant summary judgment with regard to all accused products in Groups 5, 8, and 9, since LBC failed to disclose its reliance on the DOE. The Court agrees and will strike LBC’s DOE infringement contentions related to the “direct current blocking means.” Several considerations underlie the Court’s decision on this issue. First of all, LBC utterly failed to comply with Northern District of Texas Miscellaneous Order No. 62, ¶¶ 3-1, 3-6. These paragraphs require a party to disclose “specifically and in detail where each element of each asserted claim is found within each accused instrumentality” and “[w]hether each element of each asserted claim is claimed to be literally present or present under the doctrine of equivalents in the accused instrumentality.” Misc. Order No. 62 ¶ 3-1. They also permit a party to amend or supplement

these disclosures after receiving further discovery, or after the court issues its final claim construction ruling. Misc. Order No. 62 ¶¶ 3-1, 3-6.

LBC has never amended or supplemented its September 11, 2009 infringement contentions, which contained only a boilerplate reservation of rights to assert infringement under the DOE. Such boilerplate language was insufficient to place ULT on notice of LBC's specific DOE infringement theory. *See Rambus, Inc. v. Hynix Semiconductor, Inc.*, 2008 WL 5411564 *3 (N.D. Cal. Dec. 29, 2008). LBC's final infringement contentions were due January 3, 2011; however, LBC never moved for an extension of this deadline or otherwise indicated that it planned to add infringement contentions under the DOE. ULT did not learn of LBC's DOE theory until LBC served Dr. Roberts's expert report on January 24, 2011. This non-disclosure effectively deprived ULT of the opportunity to assert additional invalidity contentions based on LBC's DOE contentions.³ Setting aside any time constraints relative to the approaching summary judgment deadlines and trial,

³ LBC asserts that ULT was not prejudiced because ULT's infringement expert included his rebuttal opinions relative to LBC's DOE theory. However, this does not excuse LBC's non-disclosure of its DOE infringement contentions. It was entirely proper and prudent for ULT to attempt to address those arguments in event that LBC could demonstrate that the delay was not within its control or diligence in complying with the local patent rules. If ULT chose not to address LBC's DOE contentions it would run the risk of finding itself in the same position as LBC on this issue. In sum, ULT did not waive its right to complain of LBC's non-disclosure by addressing their DOE contentions on the merits.

in order to properly amend its invalidity contentions, ULT would have been required to seek leave of court since that deadline had passed as well.

LBC argues that in serving Dr. Roberts's expert report it was in fact serving its final infringement contentions based on an agreement between the parties. However, ULT denies that there was any agreement between the parties allowing LBC to serve its final infringement contentions approximately three weeks late and in the form of an expert report. LBC does not offer any evidence of such an agreement. Otherwise, LBC offers no explanation for why it failed to comply with the Northern District's patent rules relating to disclosure of infringement contentions. To the extent that an agreement between the parties did permit LBC to serve detailed claim charts, as a part of its infringement contentions, for three representative products only, LBC properly bore the risk that the representative products it chose might not in fact be representative of its final infringement contentions in that none of the three products infringed under the DOE.

In sum, the Court cannot simply overlook the fact that LBC completely failed to fully disclose its infringement contentions until it served the report of its infringement expert. LBC effectively seeks leave from the Court to amend its infringement contentions via its response to ULT's motion for summary judgment. The Court will not permit such a late amendment of infringement contentions, especially when they are in direct violation of the local rules, and the offending party has not demonstrated any effort to comply those rules. LBC has given no reason for

waiting until it served its infringement expert's report to fully disclose its infringement allegations.⁴ Likewise, LBC has not shown that the delay was outside of its control. Therefore, the Court will strike LBC's untimely DOE contentions.

LBC's infringement allegations relating to all products in Groups 5, 8, and 9 are based on a DOE theory. *See* Pl.'s Resp. 26-27. Since the Court has stricken LBC's DOE infringement contentions related to these products, and LBC does not contend or present evidence that these products infringe literally, summary judgment in favor of ULT that products in Groups 5, 8, and 9 do not infringe is appropriate and will be granted.

In sum, the Court has construed the "whenever" clause, and more specifically the term "defective," within the "direct current blocking means" limitation. Based on this construction, the Court has determined that there are genuine disputes of material fact as to whether the accused products infringe literally. The Court has also found that a genuine dispute of material fact exists as to whether the accused products contain an equivalent structure, within the meaning of section 112, ¶ 6, to the "control means" limitation. Accordingly, ULT's motion for summary judgment based on non-infringement of the '529 Patent should be denied.

⁴ LBC complains separately of discovery malfeasance on the part of ULT and its delays in turning over certain documents. The Court declines to wade into this matter as it is not properly before the Court.

B. Invalidity for Anticipation

ULT also moves for summary judgment on its first and third affirmative defenses of invalidity of the patent-in-suit for anticipation under 35 U.S.C. § 102. ULT bases its anticipation defenses on two Japanese patents, JP 61-153997 (“JP ‘997”) and JP 1-157099 (“JP ‘099”). According to ULT, each of these patents qualify as prior art references under § 102(b) and teach each limitation of the asserted claims of the ‘529 Patent. LBC does not dispute that JP ‘997 and JP ‘099 constitute “printed publication[s] in ...a foreign country” under § 102(b). Therefore, the Court will proceed under the assumption that both references qualify as prior art references.

In order to invalidate the asserted claims of the ‘529 Patent, ULT must prove that one or both of these prior art references anticipate each limitation of the asserted claims and that there are no genuine disputes of material fact on the issue. “Anticipation requires a showing that each element of the claim at issue, properly construed, is found in a single prior art reference.” *Uniloc USA, Inc. v. Microsoft Corp.*, 632 F.3d 1292, 1323 (Fed. Cir. 2011). Therefore, ULT must prove, as a matter of law, that each element of the asserted claims, as construed by the Court, are found in one of the prior art references, JP ‘997 or JP ‘099.

Before addressing the merits of ULT’s anticipation defenses, the Court must resolve LBC’s objection to ULT’s primary evidence of anticipation, the expert report of Dr. Michael Giesselmann, ULT’s expert on

invalidity. *See* Pl.'s Objs. Evid. Supp. Def.'s Mot. Summ. J. 2, ECF No. 134. LBC objects to the report and the attachments thereto and moves to strike it because it is unsworn and is therefore hearsay not subject to any exception. *See id.* In response, ULT attached the Declaration of Dr. Giesselmann, in which he verifies that his originally unsworn report, and the attachments thereto, set forth the substance and basis of his opinions regarding invalidity of the '529 Patent. *See* Def.'s Resp. Pl.'s Objs. 1-2, Ex. A, ECF No. 139. If an expert report is objected to as unsworn, the deficiency may be corrected by filing a sworn declaration endorsing the unsworn report. *See Straus v. DVC Worldwide, Inc.*, 484 F. Supp. 2d 620, 633-34 (S.D. Tex. 2007). Accordingly, with the sworn declaration, Dr. Giesselmann's report and its attachments and exhibits are admissible summary judgment evidence. Thus, LBC's objections thereto are overruled.⁵

ULT argues, and presents evidence in support, that JP '997 and JP '099 each contain every element

⁵ LBC also objects to and moves to strike Exhibits 11 and 12 to ULT's Appendix In Support of Motion for Summary Judgment, ECF No. 127. LBC objects that the underlying documents, presumably the Japanese Patents themselves, are not competent summary judgment evidence under Rules 802 and 901 of the Federal Rules of Evidence. These objections are overruled. The Japanese patents are self-authenticating documents under Rule 902 and would qualify under Rule 802(8) as business records. Moreover, a patent submitted as prior art is not hearsay, rather it is offered for the purpose of demonstrating its existence and the invention described therein; it is not offered to prove the truth of matters asserted in the document. *See Joy Techs., Inc. v. Manbeck*, 751 F. Supp. 225, 233 n.2 (D.D.C. 1990).

of the asserted claims of the '529 Patent. *See* Expert Report of Dr. Michael Giesselmann, Ex. C6, App. Supp. ULT's Mot. Summ. J., ECF No. 127. LBC presents evidence from its invalidity expert, Dr. Regan Zane, in his rebuttal report, contesting only whether the prior art references contain the "direct current blocking means" limitation of Claim 1 and the limitations of dependent Claims 2 and 5 respectively.⁶ *See* Expert Report of Dr. Regan Zane, Ex. 2, Pl.'s App. Therefore, the Court will assume, for purposes of summary judgment, that both JP '997 and JP '099 contain each element of the asserted claims of '529 Patent, with the exception of the "direct current blocking means" and the respective limitations of dependent Claims 2 and 5. Thus, the only relevant questions are whether JP '997 or JP '099 teaches the "direct current blocking means" limitation of independent Claim 1 and the respective limitations of dependent Claims 2 and 5, as they have been construed by the Court or agreed to by the parties.

The dispute between the parties with respect to the "direct current blocking means" of Claim 1 centers

⁶ ULT argues that LBC has conceded that the prior art references teach all limitations of independent Claim 1, except the "direct current blocking means" because Dr. Zane did not discuss any other limitations in his expert report. LBC disputes this contention insofar as ULT argues that they have "conceded" those elements. However, what is clear is that at the summary judgment stage, LBC has come forward with evidence relating only to the "direct current blocking means" and dependent Claims 2 and 5, in response to ULT's contentions and evidence, in Dr. Giesselmann's charts attached to his report, that the prior art references teach every limitation of the asserted claims of the '529 Patent.

on whether the “direct current blocking means,” or capacitor(s), in JP ‘997 and JP ‘099 are “coupled to the output terminals” within the meaning of the ‘529 Patent. To address this issue, it is necessary to further construe “direct current blocking means coupled to the output terminals.” Dr. Roberts defines “output terminals” as follows:

In the Figures of the ‘529 Patent, output terminals are shown as nodes (sometimes referred to as terminals or points). On the other hand, a node (or terminal) that simply indicates a connection between two lamps but does not otherwise connect to the device is not an output terminal. In the typical one-lamp configuration, each filament of the lamp is associated with two output terminals (i.e., one set of two output terminals per filament). In most two-lamp configurations, where the lamps are connected in series, the ballast will feature six output terminals (see, e.g., Fig. 3 of the ‘529 Patent, which shows a set of output terminals on each end [10, 11, and 22, 23], and a set of out terminals in the middle [307 and 308]).

Report of Dr. Roberts 28-29. Dr. Zane also agrees with this definition of “output terminals.” See Report of Dr. Zane 14. ULT does not to express any disagreement. Dr. Roberts also defines “coupled to the output terminals” as follows:

[T]he requirement that the DC blocking means be “coupled to” (i.e. connected to) the output terminals is a requirement that encompasses various types of connections. In the ‘529 Patent, Mr. Bobel speaks of DC blocking circuits that are “connected *across*” the output terminals (see, e.g., Col. 3, ln. 53-55 and the outer sets of output terminals in Figs. 1 and 3) and DC blocking circuits that are “connected *between*” the output terminals (see, e.g., Col. 4, ln. 41-44 and the middle set of output terminals in Fig. 3).

Report of Dr. Roberts 32. Again, Dr. Zane agrees with this statement and adopts it in his report. *See* Report of Dr. Zane 14. Likewise, ULT does not express any disagreement. Moreover, both Dr. Roberts and Dr. Zane opine that the ‘529 Patent requires that each set of output terminals be connected to a DC blocking capacitor. *See* Report of Dr. Roberts 32; Report of Dr. Zane 14. Accordingly, for purposes of summary judgment, the Court will adopt these constructions of the “direct current blocking means.”

These additional constructions, in addition to the Court’s construction of the “whenever” clause above, lead to two additional observations. First, the ‘529 Patent does not require that the DC control signal pass through every filament of every lamp. Figure 2 of the ‘529 Patent, for example, discloses two lamps connected in series; the DC control signal does not pass through parallel-connected filaments 213 and 214. Dr. Giesselmann also notes this embodiment in

his report. *See* Report of Dr. Giesselmann 16. This observation is consistent with Dr. Roberts’s definition of “output terminals” as not including those terminals where two lamps connect together but do not otherwise connect to the ballast. In Figure 2, terminals x and y are not “output terminals.” Secondly, the ‘529 requires that the DC control signal pass through at least one filament of each lamp.⁷ With the meaning of the “direct current blocking means” established, the Court may consider ULT’s anticipation arguments.

First, ULT argues that JP ‘997 anticipates Claim 1 because it includes the “direct current blocking means.” Dr. Giesselmann identifies the DC blocking capacitors in JP ‘997 as follows: “When one of the lamps is removed or defective, capacitors C2a and C2b, shown in Figure 1 [of the JP ‘997 Patent], block the flow of DC current through the primary windings of T2 and the choke coils CH1 and CH2.” Report of Dr. Giesselmann 24. ULT asserts that capacitors C2a and C2b and their arrangement in relation to the filaments of respective lamps F1 and F2 satisfy the “direct current blocking means” of Claim 1.

In JP ‘997, the left lead of C2a is coupled to the left filament of F1, the right lead

⁷ If the DC control signal did not pass through at least one filament of each lamp then the ballast would attempt to restrike when a lamp, through which the DC control signal does not pass, is removed from the ballast. The “direct current blocking means” does not allow for this because it requires that the DC control signal be stopped “whenever at least one gas discharge lamp is removed[.]”

of C2a is coupled to the right filament of F1 through one winding of T2, the left lead of C2b is coupled to the left filament of F2, and the right lead of C2b is coupled to the right filament of F2 via another winding of T2Dr. Zane ...admitted during his deposition that JP '997 teaches that capacitors C2a and C2b are coupled to each set of output terminalsDr. Zane said in his report that "Claim 1 requires DC blocking means that accounts for each *set* of output terminals." ...Therefore, there is no credible interpretation of claim 1 whereby the claim is not anticipated by JP '997.

Pl.'s Reply Br. Supp. Mot. Summ. J. 22, ECF No. 138. Therefore, according to ULT, Claim 1 of the '529 Patent is anticipated by JP '997.

LBC disputes ULT's assertion by arguing that JP '997 does not include DC blocking circuits accounting for each set of output terminals as required by the '529 Patent. According to Dr. Zane:

JP '997 does not teach "direct current blocking means coupled to the output terminals." To the extent Giesselmann relies on C2a or C2b as "DC blocking means," they are not coupled to each set of output terminals, as required by Claim 1 of the '529 patentGiesselmann does not specifically identify the output terminals

in JP '997 or otherwise cite a portion of the text to support his position; rather, he skips over a discussion of the output terminals and does not attempt to explain how or by what configuration the DC blocking means is allegedly coupled to each set of output terminals.

Report of Dr. Zane 22-23. For this reason, LBC argues, JP '997 does include "direct current blocking means."

Based on the arguments and evidence summarized above, it is clear that the parties closely contest this issue. The evidence indicates that JP '997 includes a capacitor connected in parallel to each lamp. The parties do not dispute that these capacitors, C2a and C2b, are capable of stopping the flow of the controls signal from the DC input terminals whenever the DC control signal path is broken because the lamp is removed from the output terminals or a filament is broken. Dr. Zane, in his deposition, has gone so far as to concede that each capacitor is connected between the output terminals, but noted that the capacitors are parallel to the respective lamps, unlike the embodiments disclosed in the '529 Patent. The Court also notes that the capacitors C2a and C2b are each connected between two sets of output terminals, or between the respective filaments of lamps F1 and F2, in JP '997, rather than each DC blocking capacitor being connected across or between one set of output terminals as disclosed in the '529 Patent.

As the party raising invalidity for anticipation as a defense, ULT carries the burden to prove, by clear and convincing evidence, that JP '997 includes every limitation of the asserted claims. Resolving all doubts and inferences in favor of the non-moving party, and considering that anticipation is ultimately a question of fact, the Court finds that LBC has set forth sufficient evidence to raise a genuine dispute of material fact as to whether JP '997 includes the "direct current blocking means." Therefore, summary judgment in favor of ULT on this issue will be denied.⁸

Secondly, ULT argues that JP '099 anticipates Claim 1 of the '529 Patent because it includes the "direct current blocking means." According to ULT:

The *only* difference LBC identified between claim 1 of the '529 patent and JP '099 is that the DC blocking means of JP '099 "is coupled only to the output terminals associated with filaments f12 and f21; it is not coupled to the output terminals associated with [filaments] f11 and [f22]." [citation omitted] In other words, the Zane Report interprets claim 1 to require that a separate DC blocking means be provided for each filament. Since it is the function of the DC blocking means to stop the flow of the

⁸ ULT also contends that JP'997 anticipates dependent Claims 2 and 5; however, since the Court has found a question of fact as to whether JP '997 includes the "direct current blocking means," the Court need not address the additional limitations presented by Claims 2 and 5.

control signal from the DC input terminals whenever at least one gas discharge lamp is removed from the output terminals or is defective, LBC's position, as expressed in the Zane Report, is that the control signal must pass through all of the filaments of the lamps (so long as the lamp is not defective).

Def.'s Br. Supp. 46. As indicated, ULT bases its arguments related to the JP '099 Patent on a construction of the "direct current blocking means" where a separate DC blocking means must be provided for each filament. ULT argues, that since LBC asserts that a lamp is defective only when the DC control path is broken, then since filaments f11 and f22 are not in the DC control path, JP '099 includes the "direct current blocking means" limitation.

Summary judgment in favor of ULT that JP '099 anticipates Claim 1 of the '529 Patent is inappropriate because the DC blocking capacitor, C12, is not coupled to the outside sets of output terminals, associated with filaments f11 and f22. ULT's anticipation argument is contrary to the Court's constructions of the "direct current blocking means" set forth above. Specifically, the "direct current blocking means" does not require that a DC blocking capacitor be coupled to every filament, rather it requires that a capacitor be coupled to each set of output terminals. As Figure 2 of the '529 Patent makes clear, it is possible for the "direct current blocking means" to be coupled to every set of output

terminals though not connected to every lamp filament. Points at which two lamps connect to one another but do not otherwise connect to the ballast are not output terminals. Thus, if two filaments are connected in series, in the manner illustrated by Figure 2 of the '529 Patent, those filaments are not connected to output terminals and the DC control current would not pass through them. Therefore, the “direct current blocking means” requires that a DC blocking circuit be coupled to every set of output terminals but not every lamp filament, depending on the configuration at issue. Summary judgment in favor of ULT that JP '099 anticipates Claim 1 of the '529 Patent will be denied.⁹

C. “Voltage Source Means” Limitation

ULT renews its argument that the Court should hold the asserted claims of the '529 Patent invalid as indefinite as a result of the “voltage source means” limitation of Claim 1. The Court has twice addressed this limitation and declines ULT’s invitation to address the same issue a third time. ULT presents no additional basis for holding the asserted claims invalid. The Court has previously addressed this issue and hereby adopts and incorporates its prior findings and analysis. *See* Am. Mem. Op. & Order 16-24, December 2, 2010, ECF No. 107. Accordingly, ULT’s motion for summary judgment that the

⁹ ULT also contends that JP'099 anticipates dependent Claims 2 and 5; however, since the Court has found that JP '099 does not include the “direct current blocking means,” the Court need not address the additional limitations presented by Claims 2 and 5.

asserted claims are invalid as indefinite will be denied.

IV. CONCLUSION

The parties have also filed various objections to certain evidence presented by the opposing party. LBC's objections (ECF No. 134) to the testimony of Dr. Victor Roberts and Dr. Regan Zane are overruled as moot. ULT objects (ECF No. 137) to various new opinions submitted by Dr. Roberts. The Court will sustain this objection to the extent these opinions were not a part of Dr. Roberts's original expert report and that ULT has not had the opportunity to depose Dr. Roberts on these opinions. ULT's remaining objections are overruled as moot. Lastly, the Court will deny LBC's motion for leave to file a sur-reply (ECF No. 141). LBC did not identify any new arguments raised for the first time in ULT's reply brief. Moreover, the evidence attached to ULT's reply brief did not warrant a sur-reply. In any event, LBC's sur-reply went beyond addressing the attachments to ULT's reply brief. Accordingly, LBC's motion for leave to file a sur-reply (ECF No. 141) is **DENIED**.

Consistent with the Court's findings and analysis above, ULT's motion for summary judgment will be granted with respect to any infringement claims related to Claims 3, 4, and 18 of the '529 Patent. ULT's motion will also be granted with respect to infringement of all accused products in Groups 5, 7, 8, and 9. Therefore, ULT's Motion for Summary Judgment or Partial Summary Judgment

(ECF No. 127) is hereby **GRANTED, IN PART**, and the remainder is hereby **DENIED**.

SO ORDERED on this **4th** day of **May 2011**.

Reed O' Connor

**UNITED STATES DISTRICT
JUDGE**

APPENDIX F

**IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF TEXAS
WICHITA FALLS DIVISION**

LIGHTING BALLAST	§	
CONTROL,	§	
LLC,	§	
	§	
Plaintiff,	§	
	§	
v.	§	CIVIL ACTION
	§	NO. 7:09-CV-29-O
	§	
PHILIPS ELECTRONICS	§	
NORTH	§	
AMERICA CORP., et al.,	§	
	§	
Defendants.	§	

**AMENDED MEMORANDUM OPINION AND
ORDER**

Before the Court is Plaintiff Lighting Ballast Control, LLC ‘s (“LBC”) Motion for Reconsideration (ECF No. 102) of this Court’s Memorandum Opinion and Order of August 19, 2010 (ECF No. 101) construing the “voltage source means” limitation in LBC’s United States Patent 5,436,529 (“529 Patent”) issued on July 25, 1995 and entitled “CONTROL AND PROTECTION CIRCUIT FOR ELECTRONIC BALLAST.” After finding that the “voltage source means” limitation in Claims 1 and 18 of the

529 Patent should be construed in accordance with 35 U.S.C. § 112 ¶ 6 the Court held the claims invalid for indefiniteness under section 112, ¶ 2 because the patent's specification failed to disclose a structure corresponding to the "voltage source means" limitation. *See generally* Memorandum Opinion and Order, August 19, 2010, ECF No. 101. As explained below, the Court finds Plaintiff's arguments on reconsideration are well-taken. Accordingly, the Court hereby vacates its Memorandum Opinion and Order of August 19, 2010, in its entirety and issues this Amended Memorandum Opinion and Order on claim construction.

The invention at issue in this patent infringement case is a lighting product, specifically an electronic ballast. A ballast is a device for starting and regulating florescent and other types of lamps. A ballast provides proper voltage to light the lamp, and regulates the electric current flowing through the lamp to control light output. The ballasts at issue in this case are designed to power florescent lamps with heatable filaments. The parties dispute various claim terms in the 529 Patent. The Court has construed the disputed claim terms after reviewing the briefs and responses of the parties, the applicable law, and where appropriate, any extrinsic evidence submitted by the parties.

I. BACKGROUND

The Court sets forth only those facts necessary to provide context for the claim construction. Plaintiff LBC holds the exclusive right to enforce the 529 Patent. The inventor is Andrzej "Andrew" Bobel. The

529 Patent covers a lighting ballast that powers florescent lamps with heatable filaments. An electronic ballast practicing the 529 Patent operates in three different stages: (1) the initial start-up of the ballast, (2) the shut-down or sleep-mode of the ballast, and (3) the re-starting of the ballast after an inoperable lamp has been replaced. Pl.'s Opening Br. Cl. Const. 4, ECF No. 84. The invention was intended to address significant technical challenges facing the ballast industry in 1993; specifically, how to preserve the integrity of the ballast by not drawing power from a power line source when a lamp is removed or defective, and by not having to turn the power OFF and ON when the lamp is replaced. *Id.* at 6. The invention covered by the 529 Patent was intended to remedy these issues in a safe, energy efficient, and affordable manner. *Id.*

LBC sues Defendant Universal Lighting Technologies, Inc. ("ULT") claiming infringement of the 529 Patent because ULT manufactures, uses, or sells electronic ballasts utilizing circuitry that monitors the voltage across one or more lamps and provides end-of-life protection for multiple types of failures.¹ Pl.'s Orig. Compl. 4, ECF No. 1. LBC specifically points to the ULT B254PUNV-D ballast as infringing on one or more claims of the 529 Patent. *Id.* ULT denies any infringement and brings a counterclaim seeking a declaration that ULT has not infringed any of the claims of the 529 Patent, and that

¹ LBC originally sued several defendants, however, ULT is the only remaining defendant in the case, pending final settlement with Philips Electronics North America Corp.

the patent is invalid. Def.'s Am. Answer 7, ECF No. 70.

II. LEGAL STANDARDS—PATENT CLAIM CONSTRUCTION

Patent infringement is the unauthorized making, using, selling, offering to sell, or importing into the United States of any patented invention during the term of the patent. 35 U.S.C. § 271(a). In a patent infringement case, a court first determines the proper construction of the patent claims by establishing, as a matter of law, the scope and boundaries of the subject-matter of the patent. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 976 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370, 384-85 (1996). Second, the trier of fact compares the properly construed claims to the allegedly infringing device(s) and determines whether there has been an infringement. *Id.* The issue before the Court is the proper construction of certain disputed claims in the 529 Patent.

A. Rules of Claim Construction

The claims of a patent are the numbered paragraphs at the end of the patent that define the scope of the invention, and thus the scope of the patentee's right to exclude others from making, using, or selling the patented invention. *See Astrazeneca AB v. Mutual Pharm. Co.*, 384 F.3d 1333, 1335-36 (Fed. Cir. 2004). Claim construction is the process of giving proper meanings to the claim language thereby defining the scope of the protection. *See Bell Commc'ns Research, Inc. v. Vitalink Commc'ns Corp.*,

55 F.3d 615, 619 (Fed. Cir. 1995) (internal citations omitted).

Claim construction starts with the language of the claim itself since a patent's claims define the invention to which the patentee is entitled the right to exclude. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc). "The claims themselves provide substantial guidance as to the meaning of particular claim terms." *Id.* at 1314. Moreover, claim terms should be given their ordinary and customary meaning as understood by a person of ordinary skill in the art as of the effective filing date of the patent application. *Id.* at 1313. This is because a patent is addressed to, and intended to be read by, others skilled in the particular art. *Id.* However, the patentee is free to define his own terms, so long as any special definition given to a term is clearly defined in the specification. *Intellicall, Inc. v. Phonometrics, Inc.*, 952 F.2d 1384, 1388 (Fed. Cir. 1992).

When construing disputed claim terms the court should look first to the intrinsic record of the patent, including the claims and the specification, to determine the meaning of words in the claims. *Nazomi Commc'ns., Inc. v. Arm Holdings, PLC*, 403 F.3d 1346, 1368 (Fed. Cir. 2005). "The specification is always highly relevant to the claim construction analysis. Usually it is dispositive; it is the single best guide to the meaning of a disputed term." *Phillips*, 415 F.3d at 1315. The specification acts as a dictionary when it expressly or implicitly defines terms. *Id.* at 1321. Courts should also refer to the prosecution history if it is in evidence. *Vitronics Corp. v. Conceptoronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir.

1996). The prosecution history is part of the intrinsic record and consists of a complete record of all proceedings before the United States Patent and Trademark Office, including prior art cited during the examination of the patent, and express representations made by the applicant as to the scope of the claims. *Id.*

The Federal Circuit has also stated that district courts may “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.” *Id.* (internal quotations omitted). Dictionaries and treatises can be “useful in claim construction[,]” particularly technical dictionaries which may help the court “to better understand the underlying technology and the way in which one of skill in the art might use the claim terms.” *Id.* at 1318 (internal quotations omitted). As to expert testimony, the Federal Circuit has stated:

[E]xtrinsic evidence in the form of expert testimony can be useful to a court for a variety of purposes, such as to provide background on the technology at issue, to explain how an invention works, to ensure that the court’s understanding of the technical aspects of the patent is consistent with that of a person of skill in the art, or to establish that a particular term in the patent or the prior art has a particular meaning in the pertinent field.

Id. However, “a court should discount any expert testimony that is clearly at odds with the claim construction mandated by the claims themselves, the written description, and the prosecution history, in other words, with the written record of the patent.” *Id.* (internal quotations omitted). Extrinsic evidence is less significant than the intrinsic record and undue reliance on it may pose a risk of changing the meaning of claims, contrary to the public record contained in the written patent. *Id.* 1317, 1319.

B. Means-Plus-Function Limitations

Pursuant to 35 U.S.C. § 112 ¶ 6 a patentee may express a claim limitation by reciting a function to be performed by a generic means, rather than reciting in the claim the actual structure for performing the particular function. Section 112, ¶ 6 provides:

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

Section 112, ¶ 6 thus “operates to restrict claim limitations drafted in such functional language to those structures, materials, or acts disclosed in the specification (and their equivalents) that perform the claimed function.” *Personalized Media Comm’ns, LLC*

v. Int'l Trade Comm'n, 161 F.3d 696, 703 (Fed. Cir. 1999). “The point of the requirement that the patentee disclose particular structure in the specification and that the scope of the patent claims be limited to that structure and its equivalents is to avoid pure functional claiming.” *Aristocrat Techs. Australia Pty Ltd. v. Int'l Game Tech.*, 521 F.3d 1328, 1333 (Fed. Cir. 2008).

The determination of whether a particular limitation should be regarded as a means-plus-function limitation is a question of law, even though it is a question on which evidence from experts may be relevant. *Lighting World, Inc. v. Birchwood Lighting, Inc.*, 382 F.3d 1354, 1358 (Fed. Cir. 2004) (citations omitted). The *Lighting World* court set forth the standard to be used when determining whether to apply section 112, ¶ 6 to a claim limitation:

A claim limitation that actually uses the word “means” invokes a rebuttable presumption that § 112, ¶ 6 applies. By contrast, a claim term that does not use “means” will trigger the rebuttable presumption that § 112, ¶ 6 does not apply. The use of the term “means” is central to the analysis because the term “means,” particularly as used in the phrase “means for,” is part of the classic template for functional claim elements and has come to be closely associated with means-plus-function claiming.

Id. at 1358. However, claim language that further defines a generic term, such as nouns or adjectival qualifications that appear before or after the word “means,” can add or suggest sufficient structure to avoid section 112, ¶ 6. *Mass. Inst. of Tech. v. Abacus Software*, 462 F.3d 1344, 1354 (Fed. Cir. 2006). Moreover, section 112, ¶ 6 may be avoided where “the claim term is used in common parlance or by persons of skill in the pertinent art to designate structure, even if the term covers a broad class of structures and even if the terms identify the structures by their function.” *Id.* at 1356 (quotations and citations omitted).

Claim construction of a means-plus-function limitation has two steps: “First, the court must determine the claimed function. Second, the court must identify the corresponding structure in the written description of the patent that performs that function.” *Applied Med. Res. Corp. v. U.S. Surgical Corp.*, 448 F.3d 1324, 1332 (Fed. Cir. 2006). The claimed function is recited in the claim itself, and the corresponding structure “must not only perform the claimed function [but] the specification must clearly associate the structure with the performance of the function.” *Cardiac Pacemakers, Inc. v. St. Jude Med., Inc.*, 296 F.3d 1106, 1113 (Fed. Cir. 2002). The court should first inquire as to whether “structure is described in [the] specification, and, if so, whether one skilled in the art would identify the structure from that description.” *Atmel Corp. v. Info. Storage Devices, Inc.*, 198 F.3d 1374, 1381 (Fed. Cir. 1999). “The inquiry is whether one of skill in the art would understand the specification itself to disclose a structure, not simply whether that person would be

capable of implementing a structure.” *Biomedino, LLC v. Waters Techs. Corp.*, 490 F.3d 946, 953 (Fed. Cir. 2007).

III. ANALYSIS

The parties have presented two claims from the 529 Patent for construction. Claim 1 recites (with the disputed claim limitations emphasized in bold):

1. An energy conversion device employing an **oscillating resonant converter** producing oscillations, having **DC input terminals producing a control signal** and adapted to power at least one gas discharge lamp having heatable filaments, the device comprising:

voltage source means providing a constant or variable magnitude DC voltage between the DC input terminals;

output terminals connected to the filaments of the gas discharge lamp;

control means capable of receiving control signals from the DC input terminals and from the resonant converter, and operable to effectively initiate the oscillations, and

to effectively stop the oscillations of the converter; and a direct current blocking means coupled to the output terminals and operable to stop flow of the control signal from the DC input terminals, whenever at least one gas discharge lamp is removed from the output terminals or is defective.

Pl.'s Opening App. 14, ECF No. 84-1.

Claim 18 recites (again with the disputed claim limitations emphasized in bold):

18. An energy conversion device employing an **oscillating resonant converter**, having **DC input terminals** and adapted for powering at least one gas discharge lamp having heatable filaments, the device comprising:

voltage source means able to provide a constant or variable magnitude DC voltage between the DC input terminals;

output terminals for connection to the filaments of the gas discharge lamp;

control means able to receive control signals from the DC input terminals and from the resonant converter, and operable to effectively initiate the oscillations, and to effectively stop the oscillations of the converter; and

direct current blocking means coupled to output terminals and operable to stop flow of the control signal from the DC input terminals, whenever at least one gas discharge lamp is removed from the output terminals or is defective wherein the direct current blocking means includes a semiconductor diode and is connected effectively across at least one heatable filament of at least one gas discharge lamp.

Pl.'s Opening App. 15, ECF No. 84-1. Independent Claims 1 and 18 are nearly identical, with Claim 18 adding one additional limitation relating to a diode. Pl.'s Opening Br. 14. The parties dispute the construction of three alleged means-plus-function limitations, and four other terms. *Id.* The Court will turn to the disputed terms and limitations, most of which appear in both Claims 1 and 18.

The parties dispute several terms that initially appear in the preambles and further dispute whether the use of these terms in the preambles should serve as a substantive limitation where those terms appear elsewhere in the claims. Plaintiff LBC concedes that the disputed terms appearing in the preambles provide the antecedent basis for those terms where they appear elsewhere in the claims. Thus, the Court's construction of the preamble terms will necessarily limit the terms for which the preamble provides the antecedent basis. Therefore, the Court need not go further in determining whether the preambles constitute substantive limitations of the claims.

A. “Oscillating Resonant Converter”

The term “oscillating resonant converter” appears in the preambles to Claims 1 and 18. The parties agree that the oscillating resonant converter can convert DC to AC and “includes inductance and capacitance; they also agree that the AC voltage created by the resonant converter is of a frequency close to the resonant frequency determined by the inductive and capacitive elements.” Pl.'s Opening Br. 21. However, they disagree as to whether the term includes both self-excited and driven resonant converters.

1. Plaintiff's Proposed Construction

Plaintiff LBC argues that “oscillating resonant converter producing oscillations” need not be construed, but in the event that it is proposed a construction as follows: “a circuit, or portion of a

circuit, containing inductance, capacitance, and at least one electronic switching device (such as a transistor) that operates to convert direct current into alternating current.” *Id.* LBC notes that this term occurs only in the preambles, and while not conceding “that the Preamble constitutes a substantive limitation, because it does not ‘breath life’ into the claim[,]” LBC agrees that “oscillating resonant converter” as “recited in the Preamble serves as the antecedent basis for the ‘resonant converter’ recited elsewhere in Claims 1, 2, and 18.” *Id.* LBC’s proposed construction is consistent with its contention that the term “oscillating resonant converter” is not limited to self-excited resonant converters.

2. *Defendant’s Proposed Construction*

Defendant ULT proposes to construe “oscillating resonant converter” as follows: “a self-excited electronic circuit capable of converting a DC voltage to an AC voltage of a resonant frequency determined by a combination of inductive and capacitive elements within the self-excited circuit.” Defs.’ Opening Br. Cl. Const. 11, ECF No. 85. At the heart of ULT’s proposed construction is their argument that the term should be limited to self-exciting oscillating resonant converters. *See id.* Since the term is the antecedent reference to “resonant converter” in the claim limitations, the claims would be limited to self-exciting oscillating resonant converters.

3. *Court’s Analysis and Construction*

Plaintiff LBC urges the Court to reject ULT’s proposed construction because the self-excited

electronic circuit limitation, upon which their construction is based, is not supported by either the claim language or specification of the 529 Patent. *See* Pl.’s Opening Br. 21-22. However, ULT argues that the claim language “oscillating resonant converter producing oscillations” necessarily limits the structure to self-excited oscillating resonant converters. Defs.’ Opening Br. 11. ULT’s proposed construction is premised on this contention. *See id.* at 11-13; Defs.’ Resp. Br. 12-14.

ULT’s proposed construction, limiting “oscillating resonant converter” to self-excited oscillating resonant converter, confuses two distinct structures—a resonant circuit and a resonant converter. *See* App. Supp. Pl.’s Resp. Br. Cl. Const. 21, ECF No. 88. In a resonant circuit, “AC energy is rhythmically transferred, or oscillates, between an inductor and capacitor,” whereas a resonant converter is “composed of a resonant circuit working in combination with an energy converter.” *Id.* at 21-22. In a lamp ballast, “the energy converter converts DC power into high frequency AC power ... [which then] flows from the energy converter through all or part of the resonant circuit and ultimately powers the lamp.” *Id.* at 22. Thus, “[w]hile all resonant circuits oscillate naturally until their stored energy has been dissipated, the energy converter portion of a resonant converter must be driven by a high frequency signal.” *Id.* In a self-oscillating resonant converter this “drive signal” comes from the resonant circuit itself, whereas in a so-called “driven resonant converter,” the drive signal comes from a “driver” circuit rather than the resonant circuit. *See id.* Therefore, in a true self-excited, or self-oscillating, resonant converter the

component energy converter is driven by the other component of the converter, the resonant circuit; but in a driven resonant converter, the energy converter is driven by a separate device. Accordingly, both driven resonant converters and self-excited oscillating resonant converters fall within the ambit of the term “oscillating resonant converter,” because both include, as a component, a resonant circuit which produces oscillations by nature.

ULT’s proposed construction seeks to exclude driven resonant converters from the term “oscillating resonant converter.” To do so, ULT argues that an “oscillating resonant converter producing oscillations” describes only a self-excited oscillating resonant converter. The Court believes that this construction is unduly narrow. As set forth above, no such limitation is implicit or explicit within the claim language as understood by one of ordinary skill in the art. Moreover, the specification explicitly contemplates the use of other non-self-excited resonant converters. *See* 529 Patent at col. 11, ll. 34-39. Thus, ULT’s proposed limitation is not apparent from the language of the claims, the specification, or the knowledge of one of ordinary skill in the art of designing lighting ballasts. It rests on an unduly narrow interpretation of “oscillating resonant converter” that obscures the fact that both self-exciting and driven resonant converters include a resonant circuit producing oscillations. All of ULT’s remaining arguments in support of its proposed construction are based on this premise and occasional imprecise usages of the term in deposition testimony. The Court need not further address the issue.

B. “DC Input Terminals”

This term appears initially in the preambles to Claims 1 and 18 and again appears in three out of the four limitations in each claim. While the parties’ dispute revolves around whether the DC input terminals are appropriately understood as conducting elements or points on a schematic, neither party proposes a construction radically different from the other.

1. *Plaintiff’s Proposed Construction*

Plaintiff does not believe that any construction is necessary, but in the event the term is construed LBC suggests “the points at which the ballast receives a direct current voltage.” See Pl.’s Opening Br. 22.

2. *Defendant’s Proposed Construction*

ULT proposes that “DC input terminals” be defined as “conducting elements that receive a DC input voltage.” Defs.’ Opening Br. 13.

3. *Court’s Analysis and Construction*

The specification of the 529 Patent at column 3, lines 5-6 speaks directly to the issue of the proper construction of this term: “DC input terminals B+,B- for receiving thereacross a DC supply voltage[.]” This statement unambiguously defines “DC input terminals.” See *Interactive Gift Express, Inc. v. Compuserve, Inc.*, 256 F.3d 1323, 1332 (Fed. Cir. 2001) (“If the meaning of the claim limitations is apparent from the totality of the intrinsic evidence, then the claim has been construed.”).

Plaintiff LBC prefers to define the “DC input terminals” as mere points on a schematic, whereas Defendant ULT proposes to define them as conducting elements. It is clear that neither party’s proposed constructions are inherently inconsistent with one another; defining the “DC input terminals” as conducting elements is not inconsistent with their being labeled as points on a schematic diagram and *vice-versa*. Moreover, the Court finds that neither proposed construction further clarifies the term beyond the extent to which it is already defined in the specification. Accordingly, the term “DC input terminals” need not be construed beyond the definition provided by the specification: terminals “for receiving ...a DC supply voltage[.]”

C. “DC input terminals producing a control signal”

Plaintiff LBC acknowledges that this term appears only in the preamble to Claim 1. LBC also concedes that the term “provides the antecedent basis for the ‘control signal[] from the DC input terminals’ referenced in the ‘control means’ limitations” of Claims 1 and 18. Pl.’s Opening Br. 23. The parties’ dispute revolves around whether the “DC input terminals” produce “a control signal.”

1. Plaintiff’s Proposed Construction

Plaintiff LBC does not believe that any construction of this term is necessary, but in the event it is construed proposes as follows: “DC input terminals” are “the points at which the ballast receives a direct current voltage,” “producing” means

“serving as the origin of,” and “control signal [from the DC input terminals]” means “direct current that travels along a direct current path from the DC input terminals, through the filament or filaments, and to an input terminal of the control means, but which does not pass through the DC blocking means.” Pl.’s Opening Br. 23.

2. Defendant’s Proposed Construction

Like LBC, Defendant ULT reargues its proposed construction of “DC input terminals.” With respect to “producing a control signal,” ULT argues the limitation fails to comply with section 112, ¶¶ 1 and 2. Therefore, according to ULT, Claims 1 and 18 are invalid in that “DC input terminals” are not capable of producing any type of “control signal.” *See* Defs.’ Opening Br. 14.

3. Court’s Analysis and Construction

The specification of the 529 Patent at column 7, lines 48-54, provides that “The device receives a DC voltage at the DC input terminals B+,B- and the capacitors 04,06 are chargedDC current starts to flow in the direct current path DCP from terminal B+ through: resistor 09, filament 12, resistor 18, filament 15, diode 39, resistor 40 to charge the capacitor 42[.]” Moreover, Figure 1 of the 529 Patent indicates that the DCP begins at the DC input terminals B+,B- and flows along a dotted line through various structures and filaments to terminal CTa. However, the specification never refers to the DC voltage flowing along the DCP as a “control signal.”

ULT seizes upon the fact that the claims “unambiguously require[] that the ‘control signal’ be *produced* by the ‘DC input terminals,’ not by other circuit elements.” Defs.’ Resp. Br. 14. Their argument proceeds as follows: the “DC input terminals,” whether they are construed as points at which the ballast receives a direct current voltage or as conducting elements that receive a DC input voltage, are incapable of “producing” a control signal. *See* Defs.’ Opening Br. 15. According to ULT:

It is only after the current flowing along the path DCP has passed through the lamp filaments (12,15) and resistors (09, 18) that a control signal results at intermediate terminal (27) to signal the control circuit that non-defective lamp is properly connected to the “output terminals” of the energy conversion device. This control signal appears on the intermediate terminal (27) and the control terminal (CTa) downstream of the lamp filaments, not at the DC input terminals. If a connection were made along the path DCP at a point upstream of the lamp filaments, the resulting signal would be present whether or not [a] non-defective lamp is connected, and the device would be completely inoperative for the purpose for which it is intended.

Id. One basic assumption underlies this argument: the word “produce” means something more than originate, or point of origin.

The clear language of the specification of the 529 Patent at column 7, lines 51-56, column 8, lines 13-17, 37-40, 47-50, teaches that when a lamp is removed or is defective the DC voltage will not flow through the filaments and thus will not reach the intermediate terminal (27). Moreover, ULT never defines what it means by “producing a control signal;” it assumes that since the “DC input terminals” are merely points or conducting elements they cannot produce a “control signal.” LBC counters that the term “produce” is interchangeable with “originate” and directs the Court to the 529 Patent’s specification and Figure 1 describing the path of the DC current. *See* Pl.’s Opening Br. 24; Webster’s Third New Int’l Dictionary 1810 (1993). The specification and Figure 1 clearly indicate, as LBC argues, that “B+ and B- ...indicate the points (or terminals or nodes) at which DC enters the ballast and as a point of reference from which the DC control signal flows.” *Id.* While the drafter was perhaps imprecise by referring to a control signal in the claims without clarifying that the control signal was in fact the DC current referred to elsewhere, it is clear from the specification and Figure 1 that the control signal produced by, or originating at, the DC input terminals is the DC voltage running from B+ through the various resistors and filaments to the control terminal (CTa). Therefore, “DC input terminals” means terminals for receiving a DC supply voltage, “producing” means serving as the origin of, and “control signal” means DC that travels along a direct current path from the DC input terminals, through the filament or filaments, and to an input terminal of the controls

means, but which does not pass through the DC blocking means.

D. Reconsideration of “Voltage Source Means” Limitation

The parties dispute whether the limitation “voltage source means providing a constant or variable magnitude DC voltage between the DC input terminals” is a means-plus-function limitation, subject to construction as limited by section 112, ¶ 6. LBC argues that “voltage source” connotes sufficient structure to one skilled in the art and that it should avoid treatment as a means-plus-function limitation. In the alternative, LBC argues that if the Court determines that section 112, ¶ 6 applies, then the specification discloses the corresponding structure. ULT argues that the term should be treated as a means-plus-function limitation because it is written in means-plus-function format, and furthermore, that the specification does not disclose a corresponding structure, making both claims in which the limitation appears indefinite.

1. Plaintiff’s Proposed Construction

LBC argues that this limitation, while using the term “means,” is not a means-plus-function limitation because the entire limitation “connotes sufficient structure to one skilled in the art” and has an understood meaning in the art when read in the context of the specification. *See* Pl.’s Opening Br. 14-15. Specifically, according to LBC, “voltage source means [providing (claim 1), able to provide (claim 18)] a constant or variable magnitude DC voltage between

the DC input terminals” connotes the structure of a rectifier to anyone skilled in the art. *Id.* at 15. As support for this assertion LBC points to testimony from Andrew Bobel, the inventor, who has several years of experience working on electronic ballast designs, and Dr. Victor Roberts, an expert witness. *Id.* Both Bobel and Dr. Roberts testify, that as persons skilled in the art, the “voltage source means” limitation clearly connotes the structure of a rectifier. Pl.’s Opening App. Ex. 2-A at 226, ECF No. 84-3; Ex. 3 at 7-8, ECF No. 84-7. In the alternative, LBC argues that if the Court determines that section 112, ¶ 6 applies, making the limitation a means-plus-function limitation, then the specification discloses the structure of a rectifier. Pl.’s Opening Br. 15-16.

2. *Defendant’s Proposed Construction*

ULT argues that this limitation is governed by section 112, ¶ 6 as a means-plus-function limitation. Defs.’ Opening Br. 16. First, ULT points to the use of the term “means,” which presumptively invokes section 112, ¶ 6. *Id.* Secondly, according to ULT, the limitation itself clearly recites a function only. *Id.* And third, the claim language does not point to any structure. *Id.* Thus, ULT asserts, this limitation is a classic means-plus-function limitation and must be construed according to section 112, ¶ 6. ULT then goes on to argue that the specification does not disclose any structure, a rectifier or otherwise, for performing the claimed function. *Id.* 18-20. Accordingly, ULT urges that Claims 1 and 18 should be held invalid because they are indefinite.

3. *Court’s Analysis and Construction*

The Court previously adopted the proposed construction of Defendant ULT. *See* Memorandum Opinion and Order, August, 19, 2010. The Court found that the “voltage source means” limitation was written in the classic means-plus-function format, that it recited only a function, and did not disclose sufficient structure to remove it from the ambit of section 112, ¶ 6. *See id.* at 10-12. The Court, construing the “voltage source means” limitation as a means-plus-function limitation, went on to find that “Lighting Ballast ...failed to identify a structure in the 529 Patent’s specification that corresponds to the ‘voltage source means’ limitation, contrary to the requirements of 35 U.S.C. § 112, ¶ 6.” *Id.* at 17. Accordingly, the Court found both Claims 1 and 18 to be invalid as indefinite under section 112, ¶ 2 because the specification failed to disclose a structure corresponding to the functional limitation. *Id.* at 18-19.

In its Motion for Reconsideration, LBC argues that in so construing the “voltage source means” limitation the Court improperly discounted “the importance of the functional language following ‘means’” and the unchallenged expert testimony in the record from Bobel and Dr. Roberts. *See* Pl.’s Mot. Recons. 2-6, ECF No. 102. In its response, ULT focuses on the standards applicable to a post-judgement motion under Rule 59 of the Federal Rules of Civil Procedure and argues that LBC has not identified any proper basis for the Court to reconsider its ruling that the “voltage source means” limitation is subject to construction under section 112, ¶ 6. *See* Def.’s Resp. 1-2, ECF No. 104. ULT supports the Court’s prior ruling by arguing that the Court expressly considered

all the recited claim language, properly considered LBC's expert testimony, and found that it does not support LBC's desired outcome. *See id.* at 2-7.

After careful consideration, research, and deliberation the Court finds that in issuing its previous claim construction order it erred in its construction of the "voltage source means" limitation. The Court's prior ruling unduly discounted the unchallenged expert testimony, in light of Federal Circuit precedent on the issue, offered by Bobel and Dr. Roberts regarding the knowledge of one of ordinary skill in the electronic ballast field. Under Rule 54(b) of the Federal Rules of Civil Procedure, the Court may freely review and revise interlocutory orders at any time before the entry of a final judgment adjudicating all claims of all parties before the Court. Therefore, the Court may modify a prior ruling if the arguments of the parties or new evidence persuade the Court to do so for any reason, so long as the Court is not making a legal error or abusing its discretion. *See Matagorda Ventures Inc. v. Travelers Lloyds Ins. Co.*, 208 F. Supp. 2d 687, 688 (S.D. Tex. 2001) (interlocutory orders of the court are subject to revision on motion or *sua sponte* before entry of final judgment). Moreover, the Federal Circuit has expressly noted the need for district courts to entertain motions to reconsider in the specific context of claim construction. *See Jack Guttman, Inc. v. Kopykake Enters., Inc.*, 302 F.3d 1352, 1361 (Fed. Cir. 2002) ("District courts may engage in a rolling claim construction, in which the court revisits and alters its interpretation of the claim terms as its understanding of the technology evolves. This is particularly true where issues involved are complex, either due to the

nature of the technology or because the meaning of the claims is unclear from the intrinsic evidence.”² *see also Union Oil Co. v. Atl. Richfield Co.*, 1998 WL 34238564 at *2 (C.D. Cal. Mar. 6, 1998) (noting that motion to reconsider is proper vehicle by which to challenge a claim construction order). LBC’s motion for reconsideration is granted, in part, and denied, in part, as explained below.

The parties dispute whether the limitation “voltage source means providing a constant or variable magnitude DC voltage between the DC input terminals” is a means-plus-function limitation, subject to section 112, ¶ 6. The Court begins with the presumption that this is a means-plus-function limitation, subject to construction under section 112, ¶ 6 because it uses the term “means.” *See Kemco Sales, Inc. v. Control Papers Co.*, 208 F.3d 1352, 1361 (Fed. Cir. 2000). Plaintiff LBC, as the party advocating a construction outside of section 112, ¶ 6, has the burden of overcoming the presumption. *See Linear Tech. Corp. v. Impala Linear Corp.*, 379 F.3d 1311, 1319-20 (Fed. Cir. 2004). This presumption will collapse if the claim describes sufficient structure for performing the recited function, despite its use of the term “means.” *See Apex, Inc. v. Raritan Computer, Inc.*, 325 F.3d 1364, 1372 (Fed. Cir. 2003); *see also Personalized Media*, 161 F.3d at 704 (In deciding

² Although the Court has revised its construction of the “voltage source means” limitation in response to Plaintiff’s Motion for Reconsideration, the Court does not imply, by this quote, that any further revisions to any of the Court’s claim constructions in this order will be necessary or likely. A settled claim construction order is required for this case to proceed.

whether the presumption has been rebutted “the focus remains on whether the claim as properly construed recites sufficiently definite structure to avoid the ambit of § 112, ¶ 6.”); *Rodime PLC v. Seagate Tech., Inc.*, 174 F.3d 1294, 1302 (Fed. Cir. 1999) (“[E]ven if the claim element specifies a function, if it also recites sufficient structure...for performing that function, § 112, ¶ 6 does not apply.”). In order to avoid means-plus-function construction the “voltage source means” limitation need not denote a specific structure, it is sufficient if the term is used “in common parlance or by persons of skill in the pertinent art to designate structure, *even if the term covers a broad class of structures and even if the term identifies the structures by their function.*” *Lighting World*, 382 F.3d at 1359-60 (emphasis added); *see also Apex*, 325 F.3d at 1372 (“[T]his court inquires into whether the ‘term, as the name for the structure, has a reasonably well understood meaning in the art,’ keeping in mind that a claim term ‘need not call to mind a single well-defined structure’ to fall within the ambit of § 112, ¶ 6.”) In *Comtech EF Data Corp. v. Radyne Corp.*, 2007 U.S. Dist. LEXIS 97038 (D. Ariz. Oct. 12, 2007) *aff’d in relevant part*, 2008 U.S. Dist. LEXIS 26966 (D. Ariz. Mar. 31, 2008), a special master appointed by the district court confronted a similar claim term with a curious and seemingly unnecessary use of “means.”

The term at issue in *Comtech* stated “power supply means for supplying power.” *Id.* at *31. The special master first determined that the drafter’s use of “means” was most likely not intended to invoke section 112, ¶ 6 because it was clear that no corresponding structure was disclosed in the

specification. *Id.* at *33. The special master’s report and recommendation went on to explain the drafter’s use of “means” was based on “the highly likely proposition that, in the context of the claimed invention, a person of ordinary skill in the art would recognize that ‘power supply’ connotes a well understood class of structures[.]” *Id.* at 34. Referencing *Lighting World*,³ the special master held that “power supply means” did not “denote a specific structure, but it is understood by persons of skill in the RF converter system art to designate a broad class of structures that supply power appropriate to the claimed system.” *Id.* at *36. Thus, the “power supply means” term was understood by those of ordinary skill in the industry to describe structure. *See id.* The Court believes this rationale applies equally to the “voltage source means” term in the 529 Patent.⁴

³ 382 F.3d at 1360 (“What is important is whether the term is one that is understood to describe structure, as opposed to a term that is simply a nonce word or a verbal construct that is not recognized as the name of structure[.]”).

⁴ Defendant ULT continues to urge the Court to accept the approach laid out in *Nilssen v. Motorola, Inc.*, 80 F. Supp. 2d 921, 928 (N.D. Ill. 2000), where the district court found that “source means having AC terminals and being operative to provide an AC voltage thereat” did not recite sufficient structure. As will be explained *infra*, this Court finds the approach of *Comtech* to be in line with Federal Circuit precedent regarding the importance of considering functional language to determine whether sufficient structure is disclosed. Moreover, *Comtech* focuses on the knowledge and understanding of one skilled in the art relative to the language of the claim term as a whole.

LBC presents the testimony of Dr. Roberts and the inventor, Andrew Bobel, to support its contention that the “voltage source means” limitation connotes the structure of a rectifier to anyone skilled in the art of designing electronic ballasts. According to Dr. Roberts:⁵

The “voltage source” limitation connotes, or suggests, to me, and would connote to anyone skilled in the art, the structure of a rectifier—with its input terminals connected to an AC power line and with its output terminals connected to the DC input terminals. In other words, the only way for a lighting ballast to convert AC (from a “power line source” such as a wall outlet or other similar AC power source in a home or office) into DC (for use as the “DC supply voltage”) is through a rectifier. In the vast majority of applications, including nearly all common applications for residential and commercial uses, the ballast receives its power from an AC power source, and that AC power is converted

⁵ Dr. Roberts has an extensive background in electrical engineering, applied physics, power electronics, lighting ballast design, and various other types of lighting-related technologies. Defendant ULT does not appear to dispute Dr. Roberts’ qualifications or the substance of his opinions, rather ULT questions LBC’s use of his testimony itself. For Dr. Roberts’ qualifications *see* Decl. Victor D. Roberts, Ph.D. Supp. Pl.’s Opening Br. Claim Construction 1-3, ECF No. 84.

into DC power through the use of a rectifier. A battery could likewise provide the necessary DC supply voltage described in the patent, but in reality, such an arrangement would be used if [sic] very few applications. In either case, one skilled in the art would immediately ascertain and implement the structure necessary to supply the DC supply voltage, based on the particular application of the ballast in question. Stated otherwise, the “voltage source” limitation, when read in the context of the specification and claims, suggests to me a sufficient structure, or class of structures, namely: a rectifier (if converting AC from a “power line source” to DC for a “DC supply voltage”) or, in a very few specialized applications, a battery (if providing the DC supply voltage directly to the DC input terminals).

Decl. Victor D. Roberts, Ph.D. Supp. Pl.’s Opening Br. Claim Construction 7-8, ECF No. 84. Additionally, Bobel, in his deposition, offered that as one skilled in the art of designing lighting ballasts, the “voltage source means” limitation connotes a structure that will “rectify the line.” Bobel Dep. 226:15-227:25, ECF No. 84. Bobel also testified that when he drafted the term he intended to suggest physical structure to those skilled in the art. *Id.* at 229:14-18. ULT presents no expert testimony contradicting the opinions of Dr. Roberts and Bobel, that one of skill in

the lighting ballast design art would understand the “voltage source means” term to disclose a rectifier.

The “voltage source means” term and Claims 1 and 18, of which it is a part, must be read in the context of the specification of the 529 Patent, although the Court relies primarily on the language of the claims themselves. *See Apex*, 325 F.3d at 1373; *see also Rodime*, 174 F.3d at 1302. Like the term at issue in *Comtech*, the Court finds that while the “voltage source means” term does not denote a specific structure, it is nevertheless understood by persons of skill in the lighting ballast design art to connote a class of structures, namely a rectifier, or structure to rectify the AC power line into a DC voltage for the DC input terminals. The Court’s prior construction of this term, and ULT’s proposed construction, exalted form over substance and disregarded the knowledge of a person of ordinary skill in the art. *See Phillips*, 415 F.3d at 1313.

Moreover, it is in keeping with Federal Circuit precedent to refer to the functional language following “voltage source means” in determining whether the term connotes sufficient structure to avoid section 112, ¶ 6. *See Mass. Inst. of Tech.*, 462 F.3d at 1356; *see also Linear Tech.*, 379 F.3d at 1320. This functional language, “providing a constant or variable magnitude DC voltage between the DC input terminals,” when read by one familiar with the use and function of a lighting ballast, such as the one disclosed by the 529 Patent, would understand a rectifier is, at least in common uses, the only structure that would provide “a constant or variable magnitude DC voltage.” The remaining language,

“between the DC input terminals,” merely describes the path of the DC voltage provided by the rectifier. According to Dr. Roberts:

The ballast described in the preferred embodiment of the 529 Patent receives AC from “a power line source,” such as an electrical outlet in an office building, converts it to DC for use during the initial startup phase, and then, upon receipt of a “DC control signal” by the ballast’s control circuit, generates a higher frequency AC power for use in pre-heating the lamp filaments and for powering the lamps.

Roberts Decl. 6-7. It is clear to one skilled in the art that to provide a DC voltage when the source is a power line, which provides an AC voltage, a structure to rectify the line is required and is clear from the language of the “voltage source means” term. To hold otherwise would disregard the meaning this limitation would have to a person of ordinary skill in the lighting ballast design art. Although the term describes a rectifier by its function, this in and of itself is not objectionable. *See Mass. Inst. of Tech.*, 462 F.3d at 1356.

The Court also finds persuasive the fact that the “voltage source means” element’s disclosure of structure is clear excluding the generic use of “means,” which would read “voltage source ... providing a constant or variable magnitude DC voltage between the DC input terminals.” *See Cole v. Kimberly-Clark Corp.*, 102 F.3d 524, 531 (Fed. Cir.

1996) (“Here, the claim drafter’s perfunctory addition of the word ‘means’ did nothing to diminish the precise structural character of this element.”); *see also Allen Eng’g Corp. v. Bartell Indus., Inc.*, 299 F.3d 1336, 1348 (Fed. Cir. 2002); *Comtech*, 2007 U.S. Dist. LEXIS 97038 at *33-38. The drafter’s use of the term “means” seems unnecessary but does not diminish the element’s disclosure of structure, or a class of structures, to one skilled in the art. Accordingly, the Court finds that Plaintiff LBC has successfully overcome the presumption that section 112, ¶ 6 applies to the “voltage source means” element of Claims 1 and 18 of 529 Patent. As such, the Court construes these limitations according to their ordinary meaning in the art.

E. “Control Means” Element

The parties agree that the limitation “control means [capable of receiving (Claim 1)/able to receive (Claim 18)] control signals from the DC input terminals and from the resonant converter, and operable to effectively stop the oscillations of the converter” should be construed in accordance with section 112, ¶ 6, that it recites three functions, and lastly, they agree on the structure corresponding to two of the functions. *See* Defs.’ Resp. Br. 7. The parties disagree as to whether the specification discloses a structure related to the remaining function. *See id.*

Specifically, the parties agree that the structure corresponding to the function “operable to effectively initiate the oscillations and to effectively stop the oscillations” is set forth at column 3, line 50, through column 4, line 21 of the 529 Patent. *See id.* They also

agree that the structures corresponding to the “effectively stop the oscillations” function are the diode 29, resistor 30, resistor 32, capacitor 33, transistor 48, and diac 45 connected as described in the 529 Patent. *See id.* The only disagreement between the parties is whether the 529 Patent discloses a structure to correspond to the function of “receiving a control signal from the DC input terminals[.]” *See id.*

1. *Plaintiff’s Proposed Construction*

To perform the function of “receiving a control signal from the DC input terminals[.]” Plaintiff LBC identifies the structure of the control circuit, labeled as 58 in Figure 1 and discussed at column 3, line 59 through column 4, line 21 of the 529 Patent. *See Pl.’s Opening Br. 17.* According to LBC, “[t]he dotted line in Figure 1 clearly shows a DC control signal, which originates at the DC input terminal B+ and travels through the filaments to the control circuit 58, where the signal is received and processed.” *Id.*

2. *Defendant’s Proposed Construction*

Defendant ULT argues there is no corresponding structure for “receiving a control signal from the DC input terminals.” *See Defs.’ Opening Br. 21.* According to ULT, the control circuit described in the specification at column 3, line 59 through column 4, line 21 does not receive any control signal from the DC input terminals. Rather, ULT asserts that any “control signals applied to the control circuit 58 are received only from the intermediate node 27 within the resonant converter; there is no control signal

input to the control circuit from the DC input terminals.”⁶ *Id.* at 22. Thus, the lack of any corresponding structure, material, or act renders Claims 1 and 18 invalid under section 112, ¶¶ 1 and 2. *See id.*

3. *Court’s Analysis and Construction*

ULT’s argument that the specification of the 529 Patent fails to disclose a structure to perform the function of “receiving a control signal from the DC input terminals” is based on the same premise as ULT’s argument that the DC input terminals do not produce a control signal, which the Court rejected *supra* at Part III(C)(3). ULT argues that since the DC input terminals cannot produce a control signal then the specification of the 529 Patent does not teach DC input terminals producing a control signal; therefore, the control means cannot possibly receive a control signal from the DC input terminal and there can be no corresponding structure for a function that the patent doesn’t teach. *See* Defs.’ Opening Br. 22; Pl.’s Resp. Br. 8. The Court rejected ULT’s premise—that the DC input terminals do not produce a control signal—*supra* at Part III(C); the Court adopts and incorporates that discussion herein. Therefore, the specification of the 529 Patent discloses a structure, namely a control circuit, at column 3, line 59 through column 4, line 21 corresponding to the function of

⁶ ULT also makes the same argument in support of their construction of the term “DC input terminals producing a control signal.” *See supra* at Part III(C)(3) where this argument is fully laid out.

“receiving a control signal from the DC input terminals.”

F. “Direct current blocking means”

The parties agree that the limitation “direct current blocking means coupled to the output terminals and operable to stop flow of the control signal from the DC input terminals, whenever at least one gas discharge lamp is removed from the output terminals or is defective” is a means-plus-function limitation governed by section 112, ¶ 6. *See* Pl.’s Opening Br. 18. The parties disagree on the named function and the corresponding structure.

1. Plaintiff’s Proposed Construction

Plaintiff LBC argues the function should include language beyond that which is recited in the “direct current blocking means” limitation of Claims 1 and 18. LBC proposes to construe the function as follows: “To stop the flow of the DC control signal when the lamp is removed or defective and, upon replacement, to facilitate the heating of the filaments.” *See id.* The language describing the heating of the filaments upon replacement of the lamp does not appear in “direct current blocking means” limitation. As corresponding structure LBC proposes “a DC blocking circuit that has a series connected secondary winding with a capacitor or diode [for Claim 18: DC blocking circuit must include diode].” *Id.*

2. Defendant’s Proposed Construction

Defendant ULT argues it would be improper to import language to the “direct current blocking means” which has the effect of adding a new function that is not recited in the limitation. ULT asks the Court to construe the function as follows: “stop the flow of the control signal from the DC input terminals whenever at least one gas discharge lamp is removed from the output terminals or is defective.” *See* Defs.’ Opening Br. 23. As corresponding structure, ULT suggests a “capacitor or diode connected to the heatable filament of the lamp” for Claim 1 and “a diode connected to the heatable filament of the lamp” for Claim 18. *Id.*

3. *Court’s Analysis and Construction*

The specification of the 529 Patent discloses the structure of two DC blocking circuits which are each composed of a series connected secondary winding with capacitor or diode connected across the output terminals of the lamp. *See* 529 Patent, col. 3, ll. 53-58. The specification also makes clear that the DC blocking circuit structures perform two functions: (1) preheating the filaments of the lamp via the secondary windings and (2) stopping the DC current from flowing through the circuits when the direct current path between terminal B+ and terminal CTa is broken via a capacitor or diode. *See id.* at col. 7, ll. 63-65, col. 8, ll. 38-43. However, the “direct current blocking means” limitation recites only one of these functions—“stop the flow of the control signal from the DC input terminals whenever at least one gas discharge lamp is removed from the output terminals or is defective.” The only reference to “heatable filaments” in Claims 1 and 18 comes from the

preambles which describe the type of gas discharge lamp.

LBC argues that the Court should import the filament preheating function of the DC blocking circuits because the specification indicates that the structures that perform this function, the secondary windings, are component parts of the DC blocking circuits. LBC thus argues that any claim that includes within its scope a gas discharge lamp having heatable filaments necessarily implies the filament preheating function performed by the secondary windings. The Court agrees with LBC that the appropriate test for whether a limitation appearing only in the specification may be applied to limit all claims in a patent is laid out in *Alloc, Inc. v. International Trade Commission*, 342 F.3d 1361, 1370 (Fed. Cir. 2003):

[A court] must interpret the claims in light of the specification, yet avoid impermissibly importing limitations from the specification. That balance turns on how the specification characterizes the claimed invention. In this respect, this court looks to whether the specification refers to a limitation only as a part of less than all possible embodiments or whether the specification read as a whole suggests that the very character of the invention requires the limitation be a part of every embodiment ...[W]here the specification makes clear at various points that the claimed invention is

narrower than the claim language might imply, it is entirely permissible and proper to limit the claims.

(internal citations omitted). However, neither the facts nor the reasoning of *Alloc* support LBC's proposed construction of the "direct current blocking means" limitation.

The Federal Circuit in *Alloc*, using the above-quoted test, was actually *limiting* the claimed invention in a way that was *narrower* than the claim language otherwise implied. *See id.* at 1370. Specifically at issue in *Alloc* was whether the claimed invention required "play" in every embodiment. *See id.* at 1369. The Federal Circuit determined that "the ...specification read as a whole leads to the inescapable conclusion that the claimed invention must include play in every embodiment." *Id.* at 1370. Thus, even though the claims did not explicitly require play and thereby appeared to have a broader scope, the court held that the scope of the claims, in light of the specification and prosecution history, must be limited to include only embodiments with play. *See id.* at 1372. In contrast, LBC seeks to add an omitted function to the language of the "direct current blocking means" limitation; by doing so LBC would *broaden* the claim language and scope rather than *narrow* it. The facts and reasoning of the *Alloc* case are distinguishable and do not support LBC's proposed function of the "direct current blocking means" limitation. *Alloc* stands for the proposition that the scope of a patent's claims may not be broader than the specification's characterization of the invention. *Alloc* does not allow a patentee to expand

the scope of *some* claims by importing language, in the form of an additional function for purposes of section 112, ¶ 6, from the specification.

The sole function disclosed in the “direct current blocking means” limitation is “operable to stop the flow of the control signal from the DC input terminals[.]” No additional function, such as one facilitating the heating of the filaments, is present in this limitation; and to declare as much would impermissibly depart from the actual language of the claim. *See Micro Chem. v. Great Plains Chem. Co.*, 194 F.3d 1250, 1258 (Fed. Cir. 1999) (“The statute does not permit limitation of a means-plus-function claim by adopting a function different from that explicitly recited in the claim.”). The specification ties the structure of the DC blocking circuits to the function of stopping “the flow of the control signal from the DC input terminals[.]” The other function, which LBC seeks to add to the limitation, preheating the filaments, is specifically tied to the secondary windings, not the DC blocking circuit. *See* col. 7, ll. 63-65. However, according to the specification and Figure 1, the secondary windings are components of the DC blocking circuits. *See* Col. 7:53-58, Figure 1 (07, 26).

LBC argues that since the secondary windings are part of the DC blocking circuit they should be considered corresponding structure. *See* Pl.’s Opening Br. 19-20. According to LBC:

The inventor’s chosen word order
[referring to specification’s disclosure
of the DC blocking circuit] is

persuasive: it emphasizes the importance of the secondary winding and demonstrates that the winding is not an afterthought but rather is central to the role played by the “DC blocking circuit.” In fact, the specification teaches that the recited capacitor and diode may be interchangeable but makes no such allowance for the secondary winding. Bobel, as his own lexicographer, chose to define the blocking circuitry to include a secondary winding. In light of his unambiguous definition, Defendants’ attempt to exclude the secondary winding from the corresponding structure must be rejected.

Id. at 20. ULT responds that only the capacitor or diode component of the DC blocking circuit is necessary to perform the function of “operable to stop flow of the control signal from the DC input terminals, whenever at least one gas discharge lamp is removed from the output terminals or is defective” and thus the patent only discloses the DC blocking circuit, insofar as it consists of a capacitor or diode, as the corresponding structure. *See* Defs.’ Resp. Br. 10-11.

In determining the proper corresponding structure for the function of stopping the flow of the control signal from the DC input terminals, the Court must look only to structures in the specification that are necessary to perform this function. *See Micro Chem.*, 194 F.3d at 1258 (“Nor does the statute permit

incorporation of structure from the written description beyond that necessary to perform the claimed function.”). Moreover, the structure must actually perform the function of stopping the flow of the control signal and not merely enable another structure to do so. *See Asyst Techs., Inc. v. Empak, Inc.*, 268 F.3d 1364, 1371 (Fed. Cir. 2001) (“The corresponding structure to a function set forth in a means-plus-function limitation must actually perform the recited function, not merely enable the pertinent structure to operate as intended[.]”). The secondary windings, located in series before the capacitor or diode, depending on the claim, within the DC control circuit, cannot be structure corresponding to the function the DC blocking means.

According to ULT, “[f]irst, the specification of the ‘529 patent does not link the secondary winding with the *function* of the DC blocking means. Second, it is without question that the secondary winding is not necessary to *or capable of* performing the claimed function of the DC blocking means (i.e. blocking the direct current signal).” Defs.’ Resp. Br. 11 (emphasis in original). The Court agrees, LBC does not dispute that the secondary windings do not, and are incapable of, blocking the control signal from the DC input terminals. Direct current merely passes through the secondary windings to the capacitor or diode, which is the structure that actually performs the function of the DC blocking means within the DC control circuit. ULT goes on to argue that “the secondary winding may help enable the invention of the patent-in-suit to perform other functions does not mean that the secondary winding enables the ‘DC blocking means’ to perform its claimed function.” *Id.* Again, the Court

agrees; the function of the secondary windings is to preheat the filaments in a gas discharge lamp, they have nothing to do with the function of the DC blocking means. LBC's argument to the contrary rests merely on the fact that the drafter chose to include the secondary windings as a part of the DC blocking circuit, this placement does not affect the function of the secondary windings. *See Cardiac Pacemakers*, 296 F.3d at 1113 (“[T]he structure must not only perform the claimed function but the specification must clearly associate the structure with performance of the function.”). While the specification clearly links the DC blocking circuit to the function of stopping the flow of the control signal, it does not associate the secondary windings with any such function. The only function of the secondary windings, as disclosed by the specification, is to preheat the lamp filaments.

G. “Whenever at least one gas discharge lamp ...”

Lastly, the parties dispute this phrase from the “direct current blocking means” of claims 1 and 18: “whenever at least one gas discharge lamp is removed from the output terminals or is defective[.]” ULT urges the Court to construe this phrase as follows:

Whenever at least one gas discharge lamp is removed from the output terminals or is defective, the direct current blocking means operates to stop flow of the control signal through the filaments to the control means, thereby to prevent self-excitation of the

resonant converter and hence starting of the oscillation of the ballast.

Defs.' Opening Br. 25. By this proposed construction, ULT again urges that a self-excited oscillating resonant converter limitation is appropriate. The Court has previously rejected this proposed construction with regard to the term "oscillating resonant converter" as it appeared in the preambles. The Court adopts and incorporates its reasoning rejecting ULT's proposed construction limiting "oscillating resonant converter" to self-excited resonant converters *supra* at Part III(A) and finds that this phrase needs no further construction.

IV. CONCLUSION

Based on the foregoing, the Court construes the following terms and limitations in the 529 Patent as follows:

1. In the preambles to Claims 1 and 18 respectively of the 529 Patent "oscillating resonant converter producing oscillations" means "a circuit, or portion of a circuit, containing inductance, capacitance and at least one electronic switching device (such as a transistor) that operates to convert direct current into alternating current."
2. In the preambles to Claims 1, 4, and 18 respectively of the 529 Patent "DC input terminals" means "terminals for receiving a DC supply voltage."

3. In the preamble to Claim 1 of the 529 Patent “producing a control signal” means “serving as the origin of direct current that travels along a direct current path from the DC input terminals, through the filament or filaments, and to an input terminal of the control means, but which does not pass through the DC blocking means.”
4. In Claims 1 and 18 of the 529 Patent “voltage source means providing a constant or variable magnitude DC voltage between the DC input terminals” shall be construed according to its ordinary meaning and in accordance with the Court’s reasoning in Part III(D)(3) *supra*.
5. In Claims 1 and 18 of the 529 Patent “control means capable of receiving a control signal from the DC input terminals and from the resonant converter, and operable to effectively initiate the oscillations, and to effectively stop the oscillations of the converter” shall be construed according to section 112, ¶ 6 as reciting three functions with the specification disclosing the structures corresponding to those functions as set forth *supra* in Part III(E).
6. In Claims 1 and 18 of the 529 Patent “direct current blocking means coupled

to the output terminals and operable to stop flow of the control signal from the DC input terminals, whenever at least one gas discharge lamp is removed from the output terminals or is defective” shall be construed according to section 112, ¶ 6 as reciting the function “operable to stop the flow of the control signal from the DC input terminals, whenever at least one gas discharge lamp is removed from the output terminals or is defective,” and the specification disclosing the structure corresponding to that function as a capacitor or diode within the control circuit, as set forth *supra* in Part III(F)(3).

7. In Claims 1 and 18 of the 529 Patent the phrase “whenever at least one gas discharge lamp is removed from the output terminals or is defective” shall be construed according to its ordinary meaning and in accordance with the Court’s reasoning in Part III(G)(3) *supra*.

• **SO ORDERED** on this **2nd** day of
December, 2010.

Reed O’Connor
UNITED STATES
DISTRICT JUDGE

APPENDIX G
IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF TEXAS

WICHITA FALLS DIVISION

LIGHTING BALLAST	§	
CONTROL, LLC,	§	
	§	
	§	
Plaintiff,	§	
	§	
v.	§	CIVIL ACTION
	§	NO. 7:09-CV-29-O
	§	
PHILIPS ELECTRONICS	§	
NORTH AMERICA CORP.,	§	
et al.,	§	
	§	
	§	
Defendants.	§	

MEMORANDUM OPINION AND ORDER

This is a patent infringement case. The invention at issue is a lighting product, specifically an electronic ballast. A ballast is a device for starting and regulating florescent and other types of lamps. A ballast provides proper voltage to light the lamp, and regulates the electric current flowing through the lamp to control light output. The ballasts at issue in this case are designed to power florescent lamps with heatable filaments. The parties dispute various claim terms in United States Patent 5,436,529 (“529

Patent”) issued on July 25, 1995 and entitled “CONTROL AND PROTECTION CIRCUIT FOR ELECTRONIC BALLAST.” The Court has construed the disputed claim terms after reviewing the briefs and responses of the parties, the applicable law, and where appropriate, any extrinsic evidence submitted by the parties.

I. BACKGROUND

The Court sets forth only those facts necessary to provide context for the claim construction. Plaintiff Lighting Ballast Control, LLC, (“Lighting Ballast”) holds the exclusive right to enforce the 529 Patent. The inventor is Andrzej “Andrew” Bobel. The 529 Patent covers a lighting ballast that powers florescent lamps with heatable filaments. An electronic ballast practicing the 529 Patent operates in three different stages: (1) the initial start-up of the ballast, (2) the shut-down or sleep-mode of the ballast, and (3) the re-starting of the ballast after an inoperable lamp has been replaced. Pl.’s Opening Br. Cl. Const. 4, ECF No. 84. The invention was intended to address significant technical challenges facing the ballast industry in 1993; specifically, how to preserve the integrity of the ballast by not drawing power from a power line source when a lamp is removed or defective, and by not having to turn the power OFF and ON when the lamp is replaced. *Id.* at 6. The invention covered by the 529 Patent was intended to remedy these issues in a safe, energy efficient, and affordable manner. *Id.*

Lighting Ballast sues Defendant Universal Lighting Technologies, Inc. (“Universal”) claiming infringement of the 529 Patent because Universal

manufactures, uses, or sells electronic ballasts utilizing circuitry that monitors the voltage across one or more lamps and provides end-of-life protection for multiple types of failures.¹ Pl.'s Orig. Compl. 4, ECF No. 1. Lighting Ballast specifically points to the ULT B254PUNV-D ballast as infringing on one or more claims of the 529 Patent. *Id.* Universal denies any infringement and brings a counterclaim seeking a declaration that Universal has not infringed any of the claims of the 529 Patent, and that the patent is invalid. Def.'s Am. Answer 7, ECF No. 70.

II. LEGAL STANDARDS—PATENT CLAIM CONSTRUCTION

Patent infringement is the unauthorized making, using, selling, offering to sell, or importing into the United States of any patented invention during the term of the patent. 35 U.S.C. § 271(a). In a patent infringement case, a court first determines the proper construction of the patent claims by establishing, as a matter of law, the scope and boundaries of the subject-matter of the patent. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 976 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370, 384-85 (1996). Second, the trier of fact compares the properly construed claims to the allegedly infringing device(s) and determines whether there has been an infringement. *Id.* The issue before the Court is the proper

¹ Lighting Ballast originally sued several defendants, however, Universal is the only remaining defendant in the case, pending final settlement with Philips Electronics North America Corp.

construction of certain disputed claims in the 529 Patent.

A. Rules of Claim Construction

The claims of a patent are the numbered paragraphs at the end of the patent that define the scope of the invention, and thus the scope of the patentee's right to exclude others from making, using, or selling the patented invention. *See Astrazeneca AB v. Mutual Pharm. Co.*, 384 F.3d 1333, 1335-36 (Fed. Cir. 2004). Claim construction is the process of giving proper meanings to the claim language thereby defining the scope of the protection. *See Bell Commc'ns Research, Inc. v. Vitalink Commc'ns Corp.*, 55 F.3d 615, 619 (Fed. Cir. 1995) (internal citations omitted).

Claim construction starts with the language of the claim itself since a patent's claims define the invention to which the patentee is entitled the right to exclude. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc). "The claims themselves provide substantial guidance as to the meaning of particular claim terms." *Id.* at 1314. Moreover, claim terms should be given their ordinary and customary meaning as understood by a person of ordinary skill in the art as of the effective filing date of the patent application. *Id.* at 1313. This is because a patent is addressed to, and intended to be read by, others skilled in the particular art. *Id.* However, the patentee is free to define his own terms, so long as any special definition given to a term is clearly defined in the specification. *Intellicall, Inc. v. Phonometrics, Inc.*, 952 F.2d 1384, 1388 (Fed. Cir. 1992).

When construing disputed claim terms the court should look first to the intrinsic record of the patent, including the claims and the specification, to determine the meaning of words in the claims. *Nazomi Commc'ns., Inc. v. Arm Holdings, PLC*, 403 F.3d 1346, 1368 (Fed. Cir. 2005). “The specification is always highly relevant to the claim construction analysis. Usually it is dispositive; it is the single best guide to the meaning of a disputed term.” *Phillips*, 415 F.3d at 1315. The specification acts as a dictionary when it expressly or implicitly defines terms. *Id.* at 1321. Courts should also refer to the prosecution history if it is in evidence. *Vitronics Corp. v. Conceptoronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996). The prosecution history is part of the intrinsic record and consists of a complete record of all proceedings before the United States Patent and Trademark Office, including prior art cited during the examination of the patent, and express representations made by the applicant as to the scope of the claims. *Id.*

The Federal Circuit has also stated that district courts may “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.” *Id.* (internal quotations omitted). Dictionaries and treatises can be “useful in claim construction[,]” particularly technical dictionaries which may help the court “to better understand the underlying technology and the way in which one of skill in the art might use the claim terms.” *Id.* at 1318 (internal quotations omitted). As to expert testimony, the Federal Circuit has stated:

[E]xtrinsic evidence in the form of expert testimony can be useful to a court for a variety of purposes, such as to provide background on the technology at issue, to explain how an invention works, to ensure that the court’s understanding of the technical aspects of the patent is consistent with that of a person of skill in the art, or to establish that a particular term in the patent or the prior art has a particular meaning in the pertinent field.

Id. However, “a court should discount any expert testimony that is clearly at odds with the claim construction mandated by the claims themselves, the written description, and the prosecution history, in other words, with the written record of the patent.” *Id.* (internal quotations omitted). Extrinsic evidence is less significant than the intrinsic record and undue reliance on it may pose a risk of changing the meaning of claims, contrary to the public record contained in the written patent. *Id.* 1317, 1319.

B. Means-Plus-Function Limitations

Pursuant to 35 U.S.C. § 112 ¶ 6 a patentee may express a claim limitation by reciting a function to be performed by a generic means, rather than reciting in the claim the actual structure for performing the particular function. Section 112, ¶ 6 provides:

An element in a claim for a combination may be expressed as a means or step for performing a specified function without

the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

Section 112, ¶ 6 thus “operates to restrict claim limitations drafted in such functional language to those structures, materials, or acts disclosed in the specification (and their equivalents) that perform the claimed function.” *Personalized Media Comm’ns, LLC v. Int’l Trade Comm’n*, 161 F.3d 696, 703 (Fed. Cir. 1999). “The point of the requirement that the patentee disclose particular structure in the specification and that the scope of the patent claims be limited to that structure and its equivalents is to avoid pure functional claiming.” *Aristocrat Techs. Australia Pty Ltd. v. Int’l Game Tech.*, 521 F.3d 1328, 1333 (Fed. Cir. 2008).

The determination of whether a particular limitation should be regarded as a means-plus-function limitation is a question of law, even though it is a question on which evidence from experts may be relevant. *Lighting World, Inc. v. Birchwood Lighting, Inc.*, 382 F.3d 1354, 1358 (Fed. Cir. 2004) (citations omitted). The *Lighting World* court set forth the standard to be used when determining whether to apply section 112, ¶ 6 to a claim limitation:

A claim limitation that actually uses the word “means” invokes a rebuttable presumption that § 112, ¶ 6 applies. By contrast, a claim term that does not use

“means” will trigger the rebuttable presumption that § 112, ¶ 6 does not apply. The use of the term “means” is central to the analysis because the term “means,” particularly as used in the phrase “means for,” is part of the classic template for functional claim elements and has come to be closely associated with means-plus-function claiming.

Id. at 1358. However, claim language that further defines a generic term, such as nouns or adjectival qualifications that appear before or after the word “means,” can add or suggest sufficient structure to avoid section 112, ¶ 6. *Mass. Inst. of Tech. v. Abacus Software*, 462 F.3d 1344, 1354 (Fed. Cir. 2006). Moreover, section 112, ¶ 6 may be avoided where “the claim term is used in common parlance or by persons of skill in the pertinent art to designate structure, even if the term covers a broad class of structures and even if the terms identify the structures by their function.” *Id.* at 1356 (quotations and citations omitted).

Claim construction of a means-plus-function limitation has two steps: “First, the court must determine the claimed function. Second, the court must identify the corresponding structure in the written description of the patent that performs that function.” *Applied Med. Res. Corp. v. U.S. Surgical Corp.*, 448 F.3d 1324, 1332 (Fed. Cir. 2006). The claimed function is recited in the claim itself, and the corresponding structure “must not only perform the claimed function [but] the specification must clearly associate the structure with the performance of the

function.” *Cardiac Pacemakers, Inc. v. St. Jude Med., Inc.*, 296 F.3d 1106, 1113 (Fed. Cir. 2002). The court should first inquire as to whether “structure is described in [the] specification, and, if so, whether one skilled in the art would identify the structure from that description.” *Atmel Corp. v. Info. Storage Devices, Inc.*, 198 F.3d 1374, 1381 (Fed. Cir. 1999). “The inquiry is whether one of skill in the art would understand the specification itself to disclose a structure, not simply whether that person would be capable of implementing a structure.” *Biomedino, LLC v. Waters Techs. Corp.*, 490 F.3d 946, 953 (Fed. Cir. 2007).

III. ANALYSIS

The parties have presented two claims from the 529 Patent for construction. Claim 1 recites (with the disputed claim limitations emphasized in bold):

1. An energy conversion device employing an **oscillating resonant converter** producing oscillations, having **DC input terminals producing a control signal** and adapted to power at least one gas discharge lamp having heatable filaments, the device comprising:

voltage source means providing a constant or variable magnitude DC voltage between the DC input terminals;

output terminals connected to the filaments of the gas discharge lamp;

control means capable of receiving control signals from the DC input terminals and from the resonant converter, and operable to effectively initiate the oscillations, and to effectively stop the oscillations of the converter; and a direct current blocking means coupled to the output terminals and operable to stop flow of the control signal from the DC input terminals, whenever at least one gas discharge lamp is removed from the output terminals or is defective.

Pl.'s Opening App. 14, ECF No. 84-1.

Claim 18 recites (again with the disputed claim limitations emphasized in bold):

18. An energy conversion device employing an **oscillating resonant converter**, having **DC input terminals** and adapted for powering at least one gas discharge lamp having heatable filaments, the device comprising:

voltage source means able to provide a constant or variable magnitude DC voltage between the DC input terminals;

output terminals for connection to the filaments of the gas discharge lamp;

control means able to receive control signals from the DC input terminals and from the resonant converter, and operable to effectively initiate the oscillations, and to effectively stop the oscillations of the converter;
and

direct current blocking means coupled to output terminals and operable to stop flow of the control signal from the DC input terminals, whenever at least one gas discharge lamp is removed from the output terminals or is defective wherein the direct current blocking means includes a semiconductor diode and is connected effectively across at least one heatable filament of at least one gas discharge lamp.

Pl.'s Opening App. 15, ECF No. 84-1. Independent Claims 1 and 18 are nearly identical, with Claim 18 adding one additional limitation relating to a diode. Pl.'s Opening Br. 14, ECF No. 84. The disputed issues come from Claims 1 and 18; the parties dispute the construction of three alleged means-plus-function limitations, and four other terms. *Id.* The Court will turn to the disputed limitations, the first of which appears in both Claims 1 and 18.

A. Voltage Source Means Dispute

The parties dispute whether the limitation “voltage source means providing a constant or variable magnitude DC voltage between the DC input terminals” is a function-plus-means limitation, subject to construction as limited by section 112, ¶ 6. Lighting Ballast argues that “voltage source” connotes sufficient structure to one skilled in the art and that it should avoid treatment as a means-plus-function limitation. In the alternative, Lighting Ballast argues that if the Court determines that section 112, ¶ 6 applies, then the specification discloses the corresponding structure. Universal argues that the term should be treated as a means-plus-function limitation because it is written in means-plus-function format, and furthermore, that the specification does not disclose a corresponding structure, making both claims in which the limitation appears indefinite.

1. Plaintiff's Proposed Construction

Lighting Ballast argues that this limitation, while using the term “means,” is not a means-plus-function

limitation because the term “voltage source” has an understood meaning in the art when read in the context of the specification. *See* Pl.’s Opening Br. 14-15, ECF No. 84. Specifically, according to Lighting Ballast, “voltage source means [providing (claim 1), able to provide (claim 18)] a constant or variable magnitude DC voltage between the DC input terminals” connotes the structure of a rectifier to anyone skilled in the art. *Id.* at 15. As support for this assertion Lighting Ballast points to extrinsic evidence: expert testimony from Andrew Bobel, the inventor, who has several years of experience working on electronic ballast designs, and Dr. Victor Roberts, an expert witness. *Id.* Both Bobel and Dr. Roberts testify, that as persons skilled in the art, the “voltage source” limitation clearly connotes the structure of a rectifier. Pl.’s Opening App. Ex. 2-A at 226, ECF No. 84-3; Ex. 3 at 7-8, ECF No. 84-7. In the alternative, Lighting Ballast argues that if the Court determines that section 112, ¶ 6 applies, making the limitation a means-plus-function limitation, then the limitation clearly discloses the structure of a rectifier. Pl.’s Opening Br. 15-16, ECF No. 84.

2. *Defendant’s Proposed Construction*

Universal argues that this limitation is governed by section 112, ¶ 6 as a means-plus-function limitation. Def.’s Opening Br. 16, ECF No. 85. First, Universal points to the use of the term “means,” which presumptively invokes section 112, ¶ 6. *Id.* Secondly, according to Universal, the limitation itself clearly recites a function only. *Id.* And third, the claim language does not point to any structure. *Id.* Thus,

Universal asserts, this limitation is a classic means-plus-function limitation and must be construed according to section 112, ¶ 6. Universal then goes on to argue that the specification for the 529 Patent does not disclose any structure, a rectifier or otherwise, for performing the claimed function. *Id.* 18-20. Accordingly, Universal urges that Claims 1 and 18 should be held invalid because they are indefinite.

3. *Court's Analysis and Construction*

The Court begins with the presumption that this is a means-plus-function limitation, subject to construction under section 112, ¶ 6 because it uses the term “means,” and is written in a classic means-plus-function format. *See Kemco Sales, Inc. v. Control Papers Co., Inc.*, 208 F.3d 1352, 1361 (Fed. Cir. 2000). Lighting Ballast asserts that the presumption should not apply because, despite use of the term “means,” the limitation recites sufficient structure to avoid section 112, ¶ 6. To determine whether the limitation “voltage source means” connotes sufficient structure, the Court must first consider all of the recited claim language, including nouns, adjectival modifiers, and function descriptions, and secondly, determine whether that claim language has an understood meaning in the electronic ballast field when read in the context of the 529 Patent specification. *See Linear Tech. Corp. v. Impala Linear Corp.*, 379 F.3d 1311, 1320 (Fed. Cir. 2004).

The words “voltage source” precede “means,” which is followed by the claimed function, “[providing/able to provide] a constant or variable

magnitude DC voltage between the DC input terminals.” Lighting Ballast argues, as it must in order to avoid section 112, ¶ 6, that “voltage source” connotes sufficient structure, in this case, a rectifier. However, in order to come to this conclusion, Plaintiff uses the recited function along with inventor and expert testimony, that a rectifier would be required where the function is “providing a constant or variable magnitude DC voltage.” Lighting Ballast also points the Court to case law stating “it is sufficient to avoid [section 112, ¶ 6] treatment if the claim term is used in common parlance or by persons of skill in the pertinent art to designate structure, even if the term covers a broad class of structures and even if the terms identify the structures by their function.” *Mass. Inst. of Tech.*, 462 F.3d at 1356.

Universal argues that the term “source” and by extension, the term “voltage source,” is insufficient to connote structure and directs the Court to case law. In *Nilssen v. Motorola, Inc.*, the court held that even if the term “source” in “source means” connotes a device that provides power, this alone is not a sufficient structural recitation to remove the limitation from the ambit of section 112, ¶ 6. 80 F. Supp.2d 921, 928-29 (N.D. Ill. 2000). The difference here is that “source” is preceded by “voltage” obviously meaning that it is a source of voltage. However, the Court is inclined to agree with the *Nilssen* court, that even assuming “voltage source” connotes a structure, it is not a sufficient structural recitation to overcome the presumption in favor of section 112, ¶ 6.

Lighting Ballast’s argument that “voltage source” connotes sufficient structure to avoid means-plus-function construction is problematic for other reasons as well. First, Lighting Ballast does not point the Court to any evidence, intrinsic or extrinsic, that the term “voltage source” is commonly used in the electronic ballast industry to mean a rectifier. Rather, Plaintiff relies on the description of the function, stating that persons of skill in the electronic ballast industry, including Bobel and Dr. Roberts, understand that this function, insofar as it includes supplying a DC voltage, can be and often is performed by a rectifier. Secondly, Lighting Ballast admits that a rectifier is not the only structure capable of providing a DC voltage, pointing out that a battery would also suffice. There is no indication that “voltage source” is often used synonymously with the term “rectifier” by those of ordinary skill in the electronic ballast industry, and Lighting Ballast does not appear to argue as much. In fact, the opposite would seem to be the case, since a rectifier is merely one voltage source. Lastly, neither the language of claim 1 or claim 18 describes the function of a rectifier. Rather, the recited function, “providing a constant or variable magnitude DC voltage between the DC input terminals,” refers only inferentially to the function of a rectifier.² For these reasons, the quotation from *Massachusetts Institute of Technology, supra*, does not

² Dr. Roberts appears to acknowledge this fact when he states in his declaration that “one skilled in the art would immediately ascertain and implement the structure necessary to supply the DC supply voltage[.]” Pl.’s Opening App. Ex. 3 at 7-8, ECF No. 84-7.

assist Plaintiff in avoiding section 112, ¶ 6. Therefore, the Court finds that this limitation, even when read in the context of claims 1 and 18, of which it is a part, does not suggest sufficient structure on its face to overcome the means-plus-function presumption, and it must be construed in accordance with section 112, ¶ 6.

In order to construe the “voltage source means” limitation in accordance with section 112, ¶ 6, the Court must determine the claimed function, and then identify the corresponding structure in the written specification of the 529 Patent that performs that function. *See Applied Med. Res. Corp.*, 448 F.3d at 1332. The Federal Circuit has stated that section 112, ¶ 6 represents a *quid pro quo* by allowing inventors to use a generic means expression for a claim as long as the specification indicates the structure that constitutes the means. *See Atmel*, 198 F.3d at 1381. The section 112, ¶ 6 “tradeoff cannot be satisfied when there is a total omission of structure. There must be structure in the specification.” *Id.* at 1382. Once it is established that there is a disclosure of structure in the specification, the analysis proceeds to the sufficiency of the disclosure—whether one skilled in the art will know and understand what structure corresponds to the means limitation. *Id.* Therefore, as long as there is disclosure of structure, the written description in the 529 Patent need not explicitly describe the structure; rather, disclosure of the structure may be implicit so long as it meets the above test. *See id.* at 1380. However, the Court must bear in mind that the proper “inquiry is whether one of skill in the art would understand the specification itself to disclose a structure, not simply whether that person

would be capable of implementing a structure.” *Biomedino*, 490 F.3d at 953. In other words, if no structure is disclosed, it is not sufficient that a person of skill in the art could implement a structure. *See id.*

As established *supra*, the claimed function is “providing [or (able to provide)] a constant or variable magnitude DC voltage between the DC input terminals.” Thus, the description in the 529 Patent must disclose a structure, either explicitly or implicitly, such that one with skill in the art would understand the disclosure to connote a structure, that performs this function. *See Atmel*, 198 F.3d at 1382. The parties do not dispute that the 529 Patent does not explicitly disclose the structure of a rectifier. Therefore, the issue turns on whether the specification in the 529 Patent implicitly discloses a rectifier as the structure to perform the above specified function.

The parties dispute this point. Lighting Ballast directs the Court to several references in the 529 Patent to drawing power from a power line source and to DC supply voltages. Pl.’s Opening Br. 16, ECF No. 84. Lighting Ballast, relying on testimony from Bobel and Dr. Roberts, argues that “the only structure that can perform such a function in a lighting ballast is a rectifier, which is implicit, but clear, from the specification’s multiple references to ‘a power line source’ and ‘a DC supply voltage.’” *Id.* Otherwise, Lighting Ballast does not point the Court to any language in the 529 Patent that discloses a structure. *See id.* Defendant, Universal, argues that the description in the 529 Patent does not disclose a corresponding structure, and that Lighting Ballast

may not use expert testimony to suggest a structure that was not disclosed in the patent. Def.'s Resp. Br. 4-6, ECF No. 89.

Lighting Ballast relies on language from *Atmel*, where the court states that “disclosure of structure corresponding to a means-plus-function limitation may be implicit in the written description if it would have been clear to those skilled in the art what structure must perform the function recited in the means-plus-function limitation.” 198 F.3d at 1380. However, this statement must be understood in its proper context. As noted *supra*, the central issue in the *Atmel* opinion was not whether there was a disclosure of a structure, the first step in the analysis, but whether the alleged disclosure would connote a structure to one skilled in the art. *See id.* at 1380-82. The appellant in *Atmel* argued that a citation to a particular article in the patent’s specification, which included the article’s title, was a sufficient disclosure of the structure at issue such that a person of skill in the art would understand the nature of the corresponding structure. *Id.* at 1380-81 (“Atmel specifically directs us to the testimony of its expert ...that the mere mention of the *title* of the ...article in the specification is sufficient for one skilled in the art to envision the structures disclosed in that article”) (emphasis in original). The Federal Circuit agreed, holding that “interpretation of what is disclosed must be made in light of the knowledge of one skilled in the art.” *Id.* at 1380. Therefore, when the *Atmel* court made the statement above, relied on by Lighting Ballast, the court was specifically discussing the second step of the implied-disclosure analysis, the sufficiency of the alleged disclosure.

It is also worth noting that this language was itself used in a quotation in the *Atmel* opinion. *See id.* at 1380. The *Atmel* court was quoting from what were proposed supplemental guidelines from the PTO which were themselves adopted from the Federal Circuit’s *In re Dossel* opinion. *Id.*; *see In re Dossel*, 115 F.3d 942 (Fed. Cir. 1997). In *Dossel*, the court, like the *Atmel* court, was discussing the sufficiency of the the alleged disclosure of the structure corresponding to a means-plus-function limitation in a claim. *Id.* at 946. The specific structure at issue was a computer, however, neither the written specification nor the claims ever used the word computer. *Id.* Rather the description described the structure of a computer, by its functions—”clearly, a unit which receives digital data, performs complex mathematical computations and outputs the results to a display must be implemented by or on a general or special purpose computer.” *Id.* at 946-47. The *Dossel* court then stated that this conclusion was bolstered by the fact that “in the medical imaging field, it is well within the realm of common experience that computers are used to generate images for display by mathematically processing digital input.” *Id.* at 947. Thus, it is clear that the appellant in *Dossel* had overcome the initial hurdle of pointing to a disclosure of the structure in the patent’s specification, and the court’s focus was considering whether the disclosure was adequate.³

³ Plaintiff does not point the Court to any language in the specification of the 529 Patent describing the function of a rectifier.

Finally, in *Biomedino*, the Federal Circuit addressed the substance of Lightning Ballast’s argument. 490 F.3d at 952-53. In *Biomedino*, the court considered the claim limitation “control means” and whether the patent’s specification disclosed a corresponding structure. *Id.* at 948-49. The only references in the specification to the “control means” were a box labeled “Control” in a diagram of the invention and a statement that the regeneration process “may be controlled automatically by known differential pressure, valving and control equipment.” *Id.* at 949. The appellant relied on expert testimony to show that from the above statement, one skilled in the art would be able to identify a structure.⁴ *Id.* at 951. The court rejected this argument, stating that the proper inquiry was not whether a person skilled in the art could implement a structure but whether that person would *understand the specification to disclose a structure*. *Id.* at 953 (emphasis added). Thus, the *Biomedino* court held that the “bare statement that known techniques or methods can be used does not disclose structure.” *Id.*

Here, Lighting Ballast fails to point the Court to any language in the 529 Patent that discloses either implicitly or explicitly the structure of a rectifier. Rather, Lighting Ballast attempts to use testimony from the inventor, Bobel, and an expert, Dr. Roberts, that they understand that the invention covered by the 529 Patent would require a rectifier. In so doing, Lighting Ballast finds itself in same position as the

⁴ Similar to Dr. Roberts’s argument in this case, *see supra* n2 and *infra* n6.

appellant in *Biomedino*, arguing that one skilled in the art could implement a structure. Lighting Ballast relies on the testimony of Bobel and Dr. Roberts, that they, as persons skilled in the art of lighting ballasts, understand that when the specification speaks of using a DC supply voltage, where power is supplied from a power line source, which they know to supply AC voltage, that a structure to convert AC power to DC power would be required. Furthermore, since the invention is a lighting ballast, Dr. Roberts testifies, a rectifier would be the structure used in the vast majority of applications. While all of this may be true, it ignores the proper inquiry laid out by the Federal Circuit in *Atmel* and further explained in *Biomedino*. First, Lighting Ballast must point the Court to the disclosure of a corresponding structure in the specification, and only then, may the Court evaluate the sufficiency of the disclosure and determine whether one skilled in the art would understand the disclosure to suggest the corresponding structure. See *Atmel*, 198 F.3d at 1381.

Since Lighting Ballast is unable to point the Court to language in the specification disclosing a structure, it seeks to rely on expert testimony that one skilled in the art is capable of implementing a structure after reading the specification.⁵ However, the Federal Circuit, in *Biomedino*, expressly forbids such use of

⁵ The Court notes that in its briefing, Plaintiff admits that the 529 Patent focuses on the energy output rather than the energy input side of the ballast. Pl.'s Opening Br. Cl. Const. 4, n.4, ECF No. 84. This may explain the absence of any disclosure of a structure to match the "voltage source means" limitation in Claims 1 and 18.

expert testimony. *Biomedino*, 490 F.3d at 953. At most, the language in the specification to which Lighting Ballast directs the Court requires an inference on the part of one skilled in the art who has read the 529 Patent. The references to a power line source and a DC supply voltage do not connote structure; rather they require the person skilled in the art to implement one.⁶ Therefore, the Court finds that Plaintiff, Lighting Ballast, has failed to identify a structure in the 529 Patent's specification that corresponds to the "voltage source means" limitation, contrary to the requirements of 35 U.S.C. § 112, ¶ 6.

IV. CONCLUSION

A determination that a claim is indefinite is a question of law and is part of the court's duty as the construer of patent claims. *Personalized Media Commc'ns*, 161 F.3d at 705. It is well-established that the determination of whether a claim is invalid as indefinite depends on whether one skilled in the art would understand the scope of the claim at issue when it is read in light of the specification. *North Am. Vaccine, Inc. v. American Cyanamid Co.*, 7 F.3d 1571, 1579 (Fed. Cir. 1993). Where one employs means-plus-function language in a claim, one must set forth, in the specification, an adequate disclosure showing what is meant by the claim language. *Atmel*, 198 F.3d

⁶ Dr. Roberts only bolsters this conclusion in his declaration when he states: "one skilled in the art would immediately *ascertain and implement* the structure necessary to supply the DC supply voltage, based on the particular application of the ballast in question." Pl.'s Opening App. Ex. 3 at 8, ECF No. 84-7 (emphasis added); see also n2 *supra*.

at 1378-79 (*quoting In re Donaldson Co., Inc.*, 16 F.3d 1189, 1195 (Fed. Cir. 1994)). If an applicant fails to set forth an adequate disclosure of the structure intended by the claim language, the applicant fails to “particularly point out and distinctly claim the invention,” as required by section 112, ¶ 2. *Id.* at 1379. In order for a claim to meet the particularity requirements of section 112, ¶ 2, the corresponding structure of a means-plus-function limitation must be disclosed in the written specification. *Id.* at 1382. Where a patent specification fails to disclose a corresponding structure for a means-plus-function limitation in a claim, that claim is invalid for indefiniteness under section 112, ¶ 2. *See id;* *see also Default Proof Credit Card Sys., Inc. v. Home Depot U.S.A., Inc.*, 412 F.3d 1291, 1302-03 (Fed Cir. 2005)..

The Court has held that the “voltage source means” limitation, present in both Claims 1 and 18, is a means-plus-function limitation, subject to construction under section 112, ¶ 6. Applying section 112, ¶ 6 the Court found that the specification of the 529 Patent fails to disclose a corresponding structure for the “voltage source means.” Therefore, since the 529 Patent fails to disclose a structure for a means-plus-function limitation in a claim, those claims, Claims 1 and 18, are indefinite under section 112, ¶ 2 because they fail to particularly point out and distinctly claim the subject matter which the applicant regards as his invention. *See Atmel*, 198 F.3d at 1379; *Default Proof Credit Sys.*, 412 F.3d at 1302-03. Accordingly, the Court finds that Claims 1 and 18 are invalid for indefiniteness and may not be enforced by Lighting Ballast against Universal.

While the parties present other claim terms and limitations from Claims 1 and 18 for construction the Court need not reach them due to the invalidity of both claims.

Signed this **19th** day of **August, 2010**.

Reed O'Connor
UNITED STATES DISTRICT
JUDGE

APPENDIX H

NOTE: This order is nonprecedential.

- (1) **United States Court of Appeals**
(2) **for the Federal Circuit**

-
- (3) **LIGHTING BALLAST CONTROL LLC,**
Plaintiff-Appellee

(4) **v.**

- (5) **PHILIPS ELECTRONICS NORTH
AMERICA
CORPORATION,**
Defendant

- (6) **UNIVERSAL LIGHTING
TECHNOLOGIES, INC.,**
Defendant-Appellant

2012-1014

Appeal from the United States District Court
for the Northern District of Texas in No. 09-CV-
0029, Judge Reed O'Connor.

ON PETITION FOR REHEARING EN BANC

Before PROST, *Chief Judge*, NEWMAN, LOURIE, DYK,
MOORE, O'MALLEY, REYNA, WALLACH, TARANTO,
HUGHES, and STOLL, *Circuit Judges*.*

- PER CURIAM.

O R D E R

Appellant Universal Lighting Technologies, Inc. filed a petition for rehearing en banc. The petition was first referred as a petition for rehearing to the panel that heard the appeal, and thereafter the petition for rehearing en banc was referred to the circuit judges who are in regular active service.

Upon consideration thereof,

IT IS ORDERED THAT:

The petition for panel rehearing is denied.

The petition for rehearing en banc is denied.

The mandate of the court will issue on September 18, 2015.

FOR THE COURT

September 11, 2015
Date

/s/ Daniel E. O'Toole
Daniel E. O'Toole
Clerk of Court

* Circuit Judge Chen did not participate.

APPENDIX I

IN THE UNITED STATES DISTRICT COURT FOR
THE NORTHERN DISTRICT OF TEXAS WICHITA
FALLS DIVISION

LIGHTING BALLAST	§	
CONTROL LLC,	§	
	§	
Plaintiff,	§	
	§	
v.	§	CIVIL ACTION
	§	NO. 7:09-CV-00029-O
	§	
PHILIPS ELECTRONICS	§	JURY TRIAL
NORTH AMERICA	§	DEMANDED
CORPORATION, and	§	
UNIVERSAL LIGHTING	§	
TECHNOLOGIES, INC.,	§	
	§	
Defendants.	§	

**DECLARATION OF VICTOR D. ROBERTS,
Ph.D IN SUPPORT OF PLAINTIFF'S OPENING
BRIEF ON CLAIM CONSTRUCTION**

I, Victor D. Roberts, declare as follows:

1. My name is Victor D. Roberts. I am over 18 years of age and competent to testify to the facts stated herein. I have personal knowledge of the facts stated herein, and they are true and correct.

2. I have an extensive background and experience in electrical engineering, applied physics, power electronics, lighting ballast design, and various other types of lighting-related technologies. My Curriculum Vitae is attached hereto. It includes a list of patents on which I am a named inventor, as well as a list of publications I have authored or co-authored and a list of Key Conference Presentations in which I was a speaker or presenter.

3. I received a Bachelor of Science in Electrical Engineering from the University of Maryland in 1964. In 1967, I received the degree of Master of Science in Engineering, with a major in electrical engineering from the Case Western Reserve University. In 1972, I received a Ph.D (Doctor of Philosophy) degree with a major in electrical engineering and applied physics from the Case Western Reserve University.

4. I have extensive professional and work experience as an electrical engineer. In the summer of 1964, I worked as an electrical engineer at the NASA Goddard Space Flight Center.

5. From 1964-1971, I attended classes and worked as a teaching and research assistant at the Case Western Reserve University, in the Department of Electrical Engineering and Applied Physics. While there, I taught a course in electromagnetic theory.

6. From 1971-1978, I worked as an electrical engineer for the General Electric Lighting Business Group. While there, I worked in various capacities and on various efforts to improve lamp and

electronic ballast development and design. From 1976-1978, I held the title of Technical Leader in the Advance Engineering Section of Fluorescent Lamp Department.

7. From 1978-1999, I worked as an electrical engineer for the General Electric Research and Development Center. For approximately fifteen of those years, 1981-1995, I worked as Manager of the Lighting Systems Program. In that capacity, I supervised a staff of 10-17 individuals, many of whom had a Ph.D. We worked on advanced lighting systems, fluorescent lamps and other low and high pressure discharge lamps, and electronic ballasts and controls to operate those lamps. I managed a total budget of \$4 Million.

8. From 1999-2002, I was an Adjunct Assistant Professor in the Lighting Research Center at the Rensselaer Polytechnic Institute in Troy, New York. During part of that time, from 2000-2001; I was the Senior Lighting Technologist and an Adjunct Assistant Professor. In my capacity as the Senior Lighting Technologist, I supervised the evaluation of new lighting technology, including a new class of “universal” ballasts for compact fluorescent lamps. I helped establish the foundation for the first high frequency reference ballast facility at the Lighting Research Center. I also taught a Master in Science course focused on lighting systems for developing countries.

9. From November 2000 to the present, I have worked as a consultant for my own company, Roberts Research and Consulting. In that capacity, I

have served as a lighting technology consultant and as an expert witness, with a focus on the development, evaluation, and application of lamp ballasts, lighting controls, and associated intellectual property. I have served as an expert and expert witness in lamp and lighting-related product performance cases, patent infringement cases, and other similar cases. I have also evaluated new lighting technology for private companies and governmental agencies, including the U.S. Department of Energy. I have been the President of Roberts Research and Consulting, Inc. since its incorporation in May 2002.

10. I am a named inventor on over thirty patents. Of those, thirty are directed towards lighting technology, including a dozen or so directed specifically to electronic lighting ballasts. I have authored or co-authored many technical papers and articles about lighting technology, including many that deal specifically with electronic lighting ballast technology, and I have been a speaker or presenter at numerous conference presentations, many of which were directed towards lighting technology.

11. I have been retained by the Fort Worth, Texas, law firm of Friedman, Suder & Cooke, on behalf of its client Lighting Ballast Control LLC (“LBC”), to opine on technical aspects of the case styled *Lighting Ballast Control LLC v. Philips Electronics North America Corporation and Universal Lighting Technologies, Inc.*, Civil Action No. 7:09-CV-00029-O, which is pending in the in the United States District Court, Northern District of Texas, Wichita Falls Division.

12. The only opinions expressed herein relate to the parties' ongoing claim construction proceedings and, in particular, the parties' dispute regarding the "voltage source" limitation recited in Claims 1 and 18 of U.S. Patent No. 5,436,529 (the "529 Patent"). I reserve the right to offer further expert opinions, in connection with the claim construction proceedings or otherwise, if asked to do so. I specifically reserve the right to offer rebuttal opinions to any or all the claim construction arguments raised in Defendants' opening claim construction brief.

13. I have reviewed certain documents in this case provided by counsel for LBC, including but not limited to the following:

- The '529 Patent;
- Deposition transcript of Mr. Andrew Bobel;
- The parties' Joint Claim Construction Statement, including the parties' proposed claim constructions attached thereto as Exhibits A and B.
- A draft of Plaintiff's Opening Brief on Claim Construction.

14. In light of my educational background, as a student, research assistant, teacher, and professor, and in light of my extensive professional and academic experience in lighting technology, including but not limited to advanced lighting ballast design, research, and development, I consider myself

to be one skilled in the art as it pertains to the invention taught in the '529 Patent.

15. I am not an attorney, but I have a general understanding of the law regarding claim construction. For example, I have reviewed the following principles of claim construction, some or all of which may apply in this case:

- Claim construction is the process of giving proper meaning to the claim language, and, ultimately, defining the scope of protection;
- The purpose of claim construction is to understand and explain, but not to change, the scope of the claims;
- The goal in claim construction is to help the fact-finder, typically a lay jury, understand the claims;
- Claim terms should be given their ordinary and customary meaning as understood by a person of ordinary skill in the art as of the effective filing date of the patent application. Notwithstanding the ordinary meaning of a term, the patentee is free to be his own lexicographer, so long as any special definition given to a word or phrase is clearly set forth in the specification;
- 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;

- A means-plus-function limitation is a special type of claim format in which the claim does not recite a definite structure but instead recites a non-specific structure (like “means” or “mechanism”), for performing a claimed function. Such limitations are governed by 35 U.S.C. § 112, Paragraph 6. Means-plus-function claiming applies only to purely functional limitations that do not provide the structure that performs the recited function.
- Claim language that further defines a generic term, such as nouns or adjectival qualifications that appear before or after the word “means,” may connote or suggest sufficient structure to avoid § 112, P 6 treatment.
- Once the court has determined that a limitation is subject to treatment under § 112, P 6, then the court must: (a) identify the claimed function; and (b) search the specification to identify the structure corresponding to the identified function. Disclosure of structure corresponding to a means-plus-function limitation may be implicit in the written description if it would have been clear to one skilled in the art what structure must perform the function recited in the means-plus-function limitation.
- Whether a claim is invalid under § 112, P 2, which relates to “indefiniteness,” requires a determination of whether

those skilled in the art would understand what is claimed when the claim is read in light of the specification.

16. I have carefully reviewed the '529 Patent, including the specification, the Figures, and the claims.

17. In forming my expert opinions, I considered, among other things, some basic principles about lighting ballast technology. The teachings of the '529 Patent are directed primarily towards how to regulate power and how to start, shut down, and restart the ballast after it has received a DC supply voltage at its DC input terminals. In other words, the invention is directed primarily to the "energy output" side of lighting ballasts. However, in forming my expert opinions, I also considered, among other things, some basic principles about power supply, or the "energy input" side of lighting ballasts. A brief discussion of some of these basic principles, set in the context of the '529 Patent, is set forth below.

18. A ballast is a device for starting and regulating florescent lamps and other types of lamps. The ballast helps start the device by providing the proper voltage to light the lamp and regulates the electric current flowing through the lamp. The ballasts at issue in this litigation are electronic ballasts designed to power gas discharge having heatable filaments, including "fluorescent" lamps. An electronic ballast needs power to operate. During normal operation, both AC and DC are flowing through various portions of the ballast. Power (measured in watts) is a combination of voltage

(measured in volts) and current (measured in amps). Alternating current power, or “AC” power, is the type of power available at an electrical outlet in a home or office building, which, in turn, typically traces its source to a power plant. Direct current power, or “DC” power, is the type of power provided by a battery. In the invention of the ‘529 Patent, and in most electronic ballasts that I have studied or examined, the ballast uses both AC and DC during normal operation. The ballast described in the preferred embodiment of the ‘529 Patent receives AC from “a power line source,” such as an electrical outlet in an office building, converts it to DC for use during the initial start-up phase, and then, upon receipt of a “DC control signal” by the ballast’s control circuit, generates higher frequency AC power for use in preheating the lamp filaments and for powering the lamps.

19. In light of some of the important principles taught or shown in the Figures of the ‘529 Patent, it is necessary to have a proper understanding of schematic diagrams. A schematic diagram is “[a] diagram that shows, by means of graphic symbols, the electrical connections and functions of a specific circuit arrangement. The schematic diagram facilitates tracing the circuit and its functions without regard to the actual physical size, shape, or location of the component device or parts.” *See* The New IEEE Standard Dictionary of Electrical and Electronics Terms, 5th ed. (1993) (def. of “schematic diagram”). In other words, the schematic diagrams used by engineers, like the one shown at Figure 1 of the ‘529 Patent, are graphic representations that correspond to an actual or

proposed circuit. They are logical and functional “maps” that communicate to engineers the manner in which the components should be interconnected. They do not necessarily represent the actual, physical placement of the components.

20. With respect to Claims 1 and 18 of the ‘529 Patent, I have reviewed the “voltage source” limitation, which reads as follows: “voltage source means providing a constant or variable magnitude DC voltage between the DC input terminals.”

21. Based on (1) my education, background, and experience, (2) the materials I have reviewed in this case, and (3) my understanding as one skilled in the art, I have the following opinions about the “voltage source” limitation:

22. The “voltage source” limitation connotes, or suggests, to me, and would connote to anyone skilled in the art, the structure of a rectifier – with its input terminals connected to an AC power line and with its output terminals connected to the DC input terminals. In other words, the only way for a lighting ballast to convert AC (from a “power line source” such as a wall outlet or other similar AC power source in a home or office) into DC (for use as the “DC supply voltage”) is through a rectifier. In the vast majority of applications, including nearly all common applications for residential and commercial uses, the ballast receives its power from an AC power source, and that AC power is converted into DC power through the use of a rectifier. A battery could likewise provide the necessary DC supply voltage described in the patent, but in reality, such an arrangement would

be used if very few applications. In either case, one skilled in the art would immediately ascertain and implement the structure necessary to supply the DC supply voltage, based on the particular application of the ballast in question. Stated otherwise, the “voltage source” limitation, when read in the context of the specification and claims, suggests to me a sufficient structure, or class of structures, namely: a rectifier (if converting AC from a “power line source” to DC for a “DC supply voltage”) or, in a very few specialized applications, a battery (if providing the DC supply voltage directly to the DC input terminals).

23. If the Court determines that § 112, P 6 applies, then the specification discloses corresponding structure – namely, a rectifier – to perform the function of converting AC “from a power line source” (Col. 2, ln. 5-6; Col. 2, ln. 42) to DC for use as “a DC supply voltage” (Col. 3, ln. 6; Col. 7, ln. 48-49). The only structure in a lighting ballast that can perform such a function is a rectifier, which is implicit, but clear, from the specification’s multiple references to “a power line source” and “a DC supply voltage.” The patent’s teaching on this point is not ambiguous to me, and would not be ambiguous to anyone skilled in the art. The patent clearly links this disclosed structure (a rectifier whose output terminals are connected to the DC input terminals) to the function (converting AC to DC so as to provide a DC supply voltage at the DC input terminals). *See, e.g.*, Col. 2, ln. 5-10, 41-48; Col. 3, ln. 5-6; Col. 7, ln. 48-49; Col. 11, ln. 20-28, 54-56; and Col. 14, ln. 24-26. Again, in the vast majority of applications, including nearly all common applications for residential and commercial uses, the ballast receives its power from an AC power

source, and that AC power is converted into DC power through the use of a rectifier.

I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct.

Executed this 6th day of May, 2010 in Burnt Hills, New York.

Victor D. Roberts, Ph.D

VICTOR D. ROBERTS
President, Roberts Research & Consulting, Inc.
3 Garrison Road
Burnt Hills, NY 12027
518-399-4952

EXPERIENCE SUMMARY:

PhD in Electrical Engineering and Applied Physics. Over 44 years experience conducting research & development in electrical engineering, laser physics, plasma physics, discharge physics and related disciplines, including more than 37 years experience conducting and managing research & development on high efficacy fluorescent, compact fluorescent and metal halide lamps, low-mercury and mercury-free fluorescent lamps, electrodeless induction-coupled fluorescent and metal halide lamps, capacitively- and cavity-coupled sulfur lamps, selective emitters for high efficacy incandescent lamps, electronic ballasts and drivers for conventional and electrodeless fluorescent and HID lamps, and electronic power supplies for LED light sources. Co-developer of the first retrofit energy-saving fluorescent lamp. Pioneer in the development of electrodeless fluorescent and metal halide lamps. Established and lead teams at GE Research and Development Center that developed the Genura® lamp, world's first integrally-ballasted electrodeless fluorescent lamp and an electrodeless metal halide lamp that remains the highest efficacy white light source ever demonstrated. 30 U.S. Patents and

numerous foreign patents on advanced light sources and ballasts, plus one U.S. Patent on advanced appliance controls.

Since 2000, lighting technology consultant, expert and expert witness focused on the development, evaluation and application of light sources, lamp ballasts, LED drivers, luminaires, lighting controls, and associated intellectual property. Litigation activities as both expert and expert witness have included lighting-related product performance, product liability, breach of contract and patent infringement cases. These cases have been decided through trial, arbitration and mediation. Lighting technology evaluation activities include assessment of lighting-related patents for novelty and technical accuracy, review of research & development proposals for new energy-efficient lighting systems presented to the Office of Energy Efficiency and Renewable Energy of the U.S. Department of Energy, plus dissemination of information related to the operation, characteristics and use of the latest lighting technology via technical papers, handbooks and targeted invited presentations at conferences and private companies. Product development activities include new energy efficient light sources and systems for general lighting plus lighting systems for novel applications, such as light-activated biomedical processes. Clients include lamp, ballast and fixture companies ranging from startups to global corporations, energy technology

information services, government agencies, legal firms and venture capital firms.

EDUCATION:

Doctor of Philosophy, Major: Electrical Engineering and Applied Physics
Case Western Reserve University, 1967-1972
Thesis topic: Resonant Wave-Wave Mixing in a Magnetoactive Plasma

Master of Science in Engineering, Major: Electrical Engineering
Case Western Reserve University, 1964-1967
Thesis topic: Noise Mechanisms in Helium-Neon Lasers

Bachelor of Science in Electrical Engineering
University of Maryland, 1961-1964

PROFESSIONAL EMPLOYMENT:

November 2000 to present, Roberts Research & Consulting, Inc.

Lighting technology consultant, expert and expert witness focused on the development, evaluation and application of light sources, lamp ballasts, LED drivers, luminaires, lighting controls, and associated intellectual property. Served as expert and expert witness in lamp and lighting-related product performance, breach of contract, patent infringement, and product liability cases, including lamp-related fires. Evaluated new lighting technology for private companies and government agencies, including the US Department

of Energy. President of Roberts Research & Consulting, Inc. since its incorporation in May 2002.

January 2000 to August 2001, Lighting Research Center, Rensselaer Polytechnic Institute.

Senior Lighting Technologist and Adjunct Assistant Professor of Architecture. Evaluated new lighting technology, including solid state lighting, electrodeless lamps and improved emissivity filaments for incandescent lamps. Evaluated new class of “universal” ballasts for compact fluorescent lamps. Lead LRC portion of program to develop dedicated portable fixture for compact fluorescent lamps. Established foundation for the first high frequency reference ballast facility at the LRC. Taught Master of Science in Lighting course focused on development of lighting systems for developing countries.

July 1, 1999 to June 30, 2002, Lighting Research Center, Rensselaer Polytechnic Institute. Adjunct Assistant Professor of Architecture - Lighting Research Center.

January, 1978-November, 1999, General Electric Research and Development Center Physicist, Electrical Engineer and Manager, Lighting Systems

Program (1981-1995). Supervised work of 10 to 17 staff up to Ph.D. level working on advanced lighting systems, including metal halide and high pressure sodium & cesium discharge lamps, fluorescent lamps and other low pressure discharge lamps, and electronic ballasts & controls to operate these lamps. Managed total budget of \$4 million. Major accomplishments of team include: Genura® electrodeless fluorescent lamp, Multilox electrodeless metal halide lamp, low-mercury and mercury-free fluorescent lamps, long life cesium flash lamps for optically triggered thyristors in HVDC converter stations, computer models of low and high pressure lamps (lamp CAE tools), advanced electronic ballasts for low and high pressure lamps, high performance lamps & ballasts for aircraft displays, and electronic sensor & control systems for advanced home appliance products.

September 1971-January 1978, General Electric Lighting Business Group.

Electrical Engineer and Technical Leader (1976-1978) in Advance Engineering Section of Fluorescent Lamp Department. Worked on lamp and electronic ballast development programs, including Wattmiser® energy-saving retrofit lamp program and electrodeless fluorescent lamp and electronic ballast program. Liaison

between GE Lighting and GE Research and Development Center for electronic ballast programs and electrodeless fluorescent lamp program. Developed high accuracy, high frequency electronic wattmeter for measurement of performance of fluorescent lamps at high frequency.

September 1964-August 1971, Case Western Reserve University

Teaching and Research Assistant, Department of Electrical Engineering and Applied Physics, Case Institute of Technology. Worked on development of gas phase and solid state lasers. Conducted research in areas of noise mechanisms in He-Ne lasers and wave mixing in magnetoactive plasmas. Taught course in electromagnetic theory.

Summer 1964, NASA Goddard Space Flight Center

Electrical Engineer, Sounding Rocket Branch. Responsible for the design of a portion of a digital data telemetry system.

PATENTS: Thirty U.S. patents issued for high performance discharge lamps, electronic ballasts and associated technology. One U.S. patent issued for advanced electric range controls. Additional patents

pending. See attached list of issued patents.

PUBLICATIONS: Twenty four external publications and key conference presentations.

AWARDS: Tau Beta Pi Honor Society (Engineering)
Eta Kappa Nu Honor Society (Electrical Engineering)
Phi Eta Sigma Honor Society (Engineering)
Ford Foundation Fellowship (1964)

PROFESSIONAL SOCIETIES:

American Physical Society
Institute of Electrical and Electronic Engineers—Senior Life Member
Illuminating Engineering Society of North America

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U.S. PATENTS - VICTOR ROBERTS

1. "Three-Level Interface Control Circuit For Electronically Ballasted Lamp" U.S. Patent #4,383,204, May 10, 1983.
2. "Fluorescent Lamp With Reduced Electromagnetic Interference" U.S. Patent #4,409,521, October 11, 1983
3. "Integrated Multi-Stage Electrical Filter" U.S. Patent #4,422,056, December 20, 1983
4. "Capacitor Structure For Integrated Multi-Stage Filter" U.S. Patent #4,427,955, January 24, 1984
5. "Amalgam Heating System For Solenoidal Electric Field Lamps" U.S. Patent #4,437,041, March 13, 1984
6. "Inter-Channel Isolation Scheme For Compact, Folded Discharge Lamps" U.S. Patent #4,454,448, June 12, 1984
7. "Resistive Lamp Ballast Re-Ignition Circuit" U.S. Patent #4,536,680, August 20, 1985
8. "Driver Circuit Controller For AC to AC Converters" U.S. Patent #4,613,795, September 23, 1986 (with AM Itani)
9. "Integrated Transformer and Inductor" U.S. Patent #4,613,841, August 23, 1986

U.S. PATENTS - VICTOR ROBERTS (CONT.)

10. "Electronic Ballast With Low Frequency AC to AC Converter" U.S. Patent #4,614,898, September 30, 1986 (with AM Itani)
11. "Drive and Control Circuits for Gate Capacitance Latch with Refresh Lamp Ballast" U.S. Patent #4,677,346, June 30, 1987 (with JC Borowiec)
12. "Operation of Standby Filament Associated with an AC Arc Discharge Lamp Ballast" U.S. Patent #4,709,188, November 24, 1987
13. "Single Conductor Power Line Communications System" U.S. Patent #4,714,912, December 22, 1987 (with JC Borowiec)
14. "Reduced Requirement Energy Storage for Load Having Non-Zero Minimum Operating Potential" U.S. Patent #4,739,225, April 19, 1988 (with MD Bloomer & G Jernakoff)
15. "High Efficacy Discharge Lamp Having Large Anodes" U.S. Patent #4,902,933, February 20, 1990
16. "Combination Lamp and Integrating Sphere for Efficiently Coupling Radiant Energy from a Gas Discharge to a Lightguide" U.S. Patent #4,950,059, August 21, 1990
17. "Starting Electrodes for HID Lamps" U.S. Patent #4,959,592, September 25, 1990 (with JM Anderson)

U.S. PATENTS - VICTOR ROBERTS (CONT.)

18. "Discharge Lamp Using Acoustic Resonant Oscillations to Ensure High Efficiency" U.S. Patent #4,983,889, January 8, 1991
19. "Starting Aid for an Electrodeless High Intensity Discharge Lamp" U.S. Patent #5,047,693, September 10, 1991 (with SA El-Hamamsy)
20. "Starting Aid for an Electrodeless High Intensity Discharge Lamp" U.S. Patent #5,084,654, January 28, 1992 (with SA El-Hamamsy)
21. "Gas Probe Starter for an Electrodeless High Intensity Discharge Lamp" U.S. Patent #5,095,249, March 10, 1992 (with JT Dakin, ME Duffy & RA Heindl)
22. "Feedback System for Stabilizing the Arc Discharge of a High Intensity Discharge Lamp" U.S. Patent #5,134,345, July 28, 1992 (with SA El-Hamamsy)
23. "Use of Silicon to Extend the Useful Life of Metal Halide Discharge Lamps" U.S. Patent #5,136,214, August 4, 1992 (with DA Doughty & JL Myers)
24. "Magnetically Tunable Starting Circuit for an Electrodeless High Intensity Discharge Lamp" U.S. Patent #5,175,476, December 29, 1992 (with JM Anderson, GA Farrall, & JP Cocoma)

U.S. PATENTS - VICTOR ROBERTS (CONT.)

25. "Method of Dosing a Discharge Lamp with Mercury"
U.S. Patent #5,213,537, May 25, 1993 (with JT Dakin, WR Champman & BF Fenoglio)
26. "Combination Lamp and Integrating Sphere for Efficiently Coupling Radiant Energy from a Gas Discharge to a Lightguide" U.S. Patent #Re. 34,492 (reissue of #4,950,059)
27. "Electrostatic Shield to Reduce Wall Damage in an Electrodeless High Intensity Discharge Lamp"
U.S. Patent #5,438,235, August 1, 1995 (with TJ Sommerer, HR Chang, A Klein, HL Witting & GA Farrall)
28. "Virtual Fixture for Reducing Electromagnetic Interaction Between an Electrodeless Lamp and a Metallic Fixture." U.S. Patent #5,461,284, October 24, 1995. (with El-Hamamsy, Taubert & Mieskoski)
29. "Systematic Configuration of Compact Fluorescent Lamps for Operation in a Single-Type Ballast" U.S. Patent #5,834,884, November 10, 1998 (with CJ Harsa, DJ Kachmarik and S Vamvakas)
30. "Integrated Starting and Running Amalgam Assembly for an Electrodeless Fluorescent Lamp"
U.S. Patent #5,847,508, December 8, 1998. (with JC Borowiec and JP Cocoma)

U.S. PATENTS - VICTOR ROBERTS (CONT.)

31. "Boil Dry detection in Cooking Appliances" U.S. Patent #6,469,282, October 22, 2002.

**PUBLICATIONS and KEY CONFERENCE
PRESENTATIONS - VICTOR ROBERTS**

“Resonant Wave-Wave Mixing of Electron Cyclotron Harmonic Waves and Ion Acoustic Waves”, V.D. Roberts, & S. Gruber, Bull. Am. Phys. Soc., 16, 1273 (1971).

“Capacitance of Twisted Wire Trims Fast Op-Amps”, V.D. Roberts, Electronics, 46, #14, 109 (1973)

“Phase Front Structure of Mixed Waves in a Magnetized Plasma”, V.D. Roberts, S.A. Muelder, & S. Gruber, Plasma Physics, 16, 1069 (1974)

“Starting Behavior of Fluorescent Lamps with Internal Starting Aids”, R.S. Bergman, E.E. Hammer, & V.D. Roberts, J. of the Illum. Eng. Soc., 5, #3, 131 (1976)

“Measurement of Power Delivered to Rapid Start Fluorescent Lamps and Other Multi-Port Devices”, V.D. Roberts, J. of the Illum. Eng. Soc., 10, #3 (1981)

“Reduction of AM Radio Interference Through Control of Radiated Electric Field”, V.D. Roberts, Proceedings of the Lighting-Electromagnetic Compatibility Conference, Lawrence Berkeley Laboratories, March 18-19, 1982, LBL-15199.

“Mercury Isotopes and the Fluorescent Lamp”, V.D. Roberts & J.H. Ingold, 1984 Annual Conference of the Illuminating Engineering Society, St. Louis.

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Advanced Study Institute-Radiative Processes in Discharge Plasmas Conference, Pitlochry (Perthshire) Scotland, June 23 – July 5, 1985.

“Atomic Transition Probabilities for ScI and ScII, E.A. Den Hartog, G.C. Marsden, J.E. Lawler, J.T. Dakin and V.D. Roberts, Thirty-Ninth Annual Gaseous Electronics Conference, October 7-10, 1986, Madison, Wisconsin

“Angle Dependent Emittance of 245nm Radiation from Hg-Ar Discharges in Magnetic Fields”, V.D. Roberts, International Conference on Phenomena in Ionized Gases, July 13-17, 1987, University College of Swansea, Wales.

“Radiative Lifetimes of Even- and Odd-Parity Levels in ScI and ScII”, G.C. Marsden, E.A. Den Hartog, J.E. Lawler, J.T. Dakin and V.D. Roberts, J. Opt. Soc. Am. B, 5, 606 (1988)

“Inductively Coupled HID Lighting System”, C.N. Stewart, M.E. Duffy, J.T. Dakin, V.D. Roberts, S.A. El-Hamamsy, H.L. Witting, A. Inouye, K Shimizu and K. Araki, 6th International Symposium on the Science and Technology of Light Sources, August 30 - September 3, 1992, Budapest.

“Solid State Lighting for General Lighting Applications”, V.D. Roberts, 13th Annual E Source Members’ Forum, November 13 - 16, 2000, Colorado Springs, Colorado.

“High Efficiency Lighting, What Lies Ahead?”, Victor Roberts, 2nd Annual E Source Emerging Technology Summit, September 11, 2001, Westminster, Colorado.

“Radio-Frequency Lighting”, Victor D. Roberts, McGraw-Hill Yearbook of Science & Technology 2003, The McGraw-Hill Companies, Inc., 2003, pp 349 - 352.

“In Situ Measurement of Ferrite Temperature and B_{sat} in Induction-Coupled Electrodeless Fluorescent Lamps,” Victor D. Roberts, Proceedings of the Tenth International Symposium on the Science and Technology of Light Sources, Toulouse, France, July 18 - 22, 2004, Georges Zissis, ed., Institute of Physics Conference Series Number 182, IoP Publishing, Bristol and Philadelphia, ISBN 0 7503 1007 3, pp 275 - 276.

“Solid State Lighting: Status & Future Directions,” Victor Roberts, 17th Annual E Source Members Forum, November 9 - 12, 2004, Colorado Springs, Colorado

“Incoherent Sources: Lamps,” V Roberts, Encyclopedia of Modern Optics, edited by Robert D. Guenther, Duncan G. Steel and Leopold Bayvel, Elsevier, Oxford, 2004. ISBN 0-12-227600-0, Volume 2, pp 208 - 217.

“E Source Technology Atlas Series, Volume 1, Lighting,” Editors: Victor Roberts and Ira Krepchin, Platts, a division of The McGraw-Hill Companies Inc., 2005, ISBN 1-58167-002-8.

“Solid State Light Sources: an Energy Conservation Perspective,” Victor Roberts 19th Annual E Source Forum, October 3 - 6, 2006, Boulder, Colorado.

“High Frequency Efficacy of Metal Halide Lamps.” Victor D. Roberts, Proceedings of the 11th International Symposium on the Science and Technology of Light Sources, Shanghai, China, May 20th – 24th, 2007, M.Q Liu & R. Devonshire, Ed., ISBN 987-0-9555445-1-4.

“Evaluating LED Luminaires and Replacement Lamps,” Victor D. Roberts, 20th Annual E Source Forum, September 25 – 28, 2007, Boulder, Colorado.

“So, You’re Thinking of Converting to LEDs?,” Victor D. Roberts, GovEnergy 2008, August 3 – 6, Phoenix, AZ.