IN THE UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF ILLINOIS
EASTERN DIVISION

ANDREZJ BOBEL,	)	
	)	
Plaintiff,	)	
	)	
v.	)	Case No. 12-cv-5346
	)	
MAXLITE, INC. f/k/a SK AMERICA, INC.,	)	
	)	
Defendant.	)	

MEMORANDUM OPINION AND ORDER

AMY J. ST. EVE, District Court Judge:

The parties in this patent infringement case dispute the construction of five terms in the patent-in-suit. After reviewing the parties' respective submissions and conducting a *Markman* hearing on January 16, 2014, *see Markman v. Westview Instruments, Inc.*, 52 F.3d 967 (Fed. Cir. 1995) (*en banc*), *aff'd* 517 U.S. 370, 116 S. Ct. 1384, 134 L. Ed. 2d 577 (1996), the Court construes the disputed claim terms as set forth below.

BACKGROUND

I. Procedural History

On July 6, 2012, Plaintiff Andrejz Bobel brought this suit against Defendant MaxLite, Inc. for allegedly infringing U.S. Patent No. 5,434,480 (the "'480 patent") pertaining to an electronic device for powering a gas discharge load from a low frequency source. (R. 1, Compl.) Bobel claims that MaxLite's importation, sale, offering for sale, and use of various models of dimmable compact fluorescent lamps ("CFLs"), non-dimmable CFLs, and dimmable faux can fixtures infringes claims 9 and 10 of the '480 patent. (R. 53, Am. Compl. ¶¶ 11-15, 25, 30-31; R. 55, Am. Infringement Contentions § (ii).) Claims 9 provides:

> An electronic device for powering a gas discharge load from a low frequency power line source wherein the device draws a current proportional to a voltage of the power line, the device comprising:
>
> > a resonant oscillator circuit having a switching transistor and adapted to energize the gas discharge load;
> >
> > a power line voltage rectifier; and
> >
> > a resonant boosting circuit integrated into the power line voltage rectifier to perform boost switching and rectifying functions developed by and synchronized with a pulsating current drawn from the rectifier by the resonant oscillator circuit.

(*See* Am. Compl. at Ex. A, '480 Patent at col. 14, ll. 49-61.) Claim 10 provides:

> An inverter device for a high power factor current supply to a load, the device comprising:
>
> > rectifier means receiving an input voltage from an AC power source and providing at an output a pulsating DC voltage source having voltage of absolute peak magnitude higher than absolute peak magnitude of the rectified input voltage;
> >
> > unidirectional device means coupled to the pulsating DC voltage source;
> >
> > energy storage means receiving energy from the pulsating DC voltage source via the unidirectional device and providing at DC terminals a relatively constant DC voltage; and
> >
> > inverter circuit means connected in parallel with the energy storage means and comprising:
> >
> > > (i) semiconductor switching means receiving the constant DC voltage and operable in a periodical ON and OFF manner; and
> > >
> > > (ii) resonant oscillator means coupled to the semi-conductor switching means and providing a high frequency signal to the load.

(*Id.* at col. 14, l. 62 – col. 16, l. 8.)

On September 20, 2012, MaxLite admitted that the dimmable CFLs it purchased from certain entities infringed claim 9 of the '480 patent. (R. 30.) MaxLite, however, did not admit infringement of any claim for dimmable CFLs it purchased from Lux Electronic Products. (*Id.*) On January 25, 2013, the Court granted MaxLite summary judgment on Bobel's claims

regarding the dimmable CFLs MaxLite purchased from Lux. (*See* R. 60, Memorandum Opinion and Order.) Bobel's claims regarding MaxLite's non-dimmable CFLs and dimmable faux can fixtures remain.

II. Compact Fluorescent Lamps

Unlike traditional incandescent light bulbs, which convert heat into light, CFLs produce light by sending an electric current through ionized gas. *See generally* Department of Energy, Office of Energy Efficiency & Renewable Energy, *Fluorescent Lighting Basics* (Oct. 17, 2013), http://energy.gov/eere/energybasics/articles/fluorescent-lighting-basics (last visited Feb. 3, 2014); Office of Compliance, *Fast Facts: Compact Fluorescent Lamps* (Jan. 2009), http://www.compliance.gov/wp-content/uploads/2010/03/fastfacts_compactfluorescentlamps.pdf (last visited Feb. 3, 2014). CFLs generally consist of two main components: an electronic ballast and a gas-filled tube. The electronic ballast, which connects the gas-filled tube to the power line, regulates the current flowing through the lamp. Some CFLs have an electronic ballast permanently installed in the light fixture, in which case the bulb consists of only a gas-filled tube. *See* Department of Energy, Office of Energy Efficiency & Renewable Energy, *Fluorescent Lighting Basics*. Other CFLs, including those typically used in households, combine the electronic ballast and gas-filled tube into a single unit. *Id.*

The electronic ballast operates the same way in either setup: it converts the low-frequency alternating ("AC") voltage of a conventional power line into a high-frequency AC output to power the lamp. (*See* '480 patent at col. 1, ll. 38-44.) To do so, the electronic ballast first converts the AC input voltage to direct ("DC") voltage and then converts the DC voltage into a high-frequency AC voltage. (*See id.*) The high-frequency AC voltage excites the molecules in the gas-filled tube and causes the molecules to produce invisible ultraviolet light.

See Department of Energy, Office of Energy Efficiency & Renewable Energy, *Fluorescent Lighting Basics*. When the ultraviolet light strikes the phosphor coating on the gas-filled tube, the phosphor emits visible light. *Id.*

CFLs produce the same amount of visible light as traditional incandescent lamps but use less electrical power overall and last several times longer than incandescent lamps. *See, e.g., id.*; Office of Compliance, *Fast Facts: Compact Fluorescent Lamps*. CFLs, however, typically have a lower power factor than their incandescent counterparts. Power factor, which is the ratio of real power to apparent power, measures the effectiveness with which a device converts the electrical power drawn from the power line to useful energy. *See, e.g.*, INSTITUTE OF ELECTRICAL & ELECTRONICS ENGINEERS, INC., THE AUTHORITATIVE DICTIONARY OF IEEE STANDARDS TERMS 852 (7th ed. 2000); P. HOROWITZ & W. HILL, THE ART OF ELECTRONICS 34 (2d ed. 1989). In simplified terms, a lamp with a low power factor draws more current from the power line to produce the same amount of energy in the form of light and heat than a lamp with a high power factor. The invention at issue in this case pertains to an electronic ballast designed to improve the power factor of CFLs. ('480 patent at col. 2, ll. 52-56.)

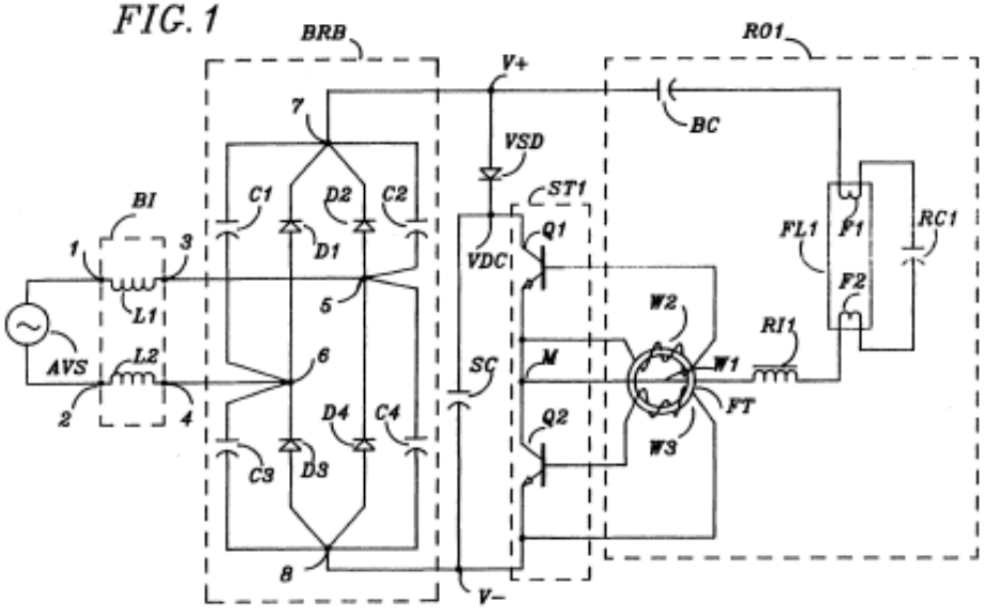
III. The Patent-In-Suit

The U.S. Patent Office issued the '480 patent to Andrezj Bobel on July 18, 1995 from Application No. 134,976. The invention in the '480 patent focuses on a design for electronic ballasts that improves the power factor of CFLs while avoiding the shortcomings of prior art, which relied on large inductors, complex and expensive circuitry, or re-directing power from the output of the device to the input resulting in the dissipation of power within the ballast. (*See id.* at col. 1, l. 64 – col. 2, l. 56.) The present invention teaches the use of "an integrated, single-stage electronic energy converter wherein the energy used to correct the power factor is not re-

directed from the output to the input of the device," but rather is stored within and released by "a resonant boosting circuit integrated into a power line voltage rectifier" at the input of the device. (*See id.* at col. 3, ll. 1-7, col. 9, ll. 32-57.) The '480 patent provides three embodiments of this "resonant boosting circuit integrated into a power line voltage rectifier:" Figure 1, Figure 11, and Figure 12.

Figure 1 illustrates the invention in its preferred embodiment. The "boosting inductor" (BI) and the "boosting and rectifying bridge" (BRB) of Figure 1 are most relevant to construing the disputed claim terms. The boosting inductor consists of two power input terminals (1 and 2), two output terminals (3 and 4), and two inductors (L1 and L2). (*Id.* at col. 5, ll. 38-43.) Inductor L1 is connected between terminals 1 and 3, and inductor L2 is connected between terminals 2 and 4. (*Id.*) The boosting and rectifying bridge includes a full-wave rectifier bridge formed by diodes D1-D4, four capacitors (C1-C4) connected across each diode, respectively, AC input terminals 5 and 6, and DC output terminals 7 and 8. (*Id.* at col. 5, ll. 29-37.) Terminal 7 is the positive DC output terminal, and terminal 8 is the negative DC output terminal. (*Id.*) Each of the four capacitors in the boosting and rectifying bridge has a value of approximately 10 nF, which is 3,300 times less than the value of the storage capacitor (SC) located outside the boosting and rectifying bridge (33 uF). (*Id.*)

FIG. 1



Figures 11 and 12 provide alternative embodiments of the boosting and rectifying bridge (BRB) in Figure 1. (*Id.* at col. 7, ll. 13-22.) The alternative embodiment in Figure 11 (BRB11) replaces capacitors C2 and C4 with "capacitor C5 connected between terminals 7 and 8." (*Id.* at col. 7, ll. 15-17.) Figure 12 depicts a boosting and rectifying voltage doubler (BRVD), which also may substitute for the boosting and rectifying bridge of Figure 1. (*Id.* at col. 7, ll. 18-22.) The boosting and rectifying voltage doubler omits diodes D2 and D4 from Figure 1. (*Id.*)

FIG. 11

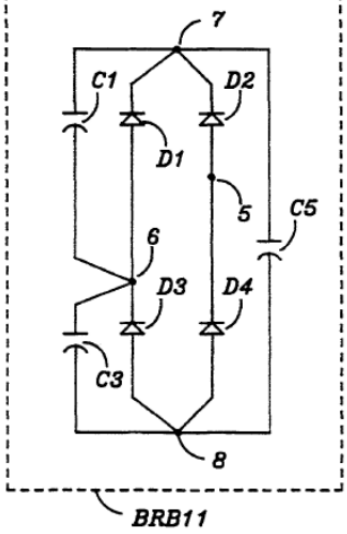
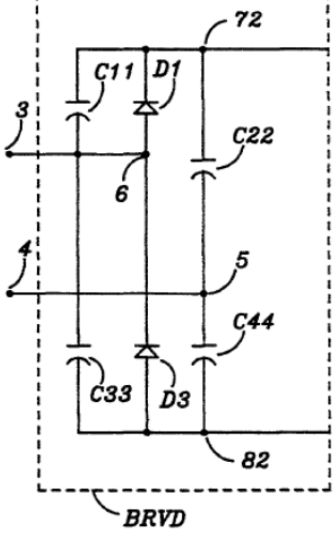


FIG. 12



IV. The Disputed Terms

In their claim construction briefs, the parties raised four disputed terms for the Court to construe: (1) "resonant boosting circuit;" (2) "power line voltage rectifier;" (3) "integrated into;" and (4) "a resonant boosting circuit integrated into the power line voltage rectifier." Additionally, the parties raised a fifth disputed term during the *Markman* hearing: "parallel." The parties' initial proposed constructions of these five disputed terms are set forth below.

Claim Term	**MaxLite's Proposed Construction**	**Bobel's Proposed Construction**
resonant boosting circuit	A component of a circuit including an inductor connected in circuit between AC input terminals of a power line rectifier and an alternating voltage source, and capacitors connected to the inductor and in parallel across each diode of the rectifier from the power line to the output of the power line rectifier.	Plain and ordinary meaning. A resonant boosting circuit to one of ordinary skill means a circuit with some inductance and some capacitance that outputs a voltage higher than the voltage of the input.
power line voltage rectifier	A device including at least two diodes, with each diode being connected on one side to an AC power line that convert an AC signal from alternating voltage source into a pulsating DC signal at the output of the rectifier.	Plain and ordinary meaning. A power line voltage rectifier to one of ordinary skill means a rectifier that rectifies AC voltage to DC voltage.
integrated into	Physically combined into.	Plain and ordinary meaning. The term means combined into.
a resonant boosting circuit integrated into the power line voltage rectifier	An electrical circuit having capacitors physically combined into a power line voltage rectifier, which permits current to flow from a power line through an inductor on the power line and the diodes of the rectifier to the output of the rectifier as well as through an alternate path through the capacitors to increase the amount of current exiting the output of the rectifier.	Plain and ordinary meaning. One of ordinary skill in the art would understand "a resonant boosting circuit integrated into the power line voltage rectifier" to mean that the boosting inductance and the boosting capacitance of the resonant boosting circuit is combined into the rectifier.

parallel	Of or denoting electrical components connected to common points at each end, rather than one to another in sequence.	Of or denoting electrical components or circuits connected to common points at each end, rather than one to another in sequence.

LEGAL STANDARD

Because the claims of a patent define the invention, claim construction—the process of giving meaning to the claim language—defines the scope of the invention. *See Phillips v. AWH Corp*., 415 F.3d 1303, 1312 (Fed. Cir. 2005) (*en banc*) ("It is a 'bedrock principle' of patent law that 'the claims of a patent define the invention to which the patentee is entitled the right to exclude." (citing 35 U.S.C. § 112)). Claim construction is a matter of law for the court to determine. *See Markman*, 517 U.S. at 391; *Marine Polymer Techs., Inc. v. HemCon, Inc*., 672 F.3d 1350, 1358 (Fed. Cir. 2012). When construing claim terms, the Court "first look[s] to, and primarily rel[ies] on, the intrinsic evidence, including the prosecution history and the specification—which is usually dispositive." *SkinMedica, Inc. v. Histogen Inc.*, 727 F.3d 1187, 1195 (Fed. Cir. 2013) (citing *Phillips*, 415 F.3d at 1315). "The words of a claim are generally given their ordinary and customary meaning as understood by a person of ordinary skill in the art when read in the context of the specification and prosecution history." *Id.* (quoting *Thorner v. Sony Computer Entm't Am. LLC*, 669 F.3d 1362, 1365-67 (Fed. Cir. 2012)); *see also Phillips*, 415 F.3d at 1312-13.

Although "less significant than the intrinsic record," extrinsic evidence, which consists of "all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises," may "shed useful light on the relevant art." *See Phillips*, 415 F.3d at 1317 (citations omitted); *see also Aristocrat Techs. Australia Pty Ltd. v. Int'l Gaming Tech.*, 709 F.3d 1348, 1355 (Fed. Cir. 2013); *HTC Corp. v. IPCom GmbH & Co.*,

KG, 667 F.3d 1270, 1277 (Fed. Cir. 2012). In particular, "[d]ictionaries or comparable sources are often useful to assist in understanding the commonly understood meaning of words and have been used both by [the Federal Circuit] and the Supreme Court in claim interpretation." *Phillips*, 415 F.3d at 1322-23; *see also Aristocrat Techs.*, 709 F.3d at 1358 (affirming that the district court's reliance on a dictionary definition to inform its understanding of the "ordinary and customary" meaning of a claim term was proper). "[J]udges are free to consult dictionaries . . . to better understand the underlying technology and [they] may also rely on dictionary definitions when construing claim terms, so long as the dictionary definition does not contradict any definition found in or ascertained by a reading of the patent documents." *Phillips*, 415 F.3d at 1322-23 (internal quotations and citation omitted)); *see also Meyer Intellectual Props. Ltd. v. Bodum, Inc.*, 690 F.3d 1354, 1368 (Fed. Cir. 2012) (same).

ANALYSIS

In their briefs, the parties raised four disputed terms for the Court to construe. During the course of the *Markman* hearing, the parties resolved their disputes regarding those original four terms but raised a fifth term for the Court to construe: "parallel." For completeness, the Court will construe all five disputed terms.

I. Resonant Boosting Circuit

MaxLite's Proposed Construction	Bobel's Proposed Construction
A component of a circuit including an inductor connected in circuit between AC input terminals of a power line rectifier and an alternating voltage source, and capacitors connected to the inductor and in parallel across each diode of the rectifier from the power line to the output of the power line rectifier.	Plain and ordinary meaning. A resonant boosting circuit to one of ordinary skill means a circuit with some inductance and some capacitance that outputs a voltage higher than the voltage of the input.

The '480 patent specification describes the "resonant boosting circuit" in the invention at issue as "comprising[] (i) boosting inductance connected in circuit between the AC input

terminals and the alternative voltage source, and (ii) bosting [sic] capacitance connected in parallel with the unidirectional devices of the rectifier circuit." ('480 patent at col. 3, ll. 26-31.) This definition comports with the embodiments of the invention in the '480 patent. In Figure 1, for example, the boosting inductors (L1 and L2) are connected in circuit between the AC input terminals (5 and 6) and the alternative voltage source (AVS), and the boosting capacitors (C1-C4) are connected in parallel with the unidirectional devices of the rectifier circuit (diodes D1-D4). Furthermore, each alternative embodiment of the "boosting inductor" depicted in Figures 8-10 of the '480 patent contains at least one inductor connected in circuit between the AC input terminals and the alternative voltage source. (*Id.* at Figs. 8-10.)

The alternative embodiments of the "boosting and rectifying bridge" in Figures 11 and 12 also contain at least one boosting capacitor connected in parallel with at least one diode of the rectifier circuit. (*Id.* at Figs. 11-12.) With respect to Figure 11, the parties disagree regarding whether capacitor C5 is connected "in parallel" with diodes D2 and D4, but both acknowledge that capacitor C1 is connected in parallel with D1 and C3 is connected in parallel with D3. (*See* 1/16/14 *Markman* Hearing Transcript ("1/16/14 Hrg. Tr.") at 15:7-12; 53:22-54:3.) With respect to Figure 12, the parties do not dispute that capacitor C11 is connected in parallel with D1 and C33 with D3. ('480 patent at Fig. 12.)

The construction of "resonant boosting circuit" that MaxLite proposes in its briefs suggests that each capacitor in the resonant boosting circuit must connect in parallel with one and only one diode. This construction conflicts with the specification, which states that the boosting capacitance comprises "*one or more* capacitors" and "is connected in parallel with selected *one or more* unidirectional devices of the rectifier means." (*Id.* at col. 4, ll. 61-64 (emphasis added).) According to this plain language, a single capacitor may be connected in

parallel with multiple diodes. MaxLite backed away from this construction during the *Markman* hearing, acknowledging that the patent does not require each capacitor to be connected across one diode. (1/16/14 Hrg. Tr. 48:11-49:5.) Rather, as both parties agree, the circuit requires "*at least one* capacitor in parallel with a diode in order to get the boost function." (*See id.* (emphasis added); *see also id.* at 44:21-24.) The Court, therefore, rejects the construction of "resonant boosting circuit" that MaxLite initially proposed in its briefs.

The Court also rejects the construction Bobel proposes in its brief. Bobel states that "[a] resonant boosting circuit to one of ordinary skill means a circuit with some inductance and some capacitance that outputs a voltage higher than the voltage of the input." (*See* Am. Joint Claim Constr. Chart ¶ 1.) The patent, however, does not support such a broad construction. It provides specific requirements regarding the location and connection of the inductors and capacitors in the resonant boosting circuit. (*See* '480 patent at col. 3, ll. 22-31, col. 4, ll. 53-57, 61-64.) The Court, therefore, rejects Bobel's proposed construction as overbroad.

During the *Markman* hearing, the Court asked whether the parties would agree to using the construction of "resonant boosting circuit" contained in the patent itself—namely, a circuit "comprising[] (i) boosting inductance connected in circuit between the AC input terminals and the alternative voltage source and (ii) boosting capacitance connected in parallel with the unidirectional devices of the rectifier circuit." (*See* 1/16/14 Hrg. Tr. at 30:7-23, 47:16-48:1.) MaxLite raised no objection to this construction. (*Id.* at 47:16-48:1.) Nor did Bobel, provided that the construction of "boosting capacitance" is "consistent with the definition provided in column 4, line 61 to 64." (*Id.* at 30:7-23.) As explained above, column 4, lines 61-64 of the '480 patent state that "the boosting capacitance comprising one or more capacitors is connected in parallel with selected one or more unidirectional devices of the rectifier means." ('480 patent

at col. 4, ll. 61-64.) Based on the patent specification and the parties' agreement, the Court construes the term "resonant boosting circuit" as follows: "a circuit comprising (i) boosting inductance connected in circuit between the AC input terminals and (ii) boosting capacitance, comprising one or more capacitors, connected in parallel with selected one or more diodes of the rectifier circuit."[1]

II. Power Line Voltage Rectifier

MaxLite's Proposed Construction	Bobel's Proposed Construction
A device including at least two diodes, with each diode being connected on one side to an AC power line that convert an AC signal from alternating voltage source into a pulsating DC signal at the output of the rectifier.	A power line voltage rectifier to one of ordinary skill means a rectifier that rectifies AC voltage to DC voltage.

In its opening brief, MaxLite proposes the following construction of the term "power line rectifier:" "a device including at least two diodes, with each diode being connected on one side to an AC power line that convert an AC signal from alternating voltage source into a pulsating DC signal at the output of the rectifier." (MaxLite's Revised Claim Constr. Br. at 11.) Bobel's only objection to MaxLite's proposed construction is that the patent refers to a "power line *voltage* rectifier," not a "power line rectifier." (*See* R. 114, Bobel's Resp. Br. at 15.)

Bobel's objection is well-founded. The term "power line voltage rectifier" appears in claim 9 of the '480 patent (*see* '480 patent at col. 14, l. 56), but "power line rectifier" appears nowhere in the patent. Furthermore, MaxLite acknowledged during the *Markman* hearing that "power line voltage rectifier" is the proper term for the Court to construe. (*See* 1/16/14 Hrg. Tr. 47:12-14.) Bobel reiterated during the hearing that it has no objection to MaxLite's proposed

[1] The parties agree that the term "unidirectional devices" used in the '480 patent refers to diodes. (*See* 1/16/14 Hrg. Tr. 21:16-18; R. 116, MaxLite's Revised Claim Constr. Br. at 8-9.) The Court, therefore, replaces "unidirectional devices" with "diodes" in its construction.

construction "[p]rovided that we're talking about a power line voltage rectifier," rather than a "power line rectifier." (1/16/14 Hrg. Tr. 29:10:-30:5.)

The parties' agreed construction comports with the plain meaning of a "rectifier"—"a device for converting alternating current into direct current." *See* MERRIAM-WEBSTER'S COLLEGIATE DICTIONARY 978 (10th ed. 1999); *see also* A.P. GODSE & U.A. BAKSHI, BASIC ELECTRONICS ENGINEERING at 2-1 (9th rev. ed. 2008) ("A rectifier is a device which converts a.c. voltage to pulsating d.c. voltage, using one or more p-n junction diodes."). It also is consistent with the patent specification. The rectifying bridge depicted in Figures 1 and 11 and the voltage doubler in Figure 12 each include at least two diodes, and each diode is connected to the AC power line at terminal 5 or 6. Furthermore, as explained in the specification, the rectifying bridge operates to convert the AC signal from the alternating power source (AVS) into a "variable DC voltage" between terminals V+ and V-. ('480 patent at col. 7, l. 63 – col. 8, l. 8.)

Accordingly, based on the patent specification and the parties' agreement, the Court adopts MaxLite's proposed construction of a "power line voltage rectifier," with certain grammatical changes for clarity. The Court construes the term "power line voltage rectifier" as follows: "a device that converts the AC signal from an alternating voltage source into a pulsating DC signal at the output of the rectifier, with such device including at least two diodes, each of which connects on one side to the AC power line."

III. Integrated Into

MaxLite's Proposed Construction	Bobel's Proposed Construction
Physically combined into.	Plain and ordinary meaning. The term means combined into.

MaxLite's and Bobel's proposed constructions of "integrated into" differ by only one word—physically. During the *Markman* hearing, Bobel's counsel acknowledged that the

parties' proposed constructions have the same meaning and stated that he did not "have a problem with" MaxLite's proposed construction:

> I don't think there's a difference between the two [constructions]. . . . There is a word additionally in MaxLite's. It says 'physically.' I don't have a problem with that because [in] the resonant boosting circuit, the capacitance and the inductance have to be connected to the diodes of the rectifier.

(1/16/14 Hrg. Tr. 28:23-29:17.) MaxLite's proposed construction is consistent with the patent specification: each embodiment of the invention in the patent physically combines the inductors (L1 and L2) and capacitors (C1-C4)[2] of the resonant boosting circuit with the rectifying bridge (D1-D4) of the power line voltage rectifier. (*See* '480 patent at Figs. 1, 11, 12.) MaxLite's proposed construction also comports with the plain meaning of "integrated into." *See* MERRIAM-WEBSTER'S COLLEGIATE DICTIONARY 608 (defining "integrate" as "to unite with something else" or "incorporate into a larger unit"). The Court, therefore, adopts the parties' agreed construction and construes the term "integrated into" as "physically combined into."

IV. A Resonant Boosting Circuit Integrated into the Power Line Voltage Rectifier

MaxLite's Proposed Construction	Bobel's Proposed Construction
An electrical circuit having capacitors physically combined into a power line voltage rectifier, which permits current to flow from a power line through an inductor on the power line and the diodes of the rectifier to the output of the rectifier as well as through an alternate path through the capacitors to increase the amount of current exiting the output of the rectifier.	Plain and ordinary meaning. One of ordinary skill in the art would understand "a resonant boosting circuit integrated into the power line voltage rectifier" to mean that the boosting inductance and the boosting capacitance of the resonant boosting circuit is combined into the rectifier.

The fourth disputed term—"a resonant boosting circuit integrated into the power line voltage rectifier"—is simply a combination of the previous three terms. Although MaxLite's and Bobel's proposed constructions for "a resonant boosting circuit integrated into the power line voltage rectifier" differs significantly in their briefs, the parties reached a compromise during the

[2] The parties disagree regarding whether capacitor C5 in Figure 11 constitutes a "boosting capacitor."

Markman hearing. Bobel agreed to use the construction MaxLite proposed in the conclusion of its reply brief, provided that the parties agree to construe the term "boosting capacitance" consistently with the definition provided in column 4, lines 61-64 of the '480 patent. (*See* 1/16/14 Hrg. Tr. 5:6-7:11.) Specifically, the parties agreed to construe "a resonant boosting circuit integrated into the power line voltage rectifier" as

> a circuit operable to provide between the DC terminals a variable DC voltage having an absolute peak magnitude higher than the absolute peak magnitude of a rectified voltage of the alternative voltage source, and the resonant boosting circuit comprising: (i) boosting inductance connected in circuit between the AC input terminals and the alternating voltage source, and (ii) boosting capacitance comprising one or more capacitors connected in parallel with one or more unidirectional devices of the rectifier circuit.

(*Id.* at 8:13-9:4.) Although MaxLite agreed to the compromise at the *Markman* hearing, it noted that this construction would raise an issue regarding the construction of "parallel." (*Id.* at 9:13-10:7.) The Court addresses the construction of "parallel" in Part V below.

The parties' agreed construction of "a resonant boosting circuit integrated into a power line rectifier" comes directly from the patent specification (*see* '480 patent at col. 3, ll. 22-31), and it is consistent with the Court's constructions of the other disputed terms and the embodiments of the invention in Figures 1, 11 and 12. (*See* Parts I-III, *supra.*) The Court, therefore, adopts the parties' compromise, and construes "a resonant boosting circuit integrated into a power line rectifier" as follows: "a circuit operable to provide between the DC terminals a variable DC voltage having an absolute peak magnitude higher than the absolute peak magnitude of a rectified voltage of the alternative voltage source, and the resonant boosting circuit comprising: (i) boosting inductance connected in circuit between the AC input terminals and the alternating voltage source, and (ii) boosting capacitance comprising one or more capacitors connected in parallel with one or more unidirectional devices of the rectifier circuit."

V. Parallel

MaxLite's Proposed Construction	Bobel's Proposed Construction
Of or denoting electrical components connected to common points at each end, rather than one to another in sequence.	Of or denoting electrical components or circuits connected to common points at each end, rather than one to another in sequence.

Although the parties ultimately agreed to constructions of the four original disputed claim terms during the *Markman* hearing, the parties could not agree on a proposed construction of "parallel." Both parties repeatedly refer to components being "in parallel" in their claim construction briefs, and MaxLite even provides a definition of "parallel" in the background section of its opening brief:

> Parallel – devices are in parallel when their endpoints share common points or nodes. In parallel devices a current entering a first common node connected to the two devices splits and portions flow through the various devices, according to the constitutive equations of each circuit element, then combine and leave the parallel circuit elements from the second common node connected to as an indistinguishable single current.

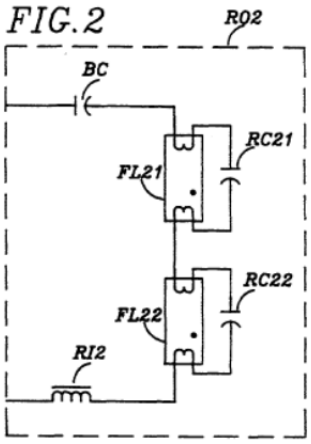
(MaxLite's Revised Claim Constr. Br. at 2.) Because the parties had not included "parallel" as a disputed term, however, neither party addressed the meaning of "parallel" in detail in their briefs or provided citations to the intrinsic and extrinsic record to support that meaning.

Nonetheless, at the *Markman* hearing, the parties agreed that the Court should adopt the commonly accepted dictionary definition of "parallel" used in the field of electronics: "of or denoting electrical components or circuits connected to common points at each end, rather than one to another in sequence." (*See* 1/16/14 Hrg. Tr. 63:6-22); *see also* NEW OXFORD AMERICAN DICTIONARY 1270 (3d ed. 2010). The parties agreed that this definition reflects how one of ordinary skill in the art would understand the customary meaning of "parallel." The parties, however, disagreed regarding whether the Court should include the phrase "or circuits" in its construction. Bobel proposed adopting the dictionary definition verbatim, including the phrase "or circuits." (1/16/14 Hrg. Tr. 63:19-64:18, 65:9-24.) MaxLite, on the other hand, opposes

including the phrase "or circuits" in the Court's construction because the patent discusses *components* connected in parallel, not circuits. (*Id.* at 64:21-65:8.) Thus, according to MaxLite, the phrase is irrelevant and including it in the Court's construction "might unnecessarily confuse the definition" of "parallel" in later stages of the litigation. (*Id.* at 64:21-65:1.)

Before deciding whether to include the phrase "or circuits" in its construction of "parallel," the Court must assess whether the dictionary definition on which the parties rely is consistent with the meaning of "parallel" in the '480 patent. *See Phillips,* 415 F.3d at 1322-23 ("[J]udges . . . [may] rely on dictionary definitions when construing claim terms, so long as the dictionary definition does not contradict any definition found in or ascertained by a reading of the patent documents."); *Meyer Intellectual Props. Ltd.*, 690 F.3d at 1368 (same). The term "parallel" appears 19 times in the '480 patent, including in claims 1-3, 6-7, 10. Although the patent does not explicitly define "parallel," a comparison of several figures in the patent with their written descriptions supports adopting the dictionary definition in the Court's construction.

With respect to Figure 2, for example, the patent states that "[t]he lamps FL21, FL22 have resonant capacitors RC21, RC22 connected in parallel, respectively" ('480 patent at col. 6, ll. 8-13), and the drawing of Figure 2 shows that FL21 and RC21 "connect to common points at each end," as do FL22 and RC22:



(*Id.* at Fig. 2.) Similarly, the patent describes Figures 5 and 6 each as having a resonant capacitor (RC5 and RC6) "connected in parallel" with a primary winding of the resonant inductor (L15 and L16) (*see id.* at col. 6, ll. 39-68), and the drawings of Figures 5 and 6 show that the resonant capacitors and primary windings at issue "connect to common points at each end"—output terminals OT1 and OT2:

FIG. 5

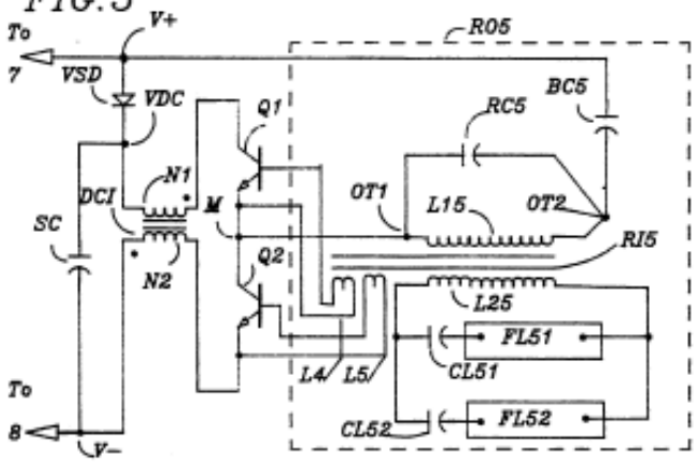
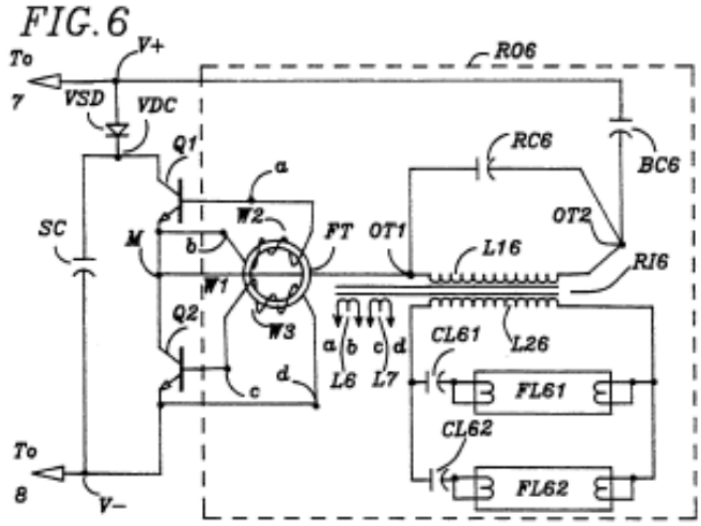


FIG. 6



(*Id.* at Figs. 5, 6.) Finally, the patent explains that the circuit in Figure 5 "is identical in operation to the one [in] FIG. 1, with the exception that the resonant elements"—*i.e.*, the resonant capacitor and the resonant inductor—"are connected here in parallel." (*Id.* at col. 9,

ll. 3-10.) The resonant elements in Figure 5 (RC5 and RI5) connect at common end points OT1 and OT2 (*id.* at col. 6, ll. 39-54 & Fig. 5), while the resonant elements in Figure 1 (RC1 and RI1) do not; rather, the resonant elements in Figure 1 are connected "in series." (*See id.* at col. 5, l. 62 – col. 6, l. 7 & Fig. 1.) The descriptions of Figures 1, 5, and 6 and corresponding drawings, therefore, support the parties' position that the Court should adopt the dictionary definition of "parallel" in its construction.

Turning to the specific dispute at hand, the Court rejects MaxLite's proposal to omit the phrase "or circuits" found in the dictionary definition from the construction of "parallel." The Court must construe the term "parallel" in the context of the entire patent, not just in the context of the specific occurrence at issue in this case. *See Phillips*, 415 F.3d at 1313 ("Importantly, the person of ordinary skill in the art is deemed to read the claim term not only in context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification."). Contrary to MaxLite's representation during the *Markman* hearing, the '480 patent explicitly discusses "parallel circuits" as well as "parallel components." (*See* '480 patent at col. 4, ll. 35-52, col. 11, l. 66 – col. 12, l. 19.) Specifically, in claim 2 and the specification, the patent describes one embodiment of the resonant oscillator means as comprising, among other things, "an inductor, a capacitor and the gas discharge load being effectively connected *in a parallel circuit* adapted to power the gas discharge load and the *parallel circuit* being connected between the output terminals." (*Id.* at col. 11, l. 66 col. 12, l. 19 (emphasis added); *see also id.* at col. 4, ll. 35-52 (same).) Because the patent uses the term "parallel" interchangeably with respect to "components" and "circuits," MaxLite's proposal to exclude the phrase "or circuits" from the Court's construction is inappropriate. *See id.*; *see also Tele-Cons, Inc. v. General Elec. Co.*, No. 6:10-cv-451 LED-JDL, 2012 WL 3112299, at *8 (E.D.

Tex. July 31, 2012) ("Although Claim 4 describes 'a feedback capacitor connected in parallel with said line voltage,' the term 'connected in parallel' is not exclusive to capacitors or Claim 4. . . . Thus, 'connected in parallel' should not be limited to a capacitor."). The Court, therefore, construes "parallel" as follows: "of or denoting electrical components or circuits connected to common points at each end, rather than one to another in sequence."

CONCLUSION

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

- **Resonant boosting circuit:** a circuit comprising (i) boosting inductance connected in circuit between the AC input terminals and (ii) boosting capacitance, comprising one or more capacitors, connected in parallel with selected one or more diodes of the rectifier circuit;

- **Power line voltage rectifier:** a device that converts the AC voltage from an alternating voltage source into a pulsating DC voltage at the output of the rectifier, with such device including at least two diodes, each of which connects on one side to the AC power line;

- **Integrated into:** physically combined into;

- **A resonant boosting circuit integrated into the power line voltage rectifier:** a circuit operable to provide between the DC terminals a variable DC voltage having an absolute peak magnitude higher than the absolute peak magnitude of a rectified voltage of the alternative voltage source, and the resonant boosting circuit comprising: (i) boosting inductance connected in circuit between the AC input terminals and the alternating voltage source, and (ii) boosting capacitance comprising one or more capacitors connected in parallel with one or more unidirectional devices of the rectifier circuit; and

- **Parallel:** of or denoting electrical components or circuits connected to common points at each end, rather than one to another in sequence.

DATED: February 5, 2014 **ENTERED**

AMY J. ST. EVE
U.S. District Court Judge