IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

LEMAIRE ILLUMINATION TECHNOLOGIES, LLC,	§	
	§	
Plaintiff,	§	
	§	
v.	§	**CIVIL ACTION NO. 2:18-CV-00021-JRG**
	§	
HTC CORPORATION,	§	
	§	
Defendant.	§	

MEMORANDUM OPINION AND ORDER

On March 21, 2019, the Court held a hearing to determine the proper construction of the disputed claim terms in United States Patent No. 6,095,611 ("the '661 Patent"). The Court has considered the arguments made by the Parties at the hearing and in their claim construction briefs. (*See* Dkt. Nos. 30, 33, 35.) The Court has also considered the intrinsic evidence and made subsidiary factual findings about the extrinsic evidence. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005); *see also Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 841 (2015). The Court issues this Claim Construction Memorandum Opinion and Order in light of these considerations.

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I. BACKGROUND

The ’661 Patent was filed on March 19, 1998, issued on August 1, 2000, and is titled “Method and Apparatus for an L.E.D. Flashlight.” ’661 Patent at 1. The ’661 Patent relates to an LED flashlight having a control circuit that “maintains an average predetermined light output level of the LED units as the charge on the battery cell varies by changing a pulse width or frequency . . . to maintain a given average light output.” ’661 Patent at Abstract. Figure 1 illustrates “one embodiment of the present invention . . . having a case 110, a battery 120 or other portable DC power supply, a power supply and control circuit 130, a switch circuit 140, a plurality of LEDs 150, and optionally a feedback circuit 160.” *Id.* at 7:17–23.

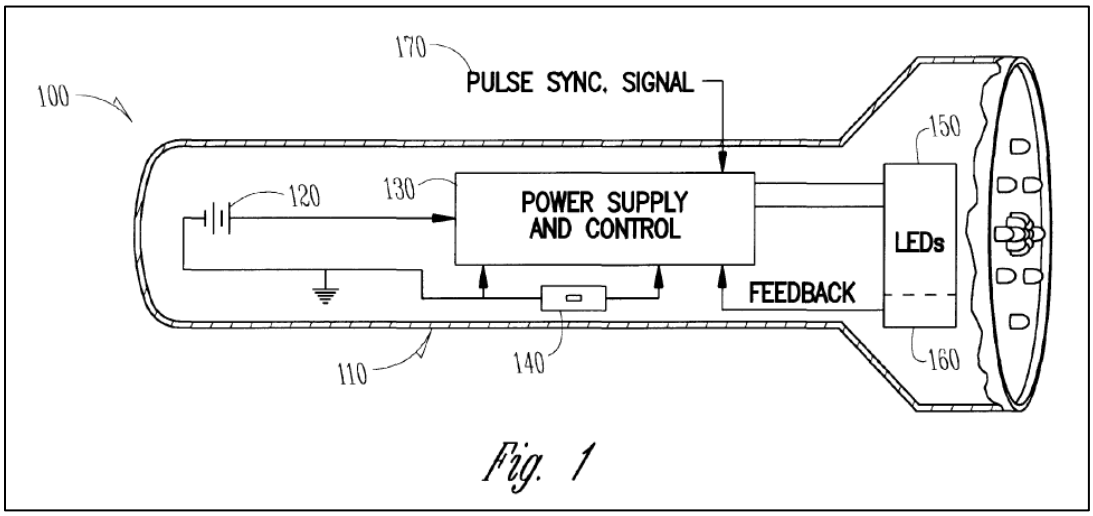

Fig. 1

Id. at Fig. 1. The specification states that “feedback circuit 160 (and similarly the other feedback circuits described herein) controls pulse width and/or frequency as a function of parameters such as battery voltage, LED light output intensity, power dissipation or device temperature, or LED color spectrum output.” *Id.* at 7:23–29. The specification further discloses that “[i]n one embodiment, feedback 160 measures the light output of LEDs 150 (e.g., using a photo diode or other suitable light detecting device) and provides a signal that allows PSCC [Power Supply and Control Circuit] 130 to adjust the light output to a desired level (typically providing a constant

light output even as battery voltage declines as power is drained)." *Id.* at 7:53–59.

Claim 34 of the '661 Patent is the only asserted claim and recites the following elements (disputed term in italics):

> 34. An illumination source, comprising:
> (a) a light-emitting diode (LED) housing comprising one or more LEDs; and
> (b) an electrical control circuit that *selectively applies pulsed power from a DC voltage source of electric power to the LEDs to control a light output color spectrum of the one or more LEDs* and *maintain a predetermined light output level of the LED units as a charge on the DC voltage source varies*.

II. APPLICABLE LAW

A. Claim Construction

This Court's claim construction analysis is guided by the Federal Circuit's decision in *Phillips v. AWH Corporation*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). In *Phillips*, the Federal Circuit reiterated that "the claims of a patent define the invention to which the patentee is entitled the right to exclude." *Id.* at 1312. The starting point in construing such claims is their ordinary and customary meaning, which "is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application." *Id.* at 1312–13.

However, *Phillips* made clear that "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." *Id.* at 1313. For this reason, the specification is often "the single best guide to the meaning of a disputed term." *Id*. at 1315 (quoting *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979–81 (Fed.Cir.1995) (en banc), *aff'd*, 517 U.S. 370 (1996)) (internal quotation marks omitted). However, it is the claims, not the

specification, which set forth the limits of the patentee's invention. *Id.* at 1312. Thus, "it is improper to read limitations from a preferred embodiment described in the specification—even if it is the only embodiment—into the claims absent a clear indication in the intrinsic record that the patentee intended the claims to be so limited." *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 913 (Fed. Cir. 2004). Other asserted or unasserted claims can also aid in determining a claim's meaning. *See, e.g.*, *Phillips*, 415 F.3d at 1314 (explaining that use of "steel baffles" and "baffles" implied that "baffles" did not inherently refer to objects made of steel).

The prosecution history also plays an important role in claim interpretation as intrinsic evidence of how the U.S. Patent and Trademark Office ("PTO") and the inventor understood the patent. *Id.* at 1317; *see also Microsoft Corp. v. Multi-Tech Sys., Inc.*, 357 F.3d 1340, 1350 (Fed. Cir. 2004) (noting that "a patentee's statements during prosecution, whether relied on by the examiner or not, are relevant to claim interpretation"); *Aylus Networks, Inc. v. Apple Inc.*, 856 F.3d 1353, 1361 (Fed. Cir. 2017) (applying this principle in the context of *inter partes* review proceedings). However, "because the prosecution history represents an ongoing negotiation between the PTO and the applicant, rather than the final product of that negotiation, it often lacks the clarity of the specification and thus is less useful for claim construction purposes." *Phillips*, 415 F.3d at 1318; *see also Athletic Alternatives, Inc. v. Prince Mfg.*, 73 F.3d 1573, 1580 (Fed. Cir. 1996) (noting that ambiguous prosecution history may be "unhelpful as an interpretive resource").

Additionally, courts may rely on extrinsic evidence such as "expert and inventor testimony, dictionaries, and learned treatises." *Id.* at 1317. As the Supreme Court recently explained:

> In some cases . . . the district court will need to look beyond the patent's intrinsic evidence . . . 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.

Teva Pharm. USA, Inc. v. Sandoz, Inc., 135 S. Ct. 831, 841 (2015). However, the Federal Circuit has emphasized that such extrinsic evidence is subordinate to intrinsic evidence. *Phillips*, 415 F.3d at 1317 ("[W]hile 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." (internal quotation marks omitted)).

III. CONSTRUCTION OF AGREED TERMS

During the claim construction hearing, the Parties agreed to the construction of the following phrase:

Claim Term/Phrase	**Agreed Construction**
"control a light output color spectrum" ('661 Patent Claim 34)	"change a light output color spectrum"

In view of the Parties' agreement on the construction of the identified term, the Court hereby **ADOPTS** the Parties' agreed construction.

IV. CONSTRUCTION OF DISPUTED TERMS

The Parties dispute the meaning and scope of three terms in the '661 Patent. Each dispute is addressed below.

A. "selectively applies"

Disputed Term	Plaintiff's Proposal	Defendant's Proposal[1]
"selectively applies"	Plain and ordinary meaning	"changes an attribute of a" (Dkt. No. 33 at 21 – "Phrase #1") "changing an attribute of a" (Dkt. No. 33 at 21 – "Phrase #2")

[1] Defendant argues that the term "selectively applies" should be construed as part of two larger claim phrases. (Dkt. No. 33 at 20.) In the alternative, Defendant argues that its proposed construction for "selectively applies" is (1) "*changes* an attribute of a" for "Phrase #1," and (2) "*changing* an attribute of a" for "Phrase #2." (*Id.* at 21.) Defendant has not provided a persuasive reason for construing the same instance of the same term differently based on Defendant's parsing of the claim language. To do so would confuse a jury.

1. The Parties' Positions

The Parties dispute whether the term "selectively applies" requires construction. Plaintiff contends that the term should be given its plain and ordinary meaning. (Dkt. No. 30 at 3.) According to Plaintiff, the surrounding claim language provides instructive context. (*Id.* at 3–4.) Plaintiff further contends that the plain and ordinary meaning of "selectively applies" is used consistently throughout the specification. (*Id.* at 4 (citing '661 Patent at Figures 1–11, Abstract, 1:50–67, 2:41–57, 3:37–60, 4:23–52, 5:25–67, 6:1–21, 6:64–7:9, 7:15–8:13, 8:14–64, 8:64–9:23, 10:6–64, 10:65–11:31, 11:52–12:24, 12:25–13:14, 13:40–14:7, 14:8–58, 14:59–15:41).)

Defendant argues that its construction captures what the control circuit does with the signal that powers the LED. (Dkt. No. 33 at 10.) According to Defendant, the control circuit changes one of the signal's attributes in order to control output color of one or more LEDs. (*Id.*) Defendant contends that Plaintiff's construction reads out the control aspect. (*Id.*) Defendant further argues that the specification describes using one of the pulse's attributes to control the LED's output color. (*Id.* at 12 (citing '661 Patent at 12:5–14, 9:45–51, 9:64–66, 2:27–31, 2:31–35, 2:36–40, 3:23–36, 3:46–51, 3:51–55, 3:55–60, 5:52–56, 6:1–5, 7:24–29, 7:49–53, 7:59–62, 8:7–13, 12:9–14, 12:47–51, 11:53–12:14, Claims 51 and 52).)

Defendant also contends that the specification repeatedly characterizes the "invention" as controlling LEDs by changing a signal's attributes. (*Id.* (citing '661 Patent at 5:33–56).) Defendant argues that the intrinsic record is entirely consistent with the meaning of the word "attribute." (*Id.*) Defendant concedes that the word "attribute" is not found in the specification verbatim, but argues that the specification is clear that the control circuit modifies an attribute. (*Id.* (citing '661 Patent at 8:7–9, 2:27–31, 2:31–35, 2:36–40, 3:27–31, 3:46–51, 3:55–60, 5:46–52, 5:52–57, 6:1–5, 7:24–29, 7:49–50, 8:9–11, 10:21–23, 11:63–12:4, 12:5–14, 12:17–24, 12:30–39, 12:47–51, 15:17–20, 15:28–32).) According to Defendant, the term "attribute" is used to simplify and describe the

pulses in plain English for the jury. (*Id.* at 15.) Defendant further contends that the extrinsic evidence supports the fact that the pulse must have attributes. (*Id.* at 16 (citing Dkt. No. 30-8 at 5).)

Plaintiff replies that Defendant's construction is incorrect because it attempts to import limitations from other claims. (Dkt. No. 35 at 6). Plaintiff argues that "attributes" or "characteristics" are in claims 18, 19, 20, 23, 24, 35, 36, 51, and 52 of the '661 Patent. (*Id.*)

2. Analysis

The term "selectively applies" appears in asserted claim 34 of the '661 Patent. The Court finds that the term is unambiguous, is easily understandable by a jury, and should be given its plain and ordinary meaning. The plain language of the claim recites that the electrical control circuit selects and applies a pulsed power from a DC voltage source. This is one of the functions of the recited "control circuit."

The specification further confirms that "selectively applies" involves selecting and applying pulsed power. The specification indicates that the characteristics of the control signal (*i.e.*, pulse frequency, pulse width, or pulse shape/height) are selected. *See, e.g.*, '661 Patent at 14:17–19 ("In one embodiment, five selectable pulse widths are predetermined and selected by SW1 . . ."), 6:1–5 ("Another embodiment of the present invention provides operator-selectable control of the pulse frequency and/or the pulse width to provide a reduced apparent brightness in order to increase battery life in situations when maximum brightness is not required."). The selected characteristics may be stored in a lookup table. *See, e.g.*, *id.* at 12:20–24 ("[I]n one embodiment, a lookup table is used to choose a predetermined pulse width based on the user selected or set color, and the current is determined by another corresponding lookup table is used to choose an appropriate current."). Consistent with the claim language, the specification indicates that "selectively applies" should be

given its plain and ordinary meaning, which is the recited selecting and applying a pulsed power.

Turning to the Parties' construction, Plaintiff contends that the term "selectively applies" should be given its plain and ordinary meaning. (Dkt. No. 30 at 3.) Plaintiff argues "that the term 'selectively applies' instruct [sic] that the power is not always turned on," and that "in order to be 'pulsed', the power is turned on or off at desired times and is turned off or on at desired times." (*Id.* at 6.) The Court agrees that the term "pulsed power" indicates that the power is switched either (1) from an on state to an off state, or (2) from an off state to an on state. The problem with Plaintiff's argument is that it addresses the disputed term "pulsed power," and not the term "selectively applies." If Plaintiff's argument were accepted, it would make the term "selectively" superfluous. That said, for the reasons described above, the Court agrees that the term "selectively applies" should be given its plain and ordinary meaning.

Defendant argues that a proper construction should make clear that the control mechanisms modify or changes a signal's attributes. (Dkt. No. 33 at 12.) According to Defendant, the specification repeatedly characterizes the "invention" as controlling LEDs by changing a signal's attributes. (*Id.*) The Court agrees that the LEDs are controlled by the control circuit. However, the phrase that captures "changing" the signal's characteristic is the disputed phrase "maintain a predetermined light output level of the LED units as a charge on the DC voltage source varies." *See* discussion *infra* Part IV.C.

Moreover, the term "attributes" does not appear in the intrinsic record. Defendant contends that the specification is clear that the control circuit modifies an attribute (*e.g.*, "pulse width, frequency or height"). The Court agrees that the control circuit may adjust the control signal's frequency, width, and/or shape/height, but this is done when a predetermined light output level is "maintained," which is addressed in another disputed phrase. Accordingly, the Court rejects

Defendant's construction. Finally, in reaching its conclusion, the Court has considered the extrinsic evidence submitted by the Parties, and given it its proper weight in light of the intrinsic evidence.

3. Court's Construction

For the reasons set forth above, the term **"selectively applies"** is given its **plain and ordinary meaning.**

B. "pulsed power"

Disputed Term[2]	Plaintiff's Proposal	Defendant's Proposal[3]
"pulsed"	Plain and ordinary meaning, or if the Court requires a construction: "a transient change in voltage, current, or some other normally constant physical parameter"	"repeating signal's two discrete voltage levels"

1. The Parties' Positions

The Parties dispute whether "pulsed" means "a transient change in power," as Plaintiff proposes, or if it means a "repeating signal's two discrete voltage levels," as Defendant proposes. Plaintiff argues that the term "pulsed" should be given its plain and ordinary meaning. (Dkt. No. 30 at 5 (citing '661 Patent at 3:66–4:2, 10:34–35, 15:21–23, Claims 1, 26, 34).) Plaintiff contends that the specification does not provide a clear intent by the inventors to act as their own lexicographers to give the term "pulsed" a definition other than its plain and ordinary meaning. (*Id.*) Plaintiff further contends that a plain and ordinary meaning for the term "pulsed" is confirmed by extrinsic evidence. (*Id.* at 6 (citing Dkt. No. 30-8 at 5; Dkt. No. 30-10 at 6).)

[2] The Parties proposed the term "pulsed" for construction. The Court finds that the expanded term "pulsed power" should be construed to properly resolve the Parties' claim construction dispute. The term "pulsed" describes a necessary characteristic of the recited "power," and therefore the two words should be construed as one term.

[3] Defendant argues that the term "pulsed" should be construed as part of a larger claim phrase. (Dkt. No. 33 at 20.) In the alternative, Defendant argues that its proposed construction for "pulsed" is a "repeating signal's two discrete voltage levels." (*Id.* at 21.)

In the alternative, Plaintiff argues that its proposed construction should be adopted because it accurately conforms to the specification and claims, and falls within its plain and ordinary meaning. (*Id.*) According to Plaintiff, its construction captures the range of embodiments disclosed in the specification and aligns with the plain and ordinary meaning of the term. (*Id.* (citing '661 Patent at 10:28–35, 35–40).)

Defendant responds that Plaintiff's construction of "transient change" broadens the claim to cover any change in a DC voltage's power. (Dkt. No. 33 at 10.) Defendant argues that its construction clarifies that the pulses powering the one or more LEDs are repeating signals, not signals that undergo some sort of transient change. (*Id.*) According to Defendant, the embodiments of the specification use a pulse train to power the LEDs on and off. (*Id.* (citing '661 Patent at 7:49–51, 6:5–9, 6:17–21).) Defendant further contends that a pulse train is a train of pulses (*i.e.*, a repeating signal) that repeatedly switches between "on" and "off." (*Id.* (citing '661 Patent at 5:52–56, 7:59–62, 8:7–9, 11:26–31).) Defendant argues that the pulse must repeat because the '661 Patent is a flashlight patent, and Claim 34 is an "illumination source." (*Id.* at 11 (citing '661 Patent at 5:46–56, 7:59–62, 8:7–9, 11:26–31, 5:52–56).) Defendant also contends that the claim language requires the signals to be repeating because it requires the predetermined light output be maintained with pulses. (*Id.* (citing '661 Patent at 19:46–51).) Defendant argues that this is illustrated in the many figures of the specification which use a transistor to pulse the signal powering the LED "on" or "off." (*Id.* (citing '661 Patent at 12:45–47, Figs. 3, 4, 7, 10, 11, 8).)

Defendant further argues that a pulse requires two discrete voltage levels (*e.g.*, it is either "on" or "off"). (*Id.* at 11.) According to Defendant, the specification consistently describes using pulses to repeatedly transition the LED from an "on" state to an "off" state to control brightness. (*Id.* (citing '661 Patent at 5:52–56, 7:59–62, 8:7–9, 11:26–31, 2:27–29).) Defendant argues that

the LED cycles between "on" and "off" quickly enough for the eye to perceive the LED as being always on. (*Id.* (citing '661 Patent at 11:1–6, 5:52–56).)

Regarding Plaintiff's construction, Defendant contends that it ignores the teachings of the specification and seeks to broaden the claims by including the phrase "transient change." (*Id.* at 13). According to Defendant, the specification describes the pulses as a regular, periodic, structured signal, not as a voltage source that merely experiences some "transient change." (*Id.* (citing '661 Patent at 7:49–53, 5:33–61).) Defendant further argues that a plain and ordinary meaning for "pulsed" would be inappropriate because it describes technical concepts that would not be readily understood by a lay juror. (*Id.*) Defendant further concedes that the word "discrete" is not found in the specification verbatim but argues that the specification describes two discrete levels of the pulse—an "on" state or an "off" state. (*Id.* at 15 (citing '661 Patent at 7:45–49, 5:46–56, 7:59–62, 8:7–9, 11:26–31, 5:52–56, 12:5–14).) According to Defendant, the terms "repeating signal" and "discrete" are used to simplify and describe the pulses in plain English for the jury. (*Id.*) Defendant also contends that the extrinsic evidence supports the fact that the signal has two discrete levels. (*Id.* at 16 (citing Dkt. No. 30-8 at 5).)

Defendant further argues that in a prior *inter partes* review, the PTAB construed "pulses"/"pulsed" under the BRI standard as "periodic changes from off to on or from on to off." (*Id.* (citing Dkt. No. 33-6 at 5–6).) Defendant contends that Plaintiff's construction is considerably broader than the BRI construction. (*Id.* at 17.)

Plaintiff replies that the claim language makes no mention of "a pulse train" or a repeating signal. (Dkt. No. 35 at 5.) Plaintiff argues that the specification clarifies that "[i]n one embodiment, PSCC 130 provides a pulse train." (*Id.* (citing '661 Patent at 7:49).) Plaintiff further contends that relying on PTAB's constructions from previous IPR proceedings is misplaced. (*Id.* at 6.)

According to Plaintiff, the claim constructions generated by PTAB under the broadest reasonable construction standard should be given very little weight for any of the disputed terms. (*Id.* at 7.)

2. Analysis

The term "pulsed power" appears in Claim 34 of the '661 Patent. The Court finds that "pulsed power" is a technical term that would not be easily understandable to a jury. As such, the Court looks to the intrinsic evidence for background and how a person of ordinary skill in the art would understand the term. The specification states that "LEDs have voltage, current, and power parameters that must be controlled in order to maximize device life." '661 Patent at 1:25–30. The specification indicates that controlling these parameters is important because it prevents "destruction of LEDs" and prevents "overheating of LEDs." *Id.* at 12:51–57. To control these parameters the specification discloses a "drive signal 250" or a "variable pulse control signal" that is used to control light output. *See, e.g.*, *id.* at 8:42–46 ("In one embodiment, MP 134 is programmed to receive a feedback signal 260 from feedback circuit 160, and on the basis of the feedback signal, adjust the drive signal(s) 250 to LEDs 150, thus adjusting the light output."), 10:21–23 ("In some embodiments, pin 336 provides a variable pulse control signal to vary pulse width, pulse frequency, or both in order to control light output as described above.").

The specification further indicates that the control circuit limits the duration of current to the LEDs. *See, e.g.*, *id.* at 5:33–41 ("The present invention takes advantage of . . . the efficiency derived from switching the current to and limiting the duration of current to the LEDs to project light efficiently and with constant brightness even as the battery supply voltage decays over time."). In other words, the drive signal switches the LED between an on state to an off state or from an off state to an on state. *See, e.g.*, *id.* at 5:46–52 ("The present invention controls the current flow duration (pulse width) to limit power dissipation in the LEDs during the LEDs' on state, and

increasing the pulse width as the battery voltage decreases over time to maintain substantially constant perceived or average LED intensity over the course of the battery's life.").

The specification also states that "[t]he invention controls the switching frequency of the pulse width to further control the LED intensity and power dissipation while maintaining a constant light output from the LEDs as perceived or visible to the human eye, or a light-sensing device, e.g., camera, nightvision scope, CMOS and CCD sensor and pixel arrays." *Id.* at 5:52–57. Finally, the specification discloses that "[i]n one embodiment, PSCC 130 provides a pulse train, in which pulse frequency, pulse width, or pulse shape/height, and/or the number of LEDs that are driven, is controlled in order to provide a relatively constant light output level even as battery voltage declines and power is drained." *Id.* at 7:48–53. With this background, the Court turns to the claim language.

Claim 34 recites that the "electrical control circuit" applies a "pulsed power" to "the one or more LEDs." As indicated above, this means that the control circuit applies a control signal that switches the one or more LEDs either (1) from an on state to an off state, or (2) from an off state to an on state. *See, e.g.*, *id.* at 5:46–49 ("The present invention controls the current flow duration (pulse width) to limit power dissipation in the LEDs during the LEDs' on state . . . ."). The specification further indicates that duration of the on state or off state is determined by the control signal's frequency, width, and shape/height. *See, e.g.*, *id.* at 7:48–53 ("In one embodiment, PSCC 130 provides a pulse train, in which pulse frequency, pulse width, or pulse shape/height, and/or the number of LEDs that are driven, is controlled in order to provide a relatively constant light output level even as battery voltage declines and power is drained."). The Parties agree that the LEDs are powered on and off during operation. *See, e.g.*, Dkt. No. 30 at 7 ("[I]n order to be 'pulsed', the power is turned on or off at desired times and is turned off or on at desired times.");

Dkt. No. 33 at 19 ("The specification also describes two discrete levels of the pulse—an 'on' state or an 'off' state."). Accordingly, the intrinsic evidence indicates that the term "pulsed power" should be construed to mean "power that is switched from an on state to an off state or from an off state to an on state."

Turning to the Parties' construction, Plaintiff contends that the term should be given its plain and ordinary meaning. (Dkt. No. 30 at 8–9). The Court finds that the term "pulsed power" is a technical concept that would not be readily understood by a lay juror. Thus, the jury would benefit from a construction that help explains the term. In the alternative, Plaintiff contends that the term should be construed to mean "a transient change in voltage, current, or some other normally constant physical parameter." (Dkt. No. 30 at 9 (citing Dkt. No. 30-8 at 5).) The Court finds that Plaintiff's construction is incomplete and overly broad. Specifically, Plaintiff's construction fails to capture that the power is switched from an on state to an off state or from an off state to an on state.

Defendant argues that the term "pulsed" should be construed to mean "a repeating signal's two discrete voltage levels." The Court first notes that the terms "repeating signal" and "discrete" are not found in the intrinsic evidence. Moreover, the proposed construction needlessly introduces confusion for a jury. Defendant agrees that the specification "describes two discrete levels of the pulse—an 'on' state or an 'off' state." (Dkt. No. 33 at 15.) Consistent with Defendant's argument, the Court finds that a jury would more easily understand an "on" or "off" state, instead of "discrete voltage levels." Moreover, unlike "discrete voltage levels," the "on" and "off" states are disclosed in the specification.

Defendant also argues that the specification consistently describes its pulses as repeating signals used to control brightness. (Dkt. No. 33 at 19.) According to Defendant, the specification

use a pulse train to power the LEDs on and off, which Defendant contends is "simply a train of pulses (i.e., a repeating signal) that repeatedly switches between 'on' and 'off.'" (Dkt. No. 33 at 14 (citing '661 Patent at 7:49–51).) As indicated, the term "repeating signal" does not appear in the specification. Moreover, the specification indicates that the "pulse train" is only one embodiment. *See, e.g.*, '661 Patent at 7:49 ("*In one embodiment*, PSCC 130 provides a pulse train.") (emphasis added). Furthermore, the "pulse train" is associated with a specific embodiment that includes a "stroboscope effect." *Id.* at 6:5–9.

In sum, whether the signal is repeating is determined by the control signal, and whether the signal's frequency, width, and/or shape/height are adjusted is captured by the phrase "maintain a predetermined light output level." Contrary to Defendant's contention, the phrases "repeating signal," "discrete," and "attributes" do not simplify and describe the pulses in "plain English for the jury." Accordingly, the Court rejects Defendant's construction because it introduces more ambiguity than clarity. Finally, in reaching its conclusion, the Court has considered the extrinsic evidence submitted by the Parties, and given it its proper weight in light of the intrinsic evidence.

3. Court's Construction

For the reasons set forth above, the Court construes the term **"pulsed power"** to mean **"power that is switched from an on state to an off state or from an off state to an on state."**

C. "maintain a predetermined light output level"

Disputed Term	Plaintiff's Proposal	Defendant's Proposal[4]
"maintain a predetermined light output level"	Plain and ordinary meaning	"to control brightness such that the perceived light output level of the LEDs stays constant over time"

[4] Defendant argues that the phrase "maintain a predetermined light output level" should be construed as part of a larger claim phrase. (Dkt. No. 33 at 20.) In the alternative, Defendant argues that its proposed construction for "maintain a predetermined light output level" is "to control brightness such that the perceived light output level of the LEDs stays

1. The Parties' Positions

The Parties dispute whether the phrase "maintain a predetermined light output level of the LED units as a charge on the DC voltage source varies" requires construction. Plaintiff argues that the phrase should be given its plain and ordinary meaning. (Dkt. No. 30 at 11.) Plaintiff contends that Defendant's construction omits the "charge" recited in Claim 34. (*Id.* at 12.) Plaintiff further argues that Defendant's construction is incorrect because it is not supported by the specification and needlessly introduces confusion for a jury. (*Id.*)

Defendant responds that the phrase describes detecting a variation in the DC voltage source, and changing one of that signal's attributes to maintain brightness. (Dkt. No. 33 at 18.) Defendant argues that the specification describes controlling the signal to maintain brightness over time in response to a reduction in the DC voltage level. (*Id.* (citing '661 Patent at 5:46–52, 1:23–27.) According to Defendant, the control circuit detects a reduction in DC voltage and, to compensate for the dimming of light, adjusts an attribute of the pulse so that the LED's brightness is increased. (*Id.* (citing '661 Patent at 5:61–67, 2:31–35, 7:53–59).) Defendant argues that increasing the amount of "on" time, as opposed to "off" time, will cause the LED to appear brighter to the human eye, thereby compensating for an aging battery. (*Id.* at 19 (citing '661 Patent at 11:1–6, 5:52–56, 7:59–62, 8:7–9, 11:26–31, 5:52–56).) Defendant further contends that its construction is correct because it states that, in response to detecting a change in the DC voltage level, one of the signal's attributes is changed so that the perceived light output level of the LEDs stays constant over time. (*Id.*)

Defendant further argues that the claim language describes a control mechanism that "selectively applies." (*Id.*) Defendant contends that the control and selective application are a

constant over time." (*Id.* at 21.)

function of a varying charge on the DC voltage source. (*Id.*) According to Defendant, the control circuit must be able to detect the varying charge in order to selectively apply in response. (*Id.*) Defendant argues that its construction describes detecting the variation in DC voltage, and changing a signal's attribute in response. (*Id.*)

Finally, Defendant concedes that its construction omits the word "charge," but argues that its construction simplifies and explains that the claim encompasses variation of the DC voltage source. (*Id.* at 20.) Defendant argues that the specification consistently describes "charge" as the battery's voltage, and that dimming occurs when the battery's voltage drops. (*Id.* (citing '661 Patent at Abstract, 1:23–47, 1:57–61).) Defendant contends that its construction captures the concept of a variation in a charge. (33 at 20).

Plaintiff replies that claim 34 makes no mention of "detects" or "detecting" or "attributes." (Dkt. No. 35 at 8.) Plaintiff argues that its construction is correct because it more closely adheres to the claim language. (*Id.* at 9.)

2. Analysis

The phrase "maintain a predetermined light output level" appears in asserted Claim 34 of the '661 Patent. The Court finds that the intrinsic evidence indicates that maintaining a predetermined light output level means maintaining a substantially constant light output level. The specification states that "[t]he present invention controls the current flow duration (pulse width) to limit power dissipation in the LEDs during the LEDs' on state, and increasing the pulse width as the battery voltage decreases over time *to maintain substantially constant* perceived or average LED intensity over the course of the battery's life." '661 Patent at 5:46–52 (emphasis added). The specification adds that "[i]n one embodiment, feedback 160 measures the light output of LEDs 150 . . . and provides a signal that allows PSCC 130 to *adjust the light output to a desired level*

(typically *providing a constant light output even as battery voltage declines as power is drained*)." *Id.* at 7:53–60 (emphasis added).

The specification further discloses that "[i]n one such embodiment, the width of each pulse is adjusted to keep *a constant average light output* (widening each pulse as the intensity of light decreases, in order to obtain a constant light output)." *Id.* at 7:59–62 (emphasis added). Similarly, the specification states that "PSCC 130 provides a pulse train, in which pulse frequency, pulse width, or pulse shape/height and/or the number of LEDs that are driven, is controlled in order to provide *a relatively constant light output level* even as battery voltage declines and power is drained." *Id.* at 7:49–53. Finally, the patent owner argued in the IPR that "'maintain,' means to keep substantially constant." (Dkt. No. 33-5 at 5.) Accordingly, the intrinsic evidence indicates that the phrase "maintain a predetermined light output level of the LED units" should be construed to mean "maintain a substantially constant light output level."[5]

Turning to the Parties' construction, Defendant argues that its construction is supported by the specification. (Dkt. No. 33 at 18.) The Court agrees that the specification discloses adjusting the signal to maintain brightness over time as a charge on the DC voltage source varies. However, Defendant's construction goes too far by requiring "detecting a variation in the DC voltage source applied to the LEDs." The claim language does not require a detecting step. Moreover, the specification discloses other ways of detecting a reduction in the light output level besides detecting a variation of the DC voltage source. For example, the specification states that "[i]n another embodiment, the present invention uses a light-sensing device such as a light-sensing

[5] At the claim construction hearing, Plaintiff indicated that it agreed with including "substantially constant" in the Court's construction. (Dkt. No. 51 at 34:7–9 ("And I think, Your Honor, we would agree with that more comfort level on your end as far as substantially constant."); *id.* at 33:18–22 ("I think Lemaire would be amenable to something closer to substantially constant because as we said before, sometimes it can deviate, but I think substantially constant is closer to what a predetermined light output level is.").)

transistor or light-detecting diode (LDD) in proximity to the output LED(s) to measure the average brightness and further regulate the LEDs' output." '661 Patent at 5:63–67. Accordingly, the Court rejects this portion of Defendant's construction.

The remaining portion of Defendant's proposal improperly redrafts the phrase "a predetermined light output level" as "the perceived light output level of the LEDs." Defendant has not provided a persuasive reason to redraft this claim language as it proposes. Defendant's construction also introduces an antecedent basis problem with "the" perceived light output level. Finally, in reaching its conclusion, the Court has considered the extrinsic evidence submitted by the Parties, and given it its proper weight in light of the intrinsic evidence.

3. Court's Construction

For the reasons set forth above, the Court construes the phrase **"maintain a predetermined light output level"** to mean **"maintain a substantially constant light output level."**

V. CONCLUSION

The Court adopts the constructions above for the disputed and agreed terms of the '661 Patent. Furthermore, the Parties should ensure that all testimony that relates to the terms addressed in this Order is constrained by the Court's reasoning. However, in the presence of the jury the Parties should not expressly or implicitly refer to each other's claim construction positions and should not expressly refer to any portion of this Order that is not an actual construction adopted by the Court. The references to the claim construction process should be limited to informing the jury of the constructions adopted by the Court.

It is SO ORDERED.

So Ordered this

May 6, 2019

RODNEY GILSTRAP
UNITED STATES DISTRICT JUDGE