IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

ON SEMICONDUCTOR CORPORATION and SEMICONDUCTOR COMPONENTS INDUSTRIES, LLC,	:	
Plaintiffs,	:	C.A. No. 17-247-LPS-CJB
v.	:	
POWER INTEGRATIONS, INC.,	:	
Defendant.	:	

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MEMORANDUM OPINION

October 9, 2018
Wilmington, Delaware

STARK, U.S. District Judge:

Plaintiffs ON Semiconductor Corporation and Semiconductor Components Industries, LLC ("Plaintiffs" or "ON") brought this patent infringement suit against Defendant Power Integrations, Inc. ("Defendant" or "Power"), alleging that Power infringes ON's U.S. Patent Nos. 7,440,298 (the "'298 patent"), 7,564,705 (the "'705 patent"), 7,800,923 (the "'923 patent"), 7,796,407 (the "'407 patent"), 9,077,258 (the "'258 patent"), and 7,102,211 (the "'211 patent"). (*See generally* D.I. 24) Power asserted counterclaims alleging that ON infringes Power's U.S. Patent Nos. 6,107,851 (the "'851 patent"), 6,229,366 (the "'366 patent"), 6,337,788 (the "'788 patent"), 6,456,475 (the "'475 patent"), 8,077,483 (the "'483 patent"), and 8,773,871 (the "'871 patent").[1] (*See generally* D.I. 34, 87) The asserted patents generally relate to power supply controllers. (*See* D.I. 81 at 1)

Presently before the Court is the issue of claim construction. The parties submitted technology tutorials (*see* D.I. 79, 80), objections to such technology tutorials (*see* D.I. 92, 94), claim construction briefs (*see* D.I. 81, 83, 91, 95), supporting exhibits (*see* D.I. 82, 83-1, 93, 96), notices of supplemental authorities (*see* D.I. 102, 106), and a joint letter requested by the Court (*see* D.I. 105). The Court held a claim construction hearing on August 6, 2018, at which both sides presented oral argument. (*See* D.I. 104 ("Tr."))

I. LEGAL STANDARDS

The ultimate question of the proper construction of a patent is a question of law. *See Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 837 (2015) (citing *Markman v. Westview*

[1]Power has also asserted infringement of U.S. Patent No. 6,249,876 (the "'876 patent"). The Court does not presently have before it claim construction disputes relating to the '876 patent.

Instruments, Inc., 517 U.S. 370, 388-91 (1996)). "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." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (internal quotation marks omitted).

"[T]here is no magic formula or catechism for conducting claim construction." *Id.* at 1324. Instead, the Court is free to attach the appropriate weight to appropriate sources "in light of the statutes and policies that inform patent law." *Id.*

"[T]he words of a claim are generally given 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 (internal citations and quotation marks omitted). "[T]he ordinary meaning of a claim term is its meaning to the ordinary artisan after reading the entire patent." *Id.* at 1321 (internal quotation marks omitted). The patent 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." *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996).

While "the claims themselves provide substantial guidance as to the meaning of particular claim terms," the context of the surrounding words of the claim also must be considered. *Phillips*, 415 F.3d at 1314. Furthermore, "[o]ther claims of the patent in question, both asserted and unasserted, can also be valuable sources of enlightenment . . . [b]ecause claim terms are normally used consistently throughout the patent." *Id.* (internal citation omitted).

It is likewise true that "[d]ifferences among claims can also be a useful guide. . . . For example, the presence of a dependent claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim." *Id.* at 1314-

15 (internal citation omitted). This "presumption is especially strong when the limitation in dispute is the only meaningful difference between an independent and dependent claim, and one party is urging that the limitation in the dependent claim should be read into the independent claim." *SunRace Roots Enter. Co., Ltd. v. SRAM Corp.*, 336 F.3d 1298, 1303 (Fed. Cir. 2003).

It is also possible that "the specification may reveal a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess. In such cases, the inventor's lexicography governs." *Phillips*, 415 F.3d at 1316. It bears emphasis that "[e]ven when the specification describes only a single embodiment, the claims of the patent will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using words or expressions of manifest exclusion or restriction." *Hill-Rom Servs., Inc. v. Stryker Corp.*, 755 F.3d 1367, 1372 (Fed. Cir. 2014) (quoting *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 906 (Fed. Cir. 2004)) (internal quotation marks omitted).

In addition to the specification, a court "should also consider the patent's prosecution history, if it is in evidence." *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 980 (Fed. Cir. 1995), *aff'd*, 517 U.S. 370 (1996). The prosecution history, which is "intrinsic evidence," "consists of the complete record of the proceedings before the PTO [Patent and Trademark Office] and includes the prior art cited during the examination of the patent." *Phillips*, 415 F.3d at 1317. "[T]he prosecution history can often inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be." *Id.*

In 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." *Teva*, 135 S. Ct. at 841. Extrinsic evidence "consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises." *Markman*, 52 F.3d at 980. For instance, technical dictionaries can assist the court in determining the meaning of a term to those of skill in the relevant art because such dictionaries "endeavor to collect the accepted meanings of terms used in various fields of science and technology." *Phillips*, 415 F.3d at 1318. In addition, expert testimony can be useful "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.* Nonetheless, courts must not lose sight of the fact that "expert reports and testimony [are] generated at the time of and for the purpose of litigation and thus can suffer from bias that is not present in intrinsic evidence." *Id.* Furthermore, "statements made by a patent owner during an IPR [inter partes review] proceeding . . . can be considered for claim construction." *Aylus Networks, Inc. v. Apple Inc.*, 856 F.3d 1353, 1362 (Fed. Cir. 2017). Overall, while extrinsic evidence "may be useful" to the court, it is "less reliable" than intrinsic evidence, and its consideration "is unlikely to result in a reliable interpretation of patent claim scope unless considered in the context of the intrinsic evidence." *Id.* at 1318-19. Where the intrinsic record unambiguously describes the scope of the patented invention, reliance on any extrinsic evidence is improper. *See Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1308 (Fed. Cir. 1999) (citing *Vitronics*, 90 F.3d at 1583).

Finally, "[t]he construction that stays true to the claim language and most naturally aligns

with the patent's description of the invention will be, in the end, the correct construction." *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998). It follows that "a claim interpretation that would exclude the inventor's device is rarely the correct interpretation." *Osram GmbH v. Int'l Trade Comm'n*, 505 F.3d 1351, 1358 (Fed. Cir. 2007) (quoting *Modine Mfg. Co. v. U.S. Int'l Trade Comm'n*, 75 F.3d 1545, 1550 (Fed. Cir. 1996)).

II. CONSTRUCTION OF DISPUTED TERMS[2]

A. ON'S PATENTS

1. '298 and '705 Patents

a. "magnetized voltage"[3] "demagnetized voltage"[4]

"magnetized voltage"	"demagnetized voltage"
ON "voltage produced at a secondary winding while an input voltage is applied to a primary winding"	**ON** "voltage applied to the secondary winding while an input voltage is not applied to the primary winding"
Power "voltage at the output of the transformer during the magnetization period" ('298 patent, cls. 1, 2) "voltage at the output of the magnetic device during the magnetization period" ('298 patent, cls. 10, 11; '705 patent, cls. 1, 3, 4, 5, 6)	**Power** "voltage at the output of the transformer during the demagnetization period" ('298 patent, cls. 1, 2) "voltage at the output of the magnetic device during the demagnetization period" ('298 patent, cls. 10, 11; '705 patent, cls. 1, 3, 4, 5, 6)

[2]The Court will also adopt the parties' proposed agreed-upon constructions.

[3]This term appears in claims 1 and 8 of the '298 patent and claim 1 of the '705 patent.

[4]This term appears in claims 1 and 9 of the '298 patent and claim 1 of the '705 patent.

Court	**Court**
"voltage at the output of the transformer during the magnetization period" ('298 patent, cls. 1, 2)	"voltage at the output of the transformer during the demagnetization period" ('298 patent, cls. 1, 2)
"voltage at the output of the magnetic device during the magnetization period" ('298 patent, cls. 10, 11; '705 patent, cls. 1, 3, 4, 5, 6)	"voltage at the output of the magnetic device during the demagnetization period" ('298 patent, cls. 10, 11; '705 patent, cls. 1, 3, 4, 5, 6)

While the specification focuses on magnetic devices with primary and secondary windings (*see* '298 patent at 1:14-32; D.I. 95 at 11; Tr. at 6), the claims refer not only to a transformer (which characteristically has distinct first and second windings) but also more broadly to a magnetic device generally (*see* D.I. 81 at 20-21), which may include, for example, an inductor (*see* Tr. at 14). ON's construction improperly would eliminate the claims' distinction between a transformer and a magnetic device. (*See id.* at 20-21)

The Court recognizes its adoption of Power's proposed constructions results in different constructions than the PTAB provided. However, since Power did not propose any constructions of these terms to the PTAB, it does not appear that the PTAB rejected the constructions adopted here. (*See id.* at 7-8; D.I. 102-1 Ex. V at 11-12; D.I. 106-1 Ex. Z at 12-13)

b. The "in response to" Terms: "generat(e/ing) a [] signal . . . in response to"[5]

ON Plain and ordinary meaning Alternatively, "generat(e/ing) a [x] signal . . . in response to [y]" → "generat(e/ing) a [x] signal based, at least in part, on [y]"
Power When a claim recites that signal A "is generated . . . in response to" signal B (and potentially other signals) it means that "the value of [x] is derived, at least in part, from the value of [y]"
Court "generat(e/ing) a [x] signal . . . in response to [y]" → "generat(e/ing) a [x] signal based, at least in part, on [y]"

ON agrees that there is "a clear and definite relationship between [y] and the step of generating signal [x]," but is concerned about identifying the specific relationship of each instance of the claim phrase without separately defining each specific claim term in each separate patent (as it alternatively proposes). (D.I. 105 at 1-2 Ex. A) During oral argument, Power conceded that "based on, at least in part" would be "fine" and that its proposed "derived" was meant as "another way of saying 'generate' without just repeating 'generate.'" (Tr. at 30-31) ON's revised, proposed, compromise construction adequately encompasses the generic relationship that exists between [x] and [y]. During the summary judgment stage or at trial, experts will be able to explain further that specific relationship (whether or not mathematical) for each claim term and how the accused product allegedly infringes.

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[5]The "generat(e/ing) a [] signal . . . in response to" terms appear in claims 1 and 8 of the '298 patent, claim 1 of the '705 patent, claims 1 and 12 of the '923 patent, and claims 1, 5, 6, and 31 of the '407 patent. The parties proposed revised constructions in a joint letter dated August 15, 2018 after the hearing. (*See* D.I. 105) These revised proposals are shown in the table.

2. '258 Patent

a. "generating a compensation signal in accordance with a synchronous rectifying signal"[6]

ON "generating a compensation signal so that it conforms to a synchronous rectifying signal"
Power When a claim recites "generating [signal A] in accordance with [signal B]" it means that the value (i.e. magnitude, duration, etc.) of signal A is derived, at least in part, from the value of signal B.
Court "generating a compensation signal based, at least in part, on a synchronous rectifying signal"

ON argues that the phrase "in accordance with [something]" means "conforming with [that something]." (D.I. 83 at 7; D.I. 95 at 17) ON admits that "mere coincidence would not suffice." (D.I. 83 at 8; D.I. 95 at 17) During oral argument, Power conceded that "based on" would work just as well as "derived" to demonstrate that "there is a mathematical relationship between the input and the output." (Tr. at 39-40) The Court's modified construction, which includes "based, at least in part, on," is consistent with its conclusions on the "in response to" terms.

b. "error amplifier"[7]

ON "a circuit component that amplifies the difference in magnitude between two input signals"
Power "a circuit component that generates an output having a magnitude representative of the difference in magnitude between two input values; not a comparator"

[6]This term appears in claim 1 of the '258 patent.

[7]This term appears in claim 1 of the '258 patent.

Court
"a circuit component that generates an output having a magnitude representative of the difference in magnitude between two input values; not a comparator"

The parties dispute "whether an 'error amplifier' must generate an analog output signal having a magnitude that is representative of the actual difference between two input signals" (Power's position) or whether "an error amplifier generates an output signal merely indicating whether a difference exists between input signals" (ON's position). (D.I. 81 at 26-27) The parties also dispute whether an "error amplifier" may encompass a comparator: Power says no, while ON says yes.

The Court sides with Power, which correctly writes: "The intrinsic record demonstrates that the claimed 'error amplifier' generates an analog output signal that represents the amount of the difference between the measured voltage and a desired voltage." (*Id.* at 27; *see also* D.I. 91 at 17-18 (error amplifiers "generate an analog signal output (V_F) that is representative of the actual difference between the two inputs (V_{REF} and V_A)")) Dictionary definitions further support a finding that a POSA would understand that an error amplifier is an analog device whose "output is an analog signal that represents the difference between its two inputs," whereas a comparator is a digital device whose output is a logic state indicating "whether one input is higher than the other." (Tr. at 46)

3. '407 and '923 Patents

a. "polarity of the pulse signal[s]"[8]

ON Plain and ordinary meaning Alternatively, "a high or low state of the pulse signal(s)"
Power "the negative/positive state of a pulse signal that is a differential signal having both positive and negative magnitudes relative to a common reference"
Court "the negative/positive state of a pulse signal that is a differential signal having both positive and negative magnitudes relative to a common reference"

The parties agree that the polarity of the pulse signal determines the on or off state of the power switch. (*See id.*; D.I. 95 at 14) Both parties also seem to agree that polarity refers to the two contrasting states of the pulse signal. (*See* D.I. 91 at 13 (suggesting alternative construction of "the positive or negative state of the pulse signal"); D.I. 95 at 15 ("polarity" is "the two contrasting states of a pulse signal"))

Power argues that "the term 'polarity' connotes a signal having ***positive*** and ***negative*** amplitudes and not merely a high and low state," noting that the patents refer to "positive-polarity pulse signal[s]" and "negative-polarity pulse signal[s]." (D.I. 91 at 13; *see also* '407 patent at 5:26-29; '923 patent at 4:14-16) It follows, according to Power, that "the additional polarity qualifier means the claimed pulse signals have both positive and negative magnitudes relative to a common reference." (D.I. 81 at 21) ON argues that Power's construction violates the doctrine of claim differentiation by defining "pulse signal" as a "differential signal," because

[8]This term appears in claims 1 and 31 of the '407 patent and claim 12 of the '923 patent.

claim 12 of the '407 patent and claim 7 of the '923 patent specify that "the pulse signal is a differential signal," unlike the respective claims on which they depend. (*See* D.I. 83 at 4)

The Court agrees with Power that the construction should refer to a positive or negative state, because the specification consistently describes the pulse signals as differential signals having positive or negative polarity. Claim differentiation does not render Power's construction wrong; the dependent claims contain several additional differences from the independent claim besides just characterizing the pulse signals as differential signals.

b. "power-switch set"[9]

ON Plain and ordinary meaning Alternatively, "a collection of circuit elements configured to operate as a power switch"
Power "two or more distinct transistor devices configured to operate collectively as a power switch"
Court "two or more distinct transistor devices configured to operate collectively as a power switch"

The parties agree that a transistor device is a power switch. (*See* D.I. 81 at 24; D.I. 83 at 6) ON contends that "set" refers to "a collection of components that operate as a power switch" and that "nothing in the specification indicates that two switches are required." (D.I. 83 at 6; D.I. 95 at 16) For support, ON points to dependent claim 2 – which specifies the set having two switches – and the doctrine of claim differentiation. (*See* D.I. 83 at 5)

To Power, "[t]here is nothing in the specification that contemplates a 'power-switch set' having only a single transistor." (D.I. 81 at 24) Rather, the patent discusses a power-switch set

[9]This term appears in claims 1 and 12 of the '923 patent.

as having two switches. (*See* '923 patent at 5:55-6:11) Power also argues that dependent claim 2 narrows the orientation of the switches and the relation of other components in the power-switch set, thereby further narrowing independent claim 1 and saving it from the doctrine of claim differentiation. (*See* D.I. 91 at 14)

The Court agrees with Power and will adopt its construction.

4. '211 Patent

a. "common leads projecting out from the resin-sealing body"[10]

ON "leads with a common electrical potential each beginning inside of and extending outside of the resin-sealing body"
Power "common leads" → "two or more physically separate leads that have a common electrical potential"
Court "leads with a common electrical potential each beginning inside of and extending outside of the resin-sealing body"

The parties agree that "common" means having "common electrical potential" (D.I. 83 at 10), but have two disputes: (1) where the leads must begin, and (2) whether the leads are "physically separate."

The Court agrees with ON that a POSA would understand that "project out from" means the thing that is being projected "begins ***within*** and extends outwardly from the boundary." (*Id.*) This is different from "project from," which "informs the reader that there is a thing that extends outwardly from the barrier." (*Id.*) The abstract provides that "common leads [are] coupled to an island, and ***a part*** of the common leads projects out from a resin seal body[;] . . . ***[t]hen***, the heat

[10]This term appears in claims 1 and 5 of the '211 patent.

. . . is dissipated through the common leads ***to the outside*** of the resin seal body." ('211 patent, Abstract; *see also id.* at 4:18-23 ("[T]he heat generated . . . is transferred from the island 23 to the common leads 24M. . . . Then, the generated heat is dissipated to the outside of the resin-sealing body."), 6:24-28)

As to the second issue, ON and Power actually agree that the common leads have to be physically separate at some points and coupled at other points. (*See* Tr. at 72-74) The Court agrees with ON that inclusion of "physically separate" in the construction is confusing and unnecessary.

b. "hybrid integrated circuit board"[11]

ON Plain and ordinary meaning Alternatively, "an interconnect structure for a plurality of electronic elements"
Power "insulated or non-conductive board that is formed separately from the conductive pattern"
Court "insulated or non-conductive board, which may include an insulating layer"

ON's construction is incorrect because the claim does not describe "the physical configuration of the board" (D.I. 83 at 11) but, instead, describes a "hybrid integrated circuit ***device***."

ON faults Power's proposed construction for improperly adding two limitations to the claim. First, ON argues that the requirement that the board "is formed separately" from the conductive pattern is inconsistent with claim 5's requirement that a conductive pattern is "formed

[11]This term appears in claim 5 of the '211 patent.

at least on a surface of" the board. (*See id.* at 12) The Court finds that the "formed separately" language adds confusion to what is required by claim 5: that the conductive pattern is "formed at least on a surface of" the hybrid integrated circuit board.

Second, ON argues that the requirement that the board must be "insulated or non-conductive" is too narrow, as the patent expressly provides that the board can be metal, including a conductive metal. (*See id.*) Power agrees that the board could be metal, but, if it is, the board must have an insulating layer on it. (*See* D.I. 81 at 30) ON does not disagree, but notes that the insulating layer would be a separate component. (D.I. 95 at 20) The Court finds that the board may be either a non-conductive material or a metal material with an insulating layer; the insulating layer need not be a separate component but may rather be part of the board.

B. POWER'S PATENTS

1. '851 and '366 Patents

a. "internally controlled signal within the regulation circuit"[12]

ON "a signal that is not subject to line voltage or load magnitude variations"
Power Plain and ordinary meaning This proposed term for construction modifies "frequency variation signal" which the parties agree, consistent with the Court's prior construction, should be construed as: "an internal signal that cyclically varies in magnitude during a fixed period of time and is used to modulate the frequency of the oscillation signal within a predetermined frequency range." No further construction is required.

[12]This term appears in claim 20 of the '851 patent.

Court Plain and ordinary meaning This proposed term for construction modifies "frequency variation signal" which the parties agree, consistent with the Court's prior construction, should be construed as: "an internal signal that cyclically varies in magnitude during a fixed period of time and is used to modulate the frequency of the oscillation signal within a predetermined frequency range." No further construction is required.

The claimed "regulation circuit" of new claim 20 is "a frequency variation circuit that provides a frequency variation signal, wherein the frequency variation signal is an internally controlled signal within the regulation circuit." ('851 patent, cl. 20) The parties agree that the Court should apply its earlier construction of "frequency variation signal:" "an internal signal that cyclically varies in magnitude during a fixed period of time and is used to modulate the frequency of the oscillation signal within a predetermined frequency range." (D.I. 78-1 at 17) The parties dispute whether "internally controlled signal within the regulation circuit" needs to be construed.

ON argues that it does, and that the specification establishes that the use of an "internal frequency variation signal" has "an advantage over the frequency jitter operation [in the prior art] in that the frequency range of the present[] regulation circuit 850 is known and fixed, and is not subject to ***line voltage or load magnitude variations***." ('851 patent at 11:45-50) (emphasis added) ON finds further support for its position in statements made by the Federal Circuit in a related appeal and also by Power in its office action response and its Federal Circuit briefing. (*See* D.I. 83 at 16-17)

Power argues that the prior agreed-to construction of "frequency variation signal" "sufficiently defines the important characteristics of the signal," emphasizing that it is internally

controlled. (D.I. 81 at 4-5) Power further argues that not being "subject to the line voltage or load magnitude variations" is an "aspirational goal of the invention" and not an "exhaustive list of characteristics which may result." (*Id.* at 5) The Court agrees with Power that "ON's proposed construction improperly isolates one of [multiple] potential benefits of an internally controlled signal" (D.I. 91 at 1); at least one other result is that the regulation circuit is "known and fixed" ('851 patent at 11:49).

ON does not dispute that "internally controlled" was added during reexamination. (*See* Tr. at 98-99) The Court agrees with Power that the Court's prior construction already accounts for the new "internal" language and that additional construction of this term is unnecessary.

b. "according to a magnitude of said frequency variation signal"[13]

ON "according to a magnitude of a signal varying frequency and not subject to line voltage or load magnitude variations"
Power "the signal instructing said drive circuit to discontinue said drive signal is derived, at least in part, from the magnitude of the frequency variation signal"
Court "the signal instructing said drive circuit to discontinue said drive signal is based, at least in part, on the magnitude of the frequency variation signal"

ON argues that Power's construction "does not include any recognition that the signal is 'internal'" (D.I. 83 at 20), but that is wrong, because the term "frequency variation signal" has already been construed to be an "internal signal," as noted above (*see* D.I. 91 at 3). For similar reasons as explained with respect to the '258 patent, the Court rejects Power's phrase "is derived, at least in part, from" and, instead, uses "based, at least in part, on."

[13]This term appears in claim 13 of the '851 patent.

c. "comprising an on-state and an off-state"[14]

ON "having at least one state that allows the switch to be active or 'on' and at least one state that results in the switch being placed or held in its inactive or 'off' condition"
Power "on-state" → "the state of the maximum duty cycle signal that allows the switch to be active or 'on' and is independent of the logic state of the signal itself" "off-state" → "the state of the maximum duty cycle signal that results in the switch being placed or held in its inactive or 'off' condition and, again, is independent of logic state"
Court "having at least one state that allows the switch to be active or 'on' and at least one state that results in the switch being placed or held in its inactive or 'off' condition"

Claim 1 of the '366 patent refers to "an oscillator that provides a maximum duty cycle signal comprising an on-state and an off-state." ('366 patent, cl. 1) The parties agree that a "maximum duty cycle signal" is "a signal the purpose of which is to limit the maximum 'on-time' of a power switch during an on/off switching cycle." (D.I. 78-1 at 17) The parties also agree that the on-state allows the switch be active or on, and the off-state results in the switch being inactive or off. (*See* D.I. 81 at 6; D.I. 83 at 21)

The parties' dispute concerns Power's proposal to add that the on-state and off-state are "independent of the logic state." Power argues that "ON's proposal is both incorrect and incomplete in that it conflates the 'on-state' and 'off-state' of the maximum duty cycle signal with the respective on and off states of the switch it controls." (D.I. 81 at 6) In other words, Power claims that its proposal clarifies that "the 'on-state' of the maximum duty signal (when the

[14]This term appears in claim 1 of the '366 patent.

signal allows the drive circuit to turn the switch on) does not necessarily correspond to the signal itself being at a high magnitude (i.e. a high logic state)" and vice versa. (D.I. 91 at 4)

ON agrees with Power that "[t]here is nothing in the specification or prosecution history . . . that ties the signal's specific logic state to the claimed 'on-state' and 'off-state.'" (D.I. 95 at 3; *see also* D.I. 81 at 6) Due to this agreement, ON suggests "there is no reason to introduce a requirement of 'logic state' into the claims." (D.I. 95 at 3; *see also* Tr. at 114-15) The Court agrees with ON that Power's addition of logic states is unnecessary.

d. "soft start circuit means"[15]

ON Means plus function, subject to § 112 ¶ 6. The functions of the soft start circuit should be construed in accordance with the plain meaning of the claims setting forth such soft start circuit functions. The corresponding structures related to the soft start circuit are shown in Figures 3, 6, and 9 of the '366 patent and described in 6:7-17, 6:35-7:18, 11:40-50, and 12:5-10. This structure requires a frequency variation signal and a pulse width modulation frequency signal.
Power Construed under 112(6) with a function corresponding to the plain meaning and a structure shown in FIGs. 3, 6, and 9 and described in 6:7-17, 6:35-7:18, 11:40-50, and 12:5-10. The soft start circuit means does not include the "soft start capacitor 110" depicted in Figure 1 disclosing the prior art. In addition, the soft start circuit is not limited to use of a low frequency oscillator to generate the signal driving the soft start function or to a signal that cyclically repeats; the specification expressly contemplates various sources for the soft start signal and such a signal need only vary once from a relatively lower to a higher value during the soft start period in order to perform the function recited for the soft start circuit means.

[15]This term appears in claims 1, 9, 16, and 21 of the '366 patent.

Court
Means plus function, subject to § 112 ¶ 6. The functions of the soft start circuit should be construed in accordance with the plain meaning of the claims setting forth such soft start circuit functions. The corresponding structures related to the soft start circuit are shown in Figures 3, 6, and 9 of the '366 patent and described in 6:7-17, 6:35-7:18, 11:40-50, and 12:5-10. This structure requires a frequency variation signal and a pulse width modulation frequency signal.

Following reexamination, claim 1 of the '366 patent requires "a soft start circuit means for providing a signal instructing said drive circuit to disable said drive signal during at least a portion of said on-state of said maximum duty cycle." ('366 patent, cl. 1) Previously, in a related action, the Court construed "a soft start circuit means" as a means-plus-function element with the function construed as the plain meaning and the corresponding structure as shown in Figures 3, 6, and 9 and as described in 6:7-17, 6:35-7:18, 11:40-50, and 12:5-10 of the '366 patent. (*See* C.A. No. 12-540-LPS D.I. 87 at 14-16) Thus, the parties agree that the "soft start circuit means" is a means-plus-function term governed by 35 U.S.C. § 112(f)[16] and that the function is the plain meaning and the structure is as the Court previously identified. (*See* D.I. 81 at 6; D.I. 83 at 23)

In the same related litigation, the Court clarified that its "claim construction does require a frequency variation signal," rejecting Power's contrary position. (C.A. No. 12-540-LPS D.I. 338 at 6) Power now asks the Court to reach a different conclusion, while ON seeks to memorialize the previous construction by having the Court adopt it here. (*See* D.I. 83 at 24; D.I. 91 at 6)

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[16]The Patent Act 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." 35 U.S.C. § 112(f).

As the Court pointed out in the related litigation, the corresponding structure (that the parties still agree on) states that the "soft start circuit" is provided with a "frequency variation signal" and a "pulse width modulation frequency signal." ('366 patent at 6:49-52; *see also id.* Fig. 3) Power argues that the corresponding structure does not require a frequency variation signal and that "any slowly varying signal may be used instead" (D.I. 81 at 7), citing to the following structure in the specification as support:

> Although the presently preferred frequency variation signal 400 is a triangular waveform, alternate frequency variation signals such as ramp signals, counter output signals or other signals that vary in magnitude during a fixed period of time may be utilized as the frequency variation signal.

('366 patent at 6:44-48) In the Court's view, this excerpt explains that different types of frequency variation signals may be used, not that signals other than frequency variation signals may be used.

ON further argues that the Court should clarify that the soft start circuit requires both a frequency variation signal and a pulse width modulation frequency signal. (*See* D.I. 83 at 24) As both signals must be provided to the soft start comparator in order for it to have an output comparing the magnitudes of the two signals, the Court agrees with ON. (*See id.* at 25; '366 patent at 7:12-18, Fig. 3)

2. '788 and '475 Patents

a. "the feedback signal cycling [periodically] between a first state and a second state when the power supply operates normally"[17]

ON Plain and ordinary meaning. Alternatively, "a feedback signal repeatedly varying between two states when the power supply operates normally"
Power "the feedback signal cycles between discrete first and second logic states; i.e. does not continuously vary in an analog fashion"
Court "the feedback signal cycles between discrete first and second logic states; i.e. does not continuously vary in an analog fashion"

The parties dispute whether the feedback signal is digital, such that it cycles between two discrete or binary states, or analog, such that it varies continuously between the two states. To Power, it is "fundamental to the operation of the inventions" that "the feedback signal cycles between two discrete logic states and does not vary continuously in an analog fashion." (D.I. 81 at 8; D.I. 91 at 6) The patent provides that "[d]uring operation, the feedback signal periodically pulses between a low state and a high state depending on the amount of power required on a secondary winding." ('788 patent at 5:25-27) Power argues that a POSA would understand "pulse" to connote "a sudden change in state, not gradually varying over time." (D.I. 81 at 9) ON contends that the invention would operate just as well with an analog feedback signal, but does not cite the patent for this assertion. (*See* D.I. 95 at 5-6)

[17]This term appears in claim 1 of the '788 patent and claim 17 of the '475 patent.

The Court is not persuaded by ON's arguments. The figures in the patent show the feedback signal as having one of two discrete logic states over time. (*See* '788 patent, Figs. 2, 4)

b. "a timer"[18]

ON "a circuit element such as a capacitor or digital counter that provides a signal representative of a measurement of time"
Power Plain and ordinary meaning. Alternatively, "a circuit that measures elapsed time"
Court "a circuit element such as a capacitor or digital counter that provides a signal representative of a measurement of time"

The parties dispute whether a timer can be a single discrete circuit element. The Summary of the patent provides:

> ***The timer may be a digital counter***. An oscillator with a predetermined frequency may be coupled to the counter. The oscillator may have a control input for changing the predetermined frequency and a first current source coupled to the oscillator control input to generate a first frequency. A second current source may be coupled to the oscillator control input to generate a second frequency. The counter's output may be coupled to the first and second current sources. ***The timer may be a capacitor*** which is adapted to be charged at a first rate from a first threshold to a second threshold to generate a first predetermined period. The capacitor may be discharged from the second threshold to the first threshold at a second rate to generate the second predetermined period. The capacitor may also be reset to a voltage below the first threshold each time the feedback signal cycles.

('788 patent at 1:65-2:12) (emphasis added) ON argues that the patent clearly describes two embodiments of a timer – a digital counter and a capacitor. (*See* D.I. 81 at 11) Power argues that

[18]"This term appears in claims 1 and 2 of the '788 patent.

ON ignores the rest of the passage. (*See* D.I. 83 at 27) Power adds that the timer must be a circuit made up of multiple components, because "additional circuitry beyond just a counter or capacitor is required for an operational timer capable of satisfying the recited purpose." (D.I. 81 at 11) The Court agrees with ON, however, that "[i]t is unremarkable that other elements must interact with the timer for the invention as a whole to operate." (D.I. 95 at 7)

Power's claim differentiation argument (*see* D.I. 81 at 12) is without merit, because dependent claims 5 and 8, which claim the timer as a capacitor and digital counter, respectively, are appropriately differentiated from independent claim 1, which claims a timer generally.

c. "timing the feedback signal"[19]

ON "measuring the amount of time that passed between two successive transitions of the feedback signal"[20]
Power "measuring the elapsed time between cycles of the feedback signal"
Court "measuring the amount of time that passed between two successive transitions of the feedback signal"

Both parties agree that "timing the feedback signal" refers to measuring the time between one transition point in the feedback signal to the next. (*See* D.I. 81 at 12-13; D.I. 95 at 8) Because "cycle" can be confused as being the transition from a first state to a second state and back to a first state, the Court will adopt ON's revised proposed construction.

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[19]This term appears in claim 17 of the '475 patent.

[20]In ON's responsive brief, ON revised its proposed construction to that shown in the chart.

III. CONCLUSION

The Court construes the disputed terms as explained above. An appropriate Order follows.