

United States District Court,
D. Massachusetts.

VLT CORPORATION and Vicor Corporation,
Plaintiffs.

v.

LAMBDA ELECTRONICS, INC,
Defendant.

No. 01-CV-10957-PBS

Jan. 3, 2003.

Owner of patent for electronic power converter sued competitor for infringement. Construing claims, the District Court, Saris, J., held that: (1) all magnetizing energy in transformer had to be recycled to reset transformer, and (2) converter could transfer energy from primary to secondary winding either during primary switch's on or off periods.

Claims construed.

"Single ended forward converter," called for in patent for electronic power converter, was device in which power transformer was simultaneously connected to source and load, with power flow controlled by single solid state primary switch, and which could transfer energy from primary to secondary winding either during primary switch's on or off periods.

Paul F. Ware, Goodwin Procter LLP, Boston, MA, for VLT, Inc., Vicor Corporation, Plaintiffs.

Philip C. Swain, Katherine M. Hamill, Stephen B. Deutsch, William D. DeVaul, Michael V. Dowd, Steven W. Phillips, Foley Hoag LLP, Boston, MA, for Lambda Electronics, Defendant.

MEMORANDUM AND ORDER

SARIS, District Judge.

Plaintiffs VLT Corporation and Vicor Corporation (collectively "Vicor") bring this patent infringement action against Lambda Electronics, Inc. ("Lambda"), claiming that Lambda's power converters literally infringe Claims 1 and 5 of Vicor's U.S. Patent No. Re. 36,098 ("the '098 patent"). This complicated technology is examined in VLT Corp. v. Unitrode Corp., 130 F.Supp.2d 178 (D.Mass.2001) ("*Unitrode*"), and the Memorandum and Order in *VLT, Inc. v. Lucent Tech., Inc.*, 00-cv-11049-PBS (D.Mass. October 18, 2001) ("*Lucent*"). Familiarity with these opinions is assumed.

Claim 1 of the '098 patent reads:

In a single ended forward converter in which energy is transferred from a primary to a secondary winding of a transformer during the ON period of a primary switch, circuitry for recycling the magnetizing energy stored in said transformer to reset it during the OFF period of said primary switch, comprising:

a storage capacitor;

an auxiliary switch connected in series with said storage capacitor;

a switch control circuit operating said auxiliary switch in accordance with a control logic such that (a) said auxiliary switch is opened prior the ON period [sic] of said primary switch, (b) said auxiliary switch remains open throughout the ON period of said primary switch, (c) said auxiliary switch is closed after the ON period of said primary switch.

Lambda seeks a construction of two terms in Claim 1, both of which are central to plaintiff's infringement case. These terms are (1) "recycling the magnetizing energy stored in said transformer to reset it" and (2) "single ended forward converter." Defendants Artesyn and Lucent, accused of infringing in related cases, join in these arguments. After extensive briefing, FN1 I adopt Lambda's claim construction with respect to the first item, but not the second.

FN1. I decline to read any arguments raised in Plaintiff's letter dated September 26, 2002 (Docket No. 44) and Defendant's letter dated October 1, 2002 (Docket No. 56). The parties had an opportunity to file claim construction briefs, replies and sur-replies, in addition to extensive argument at the hearing. These letters raise new issues not addressed in the multiple briefings or the hearing, and rehash others. I order parties not to submit any more letter briefs.

A. The Standard for Claim Construction

[1] [2] [3] [4] The starting point in claim construction is the language of the claim itself, which sets forth the scope of the claimed invention unless the written description requires a contrary reading. *See Northern Telecom Ltd. v. Samsung Electronics*, 215 F.3d 1281, 1287 (Fed.Cir.2000). "Preamble language in a claim may provide an indication of how an inventor intended to 'carry out' his invention." *Id.* at n. 1. The Federal Circuit has emphasized that it indulges a "heavy presumption" that a claim term carries its ordinary and customary meaning, which may be determined by reviewing a variety of sources, including the claims themselves, other intrinsic evidence such as the written description and the prosecution history, as well as dictionaries and treatises. *Teleflex Inc. v. Ficosa North America Corp.*, 299 F.3d 1313, 1324 (Fed.Cir.2002) ("*Teleflex*") (citations omitted). The ordinary meaning of a claim must be determined "from the standpoint of a person of ordinary skill in the relevant art." *Id.*

[5] [6] [7] "The use of extrinsic evidence to construe the scope of a claim is improper where the ordinary and accustomed meaning of a claim term does not render the claim unclear and where the patentee has not chosen to be his own lexicographer." *Northern Telecom Ltd.*, 215 F.3d at 1288. Extrinsic evidence, such as expert testimony, may be used where the intrinsic evidence cannot resolve ambiguities in the claim language. While the Court may rely on expert testimony to understand the technology and the ordinary meaning of terms to practitioners of the art, expert testimony may not be used to contradict claim language or the specification. *See Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1583-84 (Fed.Cir.1996).

Caselaw is a bit schizophrenic on the relationship between the claim language and the specification of a patent, particularly as it concerns embodiments of an invention. Lambda relies on one line of cases, which narrows claim constructions as a result of statements in the specification. *See SciMed Life Systems, Inc. v. Advanced Cardiovascular Systems*, 242 F.3d 1337, 1343 (Fed.Cir.2001) (holding that the characterization of a configuration in the specification as part of the "present invention" is "strong evidence that the claims should not be read to encompass the opposite structure."); *Gentry Gallery, Inc. v. Berkline Corp.*, 134 F.3d 1473, 1480 (Fed.Cir.1998) (holding that "claims may be no broader than the supporting disclosure, and therefore that a narrow disclosure will limit claim breadth"); *Wang Laboratories, Inc. v. America Online, Inc.*, 197 F.3d 1377, 1382-83 (Fed.Cir.1999) (construing the claim to cover only the embodiment disclosed in the specification); *Modine Mfg. Co. v. United States Int'l Trade Comm'n*, 75 F.3d 1545, 1554 (Fed.Cir.1996) (when the "preferred embodiment" is described as the invention itself, the claims are not entitled to a broader scope than that embodiment).

Citing the other line of cases, Vicor argues that claim language should not be limited, in most circumstances, by the specification. *See Teleflex, Inc. v. Ficosa North America Corp.*, 299 F.3d 1313, 1324 (Fed.Cir.2002) (holding "that claim terms take on their ordinary and accustomed meanings unless the patentee demonstrated an intent to deviate from the ordinary and accustomed meaning of a claim term by redefining the term or by characterizing the invention in the intrinsic record using words or expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope"); *CCS Fitness v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed.Cir.2002) (simply pointing to preferred embodiment or other structures or steps in specification or prosecution history will not limit claim); *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1248 (Fed.Cir.1998) (holding that a party wishing to use statements in the written description to confine or otherwise affect a patent's scope must, at the very least, point to a term or terms in the claim with which to draw in those statements).

In *Texas Digital Systems, Inc. v. Telegenix, Inc.*, 308 F.3d 1193 (Fed.Cir.2002), the Federal Circuit sought to bring some sense to this confusing area. It is worth quoting at length:

Consulting the written description and prosecution history as a threshold step in the claim construction process, before any effort is made to discern the ordinary and customary meanings attributed to the words themselves, invites a violation of our precedent counseling against importing limitations into the claims. For example, if an invention is disclosed in the written description in only one exemplary form or in only one embodiment, the risk of starting with the intrinsic record is that the single form or embodiment so disclosed will be read to require that the claim terms be limited to that single form or embodiment. Indeed, one can easily be misled to believe that this is precisely what our precedent requires when it informs that disputed claim terms should be construed in light of the intrinsic record ... But if the meaning of the words would not have been understood to persons of skill in the art to be limited only to the examples or embodiments described in the specification, reading the words in such a confined way would mandate the wrong result and would violate our proscription of not reading limitations from the specification into the claims themselves.

Texas Digital, 308 F.3d at 1204-05. (citations omitted).

As a practical matter, because many terms in a claim involving a complex patent are construed from the perspective of one skilled in the art at a point of time in the past, and because most judges don't have those qualifications, judges will often have to turn to the specification to understand claim terms. With these

parameters of claim construction in mind, the Court enters the semantic fray.

B. "Recycling the magnetizing energy stored in said transformer to reset it"

[8] Lambda argues that the phrase "recycling the magnetizing energy stored in said transformer to reset it" must be construed to require that all of the magnetizing energy (except for energy loss attributed to the non-ideal nature of circuit components) in the transformer be recycled to reset the transformer. Vicor argues that the claim requires only that sufficient magnetizing energy be returned to the core to reset it, i.e., bring the transformer's magnetic core back to the approximate state of magnetization present at the beginning of the ON period. In Vicor's view, the requirement of "recycling" is met so long as no energy is wasted—that is, dissipated as heat. Thus, energy is "recycled" if it is returned to the source, used to reset the core transformer, or transferred to the load, so long as it is not wasted as heat. This dispute matters because Lambda's devices deliver some of the magnetizing energy to the load during core reset, rather than returning it exclusively to the transformer.

1. It Depends On What the Word "The" Means

The first skirmish involves the word "the." The claim language states "circuitry for recycling *the* magnetizing energy stored in said transformer to reset it." (Emphasis added). Lambda asserts that the word "the" means all of the magnetizing energy in the transformer. Vicor contends that the claim allows for the possibility that some of the energy may be recycled to reset the core while other energy is delivered to the load. In other words, it argues that the word "the" can mean "some of the," and explains that the word "the" was used to distinguish "the magnetizing" energy from the more general term "energy" that is used earlier in the preamble. Nice linguistic jousting, but the use of the word "magnetizing" alone would have been an adequate adjective to single out the kind of energy intended for recycling. If only some of the transformer's energy needed to be recycled, the word "the" would not have been used.

Lambda's argument that the word "the" connotes all the magnetizing energy is persuasive because it gives ordinary and common sense effect to the word "the" in the claim language. *See Merriam-Webster's Collegiate Dictionary* 1221 (10th ed.1993) (giving one definition of "the" as: "used as a function word before a noun ... to indicate reference to a group as a whole"). This claim thus describes an invention that recycles all of the magnetizing energy to reset the transformer core.

2. Recycle

The determination that all the magnetizing energy in the transformer must be recycled does not resolve the dispute. Vicor argues that the claim requires only that the magnetizing energy that is removed from the core not be discharged dissipatively. In other words, it argues that "recycling" the magnetizing energy includes sending it to the source or the load, so long as it not wasted as heat.

Again, the place to start in construing the claim is the ordinary meaning of the word "recycling" as it is used in the claim preamble. *See CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed.Cir.2002) ("Sensibly enough, our precedents show that dictionary definitions may establish a claim term's ordinary meaning.") "Recycle" has a variety of meanings which could apply to Claim One, all of which include the concept of using again:

1. to treat or process (used or waste materials) so as to make suitable for reuse; *recycling paper to save trees.* **2.** to alter or adapt for new use without changing the essential form or nature of: *The old factor is*

being recycled as a theater. 3. to use again in the original form or with minimal alteration. The governor recycled some speeches from his early days. 4. to cause to pass through a cycle again: to recycle laundry through a washing machine. 5. to pass through a cycle again; repeat a process from the beginning. 6. to undergo reuse or renewal; be subject to or suitable for further use, activity, etc. The industry will recycle and become profitable once more. 7. The act or process of recycling."

Random House Unabridged Dictionary 1614 (3rd ed.1993). "Recycle" does not have a special meaning to one skilled in the art of electronic engineers, according to Dr. Paul Horowitz, Vicor's expert.

[9] Both sides point to portions of the specification to support their definition of recycling. "Among the intrinsic evidence, 'the specification is always highly relevant to the claim construction analysis. Usually it is dispositive; it is the single best guide to the meaning of a disputed term.'" *Teleflex Inc. v. Ficoso North America Corp.*, 299 F.3d 1313, 1325 (Fed.Cir.2002), quoting *Vitronics Corp.*, 90 F.3d at 1582.

Vicor highlights language that uses the word "recycled" in connection with the term "non-dissipative." *See e.g.*, Col. 3, 11. 51-52 ([the "optimal" reset mechanism] should be non-dissipative in nature, i.e., it should recycle the core's magnetization energy), Col. 3, 11. 22 to 25. It points out that a transformer can be reset even if some of the magnetizing energy is not returned to the core. To support the argument that recycling the magnetizing energy does not require that all of the energy be returned to core, Vicor cites a portion of the specification describing a prior art reset method, which states:

Following time t_2 , I decays as magnetizing energy is returned to the voltage source V_o . At time t_3 , the recycling of the magnetic energy is completed

Col. 2, 11. 8-10. While the meaning of this description of the prior art is elusive, Vicor urges the Court to conclude from this snippet that recycling can occur even when some of the energy is returned to the voltage source, and not returned to the core.

Lambda emphasizes that the claim must be understood in light of the "summary of the invention," which provides:

The apparatus defined above resets the transformer's core by implementing the conceptual function of a "magnetizing current mirror"; it takes the magnetization at the end of the ON period and creates a mirror image of it prior to the initiation of the following conversion cycle. The image is created via the charging and discharging of the storage capacitor which forms a resonant circuit with the transformer's magnetizing inductance. The capacitor is sized so that the period of this resonant circuit is considerably greater than the conversion period. Consequently, the capacitor's voltage and the voltage across the primary switch are approximately constant during the OFF period.

The new apparatus provides optimal resetting of the transformer's core in single ended forward converter topologies:

it is non-dissipative, as it recycles the core's magnetization energy via intermediate storage in a resonant circuit;

it maximizes the available flux swing, as it creates a mirror image of the magnetic flux between ON periods;

it minimizes the voltage stress on the (primary) switch, as it applies to this switch during the OFF period an approximately constant voltage which is automatically tailored to avoid dead time;

it does not introduce constraints on the switch duty cycle due to core saturation;

it does not introduce constraints on the switch duty cycle due to core saturation;

it simplifies transformer construction as it can be implemented without auxiliary windings.

Col. 4., 11. 8-35 (Emphasis added).

The "detailed description of the invention" further states:

Aside from transient conditions, during which the voltage V_c across the storage capacitor changes to adjust itself to a varying duty cycle, *the magnetizing current mirror and the transformer's core define an essentially closed system: magnetizing energy transferred from the transformer to the storage capacitor is injected back into the transformer within the converter's OFF period. This internal recycling is only incomplete to the extent that non-ideal circuit elements give rise to energy losses.* These may be accounted for by modifying the resonant circuit of FIG 4d with the addition of resistive components representing the effects of losses associated with the transformer's core, the winding resistance and the equivalent series resistances of the storage capacitor and the auxiliary switch.

(Col.7, 11.43-56) (Emphasis added); *see also* Col. 6, 11. 41-51 (describing the transfer of the magnetizing energy from the transformer to the capacitor and back to the transformer during the OFF period).

Lambda argues that the disputed terms must be understood in light of the specification's twin objectives to create a magnetizing current mirror and to "maximize the flux swing," both of which requires that all of the energy be returned to the core for reset. *See* Report of Mark N. Horenstein, Ph.D., in Connection with Defendant Lambda Electronic, Inc.'s Opening Brief on Claim Construction, Tab A, pp. 7-8 (pointing out that achieving a magnetizing current mirror requires that all of the magnetizing energy stored in the transformer be recycled.) This is undisputed extrinsic evidence. Indeed, Vicor conceded the point in its Memorandum in Support of the Motion for Partial Summary Judgment in the *Unitrode* case, p. 5.

Vicor does not dispute the key argument that a device which diverts energy from the core fails to maximize the flux swing in the transformer; and it concedes that no embodiment is presented in which the flux swing is not maximized and in which only some of the energy from the core is recycled to reset the core. Rather, Vicor argues that Lambda has wrongly singled out a description only of a preferred embodiment of the invention and argues that the Court should not limit the language of the claim with the condition of a maximized flux swing.

Vicor's contention that the term "recycling" permits transfer of some of the energy to the load fails for four reasons: *First*, the description of recycling as a closed system is contained in the self-described "summary of the invention" and "detailed description of the invention," not a description of a "preferred embodiment." *Second*, every dictionary definition of the word recycle includes the concept of using again. If the magnetizing energy is transferred to load, it can not be used again "to reset the core." *Third*, transfer of energy to load would defeat two of the objectives of the optimal reset mechanism-to create a magnetizing current mirror and to "maximize the flux swing"-which are stated at least twice in the patent itself. The

prosecution history provides additional intrinsic evidence that the inventor Vinciarelli considers this flux swing part of the invention, stating: " *This invention* is non-dissipative, *maximizes the available flux swing*, minimizes the voltage stress on the switch of the primary winding, and simplifies transformer construction as it can be implemented without auxiliary windings." (Vinciarelli Response to Office Action, July 13, 1983, at 2). *Fourth* and finally, while there is a prior art description which might be stretched to read that the term "recycling" could mean transferring energy back to *source* (rather than to the core), there is no persuasive intrinsic evidence to suggest that transfer to *load* is included within the meaning of recycle.

Accordingly, based on the ordinary and accustomed meaning of the claim terms "recycling" and "the", and the description of the invention in the specification, I adopt Lambda's claim construction.

B. What does "single ended forward converter" mean?

[10] Lambda argues that a single ended forward converter must be defined as "a device in which a single switch gates all the power transfer across the transformer, and power is transferred from the transformer's primary winding to its secondary winding *only* during the ON period of that switch." Vicor, on the other hand, contends that the term should be construed so as to allow for the transfer of energy either during the primary switch's ON or OFF periods. It seeks the following claim construction:

A 'forward' converter is one in which the power transformer is simultaneously connected to source and load. A 'single ended' converter is one in which all the power flow from source to load is gated by a single switch (the 'primary switch').

Lambda's devices transfer power from the primary winding to the secondary winding during the primary switch's OFF period, as well as during the ON period.

Again the analysis begins with the plain language of Claim One. The preamble begins, "In a single ended forward converter in which energy is transferred from a primary to a secondary winding of a transformer during the ON period of a primary switch" Here the inventor was his own lexicographer. The specification provides an explicit definition of single ended forward converter in the opening paragraph of the "Background of the Invention":

[T]he invention relates to converters of the forward type, in which the power transformer is simultaneously connected to the source and the load. More particularly, the invention relates to forward converters of the single ended type, in which the power flow from source to load is controlled by a single solid state switch.

Col. 1, 11. 15-28.

In *Unitrode*, in a background description of single ended forward converter technology generally, I wrote: "The necessity of resetting the core introduces a significant inefficiency into the converter since during periods of core reset, no power transfer is occurring." 130 F.Supp.2d at 181. Because the period of "core reset" means the OFF period of the primary switch, this statement means that in a single ended forward converter there is no energy transfer during the OFF period of the primary switch. However, the construction of "single ended forward converter" was not in controversy in the *Unitrode* litigation, and this statement did not refer specifically to the invention claimed by the '098 patent. Accordingly, tempting as it may be simply to recycle (that means use again) this *Unitrode* claim construction, the Court must move forward with a new one.

Lambda makes several arguments in support of its position that single ended forward converters must be construed as devices that transfer power only during the ON period. First, it argues that the intrinsic evidence mandates this construction even though the claim language does not explicitly state that the time of power transfer is limited to the ON period of the switch. Lambda places heavy emphasis on language in numerous places in the specification that in a single ended forward converter "power flow" from source to load is gated (controlled) by a single solid state switch. *See e.g.*, Col. 1, lines 25-29; Col. 1, lines 31-37, stating:

This invention relates to the class of DC-to-DC converters which incorporate the topology represented in Fig. 1. A converter in that class is referred to as a "single ended forward converter" because power flow is gated by a single switch and energy is transferred forward from the primary winding to the secondary winding of the transformer 11, during the ON period of the switch 10.

See also "Summary of the Invention," stating that "the primary switch controls the converter's power flow." (Col. 3, 1. 67 to Col. 4, 1. 1). Lambda also points to the prosecution history, in which Vicor explained that its invention was different from the prior art because in its invention magnetizing energy recycled to reset the core "between power transfer periods (ON periods)." (Response, Tab.4, p. 2).

Based on these references, Lambda urges the Court to find that because a single primary switch gates the flow of power, power will not flow when the switch is OFF. The problem with this argument is that there is no intrinsic evidence that supports this scientific proposition. It is not self-evident given the complexity of the technology and energy flows within these power converters.

Implicitly acknowledging this flaw, Lambda resorts to extrinsic evidence in the form of the expert report of Dr. Horenstein, who states: "A circuit with the configuration of Figure 1, in operation, will only transfer power from the primary to the secondary winding during the ON period of the primary switch." (Horenstein Report, Tab A, pp. 4-5). However, as Lambda notes, if one were to add additional elements to Figure 1, one could modify the behavior of the resulting circuit so that power was transferred at other times. This point vitiates Lambda's argument because the patent states that it "relates to the class of DC-to-DC converters which *incorporate* the topology represented in Fig. 1." Col. 1, 1. 31-32. (Emphasis added). The use of the word "incorporate" does not preclude converters with additional elements.

Pressing forward, Lambda points out that every circuit described in the specification Figure 4a (the preferred embodiment), and Figures 4e and 4f (other embodiments) conforms to Lambda's proposed construction, and no embodiment is presented in which power also is transferred during the OFF period of that switch. Again, Lambda fairly points out that Figure 4a is discussed under the heading "Detailed Description of the Invention." This argument invokes the prong of the caselaw that narrows the breadth of claims in certain circumstances: where a particular feature is neither disclosed nor suggested in the specification, it cannot be within the reach of the claims "even though the language of the claims, read without reference to the specification, might be considered broad enough to encompass the feature in question." *SciMed Life Sys. Inc.*, 242 F.3d at 1341.

In response, plaintiffs point out that the patent states: "Other embodiments are within the following claims." (Col.8, 1.50). Moreover, they flag two articles in the "Description of the Prior Art" section of the '098 Patent, both of which describe single ended forward converters which, through added circuitry, transfer energy to the load during the OFF period as well as during the ON period. (*See* Col. 2, 11. 36-43) ("Similar

limitations apply, to a varying degree, to any other reset mechanisms which involves a variable dead time to accommodate variations in the switch duty cycle. Reset methods falling into this category are found in S. Hayes, Proceedings of Powercon 8, Power Concepts Inc. 981 and in R. Severns, *ibid.*") FN2; (*Hearing Tr.* Day 3, 16-25, 43-46, 87.)

FN2. Severns uses the word "recover" core energy, rather than recycle it. (Tab.37, p. 6.) Therefore, this article is unpersuasive with respect to the recycling claim interpretation.

These prior art articles describing an embodiment transferring power during an OFF period do not resolve the dispute because the Court must construe the claim in light of the patent's specification. While there were single ended forward converters in 1982 that permitted the transfer of energy to the load during the OFF period, neither the claim nor the specification expressly includes them in the description or summary of the invention.

Finally, Lambda points to extrinsic evidence to support its claim construction. For example, in the background section of another patent (U.S. Patent 5,805,434), Vinciarelli stated "In some such converters, called 'single-ended forward converters,' forward energy transfer from the input source toward the load occurs during the time that the switch is closed ... In yet other single-ended converters a portion of the energy may be transferred during the ON and OFF times of the switch." ('434 Patent, Col. 1, lines 12-24). Vicor retorts that the specification of the '434 patent was filed in 1995, thirteen years after the specification of the '098 patent was filed.

On balance, Vicor has the better argument under the reasoning of *Teleflex*:

[C]laims take on their ordinary and accustomed meanings unless the patentee demonstrated an intent to deviate from the ordinary and accustomed meaning of a claim term by redefining the term or by characterizing the invention in the intrinsic record using words or expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope.

Teleflex, 299 F.3d at 1324. Here the express words of the claim do not preclude energy transfer during the OFF period. Although the embodiments described in the specification of the invention do not include transfers during the OFF period, there are no "words or expressions of manifest exclusion or restriction representing a clear disavowal of claim scope." *Id.* at 10. Lambda has failed to overcome the heavy presumption in favor of the claim language. *Id.* at 10. Accordingly, I reject Lambda's claim construction that precludes energy transfer during the OFF period.FN3

FN3. I decline to be drawn into the emerging debate on the meaning of a single primary switch "gating" power flow because no one has pressed me to construe that term and the record is inadequate to determine whether various additional features and/or different circuit topologies are infringing. Vicor's claim construction chart in the Artesyn litigation states: "A 'single ended' converter is one in which all power flow from source to load is gated by a single switch (the 'primary switch'). A switch gates the flow of power to the transformer if it intermittently enables and blocks the flow of current to the transformer and the current flowing in the switch results in a net transfer of energy to the transformer." Vicor's Response to Lambda's Claim Construction Brief at 15-19. However, in this litigation, Vicor has not asked for this construction. (*Hearing Day 3, Tr.* 66.) Accordingly, I do not address it. This is not an invitation for more briefs; indeed any request for a *Markman* hearing on that claim will be denied as untimely.

CONCLUSION AND ORDER

For the foregoing reasons the Court construes the '098 patent as follows:

I. "[R]ecycling the magnetizing energy stored in said transformer to reset it" means that all of the magnetizing energy stored in the transformer (except that lost due to the non-ideal nature of the circuit elements) must be recycled from the transformer, back to the transformer, for the purpose of resetting the transformer.

II. "[S]ingle ended forward converter" means a device in which (a) the power flow from source to load is controlled (gated) by a single solid state primary switch; (b) energy is transferred forward from the primary winding to the secondary winding of the transformer during the ON period of the switch; and (c) the power transformer is simultaneously connected to the source and the load.

D.Mass.,2003.

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