United States District Court,
N.D. California.

COMPETITIVE TECHNOLOGIES, et al,
Plaintiff(s).
v.
FUJITSU LIMITED, et al,
Defendant(s).

No. C-02-1673 JCS

Aug. 8, 2003.

Owner of patents for plasma display panel sued panel manufacturer for infringement. Construing claims, and ruling on manufacturer's motion for summary judgment of invalidity, the District Court, Spero, United States Magistrate Judge, held that: (1) first patent was invalid as indefinite; (2) requirement that sustain means energize "said address electrodes" excluded use of three-electrode panels; (3) "inductor" was not limited to single device; (4) inductor charging and discharging claims required charging and discharging of panel capacitance, solely through inductor, without interruption until inductor current reached zero; and (5) "maintaining" and "clamping" of panel's capacitance voltage could occur only when inductor current was zero.

Claims construed; motion granted.

5,081,400. Construed.

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CORRECTED ORDER:

1) CONSTRUING DISPUTED CLAIM TERMS OF U.S. PATENT NOS. 4,866,349 **AND** 5,081,400 **[Docket Nos. 323, 343];**

2) GRANTING DEFENDANTS' MOTION FOR SUMMARY JUDGMENT [Docket No. 344];

3) DENYING PLAINTIFF'S MOTION FOR SUMMARY JUDGMENT [Docket No. 362];

4) DENYING PLAINTIFF'S MOTION TO STRIKE [Docket No. 370] AND DEFENDANTS' MOTION IN LIMINE [Docket No. 374]

5) SETTING FURTHER CASE MANAGEMENT CONFERENCE

SPERO**, United States Magistrate Judge.**

I. *INTRODUCTION* FN1

FN1. In this Order, the Court corrects typographical errors in its July 31, 2003 claim construction Order. In all other respects, this Order is identical to the July 31, 2003 Order.

In this action, Plaintiff University of Illinois ("UI") has sued various Fujitsu Defendants ("Fujitsu") for infringement of two patents ("the Patents"): 1) United States Patent No. 4,866,349 ("the '349 patent"); 2) United States Patent No. 5,081,400 ("the '400 patent"). The '400 patent is a continuation of the '349 patent, and both are entitled "Power Efficient Sustain Drivers and Address Drivers for Plasma Panel." Currently before the Court is the parties' dispute over the proper construction of a number of the claims in the two patents. The parties also have filed cross-motions for summary judgment: Fujitsu seeks a declaration that claims 5-11 of the '349 patent are invalid due to indefiniteness while UI seeks a declaration that the same claims are not invalid due to indefiniteness.Finally, the parties have filed motions to exclude or strike expert testimony. A tutorial was held on April 28, 2003, and a hearing on the motions and claim construction was held on April 29 and April 30, 2003.

II. *ANALYSIS*

A. *Legal Standard*

1. Claim Construction

[1] [2] [3] Patent claims define the scope of the patentee's rights under the patent. Markman v. Westview Instruments, Inc., 52 F.3d 967, 970-971 (Fed.Cir.1995). The construction of patent claims is a matter of law exclusively for the court. *Id*. In construing a claim, the court must look first to the words of the claim itself. Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582 (Fed.Cir.1996). The words used in the claim are interpreted in light of the intrinsic evidence, that is, the specification and other claims in the patent, and the prosecution history, if in evidence. CCS Fitness, Inc. v. Brunswick Corp., 288 F.3d 1359, 1366 (Fed.Cir.2002). Such intrinsic evidence is the most significant source of the legally operative meaning of disputed claim terms. Vitronics, 90 F.3d at 1582.

[4] [5] Courts may also use extrinsic evidence in construing claim terms. Markman, 52 F.3d at 980. Dictionaries and treatises have been held to be particularly useful resources in construing claim terms.

Texas Digital Systems, Inc. v. Telegenix, Inc., 308 F.3d 1193, 1202 (Fed.Cir.2002). Courts may also consider expert testimony, the testimony of the inventor and prior art, whether or not it is referenced in the specification, or the prosecution history. Vitronics, 90 F.3d at 1584. As the court explained in *Markman,* "[extrinsic] evidence may be helpful to explain scientific principles, the meaning of technical terms, and terms of art that appear in the patent and prosecution history." 52 F.3d at 980. "Extrinsic evidence may demonstrate the state of the prior art at the time of the invention." *Id*. However, extrinsic evidence may not be used to vary or contradict the terms of the claims. *Id*. at 981.

[6] There is a strong presumption that a claim term carries the ordinary and customary meaning that would be ascribed to that term by a person of ordinary skill in the field of the invention. *The* Toro Company v. White Consolidated Industries, 199 F.3d 1295, 1299 (Fed.Cir.1999). This presumption may be overcome, however, in at least two situations. First, a term may be given a meaning other than the ordinary meaning where the inventor has acted as his own lexicographer. Such a special definition must be "clearly stated" in the patent specification. Vitronics, 90 F.3d at 1582. "The specification acts as a dictionary when it expressly defines terms used in the claims or when it defines terms by implication." *Id*.

Second, the presumption may be overcome where the prosecution history shows that the inventor defined the term in a way that deviates from the ordinary and common usage, or expressly disavowed a particular meaning. Teleflex, Inc. v. Ficosa North America Corp., 299 F.3d 1313, 1326 (Fed.Cir.2002). Therefore, "[a]rguments and amendments made during the prosecution of a patent application and other aspects of the prosecution history ... must be examined to determine the meaning of terms in the claims." *Id*. (citing Southwall Techs., Inc. v. Cardinal IG Co., 54 F.3d 1570, 1576 (Fed.Cir.1995)).

In construing "means-plus-function" claim limitations, certain additional rules apply. A "means-plus-function" claim is a special type of claim provided for in 35 U.S.C. s. 112, para. 6, which 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. s. 112, para. 6. This provision allows an inventor to describe an element of the invention by the results accomplished or the function served rather than by describing the item or element to be used. Warner-Jenkinson Co., Inc. v. Hilton Davis Chemical, Co., 520 U.S. 17, 20, 117 S.Ct. 1040, 137 L.Ed.2d 146 (1997). The Federal Circuit has described the principles governing construction of a means-plus-function claim as follows:

Construction of a means-plus-function limitation involves two steps. First, the court must identify the claimed function.... The court must construe the function of a means-plus-function limitation to include the limitations contained in the claim language, and only those limitations.... It is improper to narrow the scope of the function beyond the claim language.... It is equally improper to broaden the scope of the claimed function by ignoring clear limitations in the claim language.... Ordinary principles of claim construction govern interpretation of the claim language used to describe the function.... After identifying the claimed function, the court must then determine what structure, if any, disclosed in the specification corresponds to the claimed function.... In order to qualify as corresponding, the structure must not only perform the claimed function, but the specification must clearly associate the structure with performance of the function.... This inquiry is undertaken from the perspective of a person of ordinary skill in the art.... Alternative embodiments may disclose different corresponding structure, and the claim is valid even if only one embodiment discloses corresponding structure.... If, however, this inquiry reveals that no embodiment discloses corresponding structure, the claim is invalid for failure to satisfy the definiteness requirement of s. 112, para. 2.

Cardiac Pacemakers, Inc. v. St. Jude Medical, Inc., 296 F.3d 1106, 1113 (Fed.Cir.2002).

2. Summary Judgment

[7] [8] The parties bring cross-motions for summary judgement seeking a legal determination that claims 5-11 of the '349 patent are (or are not) indefinite, and therefore invalid, either because the claims are internally inconsistent or because there is no corresponding structure. The requirement that claims be sufficiently "definite" is set forth in 35 U.S.C. s. 112, para. 2, which provides that, "[t]he specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." "The definiteness inquiry focuses on whether those skilled in the art would understand the scope of the claim when the claim is read in light of the rest of the specification." Union Pacific Resources Co. v. Chesapeake Energy Corp., 236 F.3d 684, 692 (Fed.Cir.2001). In order to "accord respect to the statutory presumption of patent validity," a claim should be found indefinite "only if reasonable efforts at claim construction prove futile." Exxon Research and Engineering Co. v. United States, 265 F.3d 1371, 1375 (Fed.Cir.2001). Thus, a claim is not indefinite simply because its meaning is not ascertainable from the face of the claims. Amgen, Inc. v. Hoechst Marion Roussel, Inc., 314 F.3d 1313, 1342 (Fed.Cir.2003). A claim is indefinite, however, if it is "insolubly ambiguous, and no narrowing construction can properly be adopted." *Id*. (citations omitted); *see also* Omega Engineering, Inc. v. Cole-Parmer Instrument Co., 198 F.Supp.2d 152 (D.C.Conn.2002)(holding that where dependentclaims required a center dot but independent claims from which they were derived precluded a center dot, former claims were invalid for failure to satisfy the definiteness requirement because claims were logically contradictory). In addition, a means-plus-function claim is indefinite where the specification does not disclose any corresponding structure. Cardiac Pacemakers, Inc., 296 F.3d at 1114.

On a motion for summary judgment, the moving party must demonstrate that there is no genuine issue as to any material fact. Fed.R.Civ.P. 56(c). "A determination of claim indefiniteness is a legal conclusion that is drawn from the court's performance of its duty as the construer of patent claims." Personalized Media Communications, LLC v. Int'l Trade Comm'n, 161 F.3d 696, 705 (Fed.Cir.1998). Further, even where the court considers conflicting evidence in determining the proper meaning of the claims, an issue of fact usually is not created for the purposes of summary judgment. Johnston v. IVAC Corp., 885 F.2d 1574, 1580 (Fed.Cir.1989). A fact question may arise if there is a "a genuine evidentiary conflict created by the underlying probative evidence pertinent to the claim's interpretation." *Id*. However, "conflicting opinions on the meaning of a term which are merely conclusory do not create such evidentiary conflict." *Id*. Where there is a factual dispute, the moving party must prove invalidity with clear and convincing evidence. Budde v. Harley-Davidson, Inc., 250 F.3d 1369, 1376-1377 (Fed.Cir.2001).

B. *Evidentiary Motions*

Both Fujitsu and UI bring evidentiary motions related to the claim construction briefing and hearing. UI brings a Motion to Strike Portions of Dr. Silzars' Declaration. Fujitsu brings two motions: 1) Motion in Limine to Limit Expert Testimony of UI's Expert, Dr. Inan, at the April 29 Hearing; and 2) Objections to Evidence. All three motions are DENIED.

[9] In its Motion to Strike, UI argues that portions of the declaration by Dr. Silzars filed in support of Fujitsu's claim construction brief should be stricken under Fed.R.Civ.P. 37(c)(1) because that declaration contains material that was not included in the expert report by Dr. Silzars that was provided to UI in December 2002, when the parties exchanged expert reports. According to UI, Fujitsu's failure to provide the complete report in December, prior to Dr. Silzars' deposition, violated Fed.R.Civ.P. 26(a)(2)(B). UI argues that as a sanction, the additional portions of the declaration that were not included in the earlier report should be stricken.

UI's argument fails for two reasons. First, it is evident from the record that the parties understood that the expert reports exchanged in December would be more detailed than the summaries required under Patent Local Rule 4-3, but would not be subject to the expert disclosure requirements of Rule 26. *See, e.g.,* December 13, 2002 e-mail from Stephen Richeson to Roman Melnick, Exh. D to Declaration of Stephen W. Ritcheson in Support of Defendants' and Counterclaimants' Opposition to the University of Illinois' Motion to Strike Portions of Dr. Silzars' Declaration ("I think we are in agreement that these reports, *although not technically subject to* Rule 26, are going to be like Rule 26 reports in the sense that they will be full-fledged reports rather than Rule 4-3 summaries")(emphasis added). Second, even if the Court were to find that the requirements of Rule 26 applied, sanctions under Fed.R.Civ.P. 37 would not be warranted. Fujitsu's failure to comply (if any) was substantially justified because Fujitsu believed in good faith that Rule 26 did not apply to the expert reports. Any failure was also harmless, as UI has failed to establish that it has suffered any prejudice. *See* Fed.R.Civ.P. 37(c)(1) (allowing for exclusion of evidence where party fails to comply with requirements of Rule 26 "without substantial justification" unless the failure to comply was "harmless").

Fujitsu argued in its Motion in Limine that Dr. Inan should not be allowed to offer any testimony at the claim construction hearing beyond that which is contained in his expert report because Dr. Inan, at his deposition, was unprepared to rebut the opinions of Fujitsu's expert, refused to answer many of Fujitsu's questions and frequently was coached by his attorneys. Because UI did not introduce any testimony by Dr. Inan at the claim construction hearing other than his declaration, this motion is moot and accordingly, is DENIED.

[10] In its Objections to Evidence, Fujitsu objects to the March 23, 2003 declaration and attached exhibits of Dr. Donald Bitzer, UI's previous expert, as well as to the six patents attached as exhibits to the March 24, 2003 Declaration of Reynaldo C. Barcelo. Fujitsu argues that the Court should not consider the declaration and exhibits because they were submitted in violation of Patent Local Rule 4-3, under which all extrinsic evidence and expert witnesses to be used at the claim construction hearing were to be disclosed in the parties' December 6, 2002 Joint Claim Construction and Pre-hearing Statement. The Court declines to exclude this evidence for two reasons. First, at least part of Dr. Bitzer's declaration constitutes rebuttal, to the extent that Dr. Bitzer addresses Fujitsu's characterization of Dr. Bitzer's own prior testimony in the ITC action. Patent Local Rule 4-5 expressly permits such rebuttal testimony. Second, to the extent that the Bitzer Declaration, as well as the Barcelo Declaration, seek to introduce previously undisclosed evidence that goes beyond rebuttal, the Court finds that exclusion is not required. Fujitsu was allowed to present the sworn testimony of its expert, Dr. Silzars, at the claim construction hearing to address the significance of the patents attached as exhibits to the Bitzer and Barcelo declarations. Thus, Fujitsu has been given the opportunity to cure any prejudice that may have resulted from UI's failure to disclose these patents in their December 6, 2002 statement.

C. *Disputed Claim Terms*

In this Order, the Court construes the following 17 claim terms identified on the University's Comparison Chart: Claim Terms 7-9, 11, 14-16, 21-23, 30, 33-34, 39, and 42-44. In addition, the Court addresses the invalidity arguments raised in the parties' summary judgment motions based on Claim Terms 8, 16, 19, and 46.

1. Claim Terms 7 and 8

The parties dispute the proper construction of language that is contained in claim 5 of the '349 patent. The relevant language of claim 5 provides as follows:

5. An ac plasma panel having panel capacitance and comprising:

a plurality of X and Y dimension address electrodes, intersections between said address electrodes defining address cells [Claim Term 6];

address means for applying a signal to selected X and Y address electrodes to discharge at least one selected address cell associated with said selected electrode and create wall charges at said selected cell [Claim Term 7];

sustain means for subsequently energizing said address electrodes [Claim Term 8], which energization in combination with said wall charges at said selected cell discharges said cell ...

There are two primary disputes between Fujitsu and UI regarding Claim Terms 7 and 8. First, the parties disagree as to whether Claim Term 7 describes Independent Sustain and Address ("ISA") panels, as Fujitsu argues, or if it excludes ISA panels, as UI argues. Second, the parties disagree on the question of corresponding structure.

Fujitsu sets forth its arguments regarding the proper construction of Claim Terms 7 and 8 in its summary judgment motion. First, Fujitsu asserts that the terms "address electrodes" and "address cell" were understood by one of ordinary skill in the art in 1986 to refer to elements found only in ISA panels. Fujitsu Summary Judgment Motion at 8-10. Therefore, use of these terms in Claim Term 7 supports the conclusion that it describes an ISA panel only and cannot describe a non-ISA panel, such as a standard or triple-electrode configuration. Id. at 10. Second, Fujitsu argues that the only structure disclosed in the '349 patent as an address means is a driver that is shown in Figure 2 of the '349 patent, which can only be used with ISA panels. Id. at 11-13. Third, Fujitsu argues that Claim Term 8 can *only* describe a non-ISA panel. Id. at 13-16. Because Claim Term 7 describes only an ISA panel and Claim Term 8 describes only a non-ISA panel, Fujitsu argues, claim 5 (and accordingly, claims 6-11, which are dependent on claim 5) is invalid. Id. at 19. In addition, Fujitsu argues that there is no corresponding structure for Claim Term 8, and therefore, claim 5 is invalid on that basis as well. Id. at 18.

UI argues that there is no contradiction between Claim Terms 7 and 8 and that both *exclude* ISA panels. UI Opposition to Summary Judgment Motion at 3-14. First, UI points out that the preamble to claim 5 refers to an "ac plasma panel" whereas the preambles of all of the other independent claims in the ' 349 patent refer to an "independent sustain and address ac plasma panel." Id. at 5. Second, UI relies on Claim Term 8. Id. at 4-5. UI agrees with Fujitsu that Claim Term 8 can only describe a non-ISA panel, but argues that this means that the disputed language in Claim Term 7 should be construed to describe a non-ISA panel as well. Id. UI argues further that the language of Claim Term 7 is consistent with this conclusion because a person of ordinary skill in the art would understand that the electrodes in a non-ISA panel are sometimes also used to perform a sustain function and therefore, that the words "address electrodes" in Claim Term 7 must mean "electrodes used *at least* to perform an addressing function in a panel display." Id. at 12. Likewise, UI argues, a person of ordinary skill would construe the phrase in Claim Term 8, "energizing said address electrodes" to mean "energizing some or all address electrodes," as would be the case in non-ISA panels. Id. at 10-11. Finally, UI argues that the patent discloses as corresponding structure for Claim Term 7 not only the address driver shown in Figure 2 (which works with ISA panels), but also conventional address drivers, such as totem-pole drivers, which are used with non-ISA panels.

a. *Claim Term 7*

i. Meaning

Fujitsu argues that Claim Term 7 should be construed as follows:

Specific structures that are used for applying a signal to specified X and Y address electrodes and causing a discharge that creates wall charges at an address cell, which is used only during the addressing operation and not as a normal display pixel. A "wall charge" is an electrical charge that is created during the initial addressing operation and is used, in conjunction with the sustain voltage, to maintain gas discharges.

University Comparison Chart at 2. UI, on the other hand, asserts that an "address electrode" should be construed to mean " 'electrodes used *at least* to perform an addressing function in a panel display' since the address electrodes in non-ISA panels are sometimes also used to perform a sustaining function." UI Claim Construction Brief at 18 (emphasis in original). UI also asserts that Fujitsu is incorrect in its position that an "address cell" is used only for addressing. Id. at 16-17. However, UI offers no alternative definition for this term. Finally, UI disputes Fujitsu's proposed construction of the term "wall charge," which, UI argues, imposes an unwarranted time limitation by suggesting that wall charges are only created during the addressing operation. Id. at 18. UI proposes, instead, that the words "wall charge" be defined as "charges which, in conjunction with the sustain voltage, operate to maintain discharges." UI Comparison Chart at 2.

[11] The Court begins its analysis by looking to the words of Claim Term 7 and, in particular, the terms "address cell" and "address electrode." *See* CCS Fitness, Inc., 288 F.3d at 1366 (Fed.Cir.2002) (holding that courts should look first to the words of the claims). The Court concludes that the common and ordinary usage of these terms, as reflected in both the patent specification and claims and the scientific literature, reflects that these terms are specific to ISA panels. *See The* Toro Co., 199 F.3d at 1299 (holding that there is a strong presumption that words carry their common and ordinary meaning). With respect to the claims and specification of the '349 patent, several factors, when considered together, support the conclusions that an "address cell" describes a structure that is found only in an ISA panel and the term "address electrode" refers to electrodes used only for addressing. First, the term "address cell" is expressly defined earlier in claim 5 as follows:

a plurality of X and Y dimension address electrodes, intersections between said address electrodes defining address cells;

claim 5 (Claim Term 6), '349 patent. This language describes a configuration that is unique to ISA panels, in which separate electrodes are used for addressing and sustaining, resulting in a panel in which the pixels are distinct from the address cells. Silzars Decl. at 18-21. Figure 2 of the '349 patent also supports the conclusion that the term "address cell" is specific to ISA panels. That figure identifies the intersection of two address electrodes on an ISA panel as an "address cell." *See* Lacks Industries, Inc. v. McKechnie Vehicle Components USA, Inc., 322 F.3d 1335 (Fed.Cir.2003) (affirming construction of term by district court based, in part, on the fact that terms were explicitly identified in one of the patent drawings).

Second, the written description in the '349 patent supports the conclusion that the terms "address electrodes" and "address cell" are used in the claims to describe an ISA panel. For example, the term "address electrode" is used only in the context of describing an ISA panel, supporting the conclusion that that term referred to an electrode that is used for addressing *only*. *See, e.g.,* '349 patent, col. 1, ll. 63-67 ("The ISA plasma panel technique includes the addition of an independent address electrode between the sustain electrodes"). Conversely, in the generic description of plasma display panels in the specification, the electrodes are not referred to as "address electrodes" but simply as "electrodes" and the term "address cell" is not used, even though the description refers to the intersections of electrodes. *See* ' 349 patent, col. 1, ll. 17-22.

Finally, the scientific literature during the relevant time period also supports the conclusion that a person of ordinary skill in the art would understand Claim Term 7 to refer to an ISA panel and not to a standard or triple-electrode configuration. Much of this literature is written by the inventors on the '349 patent and

explains in great detail what the terms "address cell" and "address electrode" meant. For example, in an article by one of the inventors, Dr. Weber, published in 1988, he uses the term "address cell" to define the intersection of the address electrodes in an ISA panel:

The new ISA technique uses separate electrodes for addressing the pixels and sustaining them once they are on.... The pixels are addressed through address cells at the intersections of the address electrodes ... which connect to the address drivers.

Larry F. Weber, *Plasma Displays For Portable Computers,* Information Display, April 1988 at 11, Exh. 23 to Silzars Decl. Similarly, in the patent disclosing the ISA panel, U.S. Patent No. 4,772,884 (the '884 patent), Weber defines the term "address cell" as follows:

The intersections of each X and Y address electrode forms what will be referred to as an "address" cell. This address cell is used only during addressing operation and is not used as a normal display pixel.

'884 patent, col. 6, ll. 31-34, Ex. 21 to Silzars Decl. Finally, the dissertation thesis of another inventor, Dr. Warren, suggests the term "address cell" was coined to distinguish ISA panels from other configurations:

In an ISA panel, all the changes of state for a given display pixel are initiated at a neighboring cell. Note, in this last sentence, the terms display pixel and cell were both deliberately used. In previous discussions these two terms were interchangeable, because in the standard XY AC plasma technology all of the cells in the panel were display pixels. This is not true in the ISA technology. Since there are functionally two types of AC plasma cells in an ISA panel, it has become necessary to discriminate between them.

Kevin Wilson Warren, *Addressing Theory and Performance Enhancements for the Independent Sustain and Address AC Plasma Display* at 26 (1990) (unpublished PhD dissertation, University of Illinois), Exh. 26 to Silzars Decl. FN2

FN2. UI points to patents in which it asserts the terms "address cell" and "address electrode" were used in describing non-ISA plasma panels. *See* Opposition to Summary Judgment Motion at 13-14, nn. 10-11. These references do not support UI's proposed construction of Claim Term 7 because extrinsic evidence may not be used to vary or contradict the meaning of the claim language as it is defined in the patent itself. *See* Vitronics Corp., 90 F.3d at 1583. As described above, the language of the claims themselves, as well as the written description and figures in the '349 patent, conflict with UI's construction. Moreover, none of the referenced patents defines an address cell as the intersection of X and Y address electrodes, as is required under claim 5 of the '349 patent.

UI's arguments in favor of its proposed construction of Claim Term 7, while carrying some force, are ultimately unpersuasive. UI relies on the language of Claim Term 8, the words used in the preamble of claim 5, and the description of the invention in the patent to support its position that Claim Term 7 describes a non-ISA panel. First, UI argues that because Claim Term 8 calls for a "sustain means" for energizing "address electrodes," one of ordinary skill in the art, based on this language, would understand that "an 'address cell' is used not only during the addressing operation, but also during the sustaining operation of the panel." Inan Report at 11. Similarly, UI asserts that Claim Term 8 would inform one of ordinaryskill in the art that "address electrodes" means "electrodes used *at least* to perform an addressing function," that is, electrodes used for both addressing and sustaining. Id. at 8. The problem with this argument is that it requires that the common and ordinary meaning of the terms "address electrode" and "address cell" be ignored. It is improper for the Court to attribute a meaning to these terms that is different from their common and ordinary usage where, as here, the Court finds no clear intent on the part of the drafters to do so. *See* Vitronics Corp., 90 F.3d at 1582.

Next, UI points to the fact that claim 5 refers to an "ac plasma panel" rather than to an "independent sustain and address AC plasma panel," as do many of the other claims of the '349 patent. Based on the doctrine of "claim differentiation," UI argues that this reflects an intent on the part of the drafters of the patent to draft claim 5 to cover panels other then ISA panels. Under that doctrine, "there is presumed to be a difference in meaning and scope when different words and phrases are used in separate claims." Tandon Corp. v. United States International Trade Commission, 831 F.2d 1017 (Fed.Cir.1987). This argument is not entirely unpersuasive. Indeed, the description of the ' 349 patent suggests an intent on the part of the drafters to cover non-ISA as well as ISA panels. The description states as follows:

The new sustainer can be applied to standard plasma panels, or the new ISA plasma panel, as well as to other types of display panels requiring a panel electrode driver, such as electroluminescent or liquid crystal panels having inherent panel capacitance.

'349 patent, col. 8, ll. 32-36. This argument fails, however, because the drafters used terms that, when read in conjunction with Claim Term 6, namely, "X and Y dimension address electrodes, intersections between said address electrodes defining address cells," can only describe an ISA panel. In the face of this language, the Court may not adopt an alternative construction of Claim Term 7 to give effect to what it speculates may have been the *intent* of the drafters of the patent or the inventor. *See* Markman, 52 F.3d at 984 (holding that "[t]he subjective intent of the inventor when he used a particular term is of little or no probative weight in determining the scope of a claim (except as documented in the prosecution history")); Allen Engineering Corp. v. Bartell Industries, Inc., 299 F.3d 1336, 1349 (Fed.Cir.2002) (holding that "[i]t is not our function to rewrite claims to preserve their validity").

Accordingly, the Court adopts Fujitsu's proposed construction of Claim Term 7. FN3

FN3. The Court rejects UI's argument that Fujitsu's proposed construction is improper because it requires that "wall charges be created *only* during the initial addressing operation." UI Claim Construction Brief at 18. According to UI, Fujitsu's "cropped reading" imposes an unwarranted timing limitation on the term "wall charges." UI's argument fails for two reasons. First, UI has presented no evidence that wall charges can be *created* in the absence of an addressing operation. Indeed, UI's own expert states that "[t]he ... process of energizing particular electrodes to *create a gas discharge* is known as an 'addressing' operation." Expert Report of Dr. Inan in Support of The University's Claim Construction Positions ("Inan Report") at 3 (emphasis added). Second, Fujitsu's proposed construction makes clear that wall charges are not limited in time to the period when addressing is occurring but rather, are maintained through the sustaining operation.

ii. Corresponding Structure

The parties agree that Claim Term 7 is in means-plus-function form, and therefore, is subject to the requirements of 35 U.S.C. s. 112 paragraph 6. Construction of such a limitation requires the court first to identify the function of the limitation and then the corresponding structure. BBA Nonwovens Simpsonville, Inc. v. Superior Nonwovens, LLC, 303 F.3d 1332, 1343 (Fed.Cir.2002). Fujitsu argues that the function of Claim Term 7 is "applying a signal to specified X and Y address electrodes and causing a discharge that creates wall charges at an address cell, which is used only during the addressing operation and not as a normal display pixel." Fujitsu contends that the only structure disclosed in the patent that performs this function is the address driver circuitry depicted in Figure 2 and described in column 3, l. 43 through column 8, l. 22 of the '349 patent. UI, on the other hand, argues that the function is only "applying a signal" and that the words "to selected X and Y address electrodes to discharge at least one selected address cell associated with said selected electrode and create wall charges at said selected cell" should not be included in the function. UI asserts that in addition to the address driver circuitry depicted in Figure 2 (which UI does not

dispute constitutes corresponding structure for Claim Term 7), the patent discloses as corresponding structure for Claim Term 7 "totem-pole drivers" and "prior plasma panel address driver circuits." *See* '349 patent, col. 2, ll. 32-45. The Court concludes that Fujitsu's position is correct.

[12] In determining the function of a means-plus-function limitation, "a claimed function may not be improperly narrowed or limited beyond the scope of the claim language." Lockheed Martin Corp. v. Space Systems/Loral, Inc., 249 F.3d 1314, 1324 (Fed.Cir.2001). Conversely, "neither may the function be improperly broadened by ignoring the clear limitations contained in the claim language." *Id*. Thus, "[t]he function of a 'means-plus-function' claim must be construed to include the limitations contained in the claim language." *Id*. Language that merely states the result of the function is not part of the function because it adds nothing to the substance of the claim. *Id*.

[13] Applying these principles, the Court concludes that the function of Claim Term 7 is "addressing by applying a signal to selected X and Y electrodes to discharge at least one selected address cell associated with said selected electrode." The Court rejects UI's exclusion of the words "to selected X and Y electrodes to discharge at least one selected address cell associated with said selected electrode" on the basis that this would amount to ignoring clear description of the function in the claim language. Nor does the court find that the decision in *BBA Nonwovens* justifies a contrary result. In that case, the words of the claim that were at issue described the location of the function, rather than the function itself. *See* 303 F.3d at 1344. As a result, the court in that case concluded that these words constituted a separate limitation that was not subject to s. 112 paragraph 6. Here, in contrast, the words at issue describe *what* the structure is supposed to do, that is, they describe the function itself rather than setting forth a separate limitation. Accordingly, these words must be included in the function. *See* Lockheed Martin, 249 F.3d at 1324. On the other hand, the Court finds that the words "and create wall charges at said selected cell" merely state a result and therefore, are not part of the function. *See id*.

[14] Turning to corresponding structure, the issue in dispute is whether or not the totem-pole drivers and prior plasma address drivers mentioned in the description of the '349 patent can be considered corresponding structure. The Court concludes that they cannot. In order to constitute corresponding structure, a structure must be "clearly linked" to the claimed function. *See* Medtronic, Inc. v. Advanced Cardiovascular Sys., Inc., 248 F.3d 1303, 1311 (Fed.Cir.2001) (holding that the requirements of s. 112, para. 6 were not met where structures disclosed performed claimed function but where there was no clear link or association between them). Even assuming that the structures identified by UI perform the function described by Claim Term 7, they cannot constitute corresponding structure because they are not "clearly linked" to the claimed function. On the contrary, the structures identified by UI as corresponding structure are expressly *distinguished* from the claimed invention. *See* SciMed Life Sys. Inc. v. Advanced Cardiovascular Sys., Inc., 242 F.3d 1337, 1340 (Fed.Cir.2001) (holding that "[w]here the specification makes clear that the invention does not include a particular feature, that feature is deemed to be outside the reach of the claims of the patent, even though the language of the claims, read without reference to the specification might be considered broad enough to encompass the feature in question"). In particular, the patent description states as follows:

The new driver circuit utilizes open-drain (N-channel or P-channel) MOSFET output structure which can be made at a lower cost compared to the **normally used totem-pole drivers.** A unique feature of the present invention resides in a technique used to apply the proper positive and negative pulses to the ISA plasma display panel by using identical, low-cost N-channel, open-drain MOSFET devices. Thus, in contrast with **prior plasma panel address driver circuits** that must be able to pull high (i.e. drive the plasma panel with a positive pulse) and pull low (i.e. drive the plasma panel with a negative pulse) the unique feature of the present invention enables the N-channel open-drain MOSFET devices only to be designed to pull low.

'349 patent, col. 2, ll. 32-45 (language relied on by UI in bold). Therefore, the Court concludes that the only

corresponding structure for Claim Term 7 is the address driver depicted in Figure 2 and described in columns 3-8 of the '349 patent, that is, the pull-low only devices that are connected to a "common bus," called an "open-drain" configuration.

b. *Claim Term 8*

i. Meaning

The parties agree that Claim Term 8 describes a non-ISA panel because it requires that address electrodes be energized by a "sustain means," which can never occur in an ISA panel. *See* Fujitsu Summary Judgment Motion at 15 (quoting Inan Report at 6). The parties disagree, however, with respect to the implications of this construction of Claim Term 8, namely, whether Claim Term 8 makes claim 5 "insolubly ambiguous" and thus invalid. The parties also disagree as to the meaning of "said address electrodes" and whether it excludes three-electrode panels.

[15] The Court's conclusion with respect to the first issue flows from its construction of Claim Term 7. In particular, because the Court concludes that Claim Term 7 can *only* describe an ISA configuration and Claim Term 8 *excludes* ISA panels, claim 5 contains a logical contradiction that precludes a practitioner of ordinary skill in the art from determining the scope of the claim. *See* Omega Engineering, 198 F.Supp.2d 152. Accordingly, the Court concludes that claim 5 is invalid for indefiniteness under 35 U.S.C. s. 112 paragraph 2. Claims 6-11 of the '349 patent are also invalid because they are dependent on claim 5.

[16] The parties also ask the Court to construe the meaning of the words "said address electrodes." Fujitsu argues that the word "said" refers back to the words "a plurality of X and Y dimension address electrodes," used earlier in claim 5, *see* '349 patent, col. 17, l. 11, and therefore, that Claim Term 8 cannot describe a three-electrode panel because in three-electrode panels, only Y electrodes are used for sustaining. UI argues that "said address electrodes" does not require that the sustain means energize both X and Y address electrodes. Rather, UI asserts, Claim Term 8 should be construed to require that the sustain means energize "some of" or "all of" the address electrodes. The Court finds that the sustain means must be able to energize both the X *and* Y dimension electrodes.

First, the Court looks to the definition of the word "said." The Oxford English Dictionary defines "said" as "already named or mentioned." The New Shorter Oxford English Dictionary (1993 ed.), p. 2668. Here, the words "said address electrodes" are first used in claim 5 immediately after the words "a plurality of X and Y dimension address electrodes," supporting the conclusion that the address electrodes that are "already named or mentioned" are the "plurality of X and Y address electrodes." Alternatively, the term "said address electrodes" could refer to the "selected X and Y electrodes" referenced in claim 5 at col. 17, ll. 14-15, although this appears less likely, as these electrodes are referred to later in claim 5 as "said *selected* electrode." Under either interpretation, the claim requires that the sustain means energize *both* X and Y dimension electrodes. It is undisputed that only Y electrodes are used for sustaining in triple-electrode configurations and not "X *and* Y" dimension electrodes.

Thus, the plain meaning of Claim Term 8 excludes triple-electrode configurations.

ii. Corresponding Structure

[17] The parties also dispute whether the '349 patent discloses any corresponding structure that satisfies the limitation contained in Claim Term 8. The Court finds that it does not. There is no structure disclosed in which a sustain means energizes address electrodes.

2. Claim Term 9

[18] Claim Term 9 includes the words "the inductor," "an inductor," and "said inductor." *See* '349 patent, claims 5-11; '400 patent, claims 21-41. UI proposes the following construction for Claim Term 9: "one or more associated windings, with or without a magnetic core, for introducing inductance into an electric circuit." University Comparison Chart at 3-4. Fujitsu's proposed construction is as follows:

An inductor is a piece of wire that is frequently, but not always, wound into the shape of a coil, which is used to introduce inductance- *i.e.,* a magnetic field effect that causes the coil to oppose changes in current- into a circuit. Each of the claims at issue is limited to a single inductor that is used for both charging and discharging the panel capacitance.

University Comparison Chart at 4. The primary dispute is whether Claim Term 9 refers to a single inductor through which charging and discharging occurs (as Fujitsu argues) or, alternatively, whether these terms allow for multiple inductors, some of which are used for charging only and others for discharging only. The parties also disagree about the definition of an inductor. UI calls an "inductance element" what Fujitsu calls an inductor, arguing that multiple "inductance elements" may constitute a single inductor.

[19] [20] In determining whether the words "an inductor" and "the inductor" refer to a single inductor or "one or more inductor," the Court looks to the description in the patent to determine whether it reveals a clear intent to limit the invention to a singular embodiment. *See* KCJ Corp. v. Kinetic Concepts, Inc., 223 F.3d 1351, 1356 (Fed.Cir.2000). Although the use of the term "a" or "an" may suggest that a single element is claimed, "patent claim parlance also recognizes that an article can carry the meaning of 'one or more,' for example in a claim using the transitional phrase 'comprising.' " Abtox, Inc. v. Exitron Corp., 122 F.3d 1019, 1023 (Fed.Cir.1997). Where it is unclear whether the claim covers a single element or multiple elements, courts look to the written description in the patent to determine whether there is a "clear intent" to limit the invention to a singular embodiment. KCJ Corp., 223 F.3d at 1356. The fact that there is only a single inductor in the preferred embodiments shown in the patent figures does not justify imposing such a limitation on the claims. *See id.* (holding that even where the embodiments suggest a single element, such a limitation will not be imposed if the claim language is broader than the embodiments).

Here, the words "an inductor" and "the inductor" follow the open-ended terms "comprising" and "including," supporting the conclusion that "an inductor" means one or more inductors. Fujitsu argues, though, that the use of the words "said inductor" reveals a clear intent on the part of the inventor to limit the term "inductor" to a singular embodiment.

A review of the cases cited by the parties on the significance of the word "said" in patent claims is instructive. In *Abtox,* a case on which Fujitsu relies, the court addressed whether or not the claim language in dispute provided for a single chamber or rather, whether it meant "one or more chambers." Abtox, 122 F.3d at 1023-1024. The claim provided as follows:

apparatus for sterilization of medical devices and materials in a gas plasma comprising,

(a) a metallic gas-confining chamber having a non-metallic portion;

(b) a microwave energy source including a microwave cavity positioned to couple microwave energy into *said chamber* through said non-metallic portion, and

(c) means for holding ... medical devices and materials to be sterilized within *said chamber* volume and away from said microwave cavity, and including a perforated electrical shielding member positioned within *said chamber* and in close proximity to said microwave energy source to provide a portion of the internal volume of *said chamber* shielded from and away from said microwave energy providing a field-free zone containing said devices and materials.

Id. at 1022 (emphasis added). The Court concluded that this claim referred to a single chamber. *Id*. at 1027. In reaching this conclusion, the Court relied heavily on the language used in the claim, and in particular, on the repeated use of the term, "said chamber." *Id* at 1024. The court also found that the written description in the patent supported its construction. *Id*. at 1024. Specifically, one of the figures in the patent showed a single chamber and "[n]othing in the written description suggest[ed] that the claim language encompass[ed] a device with more than one gas-confining chamber." *Id*.

On the other hand, UI cites to three cases, KCJ Corp., 223 F.3d 1351, Elkay Mfg. Co. v. Ebco Mfg. Co., 192 F.3d 973 (Fed.Cir.1999) and Altiris, Inc. v. Symantec Corp., 318 F.3d 1363 (Fed.Cir.2003), in support of its proposed claim construction. In *KCJ,* the court addressed whether claim language for an air mattress limited the scope of the invention to embodiments using one lower air chamber, or alternatively, whether the scope of the claims covered an embodiment with multiple chambers. 223 F.3d at 1355. The disputed claim provided as follows:

1. An air flotation, ventilated mattress apparatus comprising:

(a) means defining a lower, continuous, inflatable chamber having an air-permeable, flexible upper wall portion,

(b) said upper wall portion being constructed for substantially uniform airflow therethrough over substantially the entire plan surface area of said upper wall portion;

(c) air-permeable secondary wall means above said chamber upper wall portion and operably coupled with said chamber-defining means,

(d) said secondary wall means being constructed for substantially uniform passage of air therethrough over substantially the entire plan surface area of said secondary wall means,

(e) said secondary wall means and upper wall cooperatively defining therebetween an inflatable compartment above *said chamber;* and

(f) means for continuously introducing positive pressure air into *said chamber* in order to continuously maintain positive air pressure conditions throughout the entirety of said chamber during the entirety of operation of said mattress apparatus and to inflate both said chamber and compartment by passage of said air into said chamber and thence through said upper wall portion and thereby maintain positive air pressure conditions in said compartment, and to cause said continuous passage of air through said secondary wall means,

(g) said mattress apparatus being free of solid internal support structure for supporting a patient,

(h) said air introduction means, upper wall portion and secondary wall means being cooperatively configured and arranged for continuous passage of sufficient positive pressure airflow through the chamber, upper wall portion, compartment, and secondary wall means for even, substantially uniform flow of air from said mattress apparatus so that a person lying atop the secondary wall means is supported by said pressurized air without the presence of weight-supporting structure within said mattress apparatus.

Id. at 1353 (emphasis added). The court concluded that the claim language provided "no support for departing from the general rule" that indefinite articles such as "a" and "an" mean one or more. *Id*. at 1357. It went on to note that neither the written description nor the prosecution history explicitly disclaimed the use of multiple chambers. *Id*. The court did not address the significance, if any, of the references to "said

chamber" in the claim.

In *Elkay,* the court addressed whether or not a single feed tube was used both for delivering liquid from a container and admitting air into a container. 192 F.3d at 977. The claim provided for "an upstanding feed tube ... to provide a hygienic flow path for delivering liquid from ... and for admitting air ... into said container to displace the liquid delivered therefrom, *said feed tube* having upper and lower end portions." Id. at 975-976 (emphasis added). Although the preferred embodiment used a single feed tube for both admitting air and delivering liquid, the court concluded that neither the language of the claim nor the written description conclusively established that the scope of the claim was limited to a single feed tube that was used for both functions. Id. at 978. It went on to hold, however, that in the prosecution history, the inventor had disclaimed an embodiment with separate flow paths for air and water. *Id*.

Finally, in *Altiris,* the court addressed whether the claim described a single "boot flag" or multiple boot flags. 318 F.3d at 1368. The disputed claim read as follows:

A digital computer system programmed to perform the method of gaining control of the boot procedure of a digital computer, said digital computer comprising:

(A) a central processing unit;

(B) a memory unit;

(C) a long term storage device; and

(D) a means of booting said computer, said means of booting including a first set of commands, said first set of commands resident on said storage device of said digital computer for booting said digital computer, and a second set of commands, said second set of commands resident on a storage device external to said digital computer, for booting said digital computer, the method comprising:

testing automatically for source of said means of booting; said testing including *reading a boot selection flag and comparing said boot selection flag* with a known flag setting; transferring control of said computer system to said source of said means of booting; performing said external commands, if said testing automatically step indicates a boot sequence stored externally to said digital computer; setting said boot selection flag; and booting normally, if said testing automatically step indicates a boot sequence stored internal to said digital computer.

Id. at 1368 (emphasis added). The court concluded that the claim was not limited to a system that used a single boot selection flag, but rather, covered a system using more than one boot selection flag as well. *Id*. at 1373. The court explained its reasoning as follows:

The parties agree that "a" generally means "one or more" in open-ended claims such as those at issue here. KCJ Corp. v. Kinetic Concepts, Inc., 223 F.3d 1351, 1356 (Fed.Cir.2000). Symantec, however, contends that this general rule does not apply here because the sole embodiment described in the patent uses a single flag. Once again, however, there are no statements in the specification or the prosecution history inviting, much less requiring, us to limit the claims to the only disclosed embodiment. This is merely another attempt to limit the invention to the preferred embodiment. We therefore hold that "boot selection flag" encompasses the use of multiple flags to select the boot cycle.

Id. at 1373-1374.

It is apparent that the word "said" as a qualifier does not always signify that the element qualified is limited

to a singular embodiment. In *KCJ,* the court found that the claim language covered an air mattress with multiple chambers even though the claim referred at least once to "said chamber." 223 F.3d at 1357. Similarly, in *Altiris,* the court found that the claim allowed for more than one boot selection flag, even though the claim language referred to "said boot selection flag." In *Elkay,* likewise, a reference to "said feed tube" was not found to limit that element to a singular embodiment. Conversely, the Federal Circuit's decision in *Abtox* makes clear that the word "said" may be significant where, as in that case, it describes the relationship between different components of the invention covered by the claim. *See* Abtox, 122 F.3d at 1023. Similarly, the word "said" may reveal the relationship between two functions described in a claim. For example, in *Altiris,* although the court did not reach the issue, it is likely that the reference to "said boot selection flag" indicated that the boot selection flag that was to be "compar[ed]" was the same boot selection flag as was to be "read."

Applying these principles, the Court concludes that the terms "an inductor" and "the inductor" in the disputed claims allow for more than one inductor. However, the claims that describe both charging and discharging through "said" inductor make it clear that the same inductor must be used for both charging and discharging the panel capacitance. For example, claim 38 of the '400 patent refers first to "an inductor coupled to said panel electrodes for charging and discharging." '400 patent, col. 22, ll. 25-28. To the extent that there may be ambiguity as to whether the charging and discharging described by this language must be conducted through the same inductor, that ambiguity is dispelled by the limitations that follow. Those limitations require: 1) a "first switch means coupled to said inductor to enable said panel capacitance to charge through said inductor," '400 patent, col. 22, ll. 29-31; and 2) a "second switch means coupled to said inductor to enable said panel capacitance to discharge through said inductor," '400 patent, col. 22, ll. 37-39. As stated above, the word "said" means "already named or mentioned." The New Shorter Oxford English Dictionary (1993 ed.), p. 2668. Thus, the word "said" in this context reveals that the charging and discharging described in the two limitations quoted above must use the *same inductor*.

[21] The parties also disagree on the issue of what constitutes a single inductor, as opposed to an "inductance element." Thus, the Court must determine the common and ordinary meaning of the term "inductor" in 1986, or, alternatively, find a clear intent in the patent description to give the word a special or different meaning. *See* Vitronics, 90 F.3d at 1582. UI argues that an "inductor" may encompass one or more "inductance elements." UI Claim Construction Brief at 21. In support of this position, Dr. Inan relies on the following definition of the term "inductor," from the IEEE Standard Dictionary of Electrical and Electronics Terms ("IEEE Dictionary"), published in 1984:

A device consisting of one or more associated windings, with or without a magnetic core, for introducing inductance into an electric circuit.

IEEE Dictionary at 440, Exh. K to Nui Decl. UI goes on to cite to Dr. Inan's testimony, in which Dr. Inan states as follows:

Inductance elements combined to constitute "an inductor" can be electrically connected in various configurations, including series and/or parallel connections. The need for or use of an electrical connection does not imply a need for or the presence of physical proximity of different windings that might be used to introduce a certain inductance value into a circuit.

Inan Report at 20. Thus, UI appears to argue that any windings that are electrically connected in a device are sufficiently "associated," under the definition in the IEEE dictionary, to constitute a single inductor. Finally, UI points to U.S. Patent No. 5,828,353, in which the term "inductance element" is used.

Fujitsu does not disagree that the IEEE definition of an "inductor" provides a starting point for construing the term. However, it argues that the word "associated" requires more than that the windings be electrically

connected. Rather, Fujitsu cites to its own expert's testimony to show that the word "associated" requires that the windings share coupled magnetic field lines. Dr. Silzars explains his position as follows:

[A]n inductor is a device that couples magnetic field lines of associated portions of a conductor. This is called "field coupling." Two elements sitting on a table may have inductance but do not constitute a single inductor unless they intimately and mutually share coupling of their magnetic field lines.... I understand that Dr. Inan states that inductors have "associated windings" whether or not they share a field coupling ... What those of ordinary skill in the art would call "inductors," Dr. Inan would call "combinations of inductance elements sharing an electrical connection that function together to introduce the desired inductance into a circuit." ... This is incorrect. Those of ordinary skill in the art in 1986, and indeed today, do not use the term "inductance element" to be distinguishable from an "inductor" ...

Silzars Decl. at 69 (citations omitted). Fujitsu also cites to three patents in support of its position, U.S. Patent No. 4,070, 663, U.S. Patent No. 3,931,528 and U.S. Patent No. 3,833,833, all of which refer to "inductors" rather than "inductance elements." Finally, Fujitsu points out that UI's former expert, Dr. Bitzer, stated in his expert report in the ITC proceeding that Fujitsu's allegedly infringing device uses "separate inductors." Fujitsu Claim Construction Brief at 19, citing to Expert Report of Donald L. Bitzer, Exh. 6 to Silzars Decl.

The Court finds no support in the '349 and '400 patents for UI's position. Rather, the description in the Patents supports Fujitsu's position that windings that do not share coupled magnetic field lines constitute separate inductors. First, the term "inductance element" is not used in either patent. Second, the '400 patent uses the word "inductors," in describing the sustain driver circuit claimed in the invention. '400 patent, col. 2, ll. 53-55. In particular, the description states that "[t]he new sustain circuit driver uses inductors in charging and discharging the panel capacitance." Id. This use of the plural "inductors" indicates that there can be multiple "inductors" in the invention as part of the same circuit, and that multiplicity is referred to by the plural "inductors," not by the singular "inductor." This conclusion is confirmed by the figures in the patents. In Figures 5 and 7, the sustain circuit described in the invention includes two sustain drivers, one for each set of sustain electrodes. *See* Figs. 5, 7 of ' 349 and '400 patents. Each of these drivers contains a set of windings and these two sets of windings are electrically connected in the same circuit. If UI's proposed definition of an inductor were correct, these two sets of windings should have been referred to as "inductance elements" and not as "inductors" in the plural form. The fact that they were referred to as "inductors" provides strong intrinsic evidence that Fujitsu's proposed definition of an "inductor" is correct.

The Court finds that "associated" means windings that share coupled magnetic field lines. As discussed above, the intrinsic evidence requires that the multiple inductors in the invention each be referred to separately as an "inductor." Moreover, the IEEE dictionary provides not only the definition of "inductor," but also the information necessary to define "associated." In that definition, the word "associated" is directly tied to the function of the inductor-introducing inductance into a circuit. *See* IEEE Dictionary at 440, Exh. K to Nui Decl. An inductor uses magnetic field lines to introduce inductance into a circuit. *See* Silzars Decl., para.para. 99-100. Accordingly, to be part of the same device, associated windings in an inductor must share coupled magnetic field lines. FN4 Id.

FN4. Because the '349 and '400 patent, read in conjunction with the IEEE dictionary, provide a sufficient basis on which to construe the meaning of the word "inductor," the Court declines to consider the Bitzer expert report and the other patents offered by the parties in support of their proposed construction. *See* Markman, 52 F.3d at 980 (holding that "[t]he court may, in its discretion, receive extrinsic evidence in order 'to aid the court in coming to a correct conclusion' "). Because the Court does not rely on Dr. Bitzer's testimony, it does not reach the question of whether that testimony is admissible as an admission under F.R. Evid. 801(d)(2).

The Court defines an inductor as follows:

A device consisting of one or more associated windings for introducing inductance into a circuit. Windings are "associated" for the purposes of this definition only if they share coupled magnetic field lines.

3. Claim Terms 14, 15, 16, 21, 22 and 23 (the "charging/discharging claim terms")

[22] The charging/discharging claim terms include three sets of terms, each set containing a charging and discharging limitation using slightly different language. The first set of charging/discharging claim terms, Claim Terms 14 and 21, provide as follows:

Claim Term 14

means for charging the panel capacitance through said inductor, initially while storing energy in said inductor until the magnitude of the inductor current reaches a maximum, and secondly while removing the stored energy from said inductor until the inductor current reaches zero

Claim Term 21

means for discharging the panel capacitance through said inductor, initially while storing energy in said inductor until the magnitude of the inductor current reaches a maximum, and secondly while removing the stored energy from said inductor until the inductor current reaches zero

See '400 patent, claims 27-33, 35-36. The second set of charging/discharging claim terms, Claim Terms 15 and 22, provide as follows:

Claim Term 15

first switch means coupled to said inductor to enable said panel capacitance to charge through said inductor from a first voltage level (a) initially to an intermediate voltage level magnitude which is about one-half the desired voltage level magnitude, while storing energy in said inductor, and (b) then to said desired voltage level magnitude, while removing said stored energy from said inductor

Claim Term 22

second switch means coupled to said inductor to enable said panel capacitance to discharge through said inductor from said desired voltage level magnitude (a) initially to an intermediate voltage level magnitude which is about one-half the desired voltage level magnitude, while storing energy in said inductor, and (b) then to said first voltage level magnitude, while removing said stored energy from said inductor

See '400 patent, claims 38-41. The third set of charging/discharging claim terms, Claim Terms 16 and 23, provide as follows:

Claim Term 16

first switch means remaining closed to enable said panel capacitance to charge through said inductor and responsive to said panel capacitance being substantially fully charged to open and thereby discontinue further charging

Claim Term 23

second switch means remaining closed to enable said panel capacitance to discharge through said inductor and responsive to said panel capacitance being substantially fully discharged to open

See '349 patent, claims 5-11. The primary dispute related to these claim terms is whether or not they are limited to resonant circuits that charge and discharge through an inductor, without interruption, until the inductor current reaches zero, as Fujitsu argues, or if they also cover circuits in which the circuit is interrupted before the inductor current has reached zero, as UI argues. The parties also disagree on the question of whether charging and discharging must occur exclusively through the inductor, as Fujitsu argues, or whether charging can occur from some other source. Finally, the parties disagree as to what (if anything) constitutes corresponding structure for these claim terms.

a. ***Meaning of Charging/Discharging Claim Terms***

Fujitsu argues that all of the charging/discharging claim terms are based on the fundamental principal that "maximum energy efficiency is achieved by switching a resonant circuit when there is no current (and thus energy) in the inductor." Fujitsu Claim Construction Brief at 22 (citing to '400 patent abstract, describing "[a]n improved power efficient sustain driver for plasma panels including an inductor through which the panel capacitance is charged and discharged, and switch means switched when the inductor current is zero, which permits recovery of the energy otherwise lost in driving the panel capacitance"). Consistent with this principle, Fujitsu argues, the charging/discharging claim terms are limited to "circuits that interrupt the natural flow of the resonant charging and discharging through the inductor, only when the inductor current reaches zero," id., and that when the inductor current reaches zero, the charging or discharging terminates "precisely and automatically." *See* University Comparison Chart at 7 (Claim Term 14), 9 (Claim Term 15), 14 (Claim Term 21), 16 (Claim Term 22). Further, Fujitsu asserts, these claims require that charging and discharging must be exclusively through the inductor rather than from some other source.

UI, on the other hand, asserts that there is nothing in the charging/discharging claim terms that requires that they be limited to uninterrupted resonant circuits, or that charging and discharging terminate precisely and automatically. In addition, UI argues that these claims require only that *some* charging or discharging occur through the inductor, "leaving open the possibility ... that other charging or discharging may occur from some other source." UI Claim Construction Brief at 26. UI argues that Fujitsu's proposed construction is merely an attempt by Fujitsu to limit the claims to the preferred embodiment depicted in Figure 5.

In construing the charging/discharging terms, the Court first looks to the words of the claims and written description in the Patents. The Court finds that the plain language contained in each of the three sets of claim terms requires that charging and discharging occur *until* a specific condition is met. Although the condition that must be met is described somewhat differently in the three sets of claim terms, the Court concludes that the condition that must be met as to all of these claim terms is that the inductor current is equal to zero. *See* Tandon Corp. v. U.S. Int'l Trade Comm'n, 831 F.2d 1017, 1023 (Fed.Cir.1987)(holding that "[t]wo claims which read differently can claim the same subject matter"). Further, all of the charging or discharging of the panel capacitance during the time that the panel capacitance is being charged or discharged through the inductor, must be solely through the inductor.

First, Claim Terms 14 and 21 expressly state that charging and discharging through the inductor occur "until the inductor current reaches zero." These words support the conclusion that under these limitations, charging and discharging may not be interrupted until the inductor current reaches zero. Further, Fujitsu has presented unrebutted evidence that it is technically impossible to concurrently charge (or discharge) through the inductor and from some other source. This is because "current necessarily flows downhill from nodes at higher voltages to nodes at lower voltages." Silzars Decl. at 61, para. 137. Thus, "[o]nce the voltage level of the panel is clamped directly to a power source, that power source controls the voltage level of the panel

capacitance [and] the inductor has little or no effect upon the panel capacitance." *Id*. Therefore, Claim Terms 14 and 21 require that while charging through the inductor is taking place, charging must be through the inductor *only* to meet these limitations.

These same requirements are contained in Claim Terms 15 and 22. Claim Term 15 requires charging through an inductor "from a first voltage level (a) initially to an intermediate voltage level magnitude which is about one-half the desired voltage level magnitude, while storing energy in said inductor, and (b) then to said desired voltage level magnitude, while removing said stored energy from said inductor." Claim 22 requires discharging through an inductor "from said desired voltage level magnitude (a) initially to an intermediate voltage level magnitude which is about one-half the desired voltage level magnitude, while storing energy in said inductor, and (b) then to said first voltage level magnitude, while removing said stored energy from said inductor." Because the words "desired voltage level magnitude" and "one-half the desired voltage level magnitude" are defined with reference to the charging that occurs *through* the inductor, these claims do not allow for charging or discharging from some other source while such charging and discharging occurs. On the other hand, some additional charging may occur *after* the inductor current reaches zero, so long as it is not substantial, as is shown in Figure 8. FN5 Further, the claims specify that the desired voltage level magnitude is reached when the stored energy is removed from the inductor, that is, when the inductor current reaches zero.

FN5. The Court rejects UI's assertion that Figure 8 is not covered by the Court's construction of the charging/discharging claim terms because in that figure, the inductor current is not zero when the voltage level of Vcc is reached. UI's argument fails because, as noted above, the "desired voltage level" is defined with reference to the charging that takes place *through* the inductor. Thus, the "desired voltage level" is simply the voltage level that is reached when all charging *through the inductor* is complete and the inductor current is zero. In Figure 8, this is not Vcc but a voltage level slightly lower than Vcc.

Finally, the same phenomena are described in Claim Terms 16 and 23. In these claim terms, charging and discharging may not be interrupted until the panel capacitance is "substantially fully charged" or "substantially fully discharged." Again, the claim terms define "fully charged" and "fully discharged" with reference to the charging that occurs *through* the inductor, precluding charging or discharging from some other source while the charging or discharging through the inductor is occurring. FN6

FN6. This construction is also supported by the testimony of Dr. Warren, one of the inventors, who testified in his deposition that the words of Claim Terms 16 and 23 describe what is "effectively ... a zero current condition." Warren Deposition at 179, Exh. 9 to Silzars Decl.

The written description in the two patents also supports the conclusion that the charging/discharging terms are limited to charging and discharging through the inductor, and from or to no other source, which is uninterrupted until the inductor current reaches zero. For example, the abstract in both patents states that charging and discharging terminate when the inductor current reaches zero:

An improved power efficient sustain driver for plasma panels including an inductor through which the panel capacitance is charged and discharged, and switch means switched when the inductor current is zero, which permits recovery of the energy otherwise lost in driving the panel capacitance.

Abstract, '349 patent and '400 patent. In addition, all of the ideal and practical circuits described in the patent charge and discharge through the inductor (and through no other source) until the inductor current reaches zero. Similarly, all of the timing diagrams that depict the current in the inductor show that charging and discharging occur through the inductor only, until the inductor current is zero. *See* Figures 8, 12 and 14

of '349 and ' 400 patent.

The prosecution history supports this construction of the charging/discharging claim terms. During the prosecution of the '349 patent, the PTO rejected claims 51-71 of the patent application, which were later issued as claims 21-41 of the '400 patent. *See* January 11, 1988 Communication, Exh. 3 to Silzars Decl. at FL062974-FL062975; *see also* id. at FL062940-FL062958 (rejected claims). In response, Weber sent the PTO Amendment B, in which he argued that claims 51-71 were allowable, stating:

Claims 51-71 are directed to an energy efficient technique for driving the electrodes of display panels wherein energy is recovered in a unique manner. This aspect of the invention is described throughout the application, particularly starting at specification page 17 and with reference to the drawings, particularly Figures 5-14.

In the method aspect of the invention, for instance, with reference to claim 51, there is recited an energy efficient method of driving display panels through an inductor coupled to the panel electrodes, including the steps of:

charging the panel capacitance through said inductor, initially while storing the energy in said inductor until the magnitude of the inductor current reaches a maximum, and secondly while removing the stored energy from said inductor until the inductor current reaches zero; and

discharging the panel capacitance through said inductor, initially while storing energy in said inductor until the magnitude of the inductor current reaches a maximum, and secondly while removing the stored energy from said inductor until the inductor current reaches zero.

The remaining claims 52-71 recite further features of this aspect of the invention in the groups listed previously on page 41 of the Preliminary Amendment of August 7, 1987. *All of the remaining claims 52-71 recite the patentable distinctions indicated above with respect to claim 51. In addition, claims 5-11 and 14 are also directed to the present energy efficient aspect of the present invention,* and these claims have been amended and are believed to be allowable as amended.

Amendment B (dated July 8, 1988), Exh. 3 to Silzars Decl. at FL062988-062989 (emphasis added). When Weber made this representation to the PTO, he gave up a construction of the charging/discharging claim terms that would allow for charging or discharging through the inductor to be interrupted before the inductor current reaches zero. *See* Elkay, 192 F.3d at 979-980 (holding that "[a]rguments made during the prosecution of a patent application are given the same weight as claim amendments" and that "[w]hen multiple patents derive from the same initial application, the prosecution history regarding a claim limitation in any patent that has issued applies with equal force to subsequently issued patents that contain the same claim limitation").

[23] The Court rejects the assertion that the statements made in Amendment B should be discounted on the basis that they are "facially inaccurate." Rambus Inc. v. Infineon Tech. Ag, 318 F.3d 1081, 1090 (Fed.Cir.2003). While the claim language takes precedence over an obviously erroneous statement by an attorney where there is a conflict, *see* Intervet America, Inc. v. Kee-Vet Labs., Inc., 887 F.2d 1050, 1054 (Fed.Cir.1989), there is no conflict here. The statements made in the course of the patent prosecution are consistent with both the claim language and the written description. As a consequence, the statements in Amendment B are not the kind of "facially inaccurate" statements that must be disavowed to avoid unfairness. *See* Biotec Biologische Naturverpackungen GmbH & Co. KG v. Biocorp, Inc., 249 F.3d 1341, 1348 (Fed.Cir.2001).

b. *Corresponding Structure*

[24] In identifying corresponding structure for the charging/discharging claim terms, the Court must first define the functions of the recited means. UI argues that the functions of these limitations are broad. *See* UI Claim Construction Brief at 36. For Claim Terms 14 and 21, UI asserts that the relevant functions are "means for charging the panel capacitance" and "means for discharging the panel capacitance." *Id*. For Claim Terms 15 and 22, UI asserts that the functions are "first switch means to enable said panel capacitance to charge" and "second switch means to enable said panel capacitance to discharge." *Id*. For Claim Terms 16 and 23, UI asserts that the functions are "first switch means remaining closed to enable said panel capacitance to charge and responsive to said panel capacitance being substantially fully charged to open" and "second switch means remaining closed to enable said panel capacitance to discharge and responsive to said panel capacitance being substantially fully discharged to open." *Id*.

Relying on BBA Nonwovens, 303 F.3d at 1344, UI argues that the remaining language in these claim terms does not describe the function and, therefore, is not subject to the requirements of s. 112, para. 6. Thus, for example, UI argues that the words "through said inductor" and "coupled to said inductor" only identify the electrical path through which charging and discharging occur and the location of the means, rather than its function. Similarly, UI argues that the language describing the timing of the charging process (e.g., "initially while storing energy in said inductor ..." [Claim Terms 14 and 21]; "from a first a first/ desired voltage level ..." [Claim Terms 15 and 22]) should be excluded because it merely discloses details about how charging and discharging are conducted. Finally, UI excludes the phrase "thereby discontinue further charging" from the function corresponding to Claim Term 16 because, it asserts, this phrase merely states a result of the limitation without adding anything to the claim.

Fujitsu argues that the functions for these limitations are narrow and include most of the words contained in the claim terms. In particular, Fujitsu argues that the function for the charging/discharging claim terms is "charging and discharging the panel capacitance through an inductor until the inductor current reaches zero, the stored energy is removed from the inductor and the panel capacitance is substantially fully charged" or discharged. Fujitsu Claim Construction Brief at 31. In addition, as to Claim Term 16, Fujitsu asserts that the phrase "thereby discontinue further charging" should be considered part of the function.

The Court agrees with UI that the words "coupled to said inductor" in Claim Terms 15 and 22, like the language that was excluded from the function in *BBA Nonwovens,* simply specifies the location of the "switch means" described in those claim terms. Therefore, this language is not part of the function of these limitations but rather, constitutes a separate limitation. *See* Chiuminatta Concrete Concepts, Inc. v. Cardinal Industries, Inc., 145 F.3d 1303, 1306 (Fed.Cir.1998) (holding that the function of a claim limitation that specified a "means connected to the saw for supporting the surface of the concrete adjacent the leading edge of the cutting blade to inhibit chipping, spalling, or cracking of the concrete surface during cutting" included all of the words of the limitation except "connected to the saw").

On the other hand, the remaining language that UI seeks to omit from the functions of these claim terms describes *how* the function is carried out, in contrast to *BBA Nonwovens,* in which the language at issue merely described the location of the means. *See* 303 F.3d at 1344. As a result, the Court concludes that UI's reliance on *BBA Nonwovens* is misplaced as to this language. For example, the words "through said inductor" are functional because they describe what the means specified in these limitations should do, not only where it should be located.

Similarly, although the Court does not find any case that directly addresses the issue, the Court concludes the language relating to timing is functional. Although *BBA Nonwovens* does not address language related to timing, the Federal Circuit's decision in Intellicall, Inc. v. Phonometrics, Inc., 952 F.2d 1384 (Fed.Cir.1992) suggests that language related to timing may be functional. In that case, a means plus function claim specified a "call cost register means, including a digital display for providing a substantially instantaneous display of cumulative call cost in dollars and cents." Id. at 1387. In determining that the accused device did

not literally infringe the claim, the court held that the function of this claim was to "provide an *instantaneous* visual display of cumulative call cost in dollars and cents...." Id. at 1387-1388 (emphasis added). Under the reasoning proposed by UI, the requirement that the display be "instantaneous" would have been excluded from the function. Here, the Court concludes that the language in the claims describing *when* the function occurs should be considered part of the function and that failure to include this language would impermissibly broaden the scope of the claims. *See* Lockheed Martin Corp. v. Space Systems/Loral, Inc., 249 F.3d at 1324.

[25] Further, the Court is not persuaded that the phrase in Claim Term 16 following "thereby" should be omitted from the function of that claim. The Federal Circuit has held that "[a] 'whereby' clause that merely states the result of the limitations in the claim adds nothing to the patentability or substance of the claim." Texas Instruments, Inc. v. United States Int'l Trade Comm'n, 988 F.2d 1165, 1172 (Fed.Cir.1993). Similarly, where the words following "thereby" simply state a result, they are not considered to be part of the function, or even a claim limitation. *See* In re Krodel, 42 C.C.P.A. 993, 223 F.2d 285 (Cust. & Pat.App.1955). On the other hand, when language following the word "thereby" does not state a result, it is considered a claim limitation. *Id*. Thus, in *Krodel,* the court held that language following the word "thereby" did not merely state a result but rather, did "much more." *Id*. The court stated:

The portion of the italicized clause of claim 18, supra, which reads 'to thereby induce a zeta potential of the same charged sign as the ink particles and which differs from that of similarly charged particles of the material by a factor of at least 4,' at first glance, appears to be functional in the sense that it might be construed that the sole purpose of the phrase is to recite a result which is desired to be obtained from the addition of a water soluble salt yielding an ion having a valence of at least 4. However, it is our opinion that this phrase sets forth much more, and is therefore not a mere statement of desired result. When the italicized portion of the claim, noted above, is read in its proper context in the claim, it must be considered to be a limitation which is required, as a result of the step of adding the salt, to successfully carry out the process. This phrase is as much a limitation of the claim as the recitation of the salt yielding an ion having a valency of at least 4 since it recites an essential characteristic of the solution which must be obtained as a result of adding the salt. In other words, the above-quoted phrase does not merely set forth a desired result per se, but couples with the desired result a physical characteristic which is deemed necessary by appellants for the successful performance of their process.

Id. at 289-90.

The Court concludes that the "thereby" clause in Claim Term 16, like the clause in *Krodel,* does not merely state a result but rather, delimits how the switch means described in Claim Term 16 is supposed to work. Moreover, it is not only a claim limitation. It describes the function of the switch means: to discontinue further charging. As such, this language should be considered to be part of the function.

Therefore, the Court concludes that the functions of the charging/discharging claim terms are as follows:

Claim Term 14: charging the panel capacitance through an inductor, initially while storing energy in said inductor until the magnitude of the inductor current reaches a maximum, and secondly while removing the stored energy from said inductor until the inductor current reaches zero.

Claim Term 21: discharging the panel capacitance through an inductor, initially while storing energy in said inductor until the magnitude of the inductor current reaches a maximum, and secondly while removing the stored energy from said inductor until the inductor current reaches zero.

Claim Term 15: switching to enable the panel capacitance to charge through the inductor from a first voltage level (a) initially to an intermediate voltage level magnitude which is about one-half the desired

voltage level magnitude, while storing energy in said inductor, and (b) then to said desired voltage level magnitude, while removing said stored energy from said inductor.

Claim Term 22: switching to enable said panel capacitance to discharge through said inductor from said desired voltage level magnitude (a) initially to an intermediate voltage level magnitude which is about one-half the desired voltage level magnitude, while storing energy in said inductor, and (b) then to said first voltage level magnitude, while removing said stored energy from said inductor.

Claim Term 16: first switch means remaining closed to enable said panel capacitance to charge through said inductor and responsive to said panel capacitance being substantially fully charged to open and thereby discontinue further charging.

Claim Term 23: second switch means remaining closed to enable said panel capacitance to discharge through said inductor and responsive to said panel capacitance being substantially fully discharged to open.

With respect to corresponding structure, there are two key disputes. First, as to Claim Terms 14 and 21, Fujitsu argues that Css is not included in corresponding structure while UI argues that it is. Second, as to Claim Terms 16 and 23, Fujitsu argues (primarily in its Summary Judgment Motion) that there is no corresponding structure, whereas UI argues that there is. Below, the Court addresses corresponding structure for each of the three types of charging/discharging claim terms.

i. Claim Terms 14 and 21

The parties agree that the corresponding structure for Claim Term 14 includes S1 (Figures 5 and 7) and T1 (Figures 9 and 10) and for Claim Term 21 includes S2 (Figures 5 and 7) and T2 (Figures 9 and 10). In addition, both parties include diodes D1 and D2 as part of corresponding structure for these claim terms. *See* UI Claim Construction Brief at 38; Fujitsu Claim Construction Brief at 32. FN7 The primary dispute between UI and Fujitsu with respect to Claim Terms 14 and 21 is whether or not the capacitor Css (or Css2 as to Figure 10) should be considered part of corresponding structure. UI argues that Css should be included as corresponding structure for Claim Terms 14 and 21 but not for the other charging/discharging claim terms, because Claim Terms 14 and 21 recite a "means for charging/discharging" whereas the other claim terms recite a switch means "enabling" charging and discharging. UI Claim Construction Brief at 39. UI explains this distinction as follows:

FN7. At the claim construction hearing, Fujitsu orally modified its position and agreed, among other things, to drop diodes D1 and D2 from its proposed corresponding structures for the charging/discharging claim terms in the '400 patent, that is, Claim Terms 14, 15, 21 and 22. In their briefs, however, both Fujitsu and UI asserted that D1 and D2 *are* corresponding structures for Claim Terms 14 and 21. On the basis of the briefs, the Court treats the inclusion of the diodes as corresponding structure for Claim Terms 14 and 21 as undisputed. In any event, the Court concludes that the diodes are properly included as part of the structures for these functions. In its oral modification, Fujitsu also omitted S3/T3 with Driver 3 and S4/T4 with Driver 2 from its proposed structures for Claim Terms 14, 15, 21 and 22. Accordingly, the Court does not include these in the corresponding structures for these claim terms.

The practical consequence of this is that identification of corresponding structure for Claim Terms 14 + 21-but not for the other two groups-must include "free-standing capacitor Css, which provides a forcing voltage Vss to charge panel capacitance Cp through inductor L to the voltage level of power supply Vcc in the embodiments disclosed in the specification."
Id.
Fujitsu argues that UI's characterization of Css as a "free-standing capacitor" has no basis in the patent or in

the relevant art. Fujitsu Claim Construction Brief at 32-34. First, Fujitsu points out that the term "free-standing capacitor" is not used in the Patents and asserts further that this is not an engineering term. Id. at 32. Second, Fujitsu argues that the term makes no sense because the capacitor itself has to be connected to an power source, such as a wall plug. Id. at 33. Fujitsu argues that if UI's reasoning were followed, that external power source would also be part of the corresponding structure. Id.

The Court concludes that Css is not part of the corresponding structure for Claim Terms 14 and 21. Capacitors, as a technical matter, are more than a power source: they are storage devices. Nothing in the patent discloses that a storage device is necessary to the function recited in these claims. In reaching this conclusion, the Court finds instructive the fact that Figures 11 and 13 do not include a power supply Css. While these figures depict address drivers rather than sustain drivers, they are relevant to the claim terms at issue here because a number of the claims in which Claim Terms 14 and 21 are used, such as claims 35 and 38 of the '400 patent, do not explicitly specify whether they describe an address or a sustain driver. Further, the Court agrees that if Css were to be included as part of the corresponding structure, the wall outlet would also have to be included, even though it is not included in any of the figures in the Patents.

Thus, the Court concludes that the corresponding structure for Claim Terms 14 and 21 is as follows:

Claim Term 14: Figures 5-7: S1/ D1; Figures 9-10: T1/ D1;

Claim Term 21: Figures 5-7: S2 / D2; Figures 9-10: T2 / D2; Figure 11: D3.

ii. Claim Terms 15 and 22

The parties agree that S1 (Figures 5 and 7) and T1 (Figures 9 and 10) are corresponding structure for Claim Term 15 and that S2 (Figures 5 and 7) and T2 (Figures 9 and 10) are corresponding structure for Claim Term 22. They also agree that Css is *not* part of the corresponding structure for these claim terms. Finally, because Fujitsu stipulated at oral argument that diodes D1 and D2, Drivers 2 and 3 and switches S3 and T3 need not be included as corresponding structure for these claim terms, the parties are now in agreement on those issues as well. The Court finds that the following are corresponding structure for Claim Terms 15 and 22:

Claim Term 15: Figures 5 and 7: S1; Figures 9 and 10: T1.

Claim Term 22: Figures 5 and 7: S2; Figures 9 and 10: T2.

iii. Claim Terms 16 and 23

The key issue in dispute with respect to Claim Term 16 and is whether the ' 349 patent discloses any structure that performs the function of "opening" in response to the panel capacitance being substantially fully charged to discontinue charging. Similarly, the dispute as to Claim Term 23 is whether there is any corresponding structure that perform the function of opening in response to the panel capacitance being substantially fully discharged. The Court concludes that there is not.

UI asserts that there are two sets of structures disclosed in the '349 patent that perform the functions described in Claim Terms 16 and 23. UI Claim Construction Brief at 39-40. First, there is a "switch only" embodiment, in which the corresponding structure includes only the switches S1 and T1 (for the charging term) and S2 and T2 (for the discharging term). Id. UI argues that these switches are "responsive" because they can be used in conjunction with clock-timed signals that open the switches when the panel capacitance is substantially fully charged or discharged. UI Opposition to Fujitsu Summary Judgment Motion at 18. According to UI, the case law establishes that such "indirect" responsiveness is sufficient to meet the

requirements of these limitations. Id. Alternatively, UI asserts, the responsiveness that is called for by these claim terms can be achieved by including the diodes D1 and D2, along with the switches S1/T1 and S2/T2, as corresponding structure. Id.

Fujitsu, on the other hand, argues that there are no corresponding structures for these claim terms. First, Fujitsu argues, there is no switch disclosed anywhere in the patent that opens in response to the panel capacitance being fully charged. *See* Fujitsu Summary Judgment Motion at 20. To the extent that UI tries to get around this problem by including Diode D1, along with S1, in corresponding structure, Fujitsu argues that this argument also fails as to Claim Term 16 because this diode does not *discontinue* any charging, as stated in the claim. Id. Rather, it prevents the panel capacitance from discharging *after* it has been fully charged, when the diode becomes reverse biased. Id. Further, Fujitsu argues, UI's "switch-only" embodiment cannot satisfy the claim requirements because the use of clock-timed signals is not clearly associated with these claims as part of corresponding structure.

The Court concludes that neither the inclusion of the diodes nor the use of clock-timed signals in the "switch-only" embodiment satisfies the requirements of Claim Terms 16 and 23. First, the inclusion of the diodes as corresponding structure fails because these claims require "switch means" that "open." Notwithstanding the extrinsic evidence presented by Fujitsu that a diode was understood to be a type of switch, FN8 the Court finds, based on the claims and written description in the Patents, that a diode is not a switch. The inventors did not refer to diodes as switches in the Patents but rather, treated them as separate and different from switches. *See, e.g.,* ' 349 patent, col. 10, ll. 45-54 (describing the "switching devices" and the "diodes" separately). Moreover, they described diodes as being "forward biased" or "reverse biased" rather than being "open" or "closed." *See, e.g.,* ' 349 patent, col. 17, ll. 42-44. Therefore, the inclusion of a diode that becomes reverse biased in response to the panel capacitance being substantially fully charged or discharged does not satisfy the requirement that the function described be accomplished through the "opening" of a switch. Nor is there any indication in the Patents that the diodes cause switches S1 and S2 to "open" as required under Claim Terms 16 and 23.

FN8. *See* Silzars Decl. at para.para. 91-93 (describing a diode as a unidirectional switch).

As to Claim Term 16, the inclusion of the diodes as part of corresponding structure also fails for the independent reason that that claim term specifies as part of the function that the switch means is to "discontinue further charging." It is undisputed, however, that the diodes described in the Patents become reverse biased only *after* the charging is complete, thus preventing *discharging* of the panel capacitance. Under these circumstance, the Court concludes that the diode does not "discontinue further charging." Moreover, the Court rejects the strained reading of the term "discontinue" advanced by UI as including "preventing" further charging, at least under the circumstance here, where there is no further charging to prevent because charging is complete. FN9

FN9. For the same reason, the Court concludes that claim 8 of the ' 349 patent is invalid. Claim 8 recites "[a]n ac plasma panel according to claim 7, wherein said diode in the first switch means is forward biased until the panel capacitance is fully charged and then is reverse biased to discontinue said panel capacitance charging."

The Court also rejects UI's argument that the switches alone can constitute corresponding structure for Claim Terms 16 and 23 because they can be made "responsive" through the use of clock-timed signals. In support of this argument, UI cites to a line in the patent description which states as follows:

Alternatively, diode D1 could be eliminated and S1 opened when Vp rises to Vcc (at the point where [the

inductor current] is zero).

'349 patent, col. 10, ll. 10-12. UI also points to Figure 9, which includes a clock timer labeled "CMOS," arguing that this diagram discloses the use of clock-timers in conjunction with switches S1 and S2 as part of corresponding structure for Claim Terms 16 and 23. The Court is not persuaded by UI's argument. Despite the vague suggestion in the description quoted above and the inclusion of a clock-timer in one of the figures, the use of clock-timed signals to make switches S1 and S2 responsive, as required under Claim Terms 16 and 23, is nowhere in the patent "clearly linked" with the functions described in Claim Terms 16 and 23. *See* Medtronic, 248 F.3d at 1311. FN10

FN10. Because the Court finds that the use of clock-timed signals is not clearly linked with the functions of Claim Terms 16 and 23, the Court does not reach the question of whether the use of clock-timed signals can achieve the "responsiveness" called for in these claim terms.

Accordingly, the Court holds that there is no corresponding structure for Claim Terms 16 and 23, and therefore, claim 5 of the '349 patent, as well as claims 6-11, which are dependent on claim 5, are invalid due to indefiniteness pursuant to 18 U.S.C. s. 112, para. 2.

4. Claim Terms 30, 33, 34, 39, 42, 43 and 44 (the "maintaining/clamping claim terms")

The parties identify three sets of claim terms related to maintaining and clamping that are in dispute. The first set of terms, Claim Terms 30 and 39, is found in claim 31 of the '400 patent. These claim terms provide as follows:

Claim Term 30

means for maintaining the panel capacitance in a charged state after charging the panel capacitance and prior to discharge

Claim Term 39

means for maintaining the panel capacitance in a discharged state after discharge and prior to again charging the panel capacitance

The second set of claim terms is found in claims 33 and 36 of the '400 patent. These claim terms state as follows:

Claim Term 33

first means for clamping the voltage level of said panel capacitance upon the inductor current reaching zero during charging of the panel capacitance

Claim Term 42

second means for clamping the voltage level of the panel capacitance upon the inductor current reaching zero during discharging of the panel capacitance

The third set of claim terms, Claim Terms 34, 43, and 44, are found in claims 39 and 40 of the '400 patent. These claim terms provide as follows:

Claim Term 34

third switch means coupled to said inductor clamping the panel capacitance voltage to said desired voltage level magnitude after charging of said panel capacitance

Claim Term 43

third switch means coupled to said inductor for clamping the panel capacitance voltage level to maintain a panel capacitance discharged state until the panel capacitance is again charged

Claim Term 44

fourth switch means coupled to said inductor for clamping the panel capacitance voltage to said first voltage level magnitude after discharging of said panel capacitance

A number of issues are in dispute regarding the maintaining/clamping claim terms. First, Fujitsu asserts that the maintaining and clamping described in these claim terms occurs only when the current in the inductor is zero whereas UI argues that maintaining and clamping can occur when the inductor current is not zero. Second, Fujitsu asserts that clamping refers to fixing to any reference voltage, including an internally generated reference voltage, while UI argues that clamping requires a connection to an external power supply. Third, Fujitsu argues that clamping includes both the act of adding the reference voltage and the subsequent maintenance of that voltage whereas UI limits clamping to maintaining a particular voltage level, asserting that clamping does not include the act of adding the reference voltage. FN11 Finally, Fujitsu and UI disagree on what constitutes corresponding structure.

FN11. The Court defines "maintaining" as "holding the voltage level of the panel capacitance."

a. *When Maintaining and Clamping Occur*

[26] Fujitsu relies on the plain meaning of the maintaining/clamping claim terms in support of the assertion that they only allow maintaining and clamping to occur when the current in the inductor is zero. Fujitsu Claim Construction Brief at 41-42. UI, on the other hand, argues that nothing in the language of these claim terms requires that they be limited to maintaining and clamping when the inductor current equals zero. UI Claim Construction Brief at 33-34. The Court concludes that Fujitsu is correct.

Claim Terms 33 and 42 explicitly state that clamping occurs "upon the inductor current reaching zero." The word "upon" is defined as "thereafter; thereon." Webster's Third New International Dictionary at 2518, Exh. 48 to Silzars Decl. Therefore, Claim Terms 33 and 42 require that clamping occur only after charging or discharging through the inductor is complete and the inductor current has reached zero. The Court concludes, based on the words used in Claim Terms 30, 34, 39, 43, and 44, that the same requirement applies to those claim terms even though this condition is described somewhat differently.

First, claim 31 of the '400 patent, which contains Claim Terms 30 and 39, requires that maintaining occur "after charging the panel capacitance" and "after discharge." Because claim 31 recites a "display panel according to claim 27," in construing the words "after charging" and "after discharge" in claim 31, the Court must consider not only the words of claim 31 but also the limitations contained in claim 27. As discussed above, claim 27 specifies a display panel in which charging and discharging through the inductor is uninterrupted until the inductor current equals zero (see discussion of Claim Terms 14 and 21). Therefore, the Court concludes that the words "after charging" and "after discharge" in claim 31 must also be construed to require that maintaining shall occur only when the inductor current equals zero and the charging or

discharging of the panel capacitance through the inductor is complete.

Similarly, Claim Terms 34, 43, and 44 describe the timing of the clamping with reference to charging and discharging of the panel capacitance. Specifically, these claim terms specify that clamping will occur "after charging of said panel capacitance," (Claim Term 34), "after discharging of said panel capacitance," (Claim Term 44) and "to maintain a panel capacitance discharged state" (Claim Term 43). The Court concludes that the words of Claim Terms 34, 43, and 44 require that all charging through the inductor be completed and that the inductor current equals zero. This conclusion is based on the fact that claims 39 and 40, like claim 31, refer back to an earlier claim that requires that charging and discharging through the inductormust be uninterrupted. Specifically, claims 39 and 40 recite "[a]n energy efficient driver according to claim 38." Claim 38, in turn, contains the charging/discharging claim terms addressed above, Claim Terms 15 and 22. Accordingly, the Court concludes that the clamping recited in Claim Terms 34, 43, and 44 may only occur when all charging or discharging through the inductor is complete, the stored energy in the inductor has been removed, and the inductor current equals zero.

b. ***Connection to an External Power Source***

[27] UI asserts that the definition of "clamping" should include the requirement that it be "accomplished via an electrical connection to a fixed bias (e.g., power supply or ground)." UI Claim Construction Brief at 31. In other words, UI's definition limits clamping to instances involving an external power supply. Fujitsu, on the other hand, takes the position that the common and ordinary meaning of the word "clamping" refers to the act of adding "any voltage reference, whether 'externally' or 'internally' generated." Fujitsu Claim Construction Brief at 39. The Court concludes that "clamping" need not be accomplished through a connection to an external power supply but rather, can be accomplished by adding any voltage reference, whether internally or externally generated.

The starting point for the Court's analysis is the definition of "clamping" found in the IEEE Dictionary, which is instructive in determining the common and ordinary meaning of the term. The IEEE Dictionary defines "clamping" as "[a] function by which the extreme amplitude of a waveform is maintained at a given level." IEEE Dictionary (3d Ed.1984) at 146, Exh. K to Nui Decl. The IEEE dictionary definition is silent as to whether clamping requires a connection to an external power supply or rather, may also be accomplished through connection to an internally generated reference voltage. Thus, this definition supports Fujitsu's position that one of ordinary skill in the art in 1986 would not have understood the term "clamping" to include the limitation contained in UI's definition of the term. FN12

FN12. Fujitsu also cites to a number of patents, including a patent issued to Dr. Weber, in which the term "clamping" refers to fixing to an internally generated reference voltage. *See* Silzars Decl. at para.para. 221-222. Although the Court places less weight on this extrinsic evidence than it does on the words of the patent and the IEEE dictionary definition, this evidence also offers some support for Fujitsu's argument that the definition of "clamping" does not include a requirement that there be a connection to an external power supply. Nor is the Court persuaded by UI's argument that all of this prior art is inapposite because the referenced patents do not involve plasma display panels. As discussed below, the '349 and '400 patents explicitly state in the Abstract that the invention is not limited to plasma panels but also can be used with electroluminescent panels and with liquid crystal panels. Because the invention is not limited to plasma panels but rather covers a variety of types of panels, the prior art cited by Fujitsu is relevant to the construction of the word "clamping" in the '349 and '400 patents.

The Court does not place a great deal of weight on the deposition testimony cited by Fujitsu of inventors Dr. Weber and Mr. Wood. *See* Silzars Decl. at para. 222. In the cited testimony, neither Dr. Weber nor Mr. Wood addresses directly the question of whether "clamping" requires a connection to an external power source. Although their failure to mention such a requirement might support Fujitsu's position, that evidence

is of very limited probative value. Nor does the Court find the decision of the European Patent Office revoking the European counterparts of the '349 and ' 400 patents to be helpful. *See* Exh. 66 (September 26, 2000 Decision revoking patent); Exh. 67 to Silzars Decl. (September 26, 2002 decision on appeal affirming revocation of patent); Silzars Decl. at para. 223. Neither the original decision revoking the patent nor the decision affirming the revocation explicitly addresses the question of whether "clamping" requires a connection to an external power source.
UI suggests, however, that even if the term "clamping" is not generally understood to require a connection to an external power supply, the term is defined differently when it is used in the context of plasma display panels. In particular, UI asserts that:

Clamping the voltage across a plasma display panel is not comparable to clamping the voltage in other contexts-even to clamping in the context of other display technologies. Unlike in other display technologies, a source of significant current is required to clamp the voltage of a plasma display panel because of the large and abrupt gas discharge current that is drawn when pixels are illuminated.

UI Reply Claim Construction Brief at 21. UI does not, however, present any evidence that one of ordinary skill in the art in 1986 would have understood that the word "clamping" carried a different meaning when used in the context of plasma display panels than when used with reference to other types of display panels. Moreover, UI's argument is unpersuasive to the extent that the '349 and '400 patents explicitly state in the Abstract that the invention is not limited to plasma panels but also can be used with electroluminescent panels and with liquid crystal panels.

Finally, the Court rejects the assertion by Dr. Inan that a "special definition" is given to the word "clamping" in the Patents. Inan Report at 44. Dr. Inan relies exclusively on the fact that in all of the preferred embodiments in the Patents, clamping is accomplished through a connection to an external power source, namely, Vcc or ground. *See* id. The presumption that words in a patent carry their common and ordinary meaning may be overcome when a special definition is "clearly stated" in the patent, that is, when the specification "expressly defines terms used in the claims or when it defines terms by implication." *See* Vitronics, 90 F.3d at 1582. On the other hand, it is well-established that the scope of an invention disclosed in a patent is not limited to the preferred embodiments but rather, is defined by the claim terms. *See* Autogiro Co. of America v. United States, 181 Ct.Cl. 55, 384 F.2d 391, 398 (Ct.Cl.1967). The latter rule would be rendered meaningless if the Court were to accept UI's argument and hold that the term "clamping" has a special definition that is more limited than the common and ordinary understanding of the word simply because only a certain type of clamping is used in the preferred embodiments. Therefore, the Court concludes that even though the preferred embodiments in the Patents involve clamping to an external power source, this fact alone does not provide a sufficient basis to find that the word "clamping" has a special definition in the '349 and '400 patents.

c. *Clamping as Maintaining v. Clamping as Adding a Voltage Reference Level*

[28] UI argues that "clamping" is a type of "maintaining" rather than a type of switching. UI Claim Construction Brief at 31. Because clamping is simply a type of maintaining the panel capacitance in a charged or discharged state, UI asserts, it does not refer to the switching that may occur prior to clamping, which is at most a "possible condition precedent" to clamping. Nor, for example, does clamping refer to the short period shown in Figure 8 between the time when switch S3 is closed and the point when the panel capacitance reaches Vcc, according to UI. Fujitsu, on the other hand, argues that "clamping" includes the act of switching to add a voltage reference, as well as maintaining the voltage reference once the panel capacitance reaches the level of the reference voltage. The Court finds Fujitsu's position more persuasive.

The IEEE Dictionary defines a "clamping circuit" as one that "adds" a reference voltage, suggesting that "clamping" includes the act that adds the reference voltage as well as the maintenance of that voltage level.

IEEE Dictionary at 146, Exh. K to Nui Decl. This construction is supported by the claims and written description of the '349 and '400 patents. In particular, switching is repeatedly equated with "clamping." *See, e.g.*, '400 patent, col. 22, ll. 47-48 ("third switch means ... for clamping"), 55-56 ("fourth switch means ... for clamping"). It is inconsistent with the usage in the patent to exclude the very act that "clamps" the voltage level from the definition of clamping.

Accordingly, the Court defines "clamping" as "the act of adding a specific reference voltage level, which results in holding the panel capacitance at such reference voltage level." Further, as noted above, "clamping" need not be accomplished through connection to an external power supply but rather, can be accomplished by adding any voltage reference, whether internally or externally generated.

d. *Corresponding Structure*

[29] [30] [31] In order to identify corresponding structure for the maintaining/clamping claim terms, the Court must first determine the function of these terms. The dispute regarding the functions for the maintaining/clamping claim terms is similar to the parties' disagreement as to the functions for the charging/discharging claim terms. In particular, UI argues that much of the language contained in the maintaining/clamping claim terms is not part of the function of these terms, while Fujitsu argues that most of the language in these claim terms is part of their function. The Court's reasoning with respect to the functions of the maintaining/ clamping claim terms is largely the same as for the charging/ discharging claim terms.

UI argues that language that refers to the timing and location of the clamping and maintaining means is not part of the function for these claim terms, again relying on BBA Nonwovens, 303 F.3d at 1343-1344. UI Claim Construction Brief at 42-45. Thus, for Claim Terms 30 and 39 (the maintaining claim terms), UI asserts that the words "after charging the panel capacitance and prior to discharge" (Claim Term 30) and "after discharge and prior to again charging the panel capacitance" (Claim Term 39) are not part of the function. *Id*. Similarly, for the clamping terms, UI argues that the following language be excluded from the function: Claim Term 33: "upon the inductor current reaching zero during charging of panel capacitance;" Claim Term 42: "upon the inductor current reaching zero during discharging of the panel capacitance;" Claim Term 34: "after charging of said panel capacitance;" Claim Term 44: "after discharging of said panel capacitance;" Claim Term 43: "Until the capacitance is again charged." *Id*. UI also argues that the words "coupled to said inductor" (Claim Terms 34, 43 and 44) merely refers to the location of the means for clamping and therefore should be excluded from the function also. *Id*. Fujitsu takes the position that all of this language constitutes part of the function for these claim terms.

As discussed above with respect to the charging/discharging claim terms, the Court agrees with UI that the language "coupled to said inductor" in Claim Terms 34, 43, and 44 describes the location of the "switch means" rather than the function of these limitations. *See* BBA Nonwovens, 303 F.3d at 1343-1344; *See also* Chiuminatta, 145 F.3d at 1308. On the other hand, the Court rejects UI's assertion that the language in the maintaining/clamping claim terms specifying *when* the function must occur should be excluded from the function. *See* Intellicall, Inc., 952 F.2d at 1387.

Accordingly, the Court defines the functions of the maintaining/ clamping claim terms as follows:

Claim Term 30: maintaining the panel capacitance in a charged state after charging the panel capacitance and prior to discharge

Claim Term 39: maintaining the panel capacitance in a discharged state and prior to again charging the panel capacitance

Claim Term 33: clamping the voltage level of the panel capacitance upon the inductor current reaching zero during charging of the panel capacitance

Claim Term 42: clamping the voltage level of the panel capacitance upon the inductor current reaching zero during discharge of the panel capacitance

Claim Term 34: switching to clamp the panel capacitance voltage to said desired voltage level magnitude after charging of the panel capacitance

Claim Term 43: switching to clamp the panel capacitance voltage level to maintain a panel capacitance discharged state until the panel capacitance is again charged

Claim Term 44: switching to clamp the panel capacitance voltage to said first voltage level magnitude after discharging of the panel capacitance

Having identified the functions of the maintaining/clamping claim terms, the Court turns to the question of corresponding structure. There are four primary disputes related to corresponding structure for these claim terms. First, as to Claim Terms 30, 39, 33, and 42, does the structure include the switches or just the electrical connections through the switches? Second, does corresponding structure for these claim terms include the drivers and associated circuitry? Third, does corresponding structure for these claim terms include Vcc and ground? Fourth, should diodes D1 and D2 be included in corresponding structure for the clamping claim terms?

i. Switches

[32] UI and Fujitsu disagree on whether certain switches constitute corresponding structure for the maintaining Claim Terms 30 and 39 and for clamping Claim Terms 33 and 42 or, alternatively, if corresponding structure for these claim terms includes only the electrical connections *through* these switches when they are closed. FN13 The Court concludes that corresponding structure for these claim terms include the switches.

FN13. The parties do not, however, disagree that the switches are included in corresponding structure for Claim Terms 34, 43 and 44. In particular, the parties agree that the following switches are included in corresponding structure for these claim terms: Claim Term 34: S3 (Fig.'s 5 and 7), T3 (Fig.'s 9-10); Claim Term 43: S4 (Fig.'s 5 and 7); T4 (Fig.'s 9-10); Claim Term 44: S4 (Fig.'s 5 and 7); T4 (Fig.'s 9-10).

Fujitsu argues that all of the maintaining/clamping claim terms include switches as corresponding structure because the switches are the devices that are activated at the time specified in these claims, that is, upon the inductor current reaching zero, to accomplish the functions of maintaining or clamping described in these claim terms. FN14 Fujitsu Claim Construction Brief at 45. UI, on the other hand, argues that the corresponding structure for Claim Terms 30, 39, 33 and 42 includes only the connections through the switches. UI Claim Construction Brief at 42-49. UI relies, in part, on the doctrine of claim differentiation and the fact that Claim Terms 30, 39, 33, and 42 recite generally a "means for maintaining" or a "means for clamping," whereas Claim Terms 34, 43 and 44 refer to a "switch means." *Id*. at 46-47. UI also asserts that its position is consistent with its proposed definition of "clamping" as a subset of maintaining. *Id*. at 44.

FN14. Fujitsu asserts that the following switches constitute corresponding structure for the maintaining/clamping claim terms: Claim Term 30: S3 (Fig.'s 5 and 7), T3 (Fig.'s 9-10); Claim Term 39: S4 (Fig.'s 5 and 7), T4 (Fig.'s 9-10); Claim Term 33: S3 (Fig.'s 5 and 7), T3 (Fig.'s 9-10); Claim Term 42: S4(Fig.'s 5 and 7), T4 (Fig.'s 9-10); Claim Term 34: S3 (Fig.'s 5 and 7), T3 (Fig.'s 9-10); Claim Term 43: S4

(Fig.'s 5 and 7); T4 (Fig.'s 9-10); Claim Term 44: S4 (Fig.'s 5 and 7); T4 (Fig.'s 9-10).

UI's argument fails for two reasons. First, as discussed above, the Court finds no evidence, either intrinsic or extrinsic, supporting UI's proposed definition of clamping as excluding the act of adding a reference voltage. Second, the doctrine of claim differentiation does not require that the switches be excluded from corresponding structure for Claim Terms 30, 39, 33, and 42.

Under the doctrine of claim differentiation, claims are presumed to have different meanings. Autogiro Co., 384 F.2d at 404. The Federal Circuit has described the doctrine of claim differentiation as follows:

There is presumed to be a difference in meaning and scope when different words or phrases are used in separate claims. To the extent that the absence of such difference in meaning and scope would make a claim superfluous, the doctrine of claim differentiation states the presumption that the difference between claims is significant. *D.M.I.,* 755 F.2d at 1574; Autogiro, 384 F.2d at 404, 155 USPQ at 708. At the same time, practice has long recognized that "claims may be multiplied ... to define the metes and bounds of the invention in a variety of different ways." Bourns, Inc. v. United States, 210 Ct.Cl. 642, 537 F.2d 486, 492 (1976). Thus two claims which read differently can cover the same subject matter.

Tandon Corp., 831 F.2d at 1023 (citations omitted).

Here, UI has not demonstrated that any claim would be rendered superfluous by construing Claim Terms 30, 39, 33, and 42, on the one hand, and Claim Terms 34, 43, and 44, on the other hand, as including switches in corresponding structure, even though the former claim terms recite a "means for maintaining" or a "means for clamping," while the latter claim terms recite a "switch means." Moreover, while the choice to use different words in these claim terms must undoubtedly be considered in construing them, the Court does not find any authority for the proposition that a means-plus-function limitation that does not refer to a "switch means" cannot include a switch in corresponding structure when other claims in the same patent explicitly recite a "switch means." Indeed, such a position must be rejected where, as here, the switches are critical for performing the maintaining and clamping functions described in Claim Terms 30, 39, 33, and 42.

ii. Drivers and Associated Circuitry

[33] The parties disagree on the question of whether Driver 2 and Driver 3 should be included in corresponding structure for the maintaining/clamping claim terms. Fujitsu argues that the drivers are part of corresponding structure because "the specification expressly ties Drivers 2 and 3 to the function of clamping upon the inductor current reaching zero and the panel capacitance being substantially fully charged or discharged." Fujitsu Claim Construction Brief at 46. UI, on the other hand, argues that Fujitsu is attempting to import the concept of responsiveness that is recited in unasserted claims 34, 37 and 41 of the '400 patent into the maintaining/clamping claim terms, which do not require "responsiveness" of any kind. The Court concludes that Drivers 2 and 3 should be included as corresponding structure for all of the maintaining/clamping claim terms.

The parties agree that the relevant description in the '400 patent regarding Drivers 2 and 3 is found at column 12 of the '400 patent, which states as follows:

Switching T3 and T4 presents a more difficult problem, however, since in addition to being switched on the transition of Vi, they must also be switched whenever the inductor current crosses zero. This could have required that T3 and T4 be controlled with additional inputs to the FIG. 9 circuit if it were not the case that V1 and V2 make voltage transitions whenever Vi makes a transition and shortly after the inductor current crosses zero. Thus, the switching of T3 and T4 is accomplished by using the transitions of V1 and V2 to

switch the Drivers (2 and 3) in FIG. 9 at the appropriate times and no additional inputs are required.

'400 patent, col. 12, ll. 34-45. This description makes clear that Drivers 2 and 3 allow for the maintaining and clamping specified in the maintaining/clamping claim terms to occur at the times specified in those claim terms, namely, after the panel capacitance is fully charged or discharged and the inductor current has reached zero. Because, as discussed above, the timing of the maintaining and clamping described in these claim terms is part of the function of these terms, Drivers 2 and 3 must be included as corresponding structure for these claim terms.

iii. Vcc and Ground

[34] UI argues that Vcc and ground must be included as corresponding structure for the maintaining/clamping claim terms. Fujitsu takes the position that they should not. The Court concludes that Fujitsu is correct.

UI asserts that Vcc and ground must be included in corresponding structure for these claim terms because "[i]t is ... undisputed that to 'hold' the voltage at a desired voltage level *requires* a fixed power supply voltage, such as Vcc or ground." UI Claim Construction Reply Brief at 32 (emphasis in original). Therefore, Vcc and/or ground must be included in corresponding structure for the maintaining claim terms (Claim Terms 30 and 39). Further, to the extent that clamping is a type of maintaining, UI argues, a fixed power supply voltage such as Vcc or ground is also an essential structure for the clamping claim terms. Id. at 36.

The Court is not persuaded by UI's argument. First, it is not undisputed that maintaining requires a connection to a fixed bias such as Vcc or ground. Indeed, UI concedes that a diode alone can maintain the panel capacitance in a charged or discharged state. *See* UI Claim Construction Brief at 43 (stating that "[u]sing the circuit in Figure 5 as an example, the diode D1 can maintain the panel capacitance in a charged state because, when reverse biased, it blocks current flow away from the panel capacitance"). At most, connection to a fixed bias *enables* maintaining. Similarly, with respect to clamping, UI has presented no evidence that clamping *requires* connection to a fixed bias, as discussed above. Again, the connection to Vcc or ground, at most, *enables* clamping. The Court concludes that under these circumstances, inclusion of Vcc and ground in corresponding structure is improper.

As the Federal Circuit held in *Asyst Technologies, Inc. v. Empak, Inc.,* "[t]he corresponding structure to a function set forth in a means-plus-function limitation must actually perform the recited function, *not merely enable the pertinent structure to operate as intended. ...*" 268 F.3d 1364,1371 (Fed.Cir.2001) (emphasis added). In *Asyst,* the court provided the following illustration of the point: "An electrical outlet enables a toaster to work, but the outlet is not for that reason considered part of the toaster." *Id.* Based on the same reasoning, Vcc and ground should not be included as corresponding structure for the maintaining/clamping claim terms.

iv. Diodes

The parties agree that diodes D1 and D2 should be included as corresponding structure for the maintaining claim terms, Claim Terms 30 and 39. As to the clamping claim terms, Claim Terms 33, 42, 34, 43, and 44, Fujitsu argues that diodes D1 and D2 in Figures 5 and 7 of the Patents should be included as corresponding structure. Fujitsu Claim Construction Brief at 46. UI, in contrast, argues that D1 and D2 should not be included as part of corresponding structure for these claim terms. UI Claim Construction Brief at 47-48. UI advances two arguments in support of its position. First, UI asserts that diodes D1 and D2 should not be included because "clamping" requires a connection to a fixed bias, such as Vcc or ground, and cannot be achieved using a diode. *Id.* Second, as to Claim Terms 34, 43, and 44, UI asserts that the diodes should not be included because these claim terms recite a "switch means" and diodes are not switches. *Id.* The Court

rejects both arguments.

As discussed above, the Court is not persuaded that a person of ordinary skill in the art reading the '349 and '400 patents in 1986 would have understood the word "clamping" to require a connection to a fixed bias. Rather, the common and ordinary meaning of clamping included fixing to *any* reference voltage. Accordingly, diodes D1 and D2 should be included as corresponding structure for Claim Terms 33 and 42, which recite a "means for clamping the voltage level."

With respect to Claim Terms 34, 43, and 44, which recite "switch means," diodes D1 and D2 should be included also because, even though they are not switches themselves, the diodes are used in conjunction with the switches in Figures 5 and 7 to perform the functions of these claim terms.

For the reasons stated above, the Court concludes that the corresponding structures for the maintaining/clamping claim terms are as follows:

Claim Term 30: D1/S3 (Fig.'s 5 and 7); T3 with Driver 3 (Fig. 9); T3 with Dr1 (Fig. 10);

Claim Term 39: D2/S4 (Fig.'s 5 and 7); T4 with Driver 2 (Fig. 9); T4 with Dr2 (Fig. 10);

Claim Term 33: D1/S3 (Fig.'s 5 and 7); T3 with Driver 3 (Fig. 9); T3 with Dr1 (Fig. 10);

Claim Term 42: D2/S4 (Fig.'s 5 and 7); T4 with Driver 2 (Fig. 9); T4 with Dr2 (Fig. 10);

Claim Term 34: S3/D1 (Fig.'s 5 and 7); T3 with Driver 3 (Fig. 9); T3 with Dr1 (Fig. 10);

Claim Term 43: S4/D2 (Fig.'s 5 and 7); T4 with Driver 2 (Fig. 9); T4 with Dr2 (Fig. 10);

Claim Term 44: S4/D2 (Fig.'s 5 and 7); T4 with Driver 2 (Fig. 9); T4 with Dr2 (Fig. 10).

5. Claim Term 11 ("energy efficient" claim term)

[35] The parties dispute the proper construction of the words "energy efficient,"used in claims 21-26, 35-36, and 38-41 of the '400 patent. First, the parties disagree on the question of whether this language is a claim limitation at all. In particular, UI argues that because this claim term is found in the preamble of the claims, it should not be considered a limitation. UI Claim Construction Brief at 49-51. Fujitsu, on the other hand, asserts that the phrase "energy efficient" is a substantive limitation on the claims. Fujitsu Claim Construction Brief at 50-52. Second, the parties dispute whether the language, assuming it is found to be a claim limitation, limits the invention disclosed to a sustainer circuit that is capable of better than 80% energy recovery, as Fujitsu argues, or rather, whether it merely requires that the circuit lose "less energy than would other wise be lost in the operation of the circuit or method," as UI argues. The Court concludes that this claim term is not a substantive claim limitation and therefore does not reach the second issue.

The Federal Circuit has described the general approach for determining the significance of language contained in the preamble of a claim as follows:

Whether to treat a preamble as a limitation is a determination "resolved only on review of the entire[ ] ... patent to gain an understanding of what the inventors actually invented and intended to encompass by the claim...." In general, a preamble limits the invention if it recites essential structure or steps, or if it is "necessary to give life, meaning, and vitality" to the claim ... Conversely, a preamble is not limiting "where a patentee defines a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention."

Catalina Marketing Int'l, Inc. v. Coolsavings.com, Inc., 289 F.3d 801, 808 (Fed.Cir.2002) (citations omitted). In addition, the Federal Circuit in *Catalina* explained that "clear reliance on the preamble during prosecution to distinguish the claimed invention from the prior art transforms the preamble into a claim limitation because such reliance indicates use of the preamble to define, in part, the claimed invention." *Id*.

Here, Fujitsu relies on the prosecution history in support of its position, pointing to statements by the inventors in which they emphasized the energy efficient aspect of the invention as a basis for distinguishing their invention from the prior art. *See* Fujitsu Claim Construction Brief at 51-52 (citing to July 1988 Amendment B at FL06289, Exh. 3 to Silzars Decl.; February 1999 Amendment B at FL063171-72, Exh. 5 to Silzars Decl.). According to Fujitsu, these statements show clear reliance on the preamble during the prosecution and thus, justify treating the phrase "energy efficient" as a substantive limitation. *Id*. Fujitsu also argues that the Court must look to the patent specification in order to define "energy efficient." *Id*. The specification states that the sustain driver disclosed in the patent "eliminates the problems" in the Higgins circuit, one of which was its inability to achieve better than 80% energy recovery. *See* 349 patent, col. 9, ll. 41-50.

The Court concludes that notwithstanding the inventors' emphasis on the "energy efficiency" of their sustain driver in the prosecution history, their statements do not reflect a "clear reliance" on the words "energy efficient" that justifies considering these words to be a substantive limitation on the claims. In both of the statements cited by Fujitsu, the inventors not only argued that their invention was new because it was "energy efficient," but they also explained *how* they achieved this energy efficiency, namely, by charging and discharging through the inductor until the inductor current reaches zero. For example,in the July 8, 1988 Amendment B, the inventors made clear that the energy efficiency they were talking about is recited in claim 51 of the patent application (claim 21 of the '400 patent), which recites charging and discharging through the inductor until the inductor current reaches zero. It is this method of charging and discharging, which is set forth in the claims themselves (as discussed above), on which the inventors relied. As a result, the words "energy efficient" need not be considered to give "life, meaning, and vitality" to the claims. Catalina, 289 F.3d at 808.

6. Claim Term 46 and 47

[36] Claim 10 of the '349 patent, which includes Claim Term 46, provides as follows:

An ac plasma panel according to claim 5, *wherein said sustain means includes third switch means connected to said inductor and said plasma panel and being selectively actuated during gas discharge of said panel*.

'349 patent, col. 17, ll. 51-54 (Claim Term 46 in italics). Claim 11 of the '349 patent includes Claim Term 47, and provides as follows:

An ac plasma panel according to claim 10, *wherein said third switch means includes one switch means connected to one terminal of the sustain power supply and the panel, and another switch means connected between the other terminal of the sustain power supply and the panel*.

'349 patent, col. 17, ll. 55-60 (Claim Term 47 in italics). In its Summary Judgment Motion, Fujitsu argues that claim 10 is indefinite on the independent ground that there is no corresponding structure for this means-plus-function limitation. Further, because claim 11 depends on claim 10, Fujitsu asserts, it is invalid for the same reason. UI, on the other hand, argues that corresponding structure is adequately disclosed for both claim 10 and claim 11. The Court holds that the '349 patent discloses corresponding structures that satisfy the requirements of Claim Terms 46 and 47. FN15

FN15. The Court emphasizes that in this section of its Order, it does not hold that claims 10 and 11 are "not invalid due to indefiniteness," as UI requests in its cross-motion for summary judgment. Because claims 10 and 11 are dependent on claim 5, these claims are indefinite for the reasons discussed above. The Court here merely rejects Fujitsu's argument that claims 10 and 11 are indefinite on the independent ground that there are no structures disclosed that satisfy the requirements of Claim Terms 46 and 47.

The Court begins its analysis by determining the function of claim 10. Fujitsu argues that the function of claim 10 is "selectively actuated switching during gas discharge." UI contends that the words "being selectively actuated during gas discharge" are not part of the function, relying again on *BBA Nonwovens*. Instead, UI asserts, the function of claim 10 is only switching. For the reasons discussed above, the Court concludes that the words "being selectively actuated during gas discharge" cannot be separated from the function of this claim because they describe the timing of the function. As a result, these words are not governed by *BBA Nonwovens* and should be included in the function.

With respect to corresponding structure, UI argues that S3/T3 and S4/T4 constitute corresponding structure for this claim term, pointing to Figures 5 and 7 (depicting S3 and S4), Figures 9 and 10 (depicting T3 and 4), and Figures 6 and 8 (revealing when switches S3 and S4 are opened and closed). In support of this position, UI cites to testimony of Dr. Inan in which he states that "during gas discharge" refers to the "general gas discharge operation of the panel" rather than the "precise momentthat the discharge current conducts through the plasma from one side of the panel to the other." Inan Report at 57. Thus, according to UI, the switching that is described in claim 10 can occur not only when the panel capacitance is fully charged but also when the panel capacitance is fully discharged-even though Dr. Inan concedes that "[g]as discharge is impossible when the panel is in a fully discharged state." *Id*.

The Court concludes that S4/T4 does not constitute corresponding structure for claim 10 but that S3/T3 does. Figures 6 and 8 of the Patents show S4 and T4 being switched upon the inductor current reaching zero after the panel capacitance is fully discharged. Claim 10 requires that the switch means be activated "during gas discharge." UI concedes that gas discharge is impossible when the panel capacitance is fully discharged. Switches S4 and T4 cannot satisfy the function of claim 10 because they are switched when gas discharge is impossible.

On the other hand, Figures 6 and 8 show that S3 and T3 are closed at the point when the inductor current reaches zero and the panel capacitance is fully charged. This switching sequence is also described in the specification of the '349 patent at col. 10, ll. 6-26. Because it is evident from the description that switches S3 and T3 are closed when a particular condition is met, namely, the inductor current reaching zero, they can accurately be said to be "selectively actuated." Moreover, it would be evident to one skilled in the art that gas discharge occurs at the point when the panel capacitance is fully charged. Indeed, the specification implies as much when it explains the operation of the sustain driver:

When the plasma panel is used as a display, frequent discharges are made to occur by alternately charging each side of the panel to a critical voltage, which causes repeated gas discharges to occur.

'349 patent, col. 8, ll. 37-40. Thus, the patent discloses corresponding structure that satisfies the requirements of Claim Term 46.

For similar reasons, the Court finds that the patent discloses corresponding structure that satisfies the requirements of Claim Term 47, which is found in claim 11. Claim 11 is dependent on claim 10 but requires two switches. Claim Term 47 indicates that "one switch means [is] connected to one terminal of the sustain power supply and the panel, and another switch means [is] connected between the other terminal of the sustain power supply and the panel." Figures 5 and 7 show two sustain drivers connected to the panel

capacitance, each of which includes a switch S3 or T3. Thus, the patent discloses structures that satisfy the requirements of Claim Term 47.

III. *CONCLUSION*

For the reasons set forth above, the Court construes the terms of the ' 349 and '400 patents as follows:

Claim Language	Court's Construction	Corresponding Structure (where applicable)
Claim Term 7: "address means for applying a signal to selected X and Y address electrodes to discharge at least one selected address cell associated with said selected electrode and create wall charges at said selected cell" ('349 patent, claims 5-11)	Specific structures that are used for applying a signal to specified X and Y address electrodes and causing a discharge that creates wall charges at an address cell, which is used only during the addressing operation and not as a normal display pixel. A "wall charge" is an electrical charge that is created during the initial addressing operation, and is used, in conjunction with the sustain voltage, to maintain gas discharges	Address means depicted in Figure 2
Claim Term 8: "sustain means for subsequently energizing said address electrodes" ('349 patent, claims 5-11)	Specific structures are electrically connected to and thus energize the X and Y electrodes that define an "address cell" to subsequently sustain the discharge of the plasma after the addressing operation and during the sustaining operation of the display panel. This claim language excludes triple-electrode configurations.	No corresponding structure disclosed
Claim Term 9: "an inductor" "said inductor" "the inductor" ('400 patent, claims 21-42, '349 patent, claims 5-11)	An inductor is a device consisting of one or more associated windings for introducing inductance into a circuit. Windings are "associated" for the purposes of this definition only if they share coupled magnetic field lines.	Not applicable
	The words "an inductor" and "the inductor" mean one or more inductors. The words "said inductor" require that the charging and discharging of the panel capacitance described in the claims must be through the same inductor.	
Claim Term 14: "means for charging the panel capacitance through said inductor, initially while storing energy in said inductor until the magnitude of the inductor current reaches a maximum, and secondly while removing the stored energy	specific structures are used to charge the panel capacitance through the inductor until all of the energy is removed from the inductor and the inductor current reaches zero. All of the charging of the panel capacitance during the time that the panel	Figures 5-7: S1/D1; Figures 9-10: T1/D1;

from said inductor until the inductor current reaches zero" ('400 patent, claims 27-33, 35-36)	capacitance is being charged through the inductor shall be solely through the inductor. Charging may not be interrupted until the inductor current reaches zero.	
Claim Term 21: "means for discharging the panel capacitance through said inductor, initially while storing energy in said inductor until the magnitude of the inductor current reaches a maximum, and secondly while removing the stored energy from said inductor until the inductor current reaches zero" ('400 patent, claims 27-33, 35-36)	specific structures are used to discharge the panel capacitance through the inductor until all of the energy is removed from the inductor and the inductor current reaches zero. All of the discharging of the panel capacitance during the time that the panel capacitance is being discharged through the inductor shall be solely through the inductor. Discharging may not be interrupted until the inductor current reaches zero.	Figures 5-7: S2/D2; Figures 9-10: T2/D2; Figure 11: D3.
Claim Term 15: "first switch means coupled to said inductor to enable said panel capacitance to charge through said inductor from a first voltage level (a) initially to an intermediate voltage level magnitude which is about one-half the desired voltage level magnitude, while storing energy in said inductor, and (b) then to said desired voltage level magnitude, while removing said stored energy from said inductor" ('400 patent, claims 38-41)	A switch device connected to the inductor that is used to charge the panel capacitance through the inductor until all of the energy is removed from the inductor and the inductor current reaches zero. All of the charging of the panel capacitance during the time that the panel capacitance is being charged through the inductor shall be solely through the inductor. Charging may not be interrupted until the inductor current reaches zero.	Figures 5 and 7: S1; Figures 9 and 10: T1.
Claim Term 22: "second switch means coupled to said inductor to enable said panel capacitance to discharge through said inductor from said desired voltage level magnitude (a) initially to an intermediate voltage level magnitude which is about one-half the desired voltage level magnitude, while storing energy in said inductor, and (b) then to said first voltage level magnitude, while removing said stored energy from said inductor" ('400 patent, claims 38-41)	A switch device connected to the inductor that is used to discharge the panel capacitance through the inductor until all of the energy is removed from the inductor and the inductor current reaches zero. All of the discharging of the panel capacitance during the time that the panel capacitance is being discharged through the inductor shall be solely through the inductor. Discharging may not be interrupted until the inductor current reaches zero.	Figures 5 and 7: S2; Figures 9 and 10: T2.
Claim Term 16: "first switch means remaining closed to enable said panel capacitance to charge through said inductor and responsive to said panel capacitance being substantially fully charged to open and thereby discontinue further charging" ('349	A specific switch device that closes, or turns on, to charge the panel capacitance through the inductor rather than from some other source until all of the energy is removed from the inductor and the inductor current reaches zero, and that opens,	No corresponding structures disclosed

patent, claims 5-11)	or turns off, to stop charging through the inductor in response to the inductor current reaching zero and the panel capacitance being substantially fully charged.	
Claim Term 23: "second switch means remaining closed to enable said panel capacitance to discharge through said inductor and responsive to said panel capacitance being substantially fully discharged to open" ('349 patent, claims 5-11)	A specific switch device that closes, or turns on, to discharge the panel capacitance through the inductor rather than from some other source until all of the energy is removed from the inductor and the inductor current reaches zero, and that opens, or turns off, in response to the inductor current reaching zero and the panel capacitance being substantially fully discharged	No corresponding structures disclosed.
Claim Term 30: "means for maintaining the panel capacitance in a charged state after charging the panel capacitance and prior to discharge" ('400 patent, claim 31)	"Maintaining" is holding the voltage level of the panel capacitance. After charging the panel capacitance through the inductor until the inductor current reaches zero, specific structures are used to hold the charge on the panel capacitance before discharging.	Figures 5 and 7: D1/S3; Figure 9: T3 with Driver 3; Figure 10: T3 with Dr1
Claim Term 39: "means for maintaining the panel capacitance in a discharged state after discharge and prior to again charging the panel capacitance" ('400 patent, claim 31)	"Maintaining" is holding the voltage level of the panel capacitance. After discharging the panel capacitance through the inductor until the inductor current reaches zero, specific structures are used to hold the panel capacitance in a discharged state before charging.	Figures 5 and 7: D2/S4; Figure 9: T4 with Driver 2; Figure 10: T4 with Dr2 (Fig. 10).
Claim Term 33: "first means for clamping the voltage level of said panel capacitance upon the inductor current reaching zero during charging of the panel capacitance" ('400 patent, claims 33, 36)	Specific structures that activate in response to the inductor current reaching zero upon the panel capacitance being substantially fully charged through the inductor to add a specific reference voltage.	Figures 5 and 7: D1/S3; Figure 9: T3 with Driver 3; Figure 10: T3 with Dr1
	"Clamping" is "the act of adding a specific reference voltage level, which results in holding the panel capacitance at such reference voltage level." "Clamping" need not be accomplished through connection to an external power supply but rather, can be accomplished by adding any voltage reference, whether internally or externally generated.	
Claim Term 42: "second means for clamping the voltage level of the panel capacitance upon the inductor	Specific structures that activate in response to the inductor current reaching zero upon the panel	Figures 5 and 7: D2/S4; Figure 9: T4 with Driver 2; Figure 10: T4 with Dr2.

current reaching zero during discharging of the panel capacitance" ('400 patent, claims 33, 36)	capacitance being substantially fully discharged through the inductor to add a specific reference voltage.	
	"Clamping" is "the act of adding a specific reference voltage level, which results in holding the panel capacitance at such reference voltage level." "Clamping" need not be accomplished through connection to an external power supply but rather, can be accomplished by adding any voltage reference, whether internally or externally generated.	
Claim Term 34: "third switch means coupled to said inductor clamping the panel capacitance voltage to said desired voltage level magnitude after charging of said panel capacitance" ('400 patent, claim 40)	A switching device that activates in response to the inductor current reaching zero upon the panel capacitance being substantially fully charged through the inductor to add a specific reference voltage.	Figures 5 and 7: S3/D1; Figure 9: T3 with Driver 3; Figure 10: T3 with Dr1.
	"Clamping" is "the act of adding a specific reference voltage level, which results in holding the panel capacitance at such reference voltage level." "Clamping" need not be accomplished through connection to an external power supply but rather, can be accomplished by adding any voltage reference, whether internally or externally generated.	
Claim Term 43: "third switch means coupled to said inductor for clamping the panel capacitance voltage level to maintain a panel capacitance discharged state until the panel capacitance is again charged" ('400 patent, claim 39)	A switching device that activates in response to the inductor current reaching zero upon the panel capacitance being substantially fully discharged through the inductor to add a specific reference voltage.	Figures 5 and 7: S4/D2; Figure 9: T4 with Driver 2; Figure 10: T4 with Dr2.
	"Clamping" is "the act of adding a specific reference voltage level, which results in holding the panel capacitance at such reference voltage level." "Clamping" need not be accomplished through connection to an external power supply but rather, can be accomplished by adding any voltage reference, whether internally or externally generated.	
Claim Term 44: "fourth switch means coupled to said inductor for clamping the panel capacitance voltage to said first voltage level magnitude after discharging of	A switching device that activates in response to the inductor current reaching zero upon the panel capacitance being substantially fully discharged through the	Figures 5 and 7: S4/D2; Figure 9: T4 with Driver 2; Figure 10: T4 with Dr2.

said panel capacitance" ('400 patent, claim 40)	inductor to add a specific reference voltage. "Clamping" is "the act of adding a specific reference voltage level, which results in holding the panel capacitance at such reference voltage level." "Clamping" need not be accomplished through connection to an external power supply but rather, can be accomplished by adding any voltage reference, whether internally or externally generated.	

Claim Term 11: "energy efficient" ('400 patent, claims 21-26, 35-36, 38-41)	Not a substantive claim limitation	Not applicable
Claim Term 46: "wherein said sustain means includes third switch means connected to said inductor and said plasma panel and being selectively actuated during gas discharge of said panel" ('349 patent, claims 10-11)	A switching device that activates in response to the inductor current reaching zero upon the panel capacitance being substantially fully charged to add a specific reference voltage.	Figures 5 and 7: S3; Figures 9 and 10: T3.
Claim Term 47: "wherein said third switch means includes one switch means connected between one terminal of the sustain power supply and the panel, and another switch means connected between the other terminal of the sustain power supply and the panel" ('349 patent, claim 11)	A switching device that activates in response to the inductor current reaching zero upon the panel capacitance being substantially fully charged to add a specific reference voltage. The switching device includes two switches, one of which is connected to one terminal of the sustain power supply and the panel, and another of which is connected between the other terminal of the sustain power supply and the panel.	Figures 5 and 7: S3; Figures 9 and 10: T3.

In addition, with respect to the parties' cross-motions for summary judgment, the Court concludes as follows:

1. Claims 5 through 11 of the '349 patent are invalid pursuant to 35 U.S.C. s. 112, para. 2 because Claim Term 7 can only describe an ISA panel while Claim Term 8 excludes ISA panels, making claim 5 insolubly ambiguous. In addition, claims 5 through 11 are invalid pursuant to 35 U.S.C. s. 112, para. 2 because there is no corresponding structure that satisfies the requirements of Claim Term 8, that is, a "sustain means for subsequently energizing said address electrodes."

2. Claims 5 through 11 of the '349 patent are invalid pursuant to 35 U.S.C. s. 112, para. 2 on the independent ground that there is no corresponding structure that satisfies the requirements of Claim Terms 16 and 23.

3. Although claims 10 and 11 of the '349 patent are invalid for the reasons stated above, they are *not* invalid pursuant to 35 U.S.C. s. 112, para. 2 on the ground that they lack corresponding structure that satisfies the

requirements of Claim Terms 46 and 47. Rather, the '349 patent adequately discloses corresponding structure that satisfies the requirements of these claim terms.

Finally, a further case management conference is set for **August 29, 2003 at 9:30 a.m.** The parties shall meet and confer regarding a schedule for the remainder of the case, with the exception of the trial date, which has already been set by the Court. The parties shall file a Joint Case Management Statement no later than **August 22, 2003.**

IT IS SO ORDERED.

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