United States District Court,
W.D. Pennsylvania.

SAMSUNG SDI CO., LTD,
Plaintiff.
v.
MATSHUSHITA ELECTRIC INDUSTRIAL CO., LTD., and Panasonic Corporation of North America,
Defendants.

Nov. 6, 2006.

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ORDER ON CLAIMS CONSTRUCTION

AMBROSE**, District Judge.**

Plaintiff Samsung SDI Co., Ltd. ("Samsung") has charged Defendants Matsushita Electric industrial Co., Ltd. and Panasonic Corporation of North America (collectively referred to as "Panasonic") with infringement of claims 1-4, 10, 11 and 13 of U.S. Patent 6,674,237 ("the '237 Patent"), with infringement of claims 1-5, 7, 10 and 11 of U.S. Patent 6,828,731 ("the 731 Patent") and with infringement of claims 1, 2, 6 and 7 of U.S. Patent 6,884,142 ("the '142 Patent"). The patents related generally to plasma display panels.

Given the highly technical nature of the patents, the parties accepted my recommendation to retain a Special Master to oversee the claims construction process. By Order dated June 29, 2006, I appointed Thomas Smegal, Jr. to serve as Special Master in this litigation. Mr. Smegal presided over a neutral tutorial held in Newport Beach, California in August of 2006. He then issued tentative rulings on claims construction. On September 6, 2006, the Special Master conducted a Markman hearing in the western District of Pennsylvania, which I attended as an observer. The Special Master has issued his Proposed Findings, Conclusions and Recommendations on Claims Construction. *See* Docket No. 141.

I would like to take a moment to commend the special Master on his work. This court gave him a very

narrow timetable. He digested an enormous amount of complex information and tendered, in an expedited fashion, a finely crafted claims construction. The parties' investment in Mr. Smegal's expertise was, in this Court's view, well worth the expense.

I have reviewed the neutral tutorial, I have reviewed the parties' submissions in advance of the Markman hearing, I have reviewed the Special Master's Preliminary Report and Tentative Claim Construction Rulings, I attended the Markman hearing, I have reviewed the Special Master's Proposed Findings, Conclusions and Recommendations on Claims construction and I have reviewed Samsung's Objections thereto (Docket No. 144) and Panasonic's Objections thereto (Docket No. 143). After careful consideration, and for the reasons set forth therein, the special Master's Proposed Findings, conclusions and Recommendations on Claims construction (Docket No. 141) are hereby adopted in their entirety. Samsung's Objections (Docket No. 144) are denied and Panasonic's Objections (Docket No. 143) are denied.

SPECIAL MASTER'S PROPOSED FINDINGS, CONCLUSION, AND RECOMMENDATIONS ON CLAIM CONSTRUCTION

THOMAS F. SMEGAL, JR., Special Master.

I. *INTRODUCTTON*

Samsung SAMSUNG Co. Ltd. (hereafter "Samsung") has charged Matsushita Electric Industrial Co., Ltd. and Panasonic Corporation of North America (hereafter collectively "Panasonic") with infringement of claims 1-4, 10, 11 and 13 of U.S. Patent 6,674,237 (the "'237 patent"), with infringement of claims 1-5, 7, 10 and 11 of U.S. Patent 6,828,731 (the "'731 patent"), and with infringement of claims 1, 2, 6 and 7 of U.S. Patent 6,884,142 (the "'142 patent").

At the Case Management Conference on March 23-confirmed in the Court's letter of April 5, 2006-the parties were instructed to meet and confer and provide a joint recommendation of a Special Master to assist the Court in connection with claim construction in the above-identified action. A Joint Submission was filed by the parties pursuant to LPR 4.2 on June 16, 2006, that identified sixteen disputed claim terms, listed on attached Exhibits A, B and C. That Joint Submission further identified three of the disputed claim terms as having been the subject of successfully negotiated agreed constructions.

Also filed on June 16, 2006, was a joint recommendation from the parties in accordance with the Court's letter of April 5, 2006. The Court conducted a telephone conference hearing on June 28, 2006 with all parties present. The Court issued an Order of Appointment dated June 29, 2006, adopting the joint recommendation by appointing the undersigned as Special Master in this litigation. The Order of Appointment included the scheduling of a Markman hearing for September 6, 2006 at 9:30 a.m. in the Courtroom of Chief Judge Donetta W. Ambrose, and further provided that within thirty (30) days of that hearing, the Special Master shall file proposed findings, conclusions and recommendations.

At the hearing on June 28, 2006 the Court also advised counsel that while the Special Master would conduct the Markman hearing on September 6, the Judge would also attend the hearing. The Court further noted that the parties anticipated filing a tutorial for the Court and Special Master prior to the hearing on September 6, 2006, and admonished the parties that the tutorials were to be neutral tutorials.

In a conference call with all parties present on July 7, 2006, the Special Master agreed to participate in a

live tutorial to be conducted in southern California at a date and time selected by the parties. The Special Master also agreed that by September 1, 2006, the parties would receive tentative claim construction rulings based upon the parties' briefs and the then-anticipated tutorial. Subsequently the parties conducted a tutorial in Newport Beach, California, on August 28, 2006 at the Fairmont Newport Beach Hotel, 4500 McArthur Blvd., Newport Beach, California (Sequoia Ballrooms 1 and 2).

On August 31, 2006, the Special Master received an inquiry from Samsung as to the procedure for handling their prior objection to extrinsic evidence represented by the Declaration of Dr. Brian Chapman earlier filed with the PANASONIC RESPONSE BRIEF. The Special Master advised the parties by email and conference call that pursuant to LPR 4.3 the Declaration of Dr. Chapman would be subject to unlimited cross-examination and redirect examination at the Markman hearing on September 6, 2006. The parties were further advised that the procedure at the Markman hearing would be to consider oral argument for the disputed claim terms *seriatim,* along with any cross-examination of Dr. Chapman directed to the portion of his Declaration relating to successive of such terms.

On September 6, 2006, the Special Master conducted a Markman hearing in Courtroom 3B of the United States District Court for the Western District of Pennsylvania. The primary purpose of the hearing was for the parties to respond to the tentative claim construction rulings FN1 proposed in the Special Master's Preliminary Report and Tentative Claim Construction Rulings dated September 1, 2006.

FN1. Such rulings will hereafter be identified as "Tentative Ruling Proposed By Special Master."

The Special Master has reviewed and fully considered the SAMSUNG OPENING BRIEF, PANASONIC RESPONSE BRIEF, SAMSUNG REPLY BRIEF and any Exhibits attached, as well as the presentation-both oral and visual-during the tutorial FN2 on August 29, 2006,FN3 and the oral arguments presented by Samsung and Panasonic counsel on September 6, 2006.

FN2. While each party had procedural objections to portions of the other parties' tutorial presentation, the Special Master overruled those objections.

FN3. The Special Master found the substance of all documents filed by the parties to be in conformance with the Local Patent Rules, Section 4. *Claim Construction Proceedings LPR 4.1-4,* as promulgated by the United States District Court for the Western District of Pennsylvania.

II. *PRINCIPLES OF CLAIM CONSTRUCTION*

A. *Overview*

Parties frequently disagree over how specific terms or phrases in patent claims should be interpreted or construed. Thus, the court is obliged to resolve such disputes and to "construe" the claims to determine their meaning and scope. *Markman,* 52 F.3d at 976. That is typically referred to as "claim construction," and is a matter of law for the court on the rationale that "it is only fair (and statutorily required) that competitors be able to ascertain to a reasonable degree the scope of the patentee's right to exclude" and that "competitors should be able to rest assured, if infringement litigation occurs, that a judge, trained in the law, will similarly analyze the text of the patent and its associated public record and apply the established rules of construction,

and in that way arrive at the true and consistent scope of the patent owner's rights to be given legal effect." *Id*. at 978-79.

"The role [of claim construction] is neither to limit nor to broaden the claims, but to define, as a matter of law, the invention that has been patented." Netword, LLC v. Centraal Corp., 242 F.3d 1347, 1352 (Fed.Cir.2001). In construing the claims, courts are not permitted to re-write the claims. *See* Chef America, Inc. v. Lamb-Weston, Inc., 358 F.3d 1371, 1374 (Fed.Cir.2004) (in construing the term "heating the resulting batter-coated dough to a temperature in the range of about 400 (deg.)F. to 850 (deg.)F," the court explained "courts may not redraft claims, whether to make them operable or to sustain their validity.... Thus, in accord with our settled practice we construe the claim as written, not as the patentees wish they had written it. As written, the claim unambiguously requires that the dough be heated to a temperature range of 400 (deg.)F. to 850 (deg.)F." Thus, " 'claim construction' is the judicial statement of what is and is not covered by the technical terms and other words of the claims." Netword, 242 F.3d at 1352.

In *Phillips* it was also noted that a court is not required to analyze sources "in any specific sequence," stating:

"For example, a judge who encounters a claim term while reading a patent might consult a general purpose or specialized dictionary to begin to understand the meaning of the term, before reviewing the remainder of the patent to determine how the patentee has used the term. [T]he sequence of steps used by the judge in consulting various sources is not important; what matters is for the court to attach the appropriate weight to be assigned to those sources in light of the statutes and policies that inform patent law." 415 F.3d at 1324, *citing Vitronics,* 90 F.3d at 1582.

B. ***Actual Words Of The Claims***

However, the Federal Circuit has long instructed trial courts to look first to the claim language itself to define the scope of the patented invention, and, as a starting point, to give claim terms their ordinary and accustomed meaning as understood by one of ordinary skill in the art. "The claim construction analysis begins with the words of the claim." Int'l Rectifier Corp. v. IXYS Corp. ., 361 F.3d 1363, 1369 (Fed.Cir.2004). The Federal Circuit also reiterated that principle in *Phillips:*

It is a "bedrock principle" of patent law that "the claims of a patent define the invention to which the patentee is entitled the right to exclude." *Innova,* 381 F.3d at 1114; *see also Vitronics,* 90 F.3d at 1582 ("we look to the words of the claims themselves ... to define the scope of the patented invention"); *Markman,* 52 F.3d at 980 ("The written description part of the specification itself does not delimit the right to exclude. That is the function and purpose of claims."). That principle has been recognized since at least 1836, when Congress first required that the specification include a portion in which the inventor "shall particularly specify and point out the part, improvement, or combination, which he claims as his own invention or discovery." Act of July 4, 1836, ch. 357, s. 6, 5 Stat. 117, 119. 415 F.3d at l312.

A court must also give meaning to all of the words in a claim, *Ethicon Endo-Surgery, Inc. v. United States Surgical Corp.,* 93 f .3d 1572, 1577 (Fed.Cir.1996), and is not free to read any limitations out of a claim. Exxon Chem. Patents, Inc. v. Lubrizol Corp., 64 F.3d 1553, 1555 (Fed.Cir.1995), *cert. denied,* 518 U.S. 1020, 116 S.Ct. 2554, 135 L.Ed.2d 1073 (1996).

C. ***Other Claims***

The court, in construing disputed terms and phrases, may consider other unasserted claims as well. "The fact that we must look to other claims using the same term when interpreting a term in an unasserted claim mandates that the term be interpreted consistently in all claims," Southwall Techs., Inc. v. Cardinal IG Co., 54 F.3d 1570, 1579 (Fed.Cir.1995), *cert. denied,* 516 U.S. 987, 116 S.Ct. 515, 133 L.Ed.2d 424 (1995). The court in *Phillips* reiterated those principles: "Other claims of the patent in question, both asserted and unasserted, can also be valuable sources of enlightenment as to the meaning of a claim term.... Because claim terms are normally used consistently throughout the patent, the usage of a term in one claim can often illuminate the meaning of the same term in other claims.... Differences among claims can also be a useful guide in understanding the meaning of particular claim terms.... For example, the presence of a dependent claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim." 415 F.3d at 1314-15.

D. *Specification*

Claims must be construed consistently with the specification; *see, e.g.,* Metabolite Lab., Inc. v. Lab. Corp. of Am. Holdings, 370 F.3d 1354, 1360 (Fed.Cir.2004) ("In most cases, the best source for discerning the proper context of claim terms is the patent specification wherein the patent applicant describes the invention."); Renishaw PLC v. Marposs Societa' per Azioni, 158 F.3d 1243, 1250 (Fed.Cir.1998) ("The construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be, in the end, the correct construction."); Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582 (Fed.Cir.1996) ("[T]he specification is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term."); *Markman,* 52 F.3d at 979 ("Claims must be read in view of the specification, of which they are a part."); General American Transp. Corp. v. Cryo-Trans, Inc., 93 F.3d 766, 770 (Fed.Cir.1996) (claims construction must be rejected where it is "inconsistent with the specification and drawings"); *see also* United States v. Adams, 383 U.S. 39, 49, 86 S.Ct. 708, 15 L.Ed.2d 572 (1966) ("[I]t is fundamental that claims are to be construed in the light of the specifications.").

Although the specification is the principal guide to the meaning of the claims, courts must also guard against improperly reading limitations from the specification into the claims. The familiar claim construction canons are: "(a) one may not read a limitation into a claim from the written description, but (b) one may look to the written description to define a term already in a claim limitation, for a claim must be read in view of the specification of which it is a part. These two rules lay out the general relationship between the claims and the written description.... As rules at the core of claim construction methodology, they provide guideposts for a spectrum of claim construction problems." Renishaw, 158 F.3d at 1248. The Federal Circuit has recognized, though "that there is sometimes a fine line between reading a claim in light of the specification, and reading a limitation into a claim from the specification." Comark Communications, Inc. v. Harris Corp., 156 F.3d 1182, 1186 (Fed.Cir.1998).

Nevertheless, the Federal Circuit has made clear that "[i]t is improper for a court to add 'extraneous' limitations to a claim, that is, limitations added wholly apart from any need to interpret what the patentee meant by particular words or phrases in the claim." Hoganas AB v. Dresser Indus., Inc., 9 F.3d 948, 950 (Fed.Cir.1993). *See* also Glaxo Wellcome, Inc. v. Andrx Pharms., Inc., 344 F.3d 1226, 1233 (Fed.Cir.2003) ("When a claim term has an accepted scientific meaning, that meaning is generally not subject to restriction to the specific examples in the specification."). That is, "[t]he written description ... is not a substitute for, nor can it be used to rewrite, the chosen claim language." SuperGuide Corp. v. DirecTV Enters., Inc., 358 F.3d 870, 875 (Fed.Cir.2004). If the court does not need to rely on a limitation to interpret what a patentee

meant by a particular term or phrase in a claim, "that limitation is 'extraneous' and cannot constrain the claim." Renishaw, 158 F.3d at 1249.

In *Phillips* the court noted that "we recognize that the distinction between using the specification to interpret the meaning of a claim and importing limitations from the specification into the claim can be a difficult one to apply in practice," and advised further that "the line between construing terms and importing limitations can be discerned with reasonable certainty and predictability if the court's focus remains on understanding how a person of ordinary skill in the art would understand the claim terms ." 415 F.3d at 1323.

The difference between reading claims in light of the specification and reading limitations from the specification into the claims, the Federal Circuit has said, may turn on how the specification characterizes the claimed invention. SunRace Roots Enter. Co. v. SRAM Corp., 336 F.3d 1298, 1305 (Fed.Cir.2003). In *Phillips,* the court explained that "[t]o avoid importing limitations from the specification into the claims, it is important to keep in mind that the purposes of the specification are to teach and enable those of skill in the art to make and use the invention and to provide a best mode for doing so.... One of the best ways to teach a person of ordinary skill in the art how to make and use the invention is to provide an example of how to practice the invention in a particular case." 415 F.3d at 1323.

Also according to the court, "[m]uch of the time, upon reading the specification in that context, it will become clear whether the patentee is setting out specific examples of the invention to accomplish those goals or whether the patentee instead intends for the claims and the embodiments in the specification to be strictly coextensive ... The manner in which the patentee uses a term within the specification and claims usually will make the distinction apparent." *Phillips,* 415 F.3d at 1323, *citing* Snow v. Lake Shore & M.S. Ry. Co., 121 U.S. 617, 630, 7 S.Ct. 1343, 30 L.Ed. 1004 (1887).

The Federal Circuit has also cautioned that a "preferred embodiment" disclosed in a specification" is just that, and the scope of a patentee's claims is not necessarily or automatically limited to the preferred embodiment." Amhil Enters. Ltd. v. Wawa, Inc., 81 F.3d 1554, 1559 (Fed.Cir.1996). *See also* Home Diagnostics, Inc. v. LifeScan, Inc., 381 F.3d 1352, 1357 (Fed.Cir.2004) ("The district court erred by placing too much emphasis on the specification's discussion of the preferred embodiments, rather than the meaning of the claims themselves."). On the other hand, in some instances, the written description requirement of 35 U.S.C. s. 112(1) warrants a claim construction that encompasses only the disclosed embodiment. *See* Laitram Corp. v. Morehouse Indus., 143 F.3d 1456, 1463; *N*. Am. Vaccine, Inc. v. Am. Cyanamid Co., 7 F.3d 1571, 1576-77 (Fed.Cir.1993). "Ultimately, the interpretation to be given a term can only be determined and confirmed with a full understanding of what the inventors actually invented and intended to envelop with the claim.... The construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be, in the end, the correct construction." Renishaw, 158 F.3d at 1250.

E. ***Ordinary And Customary Meaning To One Skilled In The Art***

In construing patent claims, there is a heavy presumption that terms should be accorded their ordinary meaning. *See, e.g.,* SuperGuide Corp. v. DirecTV Enter., Inc., 358 F.3d 870, 874 (Fed.Cir.2004). Claim terms are to be accorded their ordinary meaning "unless the patentee demonstrated an intent to deviate from the ordinary and accustomed meaning of a claim term by redefining the term or by characterizing the invention in the intrinsic record using words or expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope." *Teleflex* at 1327; *see, e.g.,* Moba v. Diamond Automation, Inc., 325 F.3d

1306, 1315 (Fed.Cir.2003) ("[T]he best indicator of claim meaning is its usage in context as understood by one of skill in the art at the time of the invention."); Ferguson Beauregard v. Mega Sys., LLC, 350 F.3d 1327, 1338 (Fed.Cir.2003) ("The words used in the claims must be considered in context and are examined through the viewing glass of a person skilled in the art."); *Markman.,* 52 F.3d at 986 ("[T]he focus is on the objective test of what one of ordinary skill in the art at the time of the invention would have understood the term to mean."). 415 F.3d at l318.

In *Phillips,* the Federal Circuit explained that

"[i]mportantly, the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification. This court explained the point well *in* Multiform Desiccants, Inc. v. Medcam, Ltd., 133 F.3d 1473, 1477 (Fed.Cir.1998):

It is the person of ordinary skill in the field of the invention through whose eyes the claims are construed. Such person is deemed to read the words used in the patent documents with an understanding of their meaning in the field, and to have knowledge of any special meaning and usage in the field. The inventor's words that are used to describe the invention-the inventor's lexicography-must be understood and interpreted by the court as they would be understood and interpreted by a person in that field of technology. Thus the court starts the decisionmaking process by reviewing the same resources as would that person, viz., the patent specification and the prosecution history.

415 F.3d at 1313

In *Phillips,* the Federal Circuit also noted that

"[T]he inquiry into how a person of ordinary skill in the art understands a claim term provides an objective baseline from which to begin claim interpretation, ... That starting point is based on the well-settled understanding that inventors are typically persons skilled in the field of the invention and that parents are addressed to and intended to be read by others of skill in the pertinent art."

415 F.3d at 1313.

F. ***Prosecution History***

In similar fashion, "[t]he prosecution history is relevant because it may contain contemporaneous exchanges between the patent applicant and the PTO about what the claims mean." Digital Biometrics, Inc. v. Identix, Inc., 149 F.3d 1335, 1344 (Fed.Cir.1998). "The prosecution history, which we have designated as part of the 'intrinsic evidence,' consists of the complete record of the proceedings before the PTO and includes the prior art cited during the examination of the patent." *Phillips,* 415 F.3d at 1317."

Also in *Phillips,* the court explained that '[l]ike the specification, the prosecution history provides evidence of how the PTO and the inventor understood the patent.... Furthermore, like the specification, the prosecution history was created by the patentee in attempting to explain and obtain the patent. Yet because the prosecution history represents an ongoing negotiation between the PTO and the applicant, rather than the final product of that negotiation, it often lacks the clarity of the specification and thus is less useful for claim construction purposes." 415 F.3d at 1317.

However, the court further admonished in *Phillips* that "Nonetheless, the prosecution history can often inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be." 415 F.3d at 1317.

G. *Extrinsic Evidence*

The Federal circuit has explained that "[I]n most situations, an analysis of the intrinsic evidence alone will resolve any ambiguity in a disputed claim term. In such circumstances, it is improper to rely on extrinsic evidence." Vitronics, 90 F.3d at 1583. However, the court has also recognized that "the testimony of one skilled in the art about the meaning of claim terms at the time of the invention will almost always qualify as relevant evidence." Eastman Kodak Co. v. Goodyear Tire & Rubber Co., 114 F.3d 1547, 1555 (Fed.Cir.1997).

In *Phillips,* the court reiterated that "[w]e have also held that extrinsic evidence in the form of expert testimony can be useful to a court for a variety of purposes, such as to provide background on the technology at issue, to explain how an invention works, to ensure that the court's understanding of the technical aspect of the patent is consistent with that of a person of skill in the art, or to establish that a particular term in the patent or the prior art has a particular meaning in the pertinent field." 415 F.3d at 1318.

Thus, a court may admit and accept testimony from the parties' expert witnesses as background in the technical area at issue, Mantech Envtl. Corp. v. Hudson Envtl. Sys., Inc., 152 F.3d 1368, 1371-1373 (Fed.Cir.1998), and "it is entirely appropriate, perhaps even preferable, for a court to consult trustworthy extrinsic evidence to ensure that the claim construction it is tending to from the patent file is not inconsistent with clearly expressed, plainly apposite, and widely held understandings in the pertinent technical field." Pitney Bowe, Inc. v. Hewlett-Packard-Packard Co., 182 F.3d 1298, 1309 (Fed.Cir.1999). "But testimony on the technology is far different from other expert testimony, whether it be of an attorney, a technical expert, or the inventor, on the proper construction of a disputed claim term .... The latter kind of testimony may only be relied upon if the patent documents, taken as a whole, are insufficient to enable the court to construe disputed claim terms." Id. at 1308-1309.

Thus, extrinsic evidence may be used by the court to assist in the proper understanding of a disputed limitation. But, such evidence may not be used to vary, contradict, expand, or limit the claim language from how it is defined in the specification or file history. Vitronics, 90 F.3d at 1584-85. In particular, the court has held that "conclusory, unsupported assertions by experts as to the definition of a claim term are not useful to a court. Similarly, a court should discount any expert testimony 'that is clearly at odds with the claim construction mandated by the claims themselves, the written description, and the prosecution history, in other words, with the written record of the patent.' " *Phillips,* 415 F.3d at 1318, *quoting* Key Pharms. v. Hercon Labs. Corp., 161 F.3d 709, 716 (Fed.Cir.1998).

The Federal Circuit has also held that dictionaries and technical treatises may, in appropriate circumstances, be considered along with intrinsic evidence in resolving the disputed meaning of claim terms. Vitronics, 90 F.3d at 1584 n. 6.

However, the court in *Phillips* concluded:

"In sum, extrinsic evidence may be useful to the court, but it is unlikely to result in a reliable interpretation of patent claim scope unless considered in the context of the intrinsic evidence. Nonetheless, because extrinsic evidence can help educate the court regarding the field of the invention and can help the court determine what a person of ordinary skill in the art would understand claim terms to mean, it is permissible for the district court in its sound discretion to admit and use such evidence. In exercising that discretion, and in weighing all the evidence bearing on claim construction, the court should keep in mind the flaws inherent in each type of evidence and assess that evidence accordingly."

415 F.3d at 1319.

III. *THE REQUIREMENTS FOR OBTAINING A PATENT*

A. *The DISCLOSURE*

A patent, by statute, must provide a written description of the invention, a disclosure that would enable one of ordinary skill in the art to make and use the invention, and a disclosure of the best mode known to the inventor for practicing the invention. 35 U.S.C. s. 112(1).FN4 A patent must also contain claims "particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." 35 U.S.C. s. 112(2). FN5 The Federal Circuit most recently in Phillips v. AWH Corp., 415 F.3d 1303, 1312 (Fed.Cir.2005) (*en banc*) observed that "[t]hose two paragraphs of section 112 frame the issue of claim interpretation for us. The second paragraph requires us to look to the language of the claims to determine what 'the applicant regards as his invention.' On the other hand, the first paragraph requires that the specification describe the invention set forth in the claims."

FN4. 35 U.S.C. s. 112(1) provides:
The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.
FN5. 35 U.S.C. s. 112(2) provides:
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

B. *The Claims*

Patent claims, as properly interpreted in light of the specification and prosecution history, provide a public notice function. Merrill v. Yeomans, 94 U.S. 568, 573-74, 24 L.Ed. 235 (1876). ("It seems to us that nothing can be more just and fair, both to the patentee and to the public, than that the former should understand, and correctly describe, just what he has invented and for what he claims a patent."). *See also* Tate Access Floors, Inc. v. Interface Architectural Res., Inc., 279 F.3d 1357, 1367 (Fed.Cir.2002) ("Fairness and the public notice function of the patent law require courts to afford patentees the full breadth of clear claim language, and bind them to it as well.").

C. *The Rights Granted By A Patent*

A patent is a fully integrated written instrument. Markman v. Westview Instrs., Inc., 52 F.3d 967, 978 (Fed.Cir.1995) (*en banc*), *aff'd,* 517 U.S. 370, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996). A patent is a grant to the patentee, his heirs or assigns, of the right to exclude others from making, using, offering for sale, or

selling the invention throughout the United States or importing the invention into the United States. *See* 35 U.S.C. s. 154. The "invention" protected by the patent is that which is defined by the claims. It is the claims that define the scope-as well as the boundaries-of the patentee's right to exclude others. *See* Teleflex, Inc. v. Ficosa N. Am. Corp., 299 F.3d 1313, 1324 (Fed.Cir.2002); York Prods. v. Central Tractor Farm & Family Ctr., 99 F.3d 1568, 1572 (Fed.Cir.1996).

IV. *THE PATENTS IN SUIT*

The following brief descriptions of the patents in suit should not be interpreted as adopting either of the parties' proposed claim constructions. The actual disclosures of the patents in suit will be discussed in greater detail below in conjunction with providing a final recommendation for the construction of those claim terms and/or phrases that are in dispute.

A. *The* '237 Patent

Summary of Relevant Portions of Its Prosecution History

The '237 patent was based on application Serial No. 09/948,839 filed September 10, 2001, claiming priority to Korean patent application No.2001-24376 filed May 4, 2001. The original application contained 30 claims directed to a plate for plasma display panel and a method for fabricating such a plate. More particularly, the invention disclosed in the '237 patent describes electrodes composed of a dielectric first component and a second component formed on a plasma display plate.

The initial communication from the United States Patent and Trademark Office ("Patent Office") was mailed December 2, 2002, and required a restriction between Group I, claims 1-10, 15-26 and 27-30 FN6 drawn to a plate for plasma display, and Group II, claims 11-14 drawn to a method for fabricating the plate for plasma display. In a response dated December 31, 2002, applicants elected to prosecute Group I, without traverse.

FN6. Unless otherwise indicated, all references to claim numbers in Section IV are application claim numbers.

In a rejection dated January 21, 2003, claims 1-4, 15, 16, 19, 20, and 27-30 were rejected under 35 U.S.C. s. 103(a) as being unpatentable over the combination of Osawa U.S. Patent 5,892,492 ("Osawa") in view of Kim U.S. Patent 5,995,175 ("Kim"). Claims 3 and 19-20 were also rejected on the aforementioned combination further in view of den Boer U.S. Patent 5,926,236 ("den Boer"). Claims 27-30 were rejected over Matsuzaki U.S. Patent 5,900,694 ("Matsuzaki"). Claims 5-10, 17, 18 and 21-26, other than being rejected for depending on rejected base claims, were found to be allowable for the reason that:

"The prior art does not show neither the electrode nor the black matrix comprising first and second components where the amounts of the first and second components gradually change in thickness direction of the electrode and the black matrix extending away from the plate member."

APPENDIX 5 at page 56.FN7

FN7. All references to APPENDICES 5-11 are to the numbered pages as identified by the parties in *APPENDIX TO JOINT DISPUTED CLAIM TERMS CHARTS PURSUANT TO LPR 4.2,* filed June 16.2006.

In an Amendment filed April 16, 2003, non-elected claims 11-14 were cancelled, various amendments were introduced to claims 1, 3, 5-7, 9, 15, 17, 18, 21-23, 25, 27 and 29, and claims 31-34 were added. Arguments were submitted responsive to the pending rejections under 35 U.S.C. s. 103, asserting that the claims as amended should be deemed to be patentable.

In a further Patent Office communication dated April 30, 2003, claims 3, 19 and 20 continued to be rejected under 35 U.S.C. s. 103(a) as being unpatentable over the combination of Osawa, Kim and den Boer. However, the examiner advised that claims 1, 2, 4-6, 8-10, 15-18 and 23-34 were allowable, stating as a reason for allowance:

"The prior art of record, taken alone or in combination, fails to show or teach A plate for a plasma display panel (PDP), comprising: a plate member comprising a transparent material; electrodes formed in a predetermined pattern on said plate member; and a dielectric layer formed on said plate member to cover said electrodes, wherein said electrodes comprise a dielectric first component and a second component, the second component comprising at least one metal selected from a group consisting of iron (Fe), cobalt (Co), vanadium (V), titanium (Ti), aluminum (Al), silver (Ag), silicon (Si), germanium (Ge), yttrium (Y), zinc (Zn), zirconium (Zr), tungsten (W), tantalum (Ta), copper (Cu), and platinum (Pt); and amount of the first and second components one of gradually change and stepwise change in a thickness direction of said electrodes extending away from said plate member."

APPENDIX 6 at page 6.

In addition, claims 7, 21 and 22 were indicated to be allowable if rewritten in independent form.

In an Amendment After Final dated July 29, 2003, claims 1, 3-6, 8-10, 15-20, 22, 23, 25 and 26 were amended while claims 7 and 21 were cancelled. Applicants again argued that the rejection of claims 3, 19 and 20 under 35 U.S.C. s. 103(a) as being unpatentable over the combination of Osawa, Kim and den Boer was rendered moot by the incorporation of allowable features previously recited by claims 7 and 21 into claims 3 and 19, respectively. Claim 20 was argued to be allowable for being dependent from allowable claim 19.

The next communication from the patent examiner was a Notice of Allowability mailed August 22, 2003, in which claims 1-6, 8-10, 15-20 and 22-34 were allowed. The Notice of Allowability contained a further statement of the examiner's reasons for allowance:

"The prior art of record fails to show or teach a electrode comprise a dielectric component and a second component where the amount of dielectric first component and the second component one of gradually change and stepwise change in a thickness direction of the electrode extending away from the plate member in order to improve control the index of refraction of light emitted and incident on the display panel.

The prior art of record also fails to show or teach a black matrix pattern comprises the dielectric first component and the second components change in step gradients in a thickness direction of the black matrix pattern extending away from the plate member in order to improve control the index of refraction of light emitted and incident on the display panel."

APPENDIX 6 at page 34.

The '237 Patent Claims

The '237 patent issued on January 6, 2004, containing 28 claims. Claim 1, reproduced below, is representative of the asserted claims.

1. A plate for a plasma display panel (PDP), comprising:

a plate member comprising a transparent material;

electrodes formed in a predetermined pattern on said plate member;

a dielectric layer formed on said plate member to cover said electrodes, wherein: said electrodes comprise a dielectric first component and a second component, the second component comprising at least one metal selected from a group consisting of iron (Fe), cobalt (Co), vanadium (V), titanium (Ti), aluminum (Al), silver (Ag), silico (Si), germanium (Ge), yttrium (Y), zinc (Zn), zirconium (Zr), tungsten (W), tantalum (Ta), copper (Cu), and platinum (Pt), and

amounts of the dielectric first component and the second components one of gradually change and stepwise change in a thickness direction of said electrodes extending away from said plate member.

B. *The* '731 Patent

Summary of Relevant Portions of Its Prosecution History

The '731 patent was based on application Serial No. 09/840,290 filed April 24, 2001, claiming priority to Korean application Nos.2000-21645 dated April 24, 2000 and 2000-62873 dated October 25, 2000. The original application contained 37 claims directed to a plasma display panel and a method of manufacturing partitions used in plasma display panels or a method of manufacturing plasma display panels. More particularly, the invention disclosed in the '731 patent describes a plasma display panel where mis-discharge in a non-light emitting zone is reduced and/or eliminated.

The initial communication required an election between Group I, claims 1-13, 15-28 and 37 drawn to the plasma display panel, and Group II, claims 14 and 29-36 drawn to the method of manufacturing plasma display panels. In a response dated October 29, 2002, applicants elected Group I without traverse.

In a Patent Office communication dated January 16, 2003, the examiner rejected all of the elected claims 1-13, 15-28 and 37. In particular, claims 1, 4, 7, 15-18 and 28 were rejected under 35 U.S.C. s. 102(e) as being anticipated by Nakano et al. U.S. Patent 6,414,434 ("Nakano et al.") while claims 2, 3, 5, 6, 8-13 and 19-27 were rejected under 35 U.S.C. s. 103(a) as being unpatentable over the same Nakano et al. reference.

In an Amendment dated April 15, 2003, applicants cancelled non-elected claims 14 and 29-36 while amending claims 1-5, 15, 17, 19, 28 and 37. Arguments were also presented asserting that the claims as amended were patentable over the Nakano et al. reference.

In a communication dated July 3, 2003, the examiner advanced a new rejection of claims 2, 3, 28 and 37 under 35 U.S.C. s. 102(e) as being anticipated by Muria et al. U.S. Patent 5,754,003 ("Muria"). In addition,

claims 4, 15 and 16 were rejected under 35 U.S.C. s. 102(e) as being anticipated by Betsui et al. U.S. Patent 6,242,859 ("Betsui"). Further, claims 1, 5-13 and 19-27 were rejected under 35 U.S.C. s. 103(a) as being unpatentable over Betsui. Finally, claims 17 and 18 were rejected under 35 U.S.C. s. 103(a) as being unpatentable over Muria. The examiner advised that the communication was a final rejection.FN8

FN8. Claims 1-7, 10 and 11 of the '731 patent had been identified as application claims 1, 4-9, 12 and 13, respectively, during Patent Office prosecution prior to allowance.

In an Amendment After Final filed November 3, 2003, applicants further amended claims 4 and 7 and argued that the pending claims 1-13, 15-28 and 37 were patentable over the cited prior art. In particular with respect to the rejection of claims 2, 3, 28 and 37 as being anticipated by Muria, applicants argued *inter alia* that

"... there is a gap between the outermost partition wall 18 and the spacer glass member 34" of Murai.

APPENDIX 9 at page 39.

More particularly, in arguing for the patentability of application claim 3, applicants stated that:

"First, Applicants submit that claim 3 does not recite that the non-light emitting filling zone portion is necessarily formed integral with the outermost portion, as summarized on page 3 of the office action.

Secondly, nowhere does Murai disclose a non-light emitting zone filling portion completely fills a space between the sealing material and the outermost partition and nowhere does the office action specify what portion or element of the invention disclosed in Murai completely fills the space between the sealing material and the outermost partition. As shown in Fig. 3(b) and 3(d), there is a gap between the spacer gap member 34 and the outermost partition 18. Thus Murai fails to disclose an element which completely fills the space between the sealing material and the outermost partition. For at least these reasons, Applicants submit that Murai fails to disclose all the features of claim 3. It is respectfully requested that the rejection of claim 3 be withdrawn."

APPENDIX 9 at page 40.

In arguing for the patentability of claim 4, 15 and 16 over the Betsui rejection, it was stated that:

"First, Applicants submit that both the 'non-light emitting zone filling zone' and the 'non-light emitting zone filling portion' cannot be satisfied by the same element 40 of Betsui. Secondly, Applicants submit that claim 4 recites that the non-light emitting zone filling portion fills a non-light emitting zone and that the non-light emitting zone is defined by the outermost one of the partitions and the sealing material. Thus, the non-light emitting zone is the region between the outermost partition 23 and the sealing material 25. *Applicants submit that,* as shown in Fig. 10, *the spacer 40* does not fill that space as it *only fills a portion of that space because it only occupies a portion of the space. Thirdly, Applicants submit that the spacer 40 of Betsui fails to cover an end portion of any of the electrodes*. By providing the spacer 40 adjacent to the sealing material, in the portion of the non-light emitting zone, two adjacent electrodes exist and thus, the energy between them may cause the gas to discharge. Instead, by *providing the non-light emitting zone adjacent to the outermost partition such that it will cover an end of at least one* FN9 *of the electrodes extending beyond the*

outermost partition wall, the space below a pair of electrodes is filled with the non-light emitting zone filling portion and thus, prevent mis-discharge. For at least these reasons, Applicants submit that Betsui fails to disclose all the features of claim 4. It is respectfully requested that the rejection of claim 4 be withdrawn." (Emphasis supplied)

FN9. A thorough review of the prosecution history of the '731 patent reveals that this sentence requires the insertion of "one" in order to understand what was meant by applicants-as will be explained more fully, infra, when claim construction is evaluated.

APPENDIX 9 at page 42.
In the next communication dated December 4, 2003, the examiner rejected claims 1-3, 17, 18, 28 and 37 under 35 U.S.C. s. 103(a) as being unpatentable over the Murata publication JP05135702 in view of Murai. However, the examiner indicated that claims 4-13, 15, 16 and 19-27 were allowable over the art of record, stating as a reason for allowance of claims 4, 7, 15 and 19 that:

"... the prior art of record does not teach or suggest a plasma display panel with all the limitations as claimed and particularly the limitation comprising the non-light emitting zone filling portion covering at least one end portion of the first electrode on the front substrate."

APPENDIX 10 at pages 6-7.

In addition, the examiner's reasons for allowance stated that:

"Regarding claim 5 the prior art of record does not teach or suggest a plasma display panel with all the limitations as claimed and particularly the limitation comprising the gas exhaust hole formed at the upper surface of the non-light emitting zone filling portion parallel to a lengthwise direction of the outermost partition."

APPENDIX 10 at page 7.

The other claims indicated to be allowable were all dependent upon other allowed claims.

In a response dated March 4, 2004, claims 1-5, 17, 18 and 28 were amended and it was argued that the amended claims were allowable over the prior art of record.

In a Patent Office communication dated May 20, 2004, the examiner withdrew the rejection of claims 1 and 17 under 35 U.S.C. s. 103(a) in view of the amendment. However, the examiner continued to object to claims 2 and 3 and continued to reject claims 2, 3, 28 and 37 over the combination of Murata and Murai.

The examiner explained the reason for allowance of claims 1 and 17 to be:

"The prior art of record does not teach or suggest a plasma display panel with all the limitations as claimed and particularly the limitation comprising one surface of the non-light emitting zone filling portion is in direct contact with the outermost surface of the outermost partition along the length of the zone."

APPENDIX 10 at page 35.

In a reply to the Final Office Action dated August 20, 2004, applicants cancelled claims 2, 3, 28 and 37, thus leaving only claims 1, 4-13 and 15-27 that the examiner had previously indicated to be allowable. The examiner issued a Notice of Allowance on December 9, 2004, advising that:

"The reasons for allowance of claims 1, 17, 18 and 4-13, 16, 19-27 have already been cited in the previous office action mailed May 20, 2004 and December 4, 2003, respectively."

APPENDIX 10 at page 50.

The '731 Patent Claims

The '731 patent issued on December 4, 2004 containing 24 claims. Claim 1, reproduced below, is representative of the asserted claims.

1. A plasma display panel comprising:

a front glass substrate and a rear glass substrate coupled to each other by a sealing material coated at edges of said front and rear glass substrates;

first and second electrodes on opposing inner surfaces of said front and rear glass substrates so as to cross each other;

a dielectric layer on each of the opposing inner surfaces of said front and rear glass substrates so as to cover said first and second electrodes;

partitions formed on an upper surface of said dielectric layer of said rear glass

substrate and extending lengthwise in a first direction wherein the partitions at least partially define a space further defined by one of the first electrodes and one of the second electrodes;

red, green and blue fluorescent substances coated between adjacent ones of said partitions; and

a zone defined between an outermost one of said partitions and the sealing material is at least partially filled with a filling material used for one of said partitions and said zone has a length in the first direction which is substantially a length of the outermost partition in the first direction and at least one surface of the filling material is in direct contact with an outermost surface of the outermost partition along the length of said zone."

C. *The* '142 Patent

Summary of Relevant Portions of Its Prosecution History

The '142 patent issued from patent application Serial No. 10/449,029 filed June 2, 2003, which was a continuation of patent application Serial No. 09/840,290 (now the '731 patent). As did the '731 patent, the '142 continuation patent also claimed priority to Korean application Nos. 10-2000-21645 dated April 24, 2000 and 10-2000-62873 dated October 25, 2000.FN10 The application as filed contained the same 37 claims that had previously been submitted in the '237 parent application. In that the invention recited by the

claims of the ' 731 patent was originally subject to a restriction requirement to the improved plasma display panel, the invention described in the ' 142 patent sought claims to the method of manufacturing plasma display panels where mis-discharge in a non-light emitting zone was reduced and/or eliminated.

FN10. The disclosures in the specifications of the '142 and '731 patents are the same in all material respects.

An initial communication dated October 2, 2003 required election between claims drawn to the plasma display panel (the '731 claims) and to the method of manufacturing a plasma display panel. In the response dated November 3, 2003, applicants incorrectly elected to prosecute the same plasma display panel claims previously prosecuted in the application from which the '731 patent was issued. In a further document dated December 17, 2003 entitled Supplemental Response to Election/Restriction Requirement, applicants correctly elected to prosecute claims directed to a method of manufacturing a plasma display panel, identified as Group II, claims 14 and 29-36, observing that the previous election had been of claims already prosecuted in the parent application.

In the initial rejection dated March 9, 2004, the examiner rejected claims 14, 29, 30, 33, 34 and 36 under 35 U.S.C. s. 102(b) as being anticipated by the Japanese counterpart of Nakano et al. U .S. Patent 6,414,430 (referred to by the examiner as "Ebe"). In addition, claims 29, 31 and 32 were rejected under 35 U.S.C. s. 103(a) as being unpatentable over Murata in view of Murai, the rejection previously advanced during the prosecution of the '731 patent application.

However, the examiner indicated that claim 35, while objected to as being dependent from a rejected base claim, contained allowable subject matter for the following reasons:

"Regarding claim 35, the references of the prior art of record fails to teach or suggest a combination of the limitations as set forth in claim 35, and specifically comprising the limitation of wherein the gas removal channel comprises forming a gas removal channel between the non-light emitting zone filling portion and the first dielectric electrode."

APPENDIX 11 at page 7.

In an Amendment dated June 8, 2004, claims 1-13, 15-28 and 37 were cancelled, while claims 14, 29 and 34 were amended and claims 38-41 were added. In addition, arguments were advanced that the pending claims were patentable over the prior art cited by the examiner.

In a final rejection dated September 9, 2004, claims 14, 29-34, 36 and 39 continued to be rejected while claims 35, 38, 40 and 41 were objected to as depending from rejected base claims. Claims 14, 29, 30, 33, 34, 36 and 39 were again rejected as anticipated in view of Ebe. In addition, claims 29, 31 and 32 again were rejected as being unpatentable under 35 U.S.C. s. 103(a) over Murata in view of Murai.

Regarding claims 35, 38, 40 and 41 that were described as containing allowable subject matter, the following statement of reasons for the indication of allowable subject matter was provided by the examiner:

"Regarding claim 35, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claim 35, and specifically comprising the limitation of wherein the gas removal channel comprises forming a gas removal channel between the non-light emitting zone filling portion and

the first dielectric layer.

Regarding claim 38, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claim 38, and specifically comprising the limitation of the non-light emitting zone filling portion preventing a discharge of the first electrodes in a space between the outermost partition and the seal.

Regarding claim 40, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claim 40, and specifically comprising the limitation of a width of the non-light emitting zone filling portion is equal to a length of the end portion of the first electrodes which extend past the outermost partition.

Regarding claim 41, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claim 41, and specifically comprising the limitation of a width of the non-light emitting zone filling portion is greater than a length of the end portions of the first electrodes which extend past the outermost partition."

APPENDIX 11 at pages 34-35.

In an Amendment dated December 8, 2004, claims 14 and 35 were cancelled while claims 29, 34 and 38-41 were amended. Again it was argued that the remaining amended claims were patentable over the prior art cited by the examiner.

A Notice of Allowability was mailed December 17, 2004, indicating that claims 29-34, 36 and 38-41 were allowable. The examiner's statement of reasons for allowance were as follows:

"Regarding claim 29, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claim 29, and specifically comprising the limitation of forming a gas removal channel adjacent to the non-light emitting zone filling portion and between the outermost partition and the seal, wherein forming the gas removal channel comprises forming the gas removal channel between the non-light emitting zone filling portion and the first dielectric layer.

Regarding claims 30-34 and 36, claims 30-34 are allowable for the reasons given in claim 29 because of their dependency status from claim 29.

Regarding claim 38, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claim 38, and specifically comprising the limitation of forming a seal connecting corresponding edges of the front and rear glass substrates, where the non-light emitting zone filling portion is disposed between at least one of an outermost partition and the seal and wherein the non-light emitting zone filling portion prevents a discharge of the first electrodes in a space between the outermost partition and the seal."

APPENDIX 11 at pages 48-49.

The '142 Patent Claims

The '142 patent issued on April 26, 2005 from a U.S. patent application filed June 2, 2003. The '142 patent

contains 11 claims. Claim 1, reproduced below, is representative of the asserted claims.

1. A method of manufacturing a plasma display panel, comprising:

providing a front glass substrate having first electrodes over which a first dielectric layer is formed;

providing a rear glass substrate disposed opposite said front glass substrate, said rear glass substrate having second electrodes over which a second dielectric layer is formed, the second electrodes not being parallel with the first electrodes;

forming partitions and a non-light emitting zone filling portion, the partitions and non-light emitting zone filling portions being formed on the second dielectric layer;

coating a fluorescent substance between the formed partitions;

forming a seal connecting corresponding edges of the front and rear glass substrates, where the non-light emitting zone filling portion is disposed between at least one of an outermost partition and the seal; and

forming a gas removal channel adjacent to the non-light emitting zone filling portion and between the outermost partition and the seal, wherein forming the gas removal channel comprises forming the gas removal channel between the non-light emitting zone filling portion and the first dielectric layer.

V. *CONSTRUCTION OF '237 PATENT CLAIMS*

A. "*dielectric*" (Claims 1, 3, 4, 10, 11 and 13)

The Parties' Agreed Upon Claim Construction

The parties have agreed that the claim term "dielectric" should be understood to mean "a material that does not conduct electricity; an electrical insulator." The Special Master has made an independent review of the record and recommends that the Court adopt the parties' agreed upon meaning.

B. "*one of gradually change and stepwise change;*" "*gradually change*" (Claims 1 and 10)

Term in Context

In the context of claim 1 of the '237 patent, the term appears italicized as follows:

1. A plate for a plasma display panel (PDP), comprising:

a plate member comprising a transparent material;

electrodes formed in a predetermined pattern on said plate member;

a dielectric layer formed on said plate member to cover said electrodes, wherein: said electrodes comprise a dielectric first component and a second component, the second component comprising at least one metal

selected from a group consisting of iron (Fe), cobalt (Co), vanadium (V), titanium (Ti), aluminum (Al), silver (Ag), silico (Si), germanium (Ge), yttrium (Y), zinc (Zn), zirconium (Zr), tungsten (W), tantalum (Ta), copper (Cu), and platinum (Pt), and

amounts of the dielectric first component and the second components *one of gradually change and stepwise change* in a thickness direction of said electrodes extending away from said plate member.

The Parties' Proposed Constructions

The parties respective proposed constructions are:

Samsung	*Panasonic*
The change in the amounts of both the dielectric component and the metal component is either gradually or stepwise. If "gradually" the change is not abrupt as shown in Figure 10. If "stepwise" the change is through a sequence of at least three relatively more abrupt changes as shown in Figure 11.	The composition of the electrode changes-either gradually or stepwise-from dielectric component where the electrode touches the plate member to metal component farther away. If the composition changes "gradually," the change must be slow, not abrupt (as shown in Figure 10). This excludes a layered structure. If "stepwise," the change must come through a sequence of at least three steps. (Figure 11 shows an example with 9 steps.)

Tentative Ruling Proposed By Special Master

The change in the amounts of both the dielectric component and the metal component is either "gradually" or "stepwise." If "gradually" the change must be slow not abrupt (as shown in Figure 10). This excludes a layered structure. If "stepwise" the change is through a sequence of at least three relatively more abrupt changes (as shown in Figure 11).

Discussion

Samsung takes its proposed construction from the definition of "gradually" in its ordinary use to mean "rising or descending at an even, moderate inclination; slowly (i.e., not abrupt)" referring to the definition found at Random House Webster's Unabridged Dictionary (2d ed. 1998) ("Random House") at page 827. Similarly, Samsung proposes that the construction of the term "stepwise" be from its ordinary use, meaning "in a steplike arrangement" (Random House at 867). Thus, Samsung argues that, consistent with the ordinary meaning of the claims and the patent specification, "gradually" change should be construed to mean a change that is not abrupt and "stepwise" change should be construed to mean a change that is through a sequence of relatively more abrupt changes.

Panasonic agrees with Samsung on the ordinary meaning of the individual terms "gradually" and "stepwise." The parties also agree that the stepwise change involves at least three steps as disclosed in Example 13 ('731 patent at column 11, lines 56-62). However, Panasonic argues that one of ordinary skill in the art would understand that a material having a gradual change in composition precludes a layered structure because a layered structure implies that change occurs through a series of steps, referring to the '237 patent at column 6, lines 40-41 where, in describing the stepwise embodiment, it is emphasized that "Thus, a layered structure is not formed."

Panasonic contends that the main disagreement between the parties involves the manner of describing the

electrodes in terms of the dielectric and metallic components. Panasonic asserts that the problem being solved by the invention is only addressed where the electrode composition changes from dielectric at the plate to metal away from the plate, i.e., the concentration of the metal component increases in the direction away from the plate member. Panasonic states that one of ordinary skill in the art would understand that requirement to be inherent, arguing that the problem identified in the prior art would not be solved and-an explicit object of the invention would be defeated-were the term not to be construed with a directional indication. Thus, Panasonic proposes the "inherent" requirement be stated as part of the claim construction.

In reply, Samsung argues that Panasonic is asking the Court to rewrite the claims to include limitations described in the preferred embodiment. Thus, Samsung contends that Panasonic's construction would improperly read limitations from the specification into the claim, arguing that claim 1 is intended to be broader than the preferred embodiment and that the term "change" is not limited to one direction or another regarding the concentration of the components in the electrodes.

Samsung also argues that the principle of claim differentiation supports their contention as claim 6, dependent from claim 1, recites a specific relationship between the first and second components, in defining that the ratio of light absorption of the electrodes gradually increases with increased distance from the external light entering the side of the plate member.

Recommended Construction

The Special Master finds Samsung to have the better argument for both reasons. Yet the Special Master is also of the view that there must be a further distinction between "gradually change" and "stepwise change." The further distinction is set forth in the Panasonic proposed claim construction by defining "gradually change" as "This excludes a layered structure," consistent with the '237 patent at Column 6, lines 40-41. Thus, it is recommended that the Court approve the "tentative ruling proposed by Special Master."

C. "*thickness direction of said electrodes extending away from said plate member*" (Claims 1, 4, 10 and 13)

Term in Context

In the context of claim 1 of the '237 patent, the term appears italicized as follows:

1. A plate for a plasma display panel (PDP), comprising:

a plate member comprising a transparent material;

electrodes formed in a predetermined pattern on said plate member;

a dielectric layer formed on said plate member to cover said electrodes, wherein: said electrodes comprise a dielectric first component and a second component, the second component comprising at least one metal selected from a group consisting of iron (Fe), cobalt (Co), vanadium (V), titanium (Ti), aluminum (Al), silver (Ag), silico (Si), germanium (Ge), yttrium (Y), zinc (Zn), zirconium (Zr), tungsten (W), tantalum (Ta), copper (Cu), and platinum (Pt), and

amounts of the dielectric first component and the second components one of gradually change and stepwise change in a *thickness direction of said electrodes extending away from said plate member*.

The Parties' Proposed Constructions

Samsung	*Panasonic*
The direction of the electrodes substantially perpendicular to the plate member and extending away from the plate member	The direction perpendicular to the plate member extending away from the plate member through the electrode formed on it

Tentative Ruling Proposed By Special Master

The direction of the electrodes substantially perpendicular to the plate member and extending away from the plate member.

Discussion

The parties essentially agree that the claim term "thickness direction of said electrodes extending away from said plate member" should be construed to mean the direction of the electrodes substantially perpendicular to the plate member and extending away from the plate member. The only difference in their proposals is that Panasonic would further include the phrase "through the electrode formed on it" in the claim construction. Panasonic bases its argument for that additional language to provide a consistent construction of the term "thickness direction" in claims 1 and 4 with its use in claims 10 and 13 where "thickness direction" is further defined as "extending into the discharge space."

What Panasonic appears to overlook is that claims 10 and 13 are directed to a plasma display *panel* while claims 1 and 4 recite only a *plate* for a plasma display panel. Thus, the subject matter recited by claims 1 and 4 does not include a "discharge space." Such a space would be present only were claims 1 and 4 to recite an entire panel, i.e., were claims 1 and 4 to also include a back plate as recited in claims 10 and 13.

Recommended Construction

There is no basis in the claims, specification or prosecution history to construe the term to include the additional limitation of "through the electrode formed on it." Thus, the Special Master recommends that the claim construction as proposed by Samsung be adopted by the Court.

D. "*black matrix pattern*" (Claim 2)

Term in Context

In the context of claim 2 of the '237 patent, the term appears italicized as follows:

2. The plate of claim 1, further comprising a *black matrix pattern* formed between adjacent pairs of said electrodes.

The Parties' Proposed Constructions

Samsung	*Panasonic*[FN11]

FN11. At the hearing on September 6, 2006, Panasonic offered as a compromise proposal for construction

that the term "black matrix pattern" be defined as "a black substance having the same composition as the electrodes arranged in a pattern form." Samsung did not find the compromise acceptable.

A black substance arranged in a form (such as a series of stripes)	Material having the same composition as the electrodes and formed simultaneously therewith

Tentative Ruling Proposed By Special Master

A black substance arranged in a pattern form (such as a series of stripes).

Discussion

The '237 specification (column 1, line 22-column 2, line 59) provides a detailed description of prior art procedures for forming a black matrix from a black pigment and an insulating material. Samsung points to the dictionary definition of the word "pattern" as "a combination of qualities, acts, tendencies, etc. forming a consistent or characteristic arrangement." In addition, Samsung argues that their claim construction is more appropriate for the reason that black matrix pattern is broadly defined in claim 2 while the use of "black matrix pattern" in claim 9 limits the definition to a pattern that "comprises the dielectric first component and the second component". Thus, Samsung contends that claim differentiation requires the term "black matrix pattern" to be construed broadly (in Claim 2) without being limited to a particular composition or method of formation.

Supporting the Samsung construction is column 6, lines 10-12 of the '731 patent that also illustrates the absence of the black matrix pattern component in broad claim 1, where it is disclosed that "However it is understood that the black matrix pattern 80 is not required in all aspects of the present invention."

Similarly, at column 6, lines 36-41, one of ordinary skill in the art is taught that the black matrix pattern 80 is optional in that the process of formation describes either depositing a second pair of electrodes 71, 72 along with the matrix pattern 80 or depositing only the second and third electrode 71 and 72 without the black matrix pattern 80. Also at column 8, lines 50-53, one of ordinary skill in the art is informed that in using a direct photolithography method or blast photolithography method, the process results in "forming either the second or third electrode 71 and 72 and a black matrix pattern 80 or only the second and third electrode 71 and 72 serving also as the black matrix pattern 80."

Another consistent teaching to one of ordinary skill in the art is found at column 9, lines 24-29 where in describing the process of Example 1, is stated that "After cleaning with deionized water, the photoresist pattern was stripped off, resulting in either the second and third electrodes and the black matrix pattern, or the second and third electrode serving also as the black matrix pattern." Other alternative embodiments further disclose the use of a black matrix pattern as taught in the prior art.

Panasonic proposes to construe the term to define its composition and method of formation. However, limiting the definition of black matrix pattern to a particular composition and/or method of formation described in a preferred embodiment is not permitted in construing the term "black matrix pattern" in claim 2 of the '237 patent.

Recommended Construction

The Special Master is of the view that the word "pattern" must be defined as "having a consistent or characteristic arrangement" to provide a more accurate construction of the overall claim term. Thus, the Special Master recommends that the Court adopt a modified tentative ruling to read "a black substance having a consistent or characteristic arrangement (such as a series of stripes)."

VI. *CONSTRUCTION OF '731 PATENT CLAIMS*

A. "*Partitions*" (Claims 1, 2, 3, 5, 7 and 10 of the '731 Patent and Claims 1 and 2 of the '142 Patent)

Term in Context

In the context of claim 1 of the '731 patent, the term appears italicized as follows:

1. A plasma display panel comprising:

a front glass substrate and a rear glass substrate coupled to each other by a sealing material coated at edges of said front and rear glass substrates;

first and second electrodes on opposing inner surfaces of said front and rear glass substrates so as to cross each other;

a dielectric layer on each of the opposing inner surfaces of said front and rear glass substrates so as to cover said first and second electrodes;

partitions formed on an upper surface of said dielectric layer of said rear glass substrate and extending lengthwise in a first direction wherein the partitions at least partially define a space further defined by one of the first electrodes and one of the second electrodes;

red, green and blue fluorescent substances coated between adjacent ones of said partitions; and

a zone defined between an outermost one of said partitions and the sealing material is at least partially filled with a filling material used for one of said partitions and said zone has a length in the first direction which is substantially a length of the outermost partition in the first direction and at least one surface of the filling material is in direct contact with an outermost surface of the outermost partition along the length of said zone.

The Parties' Proposed Constructions

Samsung	*Panasonic*
Walls extending from the glass substrate that at least partially define a space containing a fluorescent substance	Walls extending from the glass substrate that at least partially define a space.

Tentative Ruling Proposed By Special Master

Walls extending from the glass substrate that at least partially define a space further defined by a first and second electrode.

Recommended Construction

It is recommended that the above-identified "Tentative Ruling Proposed By Special Master"-and agreed to by the parties at the Markman hearing on September 6, 2006 (hearing transcript at page 88)-be approved by the Court.

B. "*outermost*" (Claims 1, 2, 3, 5, 7 and 10 of the '731 Patent **and Claim 1 of the** '142 Patent)

The Parties' Agreed Upon Claim Construction is Recommended

The parties have agreed that the claim term "outermost" should be understood to mean "farthest from the center of the glass substrate." The Special Master has made an independent review of the record and recommends that the Court adopt the parties' agreed-upon meaning.

C. "*A filling material*" (Claim 1)

Term in Context

In the context of claim 1 of the '731 patent, the italicized term appears as follows:

1. A plasma display panel comprising:

a front glass substrate and a rear glass substrate coupled to each other by a sealing material coated at edges of said front and rear glass substrates;

first and second electrodes on opposing inner surfaces of said front and rear glass substrates so as to cross each other;

a dielectric layer on each of the opposing inner surfaces of said front and rear glass substrates so as to cover said first and second electrodes;

partitions formed on an upper surface of said dielectric layer of said rear glass substrate and extending lengthwise in a first direction wherein the partitions at least partially define a space further defined by one of the first electrodes and one of the second electrodes;

red, green and blue fluorescent substances coated between adjacent ones of said partitions; and

a zone defined between an outermost one of said partitions and the sealing material is at least partially filled *with a filling material* used for one of said partitions and said zone has a length in the first direction which is substantially a length of the outermost partition in the first direction and at least one surface of the filling material is in direct contact with an outermost surface of the outermost partition along the length of said zone.

The Parties' Proposed Constructions

Samsung	*Panasonic*
a material that is	An extension of the outermost partition, of the same height as the partition, and at

present in a specified zone or area	least wide enough to cover the ends of the electrodes terminating in the non-light-emitting zone.

Tentative Ruling Proposed By Special Master

A material that is used for filling a specified space.

Discussion

Both parties agree that the term "filling" was not given any special meaning in the specification and for that reason should be accorded its ordinary meaning. In fact, Panasonic correctly points out that the term "filling material" does not appear in the '731 patent outside of being recited in claim 1. From that Panasonic concludes that one of ordinary skill in the art would understand the terms "filling material" and "non-light emitting zone filling portion" to have the same meaning in the context of the claims of the ' 731 patent. (Chapman Declaration FN12 at paragraph 96) Panasonic also points out in its response that the purpose of the filling material is for displacing discharge gas to prevent mis-discharge. The Special Master agrees with Panasonic in these observations.

FN12. During the hearing on September 6, 2006, the Special Master determined Dr. Brian Chapman to be a technical expert with the qualifications of one of ordinary skill in this art (Hearing transcript at page 45). His Declaration dated August 1, 2006 was admitted as extrinsic evidence. Samsung did not cross-examine Dr. Chapman on this opinion or any other opinion he may have expressed in his Declaration.

For example, in the '731 patent at Col. 5, lines 27-57, the purpose of the "filling material" is described as occupying the space (zone 21)-between the outermost partition (33) and the sealing member (frit glass 22). Thus, in the preferred embodiment "*The non-light emitting zone filling portion 31 completely fills the space in the non-light emitting zone 21 to prevent the non-light emitting zone 21 from being filled with a discharge gas*."

While such embodiments of the '731 patent would have the "filling material" completely occupying the non-light emitting zone, the broad purpose of the invention is to prevent mis-discharge by *displacing* at least a portion of the discharge gas by occupying the non-light emitting zone with another substance, i.e., the filling material (or non-light emitting zone filling portion). As disclosed in the specification, there are structural configurations that can also prevent mis-discharge even when the discharge gas is not entirely displaced, i.e., where the space is not completely occupied with the filling material; see '731 patent at Column 8, lines 1-19. Even claim 1 is not limited to completely occupying as it recites that the zone between the outermost partition and the sealing member is "at least partially filled" with the filling material.

Recommended Construction

Based upon a further review of the '731 specification, the parties' briefs, and consideration of the arguments presented by the parties at the hearing on September 6, 2006, the Special Master modifies his tentative claim construction to recommend that "a filling material" be construed as "*A substance that displaces discharge gas by occupying a specified space*."

D. "*Non-light emitting zone*" (Claims 2, 3 and 5); "*zone*"FN13 **(Claim 1)**

FN13. Claim 1 of the '731 patent broadly recites "zone."

Term in Context

In the context of claim 2 of the '731 patent, the italicized term appears as follows:

2. A plasma display panel comprising:

a front glass substrate and a rear glass substrate coupled to each other by a sealing material coated at edges of said front and rear glass substrates;

first and second electrodes on opposing inner surfaces of said front and rear glass substrates so as to cross each other;

a dielectric layer on each of the opposing inner surfaces of said front and rear glass substrates so as to cover said first and second electrodes;

partitions formed on an upper surface of said dielectric layer of said rear glass substrate,

red, green and blue fluorescent substances coated between adjacent ones of said partitions; and

a non-light emitting zone filling portion filling a *non-light emitting zone* defined between an outermost one of said partitions and the sealing material, said non-light emitting zone filling portion comprising a material used for one of said partitions, wherein said non-light emitting zone filling portion covers at least one end portions of said first electrodes formed on the front glass substrate.

The Parties' Proposed Constructions

Samsung	*Panasonic*
the zone between the outermost partition and the seal or sealing material that does not contain the fluorescent substances; a "zone" is an area or region distinguished from adjacent parts by a distinctive feature or characteristic	A space bounded by the outermost surface of an outermost partition on one side and the sealing material on another, in which there is no second electrode (in other words, no electrode formed on the rear glass substrate). The zone must be substantially the length of the outermost partition.

Tentative Ruling Proposed By Special Master

A "non-light emitting zone" is the space between the outermost partition and the sealing material from which light is not emitted.

A "zone" is a space distinguished from adjacent parts by a distinctive feature or characteristic.

Discussion

There is no material difference between the parties as to the definition of the term "zone" which appears to be an adoption of the plain, ordinary meaning of the term. The Special Master's definition is not inconsistent

with either of the parties' constructions.

As to "non-light emitting zone," both parties initially proposed modifying the space by a negative limitation. Samsung proposed the negative limitation to be a zone that "does not contain the fluorescent substances" while Panasonic proposed the negative limitation to be a space "in which there is no second electrode." During the hearing, both parties appeared to agree that claim construction did not require a negative limitation, either as they had originally proposed, or as included in the tentative ruling proposed by the Special Master. Samsung proposed to accept the tentative ruling provided the phrase "from which light is not admitted" be stricken (Hearing transcript at pages 113-114).

Recommended Construction

The Special Master recommends that the "tentative ruling proposed by Special Master" be further modified by deleting "from which light is not emitted" so as to read "The space between the outermost partition and the sealing material" and be approved by the Court. This tentative modified construction is entirely consistent with the intended purpose of the "non-light emitting zone" as described in the specification and is not inconsistent with claims 2, 3 and 5 in which the term appears.

The Special Master recommends that tentative ruling for the construction of "zone" be adopted by the Court.

E. "*at least one surface of the filling material is in direct contact with an outermost surface of the outermost partition alone the length of the said zone*" (Claim 1)

Term in Context

In the context of claim 1 of the '731 patent, the italicized term appears as follows:

1. A plasma display panel comprising:

a front glass substrate and a rear glass substrate coupled to each other by a sealing material coated at edges of said front and rear glass substrates;

first and second electrodes on opposing inner surfaces of said front and rear glass substrates so as to cross each other;

a dielectric layer on each of the opposing inner surfaces of said front and rear glass substrates so as to cover said first and second electrodes;

partitions formed on an upper surface of said dielectric layer of said rear glass substrate and extending lengthwise in a first direction wherein the partitions at least partially define a space further defined by one of the first electrodes and one of the second electrodes;

red, green and blue fluorescent substances coated between adjacent ones of said partitions; and

a zone defined between an outermost one of said partitions and the sealing material is at least partially filled with a filling material used for one of said partitions and said zone has a length in the first direction which is substantially a length of the outermost partition in the first direction and *at least one surface of the filling material is in direct contact with an outermost surface of the outermost partition along the length of said*

zone.

The Parties' Proposed Constructions

Samsung	*Panasonic*
one or more surfaces of the filling material contacts the outermost contact surface of the outermost partition along the length of the zone	The filling material is in direct, continuous with the outermost partition along the entire length and height of the outermost partition.

Tentative Ruling Proposed Bv Special Master

The filling material has a surface that directly contacts the outermost surface of the outermost partition along the length of the space.

Discussion

The dispute of the parties as to this term focuses upon the sub-phrase "at least one surface of the filling material is in direct contact." Panasonic proposes that the filling material have direct continuous contact with the outermost surface along the *entire length and height* of the outermost partition, while Samsung contends the filling material may have one or more surfaces that contact the outermost surface of the outermost partition along the length of the zone. The Special Master is of the view that neither of those proposed claim constructions captures the intended purpose of the claim phrase.

More particularly, the specification describes several embodiments for displacing gas from the non-light emitting zone, *all* of which involve the filling material (or filling portion) being in direct contact with the outermost surface of the outermost partition along the length of the zone. For example, in describing Figs. 6A and 7 (at column 7, lines 20-23 of the '731 patent), it is disclosed that "The non-light emitting zone filling portion 61 does not fill the entire space of the non-light emitting zone 21, but partially fills only a portion closest to the outermost partition 23."

The distinction that is being made in claim 1 is between embodiments where there is no space along the outermost surface of the outermost partition as a result of (1) the filling material being an extension of the outermost partition, i.e., formed integrally with it (such as illustrated in Figs. 3 and 4E) and (2) the filling material being "separately manufactured and inserted into" the space starting at and extending out from the outermost surface of the outermost partition; see '237 patent at Col. 5, lines 44-47.

At the hearing, Samsung agreed with the tentative ruling (Hearing transcript at page 118). Panasonic argued that construction of the term requires that the direct contact be "continuous."

Recommended Construction

The Special Master is of the view that the term "at least one surface of the filling material is in direct contact" is intended to distinguish between an embodiment where the filling material is an integral part of the outermost partition, i.e., having no filling material *surface* to be in direct contact, and other embodiments where the filling material is separately formed and introduced to occupy at least a portion FN14 of the zone. Recognizing this claim differentiation for claim 1 lends clarification to the claim term "at least one surface of the filling material is in direct contact with an outermost surface of the outermost partitions along the length of said zone." Further, the Special Master agrees with Samsung that for the direct

contact to be further described as "continuous" would be redundant of the remainder of the term which recites that the direct contact is "along the length" of the non-light emitting zone. The Special Master recommends that the Court adopt the tentative ruling.

FN14. Neither the separately formed nor the integrally formed filling material is required to fill the entire zone.

F. "*non-light emitting zone filling portion*" (Claims 2, 3, 5, 7 and 10)

Term in Context

In the context of Claim 2 of the '731 patent, the italicized term appears as follows:

2. A plasma display panel comprising:

a front glass substrate and a rear glass substrate coupled to each other by a sealing material coated at edges of said front and rear glass substrates;

first and second electrodes on opposing inner surfaces of said front and rear glass substrates so as to cross each other;

a dielectric layer on each of the opposing inner surfaces of said front and rear glass substrates so as to cover said first and second electrodes;

partitions formed on an upper surface of said dielectric layer of said rear glass substrate,

red, green and blue fluorescent substances coated between adjacent ones of said partitions; and

a *non-light emitting zone filling portion* filling a non-light emitting zone defined between an outermost one of said partitions and the sealing material, said *non-light emitting zone filling portion* comprising a material used for one of said partitions, wherein said *non-light emitting zone filling portion* covers at least one end portions of said first electrodes formed on the front glass substrate.

The Parties' Proposed Constructions

Samsung	*Panasonic*
filling material that is present in the non-light emitting zone	An extension of the outermost partition, of substantially the same height as the partition, and at least wide enough to cover the ends of the electrodes terminating in the non-light emitting zone.

Tentative Ruling Proposed By Special Master

The amount of filling material needed for at least partially filling the non-light emitting space.

Discussion

The parties agree that the term "non-light emitting zone filling portion", as recited in claims 2, 3, 5, 7, and

10 of the '731 patent, should be given the same meaning as the term "a filling material" as recited in claim 1 of the ' 731 patent. However, Samsung argues that the term should be given its plain meaning rather than a meaning encumbered with the additional limitations that Panasonic has proposed both for this term and the term "a filling material."

Recommended Construction

The Special Master's tentative ruling, prior to the hearing on September 6, 2006, included the recommendation that the construction of "a filling material" be "a material that is used for filling a specified space." Based upon further consideration of the arguments at the hearing on September 6, 2006, and to be consistent with the recommended modified construction of "a filling material" as being "A substance that displaces discharge gas by occupying a specified space," the Special Master modifies the tentative claim construction for "non-light emitting zone filling portion" to read "The amount of a substance used for displacing discharge gas by occupying a non-light emitting space," and recommends it be adopted by the Court.

G. "*Filling*" (Claims 2, 3 and 5)

Term in Context

In the context of claim 2 of the '731 patent, the italicized term appears as follows:

2. A plasma display panel comprising:

a front glass substrate and a rear glass substrate coupled to each other by a sealing material coated at edges of said front and rear glass substrates;

first and second electrodes on opposing inner surfaces of said front and rear glass substrates so as to cross each other;

a dielectric layer on each of the opposing inner surfaces of said front and rear glass substrates so as to cover said first and second electrodes;

partitions formed on an upper surface of said dielectric layer of said rear glass substrate,

red, green and blue fluorescent substances coated between adjacent ones of said partitions; and

a non-light emitting zone filling portion *filling* a non-light emitting zone defined between an outermost one of said partitions and the sealing material, said non-light emitting zone filling portion comprising a material used for one of said partitions, wherein said non-light emitting zone filling portion covers at least one end portions of said first electrodes formed on the front glass substrate.

The Parties' Proposed Constructions

Samsung	*Panasonic*
present in	Completely occupying.

Tentative Ruling Proposed By Special Master

Completely occupying.

Discussion

Samsung argues that filling must be construed to be broadly defined as "present in", and points to various portions of the specification where the filling material is described as either completely or partially filling the non-light emitting zone filling portion. In particular, Samsung focuses upon Figure 2 to support its construction, asserting that whenever filling is to be complete the specification employs "completely" to modify the term "filling." Samsung also points to Figures 6A/7 to illustrate the use of "partially" filling when applicants do not intend for the entire space to be filled.

Panasonic looks to the American Heritage Dictionary at page 659 for the ordinary meaning of "filling" to be "to put into (a container, for example) as much as can be held." To further illustrate is contention Panasonic asserts that the file history provides a clear estoppel to any broader construction of the term "filling." In particular Panasonic directs the Court's attention to the prosecution of application claim 4 (patent claim 2) where the claim was rejected as being anticipated by a prior art reference. Panasonic points out that the argument made to obtain the allowance of claim 4 (at page 16 of an Amendment dated November 3, 2003-APPENDIX 9 at page 42) illustrated that "patentee understood the term 'filling' during prosecution of the application to mean 'completely occupying' " and Panasonic notes that that understanding is also reflected in the examples found at column 3 lines 3-36; column 5, lines 30-40, lines 47-50 and lines 53-56; as well as column 9, lines 23-25 of the ' 731 patent.

Panasonic further points out that where it was intended that variations of the term "filling" not mean "completely occupying," modifying language was consistently used, pointing to claim 1 where the otherwise unidentified zone is "at least partially filled." Panasonic summarizes its position by pointing to other claims reciting "fill" or "filling" that also employ modifying language such as that included in claim 1. Thus, only claims 2, 3 and 5 recite "filling" without modifying language and, for that reason, Panasonic argues that "filling" in claims 2, 3 and 5 must be construed to mean "completely occupying."

In its reply brief, Samsung argues for the broader definition of "filling" by contrasting it with "completely fills," as found at column 5, lines 30-34, and "substantially completely fills" as recited in claim 15. Samsung also points to claim 3 where a gas exhaust hole is stated to be formed in an upper surface of the non-light emitting zone filling portion. Samsung contends that were the term "filling" to mean "completely occupying," the result would be an internal inconsistency in claim 3, because the presence of the gas exhaust hole prevents the non-light emitting zone filling portion from completely occupying the zone. Furthermore Samsung argues that the prosecution history contains no clear and unmistakable disclaimer argument over the Murai reference and concludes that for those reasons the specification does not limit "filling" to be "completely occupying".

The Special Master disagrees with Samsung regarding the significance of the term "filling" in claim 3. The gas exhaust hole is described as being formed at an upper surface of the zone *after* the zone is formed; see '731 patent at column 6, lines 57-61. Thus, at a prior step in the described manufacturing process, i.e., before the gas exhaust hole is formed at an upper surface of the zone filling portion, the non-light emitting zone filling portion is *completely occupying* of the non-light emitting zone. When read in the context of the specification, this construction of the term "filling" for claim 3 corresponds fully with claims 2 and 5 (application claims 4 and 7).

Furthermore, Panasonic correctly relies on prosecution history estoppel in directing the Court's attention to applicants' Amendment dated November 3, 2003. There, in requesting reconsideration of the rejection of application claim 4 as being anticipated by Betsui, it was argued, *inter alia,* that

"First, applicants submit that, as discussed above with regard to claim 4, the non-light emitting zone is the region between the outermost partition 23 and the sealing material 25. Applicants submit that, as shown in Figure 10 (of Betsui) the spacer 40 does not fill that space as it only fills a portion of that space because it only occupies a portion of the space.

Secondly, applicants submit that claim 4 recites that the non-light emitting zone filling portion *fills* a non-light emitting zone and that the non-light emitting zone is defined by the outermost one of the partitions and the sealing material. Thus, the non-light emitting zone is the region between the outermost partition 23 and the sealing material 25.

Applicants submit that, as shown in Fig. 10, the spacer 40 (of Betsui) does not fill the space as it only fills the portion of the space because it only occupies a portion of the space." (Emphasis supplied)

APPENDIX 9 at page 42.

In an Amendment filed March 4, 2003, applicants sought the allowance of application claim 3, amended to recite:

"wherein a zone defined between an outermost one of said partitions and the sealing material is *substantially completely filled* ..."

APPENDIX 10 at page 11.

In the next communication-a final rejection dated May 20, 2004-the examiner objected to application claim 3, pointing out that

"... the limitation of 'the zone between the outermost partition and sealing material is *substantially completely filled*' is indefinite. The non-light emitting zone is either completely filled or not completely (i.e.partially) filled. The specification (page 9, lines 1, 2 FN15) discloses that the filling portion completely fills the space."

FN15. APPENDIX 7 at page 33 (corresponding to Column 5, lines 31-34 of the '731 patent).

APPENDIX 10 at page 31.
In the next Amendment dated August 20, 2004, application claim 3 was canceled without submitting a responsive argument.

In summary, applicants used several terms-to describe the quantity of the non-light emitting zone filling portion in the non-light emitting zone-when prosecuting claims where the non-light emitting zone was other than completely occupied. Thus, patent claim 1 recites a zone *defined* between an outermost one of said partition and the sealing material that is *at least partially filled,* while patent claim 12 recites a non-light

emitting zone filling portion *disposed* between an outermost one of said partition and said seal. Further, patent claim 14 recites that a non-light emitting zone filling portion is *connected to* and has the same height as said outermost partition.FN16

FN16. It appears that because patent claim 14 does not contain either the word "filling" or "filled" but instead recites that the non-light emitting zone filling portion is both "disposed between" and "connected to" an outermost one of said partitions, the examiner overlooked that patent claim 15, dependent from claim 14, recites that the non-light emitting zone filling portion "substantially completely fills" the space between said outermost partition and said seal and should have been objected to for the same reason stated for canceled application claim 3.

Recommended Construction

It is only claims 2, 3 and 5 that specifically recite "a non-light emitting zone filling portion *filling* a non-light emitting zone *defined* between an outermost one of said partitions and the sealing material." In the opinion of the Special Master, the term "filling" as it appears in claims 2, 3 and 5 of the '731 patent is properly construed to mean "completely occupying" of the non-light emitting zone *defined* between an outermost partition and the sealing material. It is recommended that the Court adopt that construction.

H. "*Covers at least one end portion of said first electrodes*" (Claims 2 and 5)

Term in Context

In the context of claim 5 of the '731 patent, the italicized term appears as follows:

5. A plasma display panel comprising:

a front glass substrate and a rear glass substrate coupled to each other by a sealing material coated at edges of said substrates;

first and second electrodes formed on opposing inner surfaces of said front and rear glass substrates so as to cross each other;

a dielectric layer formed on each of the opposing inner surfaces of said front and rear glass substrates to cover said first and second electrodes;

partitions formed on an upper surface of said dielectric layer of said rear glass substrate;

red, green and blue fluorescent substances coated between adjacent ones of said partitions; and

a non-light emitting zone filling portion filling a non-light emitting zone between an outermost one of said partitions and the sealing material, said non-light emitting zone filling portion being disposed adjacent to said outermost partition and comprising a material used for one of said partitions, wherein

an empty space is defined between the sealing material and said non-light emitting zone filling portion, and said non-light emitting zone filling portion *covers at least one end portion of said first electrodes*.

The Parties' Proposed Constructions

Samsung	*Panasonic*
Covers at least a portion of the end of first the first electrodes	The space below the portion of the electrodes extending from the outermost partition to the end of the electrodes is filled with material to exclude discharge gas.

Tentative Ruling Proposed By Special Master

Covers at least one of the electrode end portions that extend into the non-light emitting zone.

Discussion

The parties dispute the construction of the word "covers" and the phrase "end portion of said first electrode" that are contained in Claims 2 and 5 of the ' 731 patent. The proposed construction by Samsung focuses on the end portion of the first electrode and recommends that the phrase be construed so that "covers" involves covering only a portion of the end of the first electrodes. Panasonic proposes to construe the phrase "covers at least one end portion of said first electrode" by defining the space adjacent to the first electrodes that is occupied by the filling material.

The Special Master's tentative ruling rejected both parties proposed construction in recommending that the term should be understood to mean "Covers at least one of the electrode end portions that extend into the non-light emitting zone." That construction is consistent with the specification of the ' 731 patent at Column 9, lines 13-18, describing how mis-discharge can be prevented. The arguments presented during the hearing on September 6, 2006, clarified that the electrode end portions recited by claims 2 and 5 are the non-terminal ends of the first electrodes, as described in the '731 patent at Column 7, lines 34-55.FN17

FN17. A review of the hearing transcript reveals that during the hearing, the Special Master initially failed to recognize that the end portion of the first electrodes recited in claims 2 and 5 is the non-terminal end portion.

In order to have a proper understanding of this claim term, it is necessary to trace the development of this claim language during prosecution of the '731 patent, starting with the examiner's communication dated January 16, 2003. In that communication, the examiner rejected application claims 4 and 7 (patent claims 2 and 5) among others as being anticipated by Nakano et al. The examiner's rejection contained the following explanation:

"Regarding claim 4 it is evident from Fig. 1 (of Nakano) the non-light emitting filling zone portion *covers* the end portion of the first electrodes X, Y formed on the front glass substrate 1." (Emphasis supplied)

APPENDIX 8 at page 38.

And again,

"Regarding claim 7 Nakano et al. disclose all the limitations which are the same as that of claim 1 and also an empty space defined between the sealing material 10 and the non-light emitting zone filling portion 11, the non-light emitting zone filling portion surrounds the display area *covering* the end portions of the first

electrodes." (Emphasis supplied)

APPENDIX 8 at pages 38-39.

Still further, the examiner rejected application claims 8 and 9 as being unpatentable over Nakano et al., stating that:

"Regarding claims 8 and 9 Nakano et al. disclose in Fig. 1 that the non-light emitting zone filling portion covers the end of the first electrodes which extend past the outermost partition. Nakano et al. do not disclose that the width of the non-light emitting zone filling portion being equal to (claim 8) or greater than (claim 9) the length of the end portions of the first electrodes.

Regarding claim 8 it would have been obvious to one of ordinary skill in the art at the time of invention to select the width of the non-light emitting zone filling portion to be equal to the length of the end portions of the first electrodes so that the non-light emitting zone filling portion covers the end portions of the first electrodes.

Regarding claim 9 it would have been obvious to one of ordinary skill in the art at the time of invention to select the width of the non-light emitting zone filling portion to be greater than the length of the end portions of the first electrodes so that the non-light emitting zone filling portion covers the end portions of the first electrodes."

APPENDIX 8 at page 41.

In a response dated April 16, 2003, dependent claim 4 was rewritten in independent form, but still recited "wherein said non-light emitting zone filling portion covers FN18 end portions of said first electrodes formed on the front glass substrate." No modifications were made to application claims 7-9. Applicants continued to seek the allowance of application claims 4 and 7-9 by emphasizing that Nakano et al. did not disclose what the examiner had relied upon in the prior communication, arguing *inter alia* that

FN18. The term "covers" is also consistently employed in independent claims 1, 2, 3 and 5 to recite the structural relationship between the dielectric layers formed on front and rear substrates and the first and second electrodes that they cover.

"By way of review, *Nakano et al*. discloses the line electrodes X, Y extending well outside of the second partition wall 11. As is seen in Fig. 1 (of Nakano) the ends of the line electrodes X, Y extend to edges of a glass substrate 1. There is no disclosure that the ends of the line electrodes X, Y are covered by the second partition wall 11. In contrast, claim 4 recites, among other features, that 'said non-light emitting zone filling portion covers end portions of said first electrodes formed on the front glass substrate.' As such, it is respectfully submitted that Nakano et al. does not disclose the invention recited in claim 4."
APPENDIX 8 at page 56.

In arguing for the allowance of application claims 8 and 9, applicants also pointed out that:

"... As a point of clarification and as discussed above in relation to the rejection of claim 7, *Nakano et al*. does not disclose that the second partition wall 11 covers ends of the line electrodes X, Y. Instead, as shown

in Figure 1, the line electrodes X, Y extend well past the ends of the second partition wall 11.

"Further, there is no support in the prior art for the examiner's assertion that it would have been obvious to modify the second partition wall 11 of *Nakano et al*. to cover ends of the line electrodes X, Y. There is additionally no evidence of record that one of ordinary skill in the art at the time of the invention would recognize what benefit occurs should the second partition wall 11 cover ends of the line electrodes X, Y as is required to make the asserted combination."

APPENDIX 8 at page 59.

Still further applicants stated that:

"Since *Nakano et al*. does not disclose or suggest that the second partition walls 11 cover ends of the line electrodes X, Y as discussed above in relation to the rejection of claims 4 and 7, and since *Seki et al*. is not relied upon as disclosing such a feature, it is respectfully submitted that the combination does not disclose or suggest 'said non-light emitting zone filling portion and said outermost partition covering the non-terminal end'as recited in claim 19."

APPENDIX 8 at page 61.

On July 3, 2003, the examiner finally rejected application claim 4 as being anticipated by Betsui, stating in part that:

"Betsui further discloses in Fig. 10 that the non-light emitting zone filling portion 40 covers the end portions of the first electrodes (11, 12) formed on the front glass substrate 10."

APPENDIX 9 at page 6.

The examiner also rejected application claims 7-9 as being unpatentable under 35 U.S.C. s. 103(a) over the same Betsui reference. In explaining the rejection, the examiner stated:

"Regarding claim 7 Betsui discloses all the limitations the same as of claim 4."

and continuing

"Regarding claims 8 and 9 Betsui discloses in Fig. 10 that the non-light emitting zone filling portion covers the end of the first electrodes which extend past the outermost partition."

APPENDIX 9 at page 8.

In response to the final rejection, an Amendment was filed on November 3, 2003 where application claim 4 was amended as follows:

"wherein said non-light emitting zone filling portion covers *at least one* end portions of said first electrode formed on the front glass substrate." FN19

FN19. An identical amendment was added to application claim 7 by inserting "at least one" prior to "end

portions" in the final phrase of claim 7. **APPENDIX 9** at page 32.

APPENDIX 9 at page 30. (Emphasis supplied)
Among the arguments made to support patentability of application claim 4, as amended, was that

"... the spacer 40 of Betsui fails to cover an *end* portion of any of the electrodes. By providing a spacer 40 adjacent to the sealing material, in the portion of the non-light emitting zone, two adjacent electrodes exist and thus, the energy between them may cause the gas to discharge. Instead by providing the non-light emitting zone adjacent to the outermost partition such that it will cover an end of at least [one] FN20 of the electrodes extending beyond the outermost partition wall, the space below a pair of electrodes is filled with the non-light emitting zone filling portion and thus, prevents discharge."

FN20. See footnote 9 at page 21.

APPENDIX 9 at pages 42-43.
Expanding upon the foregoing argument in seeking allowance of application claims 7-13, it was observed that:

"With regards to claims 7-13, Applicants submit that Betsui fails to disclose a non-light emitting zone filling portion being disposed adjacent to the outermost partition and an empty space defined between the sealing material and the non-light emitting zone filling portion, ... wherein the non-light emitting zone filling portion covers *an end of* at least one end portion of the first electrodes, *as recited* in amended claim 7....

Applicants submit that Betsui fails to disclose a non-light emitting zone filling portion being disposed adjacent to the outermost partition and an empty space defined between the sealing material and the non-light emitting zone filling portion, ... wherein the non-light emitting zone filling portion covers *an end of* at least one end portion of the first electrode, *as recited* in amended claim 7." (Emphasis supplied)

APPENDIX 9 at page 45.

Thus, applicants' arguments limited both application claims 4 and 7 to avoid the Betsui prior art rejections by stating that amended claims 4 and 7 recite, i.e., are limited to "wherein the non-light emitting zone filling portion covers *an end of* at least one end portion of the first electrodes."

A response from the examiner mailed December 4, 2003 advised that *inter alia* application claims 4 and 7 were allowable because

"the prior art of record does not teach or suggest a plasma display panel with all the limitations as claimed and particularly the limitation comprising a non-light emitting zone filling portion covering at least one end portion of the first electrodes on the front substrate."

APPENDIX 10 at pages 6-7.

The examiner also allowed application claims 8 and 9 FN21 because of their dependency from base claim 7.

FN21. Application claims 8-10 (patent claims 6-9) are consistent with the recommended construction of "covers" in that the width of the non-light emitting zone filling portion continues to be recited as covering at least the "length of the end portions of said first electrodes which extend past said outermost partitions."

Recommended Construction

Summarizing the foregoing, the Special Master is of the view that the doctrine of Prosecution History Estoppel applies to the arguments submitted to obtain the allowance of application claims 4 and 7 (claims 2 and 5 of the '731 patent) and requires for proper construction that application claims 4 and 7 be limited to "wherein the non-light emitting zone filling portion covers *an end of* at least one end portion of said first electrodes." Without that interpretation-which is clear from the arguments advanced during prosecution as having been intended by applicants to obtain claim allowance-the claim term does not lend itself to a proper construction.FN22 Therefore, the Special Master recommends that the Court adopt the tentative ruling.

FN22. At column 8, lines 9-19, the '731 patent discloses an embodiment (not shown) where under certain specific conditions all the electrode end portions would not have to be covered. Patent claim 9 appears to encompass such an embodiment. However, patent claim 9 fails to comply with 35 U.S.C. s. 112(4) because it does not "specify a further limitation of the subject matter claimed" in independent claim 5, from which claim 9 depends. As above indicated, proper construction of claim 5 requires there to be a non-light emitting filling portion that covers an end of at least one end portion of the first electrode. The recitation in dependent claim 9 that the first electrodes "extend past said non-light emitting zone filling portion" does not further limit claim 5.

It is recommended that the Court adopt the Special Master's tentative ruling which is consistent with the arguments advanced during prosecution of the ' 731 patent to overcome repeated rejections over prior art including Betsui and obtain the allowance of claims 2 and 5.FN23

FN23. The Special Master is well aware of the admonition of the Federal Circuit to construe claims as written, including the recent decision in Chef America, Inc., 358 F.3d at 1374. However, what is controlling in this instance is for the construction of the term "covers at least one of the electrode end portions that extend into the non-light emitting zone" to be consistent with the arguments by which applicants obtained the allowance of application claims 4 and 7 during prosecution.

I. "*Gas exhaust hole*" (Claims 3, 4, 10 and 11)

Term in Context

In the context of claim 3 of the '731 patent, the italicized term appears as follows:

3. A plasma display panel comprising:

a front glass substrate and a rear glass substrate coupled to each other by a sealing material coated at edges of said front and rear glass substrates;

first and second electrodes on opposing inner surfaces of said front and rear glass substrates so as to cross each other;

a dielectric layer on each of the opposing inner surfaces of said front and rear glass substrates so as to cover said first and second electrodes;

partitions formed on an upper surface of said dielectric layer of said rear glass substrate,

red, green and blue fluorescent substances coated between adjacent ones of said partitions; and

a non-light emitting zone filling portion filling a non-light emitting zone defined between an outermost one of said partitions and the sealing material, said non-light emitting zone filling portion comprising a material used for one of said partitions, wherein a *gas exhaust hole* is formed at an upper surface of said non-light emitting zone filling portion parallel to a lengthwise direction of said outermost partition.

The Parties' Proposed Constructions

Samsung	*Panasonic*
an opening that allows gas to be removed from the plasma display panel	An opening through which gas flows to be exhausted from inside the plasma display panel, the opening having a substantially constant cross-section through the entire length of the non-light emitting zone filling portion.

Tentative Ruling Proposed By Special Master

An opening that allows gas to be removed from the plasma display panel.

Discussion

The parties agree on a portion of the construction of "gas exhaust hole," namely that it's an opening that allows gas to be removed from the plasma display panel. However, the construction proposed by Panasonic would further limit in the proposed construction requiring the opening to have "a substantially constant cross-section through the entire length of a non-light emitting zone filling portion."

Recommended Construction

As Samsung correctly points out there is no basis in the specification or the prosecution history for importing limitations to the term "gas exhaust hole" that may be disclosed in examples included in the specification. The Special Master recommends that the construction proposed by Samsung be adopted by the Court.

J. "*length of the end portions of said first electrodes which extend past said outermost partition*" (Claim 7)

The Parties' Agreed Upon Claim Constructions

The parties have agreed that the claim term "length of the end portions of said first electrodes which extend past said outermost partition" should be understood to mean "The section of the electrode measured from the outermost edge of the outermost partition to the end of the electrodes that extend into the adjacent non-

light emitting zone." The Special Master has made an independent review of the record and recommends that the Court adopt the parties' agreed upon meaning.

VII. *CONSTRUCTION OF '142 PATENT CLAIMS*

A. "*Gas removal channel*" (Claims 1, 6 and 7)

Term in Context

In the context of claim 1 of the '142 patent, the italicized term appears as follows:

1. A method of manufacturing a plasma display panel, comprising:

providing a front glass substrate having first electrodes over which a first dielectric layer is formed;

providing a rear glass substrate disposed opposite said front glass substrate, said rear glass substrate having second electrodes over which a second dielectric layer is formed, the second electrodes not being parallel with the first electrodes;

forming partitions and a non-light emitting zone filling portion, the partitions and non-light emitting zone filling portions being formed on the second dielectric layer;

coating a fluorescent substance between the formed partitions;

forming a seal connecting corresponding edges of the front and rear glass substrates, where the non-light emitting zone filling portion is disposed between at least one of an outermost partition and the seal; and

forming a gas removal channel adjacent to the non-light emitting zone filling portion and between the outermost partition and the seal, wherein forming the *gas removal channel* comprises forming the gas removal channel between the non-light emitting zone filling portion and the first dielectric layer.

The Parties' Proposed Constructions

Samsung	*Panasonic*
a path through which gas can be removed from the plasma display panel	A passage through which gas flows to be exhausted from inside the plasma display panel, the passage having a substantially constant cross-section through the entire length of the non-light emitting zone filling portion.

Tentative Ruling Proposed By Special Master

A path that allows gas to be removed from the plasma display panel.

Discussion

Both parties advance essentially the same arguments as proffered for their construction of the term "gas exhaust hole" previously discussed with respect to claims 3, 4, 10 and 11 of the '731 patent. However, as to

construction of "gas removal channel" in claims 1, 6 and 7 of the '142 patent Samsung offers the further observation that claim 6 of the '142 patent specifically sets out the purpose for the gas removal channel. Additionally, Samsung points to the specification of the '142 patent at column 6, line 65-66 where it is disclosed that "the gas removal channel facilitates the exhaustion of gas from inside the panel." Finally, Samsung argues that the Panasonic proposed construction includes needless limitations corresponding to those which were advanced by Panasonic-and rejected by the Special Master-for the term "gas exhaust hole" in claims 3, 4, 10 and 11 of the '731 patent.

In their response Panasonic repeats arguments that they had previously made for their construction of "gas exhaust hole." In their reply, Samsung observes that both parties are in agreement that the terms "gas removal channel" and "gas exhaust hole" are being used synonymously in the '731 and '142 patents. As Samsung correctly points out, there is no basis in the specification or the prosecution history for importing further limitations to the term "gas removal channel" corresponding to examples included in the specification.

Recommended Construction

The Special Master agrees with Samsung and, consistent with his prior recommendation for "gas exhaust hole," recommends that the Court adopt the tentative ruling corresponding to that construction proposed by Samsung.

B. "*A mask over the portions of the partition material corresponding to the partitions and the non-light emitting zone filling portion*" (Claim 2)

Term in Context

In the context of claim 2 of the '142 patent, the italicized term appears as follows:

2. The method of claim 1, wherein said forming the partitions and the non-light emitting zone filling portion comprises:

coating a partition material on the second dielectric layer;

coating a dry film resist on an upper surface of the coated partition material so as to form *a mask over the portions of the partition material corresponding to the partitions and the non-light emitting zone filling portion;*

removing the partition material not covered by the mask by ejecting abrasion particles.

The Parties' Proposed Constructions

Samsung	*Panasonic*
a covering applied over portions of the material used to form the partitions and the non-light emitting portion that allows selective removal of the material	A patterned material that covers and protects the partitions and non-light emitting zone filling portion so that they are not removed.

Tentative Ruling Proposed By Special Master

A covering applied over portions of the material used to form the partitions and the non-light emitting zone filling portion that shields those portions from removal.

Recommended Construction

It is recommended that the above-identified tentative construction proposed by the Special Master-and accepted by the parties at the Markman hearing on September 6, 2006 (Hearing transcript at page 185)-be approved by the Court.

VIII. *CONCLUSION*

In summary, and based on his proposed findings and conclusions, the Special Master recommends that the Court adopt the final recommendations on claim construction set forth below.

Claim Term	Recommended Construction
Dielectric (claims 1, 3, 4, 10, 11 and 13 of the '237 patent)	A material that does not conduct electricity; an electrical insulator.
one of gradually change and stepwise change; *gradually change* (claims 1 and 10 of the '237 patent)	The change in the amounts of both the dielectric component and the metal component is either "gradually" or "stepwise." If "gradually" the change must be slow not abrupt (as shown in Figure 10). This excludes a layered structure. If "stepwise" the change is through a sequence of at least three relatively more abrupt changes (as shown in Figure 11).
thickness direction of said electrodes extending away from said plate member (claims 1, 4, 10 and 13 of the '237 patent)	The direction of the electrodes substantially perpendicular to the plate member and extending away from the plate member.
black matrix pattern (claim 2 of the '237 patent)	A. black substance having a constant or characteristic arrangement (such as a series of stripes).
Partitions (claims 1, 2, 3, 5, 7 and 10 of the '731 patent and claims 1 and 2 of the '142 patent)	Walls extending from the glass substrate that at least partially define a space further defined by a first and second electrode.
Outermost (claims 1, 2, 3, 5, 7 and 10 of the '731 patent and claim 1 of the ' 142 patent)	Farthest from the center of the glass substrate.
a filling material (claim 1 of the "731 patent)	A substance that displaces discharge gas by occupying a specified space.
non-light emitting zone; (claims 2, 3 and 5 of the '731 patent)	The space between the outermost partition and the sealing material A space distinguished from adjacent parts by a distinctive feature or characteristic
zone (claim 1 of the '731 patent)	
at least one surface of the filling material is in a direct contact with an outermost surface of the	The filling material has a surface that directly contacts the outermost surface of the outermost partition along the length of the space.

outermost partition along the length of said zone (claim 1 of the '731 patent)	
non-light emitting zone filling portion (claims 2, 3, 5, 7 and 10 of the '731 patent)	The amount of substance used for displacing discharge gas by occupying a non-light emitting space
filling (claim 2, line 5, second occurrence, of the '731 patent)	Completely occupying.
covers at least one end portion of said first electrodes (claims 2 and 5 of the '731 patent)	Covers at least one of the electrode end p ortions that extend into the non-light emitting zone.
gas exhaust hole (claims 3, 4, 10 and 11 of the '731 patent)	An opening that allows gas to be removed from the plasma display panel.
length of the end portions of said first electrodes which extend past said outermost partition (claim 7 of the '731 patent)	The section of the electrode measured from the o utermost edge of the outermost partition to the end of the electrodes that extend into the adjacent non-light emitting zone.
gas removal channel (claims 1, 6 and 7 of the '142 patent)	A. path that allows gas to be removed from the plasma display panel.
a mask over the portions of the partition material corresponding to the partitions and the non-light emitting zone filling portion (claim 2 of the '142 patent)	A. covering applied over portions of the material used to form the partitions and the non-light emitting zone filling portion that shields those portions from removal.