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## United States Court of Appeals for the Federal Circuit

05-1237

COMPETITIVE TECHNOLOGIES, INC.,

Plaintiff,

and

THE BOARD OF TRUSTEES OF THE UNIVERSITY OF ILLINOIS,

Plaintiff-Appellant,

v.

FUJITSU LIMITED, FUJITSU GENERAL LIMITED, FUJITSU HITACHI  
PLASMA DISPLAY LIMITED, FUJITSU GENERAL AMERICA, INC., and  
FUJITSU MICROELECTRONICS AMERICA, INC.,

Defendants-Appellees.

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DECIDED: June 15, 2006

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Before LOURIE, RADER, and PROST, Circuit Judges.

LOURIE, Circuit Judge.

The Board of Trustees of the University of Illinois (the “University”) appeals from the decision of the United States District Court for the Northern District of California entering judgment of noninfringement of claims 26, 32, 33, 36, 39, and 40 (collectively the “clamping claims”) of U.S. Patent 5,081,400 (the “400 patent”), invalidity of claims 5-11 of U.S. Patent 4,866,349 (the “349 patent”), and invalidity of claims 21-25, 27-31,

35, and 38 (collectively the “non-clamping claims”) of the ’400 patent in favor of Fujitsu Limited, Fujitsu General Limited, Fujitsu Hitachi Plasma Display Limited, Fujitsu General America, Inc., and Fujitsu Microelectronics America, Inc. (collectively “Fujitsu”). Competitive Techs., Inc. v. Fujitsu Ltd., No. C-02-1673 (N.D. Cal. Sept. 20, 2004) (“Judgment”). We affirm the district court’s claim construction of the term “clamping,” and hence its grant of Fujitsu’s motion for summary judgment of no literal infringement of the clamping claims of the ’400 patent. We also affirm the court’s grant of Fujitsu’s motion for summary judgment of no infringement of those claims under the doctrine of equivalents. In addition, we affirm the court’s grant of Fujitsu’s motion for summary judgment that the non-clamping claims of the ’400 patent are invalid because of anticipation, and that claims 5-11 of the ’349 patent are invalid because of indefiniteness.

## BACKGROUND

The ’349 patent and its continuation, the ’400 patent, are both entitled “Power Efficient Sustain Drivers and Address Drivers for Plasma Panel,” and were issued to the University as assignee. The invention is directed to circuits that create images on a display by selectively exciting tiny pockets of light-emitting gas (“pixels”) with electric current, used in plasma display panels (“PDPs”), electroluminescent panels, and liquid crystal panels. Generally, PDPs comprise two parallel glass plates, separated by a gas-filled gap of pixels. ’400 patent, col. 1, ll. 14-20. In the “standard” PDP configuration, a pixel emits light when its associated electrodes are charged and discharged by “driver” circuits that supply voltages to and remove voltages from those electrodes. Id. The perceived illumination of a pixel can be prolonged by applying an alternating voltage to

the electrodes using a “sustain driver” circuit. Id., col. 1, ll. 31-37. The ’349 and ’400 patents, however, describe a different PDP configuration known as Independent Sustain and Address (“ISA”) that includes the addition of an independent address electrode between the sustain electrodes; because the address electrodes are then connected to address driver circuits, address electrodes are not energized by a sustain driver circuit in ISA panels. Id., col. 1, ll. 65-67, col. 2, ll. 1-2.

Early PDPs consumed a great deal of energy because the energy supplied by the sustain driver circuit to a pixel was normally lost due to each pixel’s inherent capacitance, i.e., the unavoidable capacitance associated with the physical geometry of the PDP’s electrode configuration. Id., col. 2, ll. 21-23, 48-53. The invention of the ’349 and ’400 patents reduced the amount of energy normally lost in charging and discharging the capacitance of the PDPs, describing an improved address driver circuit and an improved sustain driver circuit. Id., col. 2, ll. 30-60.

Fujitsu manufactures PDPs that include an energy recovery circuit that clamp while there is substantial current still flowing in the inductor and that additional current is supplied directly from the power supply. On December 21, 2000, the University filed a complaint against Fujitsu in the United States District Court for the Central District of Illinois alleging infringement of the ’349 and the ’400 patents. Judgment, slip op. at 1. The case was then transferred to the Northern District of California on April 2, 2002. Competitive Techs., Inc. v. Fujitsu Ltd., 374 F.3d 1098, 1099 (Fed. Cir. 2004).

On August 8, 2003, the California district court issued its Claim Construction ruling construing 47 claim terms. Competitive Techs., Inc. v. Fujitsu Ltd., 286 F. Supp. 2d 1161, 1203-1209 (N.D. Cal. 2003) (“Claim Construction Order”). Among its rulings,

the court held that “address means” in claim 5 of the ’349 patent only describes ISA panels, and that the term “sustain means” in that same claim excludes ISA panels, and concluded that claim 5 and dependent claims 6-11 were invalid for indefiniteness. Id. at 1169-70. The court also invalidated claims 5-11 as indefinite on the independent ground that they lacked corresponding structure. Id. In addition, the court construed the term “clamping” in claims 31, 33, 36, 39, and 40 of the ’400 patent to mean “specific structures that activate in response to the inductor current reaching zero upon the panel capacitance being substantially fully charged [or discharged] through the inductor to add a specific reference voltage.” Id. at 1206-08, 1193-94.

On February 16, 2004, Fujitsu filed consolidated motions for summary judgment of invalidity and noninfringement of claims of the ’400 patent. Competitive Techs., Inc. v. Fujitsu Ltd., 333 F. Supp. 2d 858, 861-62 (N.D. Cal. 2004) (“Summary Judgment Order”). The court granted those motions on July 13, 2004. Id. First, based on the University’s concessions following the Claim Construction Order, the court held that there was no genuine dispute that claims 21-40 of the ’400 patent (including the clamping claims) were not literally infringed and that claims 21-24, 27, 35 (a subset of the non-clamping claims), were anticipated by JP No. 58-53344 (“Kanatani”). Id.

Second, the court granted summary judgment that claims 28-31 (the other non-clamping claims outside of the subset) of the ’400 patent were anticipated by Kanatani and that the accused products cannot infringe the clamping claims of the ’400 patent under the doctrine of equivalents. Id. at 861. Specifically, the court held that there was no genuine dispute that Kanatani anticipates claims 28 and 29 (the “forcing voltage claims”) and also claims 30 and 31 (the “maintaining claims”). Id. at 870, 872.

The court also held that there was no genuine dispute that the clamping claims of the '400 patent were not infringed under the doctrine of equivalents, relying on Fujitsu's evidence that, in the accused devices, the amount of "current in the inductor at the time of clamping is substantial – for many of the panels, closer to maximum current than to zero," and that "the amount of additional charging to the panel capacitance after clamping is substantial." Id. at 888. According to the court, a reasonable juror could not conclude that the accused devices met the limitations in the clamping claims. Id. at 879-80. In addition, the court held that the University was precluded from applying the doctrine of equivalents because of prosecution history estoppel, and that, in the alternative, the prosecution history supported a finding of estoppel by disclaimer. Id. at 883, 888.

The district court entered judgment in favor of Fujitsu on September 20, 2004 of noninfringement of claims 21-40 of the '400 patent, including the clamping claims, invalidity of the non-clamping claims of the '400 patent, and invalidity of claims 5-11 claims of the '349 patent. Judgment, slip op. at 1-2. The University timely appealed the judgment of noninfringement as to the clamping claims, and the judgment of invalidity as to the non-clamping claims and claims 5-11 of the '349 patent. We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(1).

## DISCUSSION

Claim construction is an issue of law, Markman v. Westview Instruments, Inc., 52 F.3d 967, 970-71 (Fed. Cir. 1995) (en banc), that we review de novo, Cybor Corp. v. FAS Techs., Inc., 138 F.3d 1448, 1456 (Fed. Cir. 1998) (en banc). We also review a district court's grant of summary judgment without deference, drawing all reasonable

inferences in favor of the nonmovant. Perricone v. Medicis Pharmaceutical Corp., 432 F.3d 1368, 1373 (Fed. Cir. 2005). We review evidentiary rulings of the district court applying the law of the regional circuit. Sulzer Textil A.G. v. Picanol N.V., 358 F.3d 1356, 1363 (Fed. Cir. 2004). The Ninth Circuit reviews evidentiary rulings for abuse of discretion. McEuin v. Crown Equip. Corp., 328 F.3d 1028, 1032 (9th Cir. 2003).

#### I. Infringement

On appeal, the University argues that the court erred in its claim construction of the clamping claims of the '400 patent. According to the University, the claim limitations are open-ended, and should not be narrowly construed to require charging “solely through the inductor,” “no substantial supplemental charging,” and “charging without interruption” until the inductor current reaches zero. The University also challenges the district court’s construction requiring that clamping occur only after the inductor current reaches zero. Further, the University argues that even if the district court’s claim construction were correct, the court erred in granting Fujitsu’s motion for summary judgment of noninfringement under the doctrine of equivalents as to the clamping claims. In addition, the University asserts that the court improperly excluded the University’s expert evidence based on its perceived weight rather than its admissibility, and that the University did not surrender equivalents in which clamping occurred before the inductor current reaches zero.

Fujitsu responds that the district court correctly construed the clamping claims to permit clamping only when the current in the inductor reaches zero. Fujitsu also contends that the court correctly found that Fujitsu’s accused devices clamp while there is substantial current still flowing in the inductor, and therefore did not err in granting

Fujitsu's motion for summary judgment of noninfringement under the doctrine of equivalents as to the clamping claims. In addition, Fujitsu asserts that during prosecution the applicants surrendered devices that clamped before the inductor current reached zero.

We agree with Fujitsu that the district court correctly construed the clamping claims of the '400 patent to permit clamping only when the current in the inductor reaches zero. Our primary focus in determining the ordinary and customary meaning of a claim limitation is to consider the intrinsic evidence of record, viz., the patent itself, including the claims, the specification and, if in evidence, the prosecution history, from the perspective of one of ordinary skill in the art. Phillips v. AWH Corp., 415 F.3d 1303, 1312-17 (Fed. Cir. 2005) (en banc). Here, the construction of the "clamping" claim term that is consistent with the claims and specification is that clamping occurs when the inductor current equals zero, and thus we give those claim limitations that ordinary and customary meaning.

Four of the clamping claims of the '400 patent, claims 26, 32, 33, and 36, require charging and discharging the panel capacitance through an inductor "until the inductor current reaches zero." '400 patent, col. 19, ll. 65-66; col. 20, ll. 4-5, 41-42, 47-48; col. 21, ll. 21-22, 30-31; col. 22, 1-2, 10-11 (emphasis added). Those claims also require "clamping the voltage level of the panel capacitance upon the inductor current reaching zero." Id., col. 20, ll. 31-32; col. 21, ll. 9-10, 24-25, 33-34; col. 22, ll. 4-5, 13-14 (emphasis added). The express language of those claims thus requires that clamping occurs only after the inductor has reached zero. The two other clamping claims, claims 39 and 40, require charging to a desired voltage and discharging to a first voltage

“through an inductor” while first “storing” and then “removing said stored energy from said inductor.” Id., col. 22, ll. 22-58. All six of the clamping claims thus require that the panel capacitance charges and discharges through the inductor until all the energy is removed from the inductor, i.e., the inductor current is zero, and that clamping not occur before the current and energy is removed from the inductor, i.e., the inductor current is zero.

The specification also supports that interpretation of the clamping claims. The Abstract states that the invention is “an improved power efficient sustain driver for plasma panels including an inductor through which the panel capacitance is charged and discharged, and switch means is switched when the inductor current is zero, which permits recovery of the energy otherwise lost in driving the panel capacitance.” Id., Abstract (emphasis added). Further, all the detailed descriptions of the embodiments state that the panel capacitance is charged/discharged through the inductor, until the circuit automatically discontinues charging/discharging through the inductor in response to the inductor current reaching zero. Id., col. 10, ll. 10-44; col. 11, ll. 15-67; col. 12, ll. 17 - col. 13, ll. 31; col. 15, ll. 22-61.

Having affirmed the district court’s claim construction of the term “clamping,” we also affirm its grant of Fujitsu’s motion for summary judgment of no literal infringement of the clamping claims of the ’400 patent. As an initial matter, we note that the district court granted Fujitsu’s motion for summary judgment of no literal infringement of the clamping claims without comparing the accused devices to the claims because the University did not dispute that there was no literal infringement of those claims under the court’s claim construction. Summary Judgment Order, 333 F. Supp. 2d at 862.

However, in granting Fujitsu's motion for summary judgment that there was no infringement under the doctrine of equivalents of the clamping claims, the court held that there was no genuine issue of material fact that, in the accused devices, "the amount of current at the time of clamping is not zero or even close to zero." Id. at 879. We see no error in that determination. Thus, we hold that no reasonable fact finder could conclude that Fujitsu's devices meet the correctly construed "clamping" limitations so as to literally infringe the clamping claims. We therefore affirm the court's grant of Fujitsu's motion for summary judgment of no literal infringement of the clamping claims.

We also affirm the court's grant of Fujitsu's motion for summary judgment of no infringement of the clamping claims under the doctrine of equivalents. "Infringement may be found under the doctrine of equivalents if every limitation of the asserted claim, or its 'equivalent,' is found in the accused subject matter, where an 'equivalent' differs from the claimed limitation only insubstantially." Ethicon Endo-Surgery, Inc. v. U.S. Surgical Corp., 149 F.3d 1309, 1315 (Fed. Cir. 1998). Here, the correctly construed "clamping" term of the clamping claims requires that clamping occur when the inductor current reaches zero. In the accused devices, the clamping occurs while the amount of current is not zero or even close to zero. The difference between when the clamping occurs in the claims and when clamping occurs in the accused devices is not a "subtle difference in degree," but rather a "clear substantial difference or difference in kind" that precludes a finding of infringement under the doctrine of equivalents. Id. at 1321. We conclude that no reasonable fact finder could find that the accused devices meet the limitations in the clamping claims, and we therefore affirm the court's grant of Fujitsu's motion for summary judgment of no infringement under the doctrine of equivalents.

In so holding, we reject the University's argument that the district court abused its discretion in accepting Fujitsu's contentions that for all accused panels, the amount of current in the inductor at the time of clamping is not zero or even close to zero. First, because the University failed to cite the specific evidence that it sought to strike in its motion below, the court did not abuse its discretion in denying the University's motion to strike. Summary Judgment Order, 333 F. Supp. 2d at 862. Second, the court did not abuse its discretion in finding that "the evidence offered by [the University] in opposition to summary judgment, while extensive, is insufficient to show a genuine issue of material fact." Id. at 880. The court rejected some of the University's evidence because the University "ha[d] not met the burden of showing that [its expert's] methodology is reliable rather than speculative," and we defer to that finding. Id. at 881.

Because no reasonable fact finder could conclude that Fujitsu's accused devices infringe the clamping claims of the '400 patent under the correct construction of the claim term "clamping," it is unnecessary for us to reach the remaining claim construction issues. It is also unnecessary for us to address whether the estoppel by amendment or estoppel by disclaimer bars application of the doctrine of equivalents.

## II. Invalidity

On appeal, the University argues that because it has amended each of the claims of the '400 patent that the district court deemed invalid for anticipation, the judgment of invalidity is moot. In addition, the University argues that claims 28 and 29 of the '400 patent are not anticipated by Kanatani. The University also asserts that the court erred in granting Fujitsu's motion for summary judgment of invalidity for indefiniteness as to claims 5-11 of the '349 patent. According to the University, the

claim language is not limited to ISA panels, and therefore the claims are not logically contradictory. The University also argues that the court erred in concluding that the “first switch means” lacks corresponding structure.

Fujitsu responds that the non-final reexamination proceedings cannot moot the court’s invalidity judgment as to the original claims. Fujitsu also asserts that the court did not err in holding that claims 28 and 29 were anticipated, and in determining that claims 5-11 of the ’349 patent were invalid as indefinite. In addition, Fujitsu contends that claims 5-11 are invalid on the independent ground that there is no structure in the specification clearly linked to the “sustain means” limitation of claim 5. Further, Fujitsu asserts that there is no structure that corresponds to the first switch means in claim 5.

We agree with Fujitsu and the district court that there is no genuine dispute that the non-clamping claims of the ’400 patent are invalid because of anticipation. As an initial matter, the non-final reexamination proceedings do not render the judgment of invalidity moot. See In re Bass, 314 F.3d 575, 577 (Fed. Cir. 2002) (“Until a matter has been completed, . . . the PTO may reconsider an earlier action.”). Further, because there is no final judgment from the district court as to the correct claim construction of terms in the proposed reexamination amendments, that issue is not properly before us.

Turning to the issue of anticipation, claims 28 and 29 require a “means” for “applying a forcing voltage” when charging/discharging the panel. ’400 patent, col. 20, ll. 49-58. Pursuant to 35 U.S.C. § 112, ¶ 6, we construe those claims “to cover corresponding structure, material, or acts described in the specification and equivalents thereof.” Here, the University’s own expert defined “forcing voltage” as “the voltage across the inductor.” Summary Judgment Order, 333 F. Supp. 2d at 869. It is

undisputed that in Figure 11, the generic power supply “applies a voltage Vdd across the inductor that is ‘about one-half the magnitude of the voltage level the panel capacitance reaches after charging.’” Id. We therefore agree with the district court that the application of voltage Vdd depicted in Figure 11 is a “forcing voltage,” and affirm the court’s grant of Fujitsu’s motion for summary judgment that claims 28 and 29 are anticipated by Kanatani.

We also agree with Fujitsu that the court did not err in holding that claims 5-11 of the ’349 patent were invalid because of indefiniteness. Every patent specification must “conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.” 35 U.S.C. § 112, ¶ 2 (2000). Claims that are “not amenable to construction” or “insolubly ambiguous” are indefinite. Datamize, LLC v. Plumtree Software, Inc., 417 F.3d 1342, 1347 (Fed. Cir. 2005). “In the face of an allegation of indefiniteness, general principles of claim construction apply. Intrinsic evidence in the form of the patent specification and file history should guide a court toward an acceptable claim construction.” Id. at 1348.

Here, independent claim 5, from which claims 6-11 depend, recites:

An ac plasma panel having panel capacitance and comprising:

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

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

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

'349 patent, col. 17, ll. 9-23 (emphases added). The parties agree that the term “sustain means” describes a non-ISA panel because it requires that address electrodes be energized by a “sustain means,” which can never occur in an ISA panel. Claim Construction Order, 286 F. Supp. 2d. at 1175. The key issue is whether a person of ordinary skill in the art would have understood the limitation “address means” to refer to an ISA panel. We conclude that the only construction of that term that is consistent with the intrinsic evidence is that it describe an ISA configuration.

The language of claim 5 requires the intersection of “X and Y dimension address electrodes” to define “address cells.” '349 patent, col. 17, ll. 11-13. As the district court correctly noted, that language “describes a configuration that is unique to ISA panels, in which separate electrodes are used for addressing and sustaining, resulting in a panel in which the pixels are distinct from the address cells.” Claim Construction Order, 286 F. Supp. 2d at 1171. The specification comports with that understanding because the term “address electrode” is used only in the context of describing an ISA panel. '349 patent, col. 1, ll. 63-65; col. 3, ll. 66-68. Conversely, the description of generic plasma display panels in the specification refers to electrodes as “electrodes” and not “address electrodes.” Id., col. 1, ll. 17-23.

Because the “address means” limitation of claim 5 requires ISA structures, and the “sustain means” limitation of that same claim excludes ISA structures, a person of ordinary skill in the art would be unable to determine the scope of the claims. They are internally inconsistent. We therefore conclude that the court did not err in holding that claims 5-11 are invalid because of indefiniteness. It is unnecessary for us to address

whether those claims are invalid on the independent ground that there is no structure in the specification linked to the sustain means limitation of claim 5.

We have considered the University's remaining arguments and find them to be unpersuasive.

### CONCLUSION

We affirm the district court's claim construction of the term "clamping," and hence its grant of Fujitsu's motion for summary judgment of no literal infringement of claims 26, 32, 33, 36, 39, and 40 (the clamping claims) of the '400 patent. We also affirm the court's grant of Fujitsu's motion for summary judgment of no infringement of those claims under the doctrine of equivalents. In addition, we affirm the court's grant of Fujitsu's motion for summary judgment that claims 21-25, 27-31, 35, and 38 (the non-clamping claims) of the '400 patent are invalid because of anticipation, and that claims 5-11 of the '349 patent are invalid because of indefiniteness.