United States District Court,
D. Massachusetts.

WANG LABORATORIES, INC,
Plaintiff.
v.
OKI ELECTRIC INDUSTRY CO., LTD,
Defendant.

No. CIV.A. 93-11882-RCL

July 31, 1998.

Patentee brought action against licensee, seeking to recover royalties pursuant to licensing agreement granting permission to use two patents for computer memory modules, and licensee filed counterclaim, alleging that patents were invalid and did not cover its modules. After case was referred to special master, parties filed motions for partial summary judgment. The District Court, Lindsay, J., held that: (1) patentee did not violate licensing agreement's "most favored licensee" clause; (2) licensee's module was infringing; and (3) royalties were due to patentee until licensee gave patentee effective notice that it was not paying royalties because underlying patents were invalid.

Motions granted in part and denied in part.

Patentee had sufficient notice that licensee was challenging validity of underlying patents when licensee raised invalidity defense in its answer in patentee's action to recover royalties, permitting licensee to challenge validity of patents with respect to royalties accrued after that date, rather than when patentee received letter from licensee, indicating that it refused to pay royalties because it had reconsidered patents' scope.

Paul F. Ware, Goodwin, Procter & Hoar, Boston, MA, Robert F. Ruyak, Kenneth M. Reiss, Jonathan G. Graves, Howrey & Simon, Washington, DC, Florinda J. Iascone, Wang Laboratories, Inc., Billerica, Scott L. Robertson, Thomas J. Scott, Thomas J. Scott, Jr., Hunton & Williams, Washington, DC, for Plaintiff.

Gary D. Wilson, Wilmer, Cutler & Pickering, Suzanne G. Ramos, Wilmer, Cutler & Pickering, Washington, DC, Dennis J. Kelly, Burns & Levinson, Boston, MA, for Defendant.

MEMORANDUM AND ORDER ON PARTIES' OBJECTIONS TO THE REPORT OF THE SPECIAL MASTER

LINDSAY**, District Judge.**

The plaintiff, Wang Laboratories ("Wang"), seeks summary judgment on its claim of entitlement to royalties

from the defendant, Oki Electric Industry Company ("Oki"), pursuant to a licensing agreement granting Oki permission to use two Wang patents for computer memory modules. Oki contends that it does not owe royalties to Wang because: (1) Wang's patents are invalid and (2) Wang's patents do not cover Oki's modules. Oki also seeks partial summary judgment in its favor on grounds that the licensing agreement between Wang and Oki is unenforceable due to a breach of the agreement by Wang. On November 16, 1995, the court bifurcated Oki's claims, holding in abeyance Oki's claim that the patents are invalid pending a determination of whether Oki's modules are covered by the Wang patents. By separate order dated September 6, 1996, the court referred the case to a special master, Alan Kirkpatrick. The special master conducted a non-jury evidentiary proceeding on December 10-12, 1996, and issued a report on May 14, 1997.

The special master carefully analyzed the issues the parties raised in the motions referred to him. The court agrees with a number of the special master's findings, but reaches different conclusions with respect to others. The areas of agreement and disagreement are set forth below, in response to the parties' objections to the special master's report.

Facts

On April 7, 1987, Wang (through James Clayton, a Wang employee) obtained United States patent # 4,656,605 (the " '605 patent") for a "single in-line memory module" or "SIMM." On February 23, 1988, Wang obtained Patent # 4,727,513 (the " '513 patent") on a continuation of the '605 application. FN1

FN1. The differences between '605 and '513 patents are not material to this dispute, and therefore the two patents are dealt with together in the following discussion.

In its first application for what ultimately was issued as the '605 patent, Wang described a module to hold computer memory chips. Wang initially sought to cover several types of memory module with its patent application, but the patent and trademark examiner rejected Wang's first effort as overbroad. A second version met the same fate. On its third and successful attempt, Wang restricted its application to cover just memory modules holding chips in a single row (*i.e.,* the "Leaded Classic" and, arguably, a version without leads called the "Leadless Classic"). As so written, the patent and its continuation excluded two other types of modules, the "3-Pack" and the "Lateral." Each of the excluded types houses more than a single row of chips.

[1] Having foregone its claims to multiple-row module coverage, Wang could not later assert that the '605 and '513 patents covered this type of module. That is because the doctrine of "prosecution history estoppel" precludes a patentee from regaining, through litigation, coverage of subject matter relinquished during prosecution of the patent application. *See* Zenith Labs., Inc. v. Bristol-Myers Squibb Co., 19 F.3d 1418, 1424 (Fed.Cir.1994); *citing* Loctite Corp. v. Ultraseal Ltd., 781 F.2d 861, 870 (Fed.Cir.1985).

Nevertheless, Wang brought suit in the United States District Court for the Eastern District of Virginia against Toshiba Corporation, alleging infringement of the '605 and '513 patents by both single and multiple-row module types. Wang also initiated an infringement action against Oki and others with the International Trade Commission ("ITC"), based on sales of single row, 3-Pack, and Lateral modules. Oki and Wang settled the ITC dispute by agreeing to a non-exclusive licensing agreement on March 25, 1992. The instant action arises from that licensing agreement.

The terms of the licensing agreement included the following: in addition to a single $850,000 payment to Wang, Oki covenanted to pay running royalties (*i.e.,* royalties triggered by actual sales as they occurred) to Wang on sales of any modules subject to "one or more valid and unexpired claims" of the '605 and '513 patents. Even though Oki had raised a prosecution history estoppel defense in the ITC action as to multiple-row modules, Oki nevertheless consented in the licensing agreement to pay royalties on sales of both single and multiple-row modules occurring after January 1, 1992.

On May 10, 1993, on appeal from a ruling of the district court in the litigation between Toshiba and Wang, the Court of Appeals for the Federal Circuit held that Wang had relinquished coverage of multiple-row module types, including the 3-Pack and Lateral, during the prosecution of the '605 and '513 patents. *See* Wang Labs., Inc. v. Toshiba Corp. et al., 993 F.2d 858, 868 (Fed.Cir.1993), *reversing in part Wang Labs, Inc. v. Toshiba Corp.,* CIV. 90-1477-A, 1991 WL 333696 (E.D.Va. Aug.23, 1991). Realizing that the Federal Circuit's *Toshiba* decision was likely to bind Wang in its dealings with Oki, Wang informed Oki that it no longer owed royalties on sales of 3-Pack and Lateral modules after the date of the Federal Circuit decision.

Oki continued to pay royalties on both single row modules with leads ("Leaded" modules) and on single row modules without leads ("Leadless modules") marketed up to September 30, 1992. However, Oki announced in a letter to Wang dated May 27, 1993, that it would no longer pay royalties on Leadless modules marketed on or after October 1, 1992. Oki stated that it had "reconsidered" the scope of the Wang patents and believed that the Oki Leadless modules were not covered under its licensing agreement with Wang.

Standard of Review

By consent of the parties, the order appointing the special master in this case established the standards by which the special master's findings would be reviewed. *See* Stauble v. Warrob, Inc., 977 F.2d 690, 694 (1st Cir.1992) (noting that parties may consent to have master perform judicial functions). As set forth in that order, the special master's findings on the issues of infringement and patent construction are reviewed herein to determine whether they are clearly erroneous or contrary to governing law. With regard to the vitality of the contract between Wang and Oki, however, the order appointing the special master required the special master to issue a report and recommendation, in the manner prescribed for magistrate judges in 28 U.S.C. s. 636(b)(1)(B) (authorizing magistrate judges to conduct hearings and issue proposed recommendations and findings of fact). The court thus reviews the contract issue *de novo* in the discussion below.

"Most Favored Licensee" Claim

[2] In addition to the primary issue of patent coverage, Oki raises a threshold challenge to its contract with Wang. Oki claims that Wang violated a "most favored licensee" ("MFL") provision in the Wang-Oki licensing agreement pursuant to which Oki agreed to pay royalties based on its use of the '605 and '513 patents. The "most favored licensee" provision required Wang to notify and to grant equally beneficial terms to Oki should Wang provide another licensee with more favorable running royalty rates or a more favorable running royalty base (*i.e.,* one calculated on the basis of fewer patents).

In support of its claim Oki asserts that, on June 21, 1993, Wang entered into a more favorable license agreement with Hyundai involving the '605 and '513 patents (the "June 21 agreement"). Pursuant to that agreement, Hyundai's royalties were based on sales of single-row modules only, with Wang reserving the

right to collect royalties on multiple-row modules should the *Toshiba* decision be reversed. The June 21 agreement therefore provided Hyundai with a more favorable royalty base than the one to which Oki originally had agreed.

Wang contends that the June 21 agreement did not disadvantage Oki, because Wang had relieved Oki of the obligation to pay royalties on 3-Pack and Lateral modules as of May 10, 1993. The June 21 agreement, however, contained language to the effect that it ran retroactively from January 1, 1993 forward to December 31, 1994.FN2 Due to this allegedly retroactive time frame, Wang's agreements with Hyundai and Oki overlapped (on paper, if not in fact) for slightly over five months before their royalty bases were made equal.

FN2. Beginning January 1, 1995, the June 21 agreement proceeded on an ordinary running-royalty basis, with payments made after each royalty-incurring event.

The June 21 agreement required Hyundai to make a lump sum payment of $750,000 to Wang, which payment the parties termed a "pre-paid running royalty"-that is, an arrangement in which money is paid up front and then drawn against as royalties accrue (as opposed to a periodic accounting and payment). Despite this contract terminology, common sense dictates that this sum could only have been "pre-paid" for events after June 21, 1993. Prepayments could not be made for uses of the patents before the June 21 agreement was concluded. Therefore, some portion of the lump sum was intended to compensate Wang for past uses of its patent.

The MFL dispute turns on how one characterizes that portion of the lump sum intended to cover past events. The special master viewed the June 21 agreement as retroactively affording Hyundai royalty terms more favorable than those Oki enjoyed. Consequently, the special master deemed Wang's claims against Oki unenforceable due to Wang's breach of the MFL clause. Upon *de novo* consideration, however, the court determines that the relevant precedents and the language of the contract give rise to the conclusion that the portion of the lump sum payment relating to the period before June 21, 1993 represented a settlement for past infringement, rather than retroactive royalties. Therefore, the court disagrees with the special master's conclusion as to this issue and concludes that Wang did not violate Oki's MFL provision by dint of its contract with Oki.

[3] [4] Monies received as a settlement for past tortious use of patents are not the equivalent of royalties. *See* Raytheon Mfg. Co. v. Radio Corp. of America, 286 Mass. 84, 190 N.E. 1, 5 (1934) ("The word 'royalty' commonly imports payment for permissive or lawful use ... and not damages for a pirated or illegal appropriation .... Damages for infringement may sometimes be ascertained by reference to royalty as a measure of value for the unlawful use, but damages are not thereby transmuted into royalty.") (citations omitted). Since a settlement is not a royalty, imposing a penalty for past tortious uses that is more favorable than the royalty rate does not violate an MFL clause.

Nearly all the relevant court decisions addressing this question are summarized in Studiengesellschaft Kohle m.b.H. v. Novamont Corp., 704 F.2d 48 (2d Cir.1983). In that case, the Court of Appeals for the Second Circuit considered whether a settlement for past infringement that breaks down to a lower rate than the rate at which royalties are paid violates an MFL clause. The Second Circuit acknowledged that truly parallel treatment of licensees and past infringers might require "that the licensor must insist upon an exaction from the later licensee for past infringement which is equivalent to the royalty terms governing the [MFL] during

the same period, or must make a refund ...." Id. at 52. However, the *Studiengesellschaft* court concluded: "MFL clauses do not seem to have been drawn so as to compel that degree of equivalency...." *Id*. (citing Rothstein v. Atlanta Paper Co. ., 321 F.2d 90, 96 (5th Cir.1963); Searle Analytic, Inc. v. Ohio-Nuclear, Inc., 398 F.Supp. 229, 231 (N.D.Ill.1975); Universal Oil Prods. Co. v. Vickers Petroleum Co., 41 Del. 238, 19 A.2d 727, 729 (1941); Raytheon, 190 N.E. at 5). *But see* Shatterproof Glass v. Libbey-Owens Ford Co., 482 F.2d 317 (6th Cir.1973) (requiring that settlement be equivalent to royalty rate where the patentee's tolerance of infringement created an implied license agreement).FN3

FN3. Oki argues that *Studiengesellschaft* depended on a finding that the patent licenses at issue were not substantially similar. It appears, however, that the dissimilarity of the licenses at issue was not central to the holding of that case. Instead, the Second Circuit focused quite clearly on the general issue of whether MFLs and later licensees must stand on equal footing and decided that such equivalence is not required, regardless of the particular terms of the licensing agreement.

[5] Courts confronting this issue have been motivated in part by a desire to encourage settlements for patent infringement. Indeed, enabling patent owners to negotiate settlements independent of the MFL rate fosters resolution of patent infringement disputes without recourse to the courts. Moreover, this policy safeguards the interests of MFLs. *See* Searle, 398 F.Supp. at 231 (*quoting* Vickers, 19 A.2d at 727). A non-exclusive license--like the one involved in the instant case and the relevant precedents--confers no standing on a licensee to protect the patent against other infringers. *See* Kalman v. Berlyn Corp., 914 F.2d 1473, 1481 (Fed.Cir.1990). Each non-exclusive licensee therefore must rely on the patent holder to prevent competition, with no legal redress if the patent holder chooses not to act. Forcing a patent owner to resolve license infringements only at the risk of forfeiting a portion of the royalties paid by an MFL could actually create a disincentive to protect the MFL patent interest, giving rise to a situation in which infringers would compete unchecked against MFLs.

In addition, there is authority to the effect that the concepts of both royalty and license are necessarily prospective, rendering a "retroactive royalty agreement" a legal nullity. The courts that have dealt with this issue have concluded that a license is a prospective grant of permission to use the patents. *See, e.g.,* Vickers, 19 A.2d at 727 ("It is somewhat difficult to understand what is meant by a 'retroactive implied license' ... [A] license in its very nature is prospective in operation.")

Finally, the language of the June 21 agreement supports the conclusion that the pre-June 21, 1993 portion of the lump-sum payment was intended to settle Wang's claims for past infringement. Section 4 of the June 21 agreement, titled "Release," states that, effective upon payment of the lump sum, Wang "irrevocably releases Licensee ... from any and all claims of past infringement." Section 5.2, describing the lump sum, states that Hyundai shall pay the $750,000 to Wang "as consideration for the release granted to Licensee herein."

For the reasons stated above then, the court disagrees with the findings of the special master and finds that the portion of Hyundai's lump sum payment to Wang attributable to the period before June 21, 1993 represented a settlement for past infringement, rather than royalties calculated at a rate more favorable than that which Oki enjoyed. As such, the lump sum payment did not violate Wang's contract with Oki, and Wang is entitled to seek royalties from Oki pursuant to that contract.

Patent Coverage

Whether Oki must pay its outstanding royalties depends on whether its modules are covered by the Wang patents identified in the June 21 agreement.FN4 Oki concedes that its Leaded modules are covered, but contends that its Leadless modules do not fall within the coverage of the '605 and '513 patents. The parties have stipulated that the critical determinants of whether Oki's Leadless modules are covered are: (1) length and width of the substrate; (2) support means for holding the module at an angle with respect to a printed circuit motherboard; and (3) the presence of memory chips packaged in plastic leaded chip carriers. The special master conducted an evidentiary proceeding on the issue of patent coverage. His report concluded that Oki's modules conform to the Wang patents with respect to their support means and chip carriers, but that the substrate of the Oki modules exceeds the length specified in the '605 and '513 patents.

FN4. In her Report and Recommendation dated October 11, 1994, Magistrate Judge Bowler held that Oki cannot recover sums already paid, because the Wang-Oki contract provided for no refunds, "for any reason." This court has upheld Judge Bowler's recommendation against two appeals.

[6] [7] [8] [9] Infringement analysis requires two steps. First, a court must construe the patents involved, without regard to the accused device. *See* General Mills, Inc. v. Hunt-Wesson, Inc., 103 F.3d 978, 981 (Fed.Cir.1997) (citing Markman v. Westview Instruments, Inc., 52 F.3d 967, 976 (Fed.Cir.1995) (" *Markman I* "), *aff'd,* 517 U.S. 370, 384, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996) (" *Markman II* ")). Second, the claim is compared to the accused device to determine whether all of the claim limitations are present, either exactly or by a substantial equivalent. *See* General Mills, 103 F.3d at 981. The first step, claim interpretation, is a matter of law. *See* Markman I, 52 F.3d at 979. The second step, infringement analysis, is a question of fact. *Id.* Absent an agreement by the parties, a district court would review the special master's claim construction *de novo,* as a matter of law. *See* Stauble, 977 F.2d at 697. However, because the parties here agreed that the special master's claim construction would be reviewed for "clear error," (and the order appointing the special master incorporated that agreement) that standard of review will apply, as it will to the special master's findings of fact in his infringement analysis.

Construction of the '605 and '513 patents

[10] To ascertain the meaning of a patent, a court must begin its analysis with the patent claims, the specification, and the prosecution history, if in evidence. *See* General Mills, 103 F.3d at 981 (citing Vitronics v. Conceptronic, Inc., 90 F.3d 1576, 1582 (Fed.Cir.1996)); Markman I, 52 F.3d at 979. As the special master recognized, the prosecution history of the '605 patent reveals that Wang's patent coverage narrowed in scope over the course of the approval process, with a progressive emphasis on space efficiency.

Briefly stated, the history is as follows. The patent and trademark examiner rejected Wang's first set of three claims on grounds of unoriginality and of overbreadth, as discussed above. Wang then submitted a second set of claims, which also were rejected as insufficiently distinguishable from prior art. In particular, in the second application, Wang struggled to differentiate its patent from an existing one issued to Cislaghi. The Cislaghi patent described a memory module with nine chips in multiple rows as well as a parity-checking chip located on a separate module. In the second application, Wang specified a "single row ... of chips, packaged in ... carriers." These chip packages were to be mounted on a substrate with etchings to interconnect the data and control lines, enabling bytes of digital information to be read to and from the module through terminals at the module edge. Wang said the module "is installed at ... [an] angle" to the motherboard, and that many modules could be installed together due to the module's very narrow thickness. By mounting the chips on the substrate, Wang claimed to have achieved an eightfold increase in memory

density. It distinguished its modules from prior art on the basis of the chip carriers, printed (not ceramic) substrate, angled mount, additional error chip and independent addressing to that chip. Wang stated that "the purpose of [Wang's] invention is to conserve space on a memory board."

Despite these changes, Wang's second application was rejected due to the existence of a similar design with a ceramic chip package. Wang then filed a single third claim, claim 7. Claim 7 was approved as the '605 patent. It covers: "A memory module comprising:

* eight data memory chips, each with input/output, control and address inputs, and each packaged in a plastic leaded chip carrier;

* a ninth memory chip for storing error detection and correction information associated with the eight chips above, with input/output, control and address inputs interconnected with those on the main eight, and a control input to permit reading and writing out of the ninth chip at times other than when the bytes of digital information are written into or read out of the chips, to facilitate error correction and detection;

* an epoxy-glass printed circuit board substrate having a length and width adequate for mounting thereon only in a single row said nine chips and for interconnecting their control and address inputs so that bytes of digital information may be input to or output from the memory chips one at a time;

* the substrate including thirty terminals for providing access to the data inputs and outputs, control inputs, address inputs of the nine chips, to enable reading and writing bytes of digital information as well as the correction/detection information into eight of them;

* support means for supporting the memory module at an angle with respect to the printed circuit motherboard when the memory module is installed thereon; and

* eight decoupling capacitators, mounted on the substrate and connected between the nine memory chips, for suppressing transient voltage spikes between chips."

Wang added several features added in claim 7. Wang limited the number of capacitators to eight, emphasized that chips were to be "only" in a single row, and, most important, described a substrate with "a length and width adequate for mounting [the chips] only in a single row."

Wang's argument in support of the '605 (final) application stressed its novelty and unique combination of elements. Wang attempted to differentiate its invention from existing modules by pointing to its epoxy-glass circuit board, and "RAM chips encased in PLCCs" (plastic leaded chip carriers). Wang also argued that the existence in the market of exact copies of its highly publicized invention supported the inference that Wang's design in fact combined elements in a unique way.FN5 Finally, Wang reiterated its emphasis on space efficiency, claiming that

FN5. The special master concluded that the evidence of "copies" that Wang submitted, in fact, covered a range of designs, so that a person investigating the patent's prosecution history could not have determined precisely what design the patent was claimed to cover.

by using the small D-RAMS and small capacitators, module 30 may have physical dimensions in the order

of three-quarter inch by three inches while providing large memory capacity ... sixty-four thousand words on the module are presently possible and 256,000 bytes are feasible with [module 30] being only slightly larger.... [Chip function] may be accomplished via only thirty terminals .... Use of module 30 ... enables an eight-fold density increase.
After analyzing the prior claims and the final version, the special master was persuaded that the distinguishing aspect of the '605 patent- *i.e.,* the element responsible for the decision to grant the patent-was the limited length of the substrate. Limiting the length comported with space efficiency goals, he concluded, because more chips are packed into less space.

Based on his conclusion that substrate length was the key to approval of the patent, the special master determined: "[F]or coverage to exist a set of nine chips of given size must be packaged only in a single row and the length and width of the module must be limited to only those dimensions needed to mount the nine chips." To the extent that it determines that nine chips in a single row are essential for coverage, this finding is consistent with the rulings of other courts that have construed the '605 and '513 patents. *See* Toshiba, 993 F.2d at 868; *Wang v. Mitsubishi Electronics America,* Nos. CV 92-9648 & 92-3891, 1994 WL 782694, (C.D.Cal. May 9, 1994) *("Mitsubishi I"*). What distinguishes the special master's conclusion from prior decisions is the emphasis he places on the word "adequate," within the phrase "length and width adequate for mounting nine chips." The special master interpreted the term "adequate" to mean "barely sufficient" (citing Webster's Dictionary). According to the special master, to be covered by Wang's patents, the total length of a chip's substrate may not surpass the minimum length needed to hold nine chips.

This determination, although the product of diligent inquiry, directly contravenes a recent decision by the Court of Appeals for the Federal Circuit. In Wang v. Mitsubishi Electronics America, 103 F.3d 1571 (Fed.Cir.1997)(" *Mitsubishi III* "), the Federal Circuit entertained an appeal involving the same patents at issue in the case at bar. The modules before the Federal Circuit, manufactured by Mitsubishi, had the same plastic leaded chip carriers, number of chips, and, most importantly, the same substrate size as Oki's. The Federal Circuit interpreted the '513 patent as permitting extension of the substrate to a length equal to that of Oki's module, which is approximately one half inch longer than the substrate length described in Wang's patents. *See* Mitsubishi III, 103 F.3d at 1583. The special master's finding that the patent will not permit such extension therefore is contrary to governing law.

In *Mitsubishi I,* the district court granted summary judgment for Mitsubishi on the issue of whether its modules infringed the '605 patent, because that patent specifies eight capacitators and Mitsubishi's modules had nine. *See* Mitsubishi I, 1994 WL 782694 at * 8. The district court reserved judgment on substrate length, however, with respect to the remaining '513 claims. *Id.* at * 12.FN6 A jury trial followed, and the jury found that the Mitsubishi modules did infringe the '513 patent (*i.e.,* modules of the same length as Oki's do infringe Wang's patents). The trial judge denied a motion for judgment as a matter of law. In denying that motion, the court stated that: "The substrate size of the leadless SIMMS literally meets the claim limitation because the substrate cannot accommodate more than nine memory chips and their required interconnectors." *Wang v. Mitsubishi Electronics America,* Nos. CV 92-4698 & CV 92-3891, 1995 WL 491434, * 10 (C.D.Cal. March 7, 1995) ("*Mitsubishi II*"). This statement reflects the court's focus on the number of chips capable of being mounted on the substrate, rather than on space efficiency *per se*.

FN6. Because all of Oki's modules have eight capacitators, the difference between the '513 and '605 patents is not relevant for purposes of this case, and the *Mitsubishi* substrate discussion should be taken as pertaining to both patents. *See supra* note 1.

On appeal, the Federal Circuit rejected any notion that the substrate length could not surpass a "bare minimum" adequate for mounting nine chips. *See* Mitsubishi III, 103 F.3d at 1583. The Federal Circuit held that "[the patent claim] language does not foreclose extension of the substrate, for some purpose, where the extra space cannot hold additional chips." *Id.*

[11] [12] Oki contests the precedential value of *Mitsubishi III* for purposes of the present dispute. It is true that, as a general rule, the Federal Circuit has declared *stare decisis* to be generally inappropriate on the issue of patent validity. *See* Mendenhall v. Cedarapids, Inc., 5 F.3d 1557, 1569-70 (Fed.Cir.1993). *Mendenhall* reflects the general patent law principle that a finding that a patent is valid usually has no estoppel value against subsequent challenges to the patent, but a single holding of invalidity is final against the patentee. *See* HERBERT F. SCHWARTZ, PATENT LAW AND PRACTICE 46 (2d ed.1995). Although patent validity is a question of law, *see* Graham v. John Deere Co., 383 U.S. 1, 17, 86 S.Ct. 684, 15 L.Ed.2d 545 (1966); Avia Group Intern., Inc., v. L.A. Gear California, Inc., 853 F.2d 1557, 1561 (Fed.Cir.1988), prior adjudications of validity do not control later decisions involving the same patent. *See* Mendenhall, 5 F.3d at 1569-70. Oki contends that interpretations of a patent likewise are devoid of precedential value for subsequent litigation.

Mendenhall, however, is not apposite authority on the issue of what role prior interpretations of the patent must play in subsequent decisions. That issue was addressed in Markman v. Westview Instruments, Inc., 517 U.S. 370, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996) (" *Markman II* "), where the Supreme Court affirmed the Federal Circuit's holding that interpretation of a patent is a matter of law, not fact. In that case, the Supreme Court indicated a strong preference for the promotion of interjurisdictional uniformity by applying principles of *stare decisis* to claim construction. *See* id. at 390-91, 116 S.Ct. 1384.

[13] District courts are bound to follow substantive patent law as decided by the Federal Circuit. *See* Panduit Corp. v. All States Plastic Mfg. Co., 744 F.2d 1564, 1573 (Fed.Cir.1984), *implicitly overruled on other grounds by* Richardson-Merrell, Inc. v. Koller, 472 U.S. 424, 432, 105 S.Ct. 2757, 86 L.Ed.2d 340 (1985). Therefore, the Federal Circuit's interpretation of the '605 and '513 patents in *Mitsubishi III* is binding on this court. *See* ELF Atochem North America, Inc. v. Libbey-Owens-Ford Co., Inc., 894 F.Supp. 844, 860 (D.Del.1995) ("In *Markman,* the Federal Circuit stated, in no uncertain terms, that it would have the final say as to the meaning of words in the claim of a patent.").

Adopting the Federal Circuit's construction of the Wang patents comports with the purpose for which a special appeals court for patent cases was created. In *Markman II,* the Supreme Court stated: "[W]e see the importance of uniformity in the treatment of a given patent as an independent reason to allocate all issues of construction to the court ... the limits of a patent must be known for the protection of the patentee [and] the encouragement of the inventive genius of others." Markman II, 517 U.S. at 390, 116 S.Ct. 1384; *see also* Markman v. Westview Instruments, Inc., 52 F.3d 967, 979 (Fed.Cir.1995) (*"Markman I")* (citing uniform treatment and availability of Supreme Court review as benefits of treating interpretation as matter of law).

[14] Oki attempts to circumnavigate *Markman I* and *Markman II* by arguing that, where extrinsic evidence is necessary to resolve a dispute as to the meaning of a patent term, patent construction becomes a mixed question of law and fact. Such fact-based holdings, according to Oki, have no precedential value. *See Defendant's Response to Plaintiff's Appeal from the Special Master's Report* at 18 (citing Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582 (Fed.Cir.1996); Palumbo v. Don-Joy Co., 762 F.2d 969, 977 (Fed.Cir.1985)). The Federal Circuit, however, expressly overruled *Palumbo* and similar precedents in

Markman I, rejecting any implication that claim construction might raise factual issues for a jury. *See* Markman I, 52 F.3d at 977-8. Claim construction therefore is a question of law, regardless of the need for extrinsic evidence. *See id*. at 980 ("The court may ... receive extrinsic evidence."); *accord* Vitronics, 90 F.3d at 1582.

Oki further attempts to escape the import of *Markman* by arguing that, because the decisions in *Mitsubishi II* preceded *Markman I,* claim construction throughout the *Mitsubishi* litigation was treated as a matter of fact rather than law. This argument is without merit. Although in *Mitsubishi* the issue of infringement was tried to a jury, the district court in that case clearly appreciated that claim interpretation was a task allocated to the court. In deciding Mitsubishi's request for judgment as a matter of law, the district court stated that "claim construction is a legal determination." Mitsubishi II, 1995 WL 491434 at * 9, and proceeded to interpret the claims. On appeal, the Federal Circuit noted the then-rendered opinions in *Markman I* and *Markman II* and articulated its own interpretations of the patent. *See* Mitsubishi III, 103 F.3d at 1582-83. That interpretation thus has the same weight as any other decision on a question of law by the Federal Circuit.

Finally, Oki complains that it never has had the chance to litigate the matter of claim interpretation (due to the denial of its motion to intervene as an *amicus curiae* in the *Mitsubishi* litigation), and that the substrate length issue was briefed far more superficially in the various *Mitsubishi* actions than in the instant case. Despite its inability to participate in the *Mitsubishi* litigation, Oki is nevertheless bound by the rule of law established in *Mitsubishi III*. That rule is that Wang's patents permit substrate extension "where the extra space cannot hold extra chips." Mitsubishi III, 103 F.3d at 1583; *see* E.E.O.C. v. Trabucco, 791 F.2d 1,2 (1st Cir.1986) (" *Stare decisis,* unlike the doctrines of res judicata and collateral estoppel, is not narrowly confined to parties and privies .... [T]he doctrine is broad in its impact, reaching strangers to the earlier litigation."); *see also id*. at 4 ("[W]e would not relish the prospect of evaluating the effectiveness of factual presentation and argument as a precondition of ... determining whether or not to accord *stare decisis* effect to an issue that has been raised and decided."). Based on the foregoing conclusion that the holding of *Mitsubishi III* established a binding principle of law, this court necessarily adopts the Federal Circuit's construction of Wang's '605 and '513 patents as the definitive interpretation of those patent claims.

Factual Issue of Coverage

Determination of whether there has been infringement is a process of comparison: are the features described in the patent found in what is alleged to infringe? *See* 3 PETER D. ROSENBERG, PATENT LAW FUNDAMENTALS s. 17.07(1997 rev. ed.). The Oki Leadless Module differs from the module described in Wang's patents in only two respects. First, the Oki version has leads removed, leaving thirty terminal pads for electrical connection to circuits of the motherboard. Second, the Oki module is longer because it has extensions ("ears") at the ends of the module.FN7 These extensions have holes that permit electrical connection to the motherboard via insertion into a socket, which provides extra support but reduces space efficiency. To determine the issue of infringement, it is necessary to examine whether these different features nonetheless fall within the patent's specifications.

FN7. Wang specified likely dimensions of three inches long by three-quarter inch. The total length of the Oki Leadless module exceeds the Wang specification by half an inch.

a. *Substrate Length*

[15] The parties are divided as to what portion of the module comprises the "substrate" for purposes of determining whether Oki's substrate exceeds the length limitation specified in Wang's patents. Using the entire length of the Oki module as the relevant definition of substrate, the special master determined that Oki's modules are too long to be covered by the Wang patents at issue.

As discussed above, the court is bound by the Federal Circuit's prior interpretation of these patents. In the *Mitsubishi* litigation, the district court employed a definition of substrate based on its function, stating: "[The] substrate is the printed circuit board area required to hold the nine memory chips, the interconnections, and thirty terminals." Mitsubishi II, 1995 WL 491434 at * 9. The district court therefore excluded the "ears" from its definition of the substrate. By affirming that decision in *Mitsubishi III,* the Federal Circuit implicitly adopted a construction of the term "substrate" to mean only that portion of the module needed to hold chips, connections, and terminals. Because the special master used a definition of substrate that is inconsistent with the definition established in *Mitsubishi III,* his findings are based on an error as to governing law.

Nevertheless, Oki urges this court to view the substrate as coextensive with the entire length of the module, as did the special master, and to hold that Oki's substrate therefore exceeds the length specified in Wang's patent. It is clear from the *Mitsubishi* litigation that the portion of Oki's module that extends past the chip area is superfluous to the function of chip support and cannot properly be considered part of the "area required to hold the nine memory chips, the interconnections, and thirty terminals." Mitsubishi II, 1995 WL 491434 at *9. Indeed, the excess space is not capable of supporting an extra chip. The holes for socket insertion in the "ear" portion of the Oki substrate occupy any extra space that might otherwise be available for chips.

Using the functional definition of "substrate" explained in *Mitsubishi II* and affirmed by the Federal Circuit, the court does not accept the special master's conclusion that the term "substrate" includes the entire length of the module. Instead, the court concludes that Oki's modules do not exceed the substrate length limitation of the Wang patents, because the extra module area is not properly considered part of the "substrate."

b. *Support Means*

Section 112 of Title 35 of the United States Code provides that a patent may describe a covered element by its function, rather than its structure. *See* 35 U.S.C. s. 112 para. 6.FN8 So written, a patent claim extends to cover devices that are the equivalent of the functionally described element (the "doctrine of equivalents"). The Federal Circuit has held that s. 112 requires not merely functional, but structural equivalency. *See* Johnston v. IVAC Corp., 885 F.2d 1574, 1580 (Fed.Cir.1989).

FN8. The statute provides: "An element in a claim ... may be expressed as a means or step for performing a specific function without the recital of structure .... [S]uch claim shall be construed to cover the corresponding structure ... and equivalents thereof." 35 U.S.C. s. 112 para. 6.

[16] [17] Wang's '605 and '513 patents specify that a covered module must have a "support means for supporting" the module at an angle to the motherboard. To infringe such a "means plus function" patent claim, the accused device must: (1) perform the identical function at issue; and (2) incorporate the structure disclosed in the patent specification, or its substantial structural equivalent, as the means for performing that function. *See* Intellicall, Inc. v. Phonometrics, Inc., 952 F.2d 1384, 1388-89 (Fed.Cir.1992) (citation

omitted); Pennwalt Corp. v. Durand-Wayland, Inc., 833 F.2d 931, 934 (Fed.Cir.1987) (*en banc*).

Wang's leaded modules have thirty terminals on their lower edge, with attached leads that insert into corresponding holes on the motherboard. The leads are then soldered for support. By contrast, in the Oki leadless module, the terminal pads have no leads attached. To use the leadless module, a gripping socket must first be inserted into holes on the motherboard. The thirty terminal pads are then inserted into the socket. Holes in the ears of the leadless module hook over pins on the socket, and the socket then latches over the substrate for additional support (the "Molex-type" socket). Neither leaded module nor the leadless version, however, can support itself on the motherboard independently. Rather, the leaded version requires holes into which it can be inserted, and the leadless module requires a socket.

Because its module must be inserted into a socket to stay on the motherboard, Oki argues that its modules lack the "support means" specified in the patent claim. Oki asserts that the patents require the module itself to contain a "support means," with no need for an external socket. In response, Wang notes that the leaded module also requires stabilization, in the form of solder, to hold the module in place. Wang further asserts that the holes on Oki's substrate ends constitute "a means for supporting" the module when placed on a socket.

The special master found that Oki's modules are structurally equivalent to Wang's. Although they work differently, he concluded, each module uses the terminal pads to connect to the motherboard in some way. Each support system supports the module equally effectively, providing the same resistance to torsion. Oki itself admits, in its pre-trial memorandum, that the two support mechanisms were used interchangeably at the time Wang acquired its patents. *See Defendant's Pre-Trial Memorandum* at 8 ("In 1983 ... modules with terminal leads and modules with terminal pads designed to be used with edge connector sockets were generally recognized as alternative techniques for supporting module structures."). Under the clear error standard, the special master's finding of equivalence is entitled to deference, particularly in light of his greater familiarity with the performance of computer memory modules and his knowledge of how a person familiar with this technology would understand the patents. *See* Graver Tank & Mfg. Co. v. Linde Air Products Co., 339 U.S. 605, 70 S.Ct. 854, 94 L.Ed. 1097 (1950) ("An important factor [in determining equivalence] is whether one skilled in the art would have known of the interchangeability of an ingredient not contained in the patent with one that was.").

Additional prosecution history further supports the special master's conclusion on this issue. Wang submitted an amendment during the prosecution of its patents, in 1986, with a picture of an Oki leadless module as an example of an "exact copy." Around the same time, Clayton, the inventor of the modules, submitted a "future developments" declaration describing a socket mount for leadless modules. Therefore, it may be inferred that the PTO examiner understood Wang's patents to encompass a leadless variation with a socket mount.

The special master rejected Oki's claim that structural equivalency would require complete interchangeability between leaded and leadless modules. Oki pushes the concept of structural equivalency too far with this argument. *See* Graver Tank, 339 U.S. at 609, 70 S.Ct. 854 ("Equivalence, in the patent law, is not the prisoner of a formula and is not an absolute to be considered in a vacuum. It does not require complete identity for every purpose and in every respect. In determining equivalents, things equal to the same thing may not be equal to each other and, by the same token, things for most purposes different may sometimes be equivalents.").

For the foregoing reasons, the court accepts the special master's finding that Oki's support mechanism is the structural equivalent of the mechanism described in Wang's patent.

c. *Plastic Leaded Chip Carriers*

[18] Oki further contends that its plastic leaded chip carriers are different from those specified in Wang's patents. The issue between Wang and Oki here arises because Oki uses both the "PLCC" (Plastic Leaded Chip Carrier) and "SOJ" (Small Outline, J-Lead package). PLCCs have J-leads on four sides, while SOJs have them on only two. Oki strives to limit Wang's patent to PLCCs and submits that those of its modules which use SOJ carriers are not covered.

The special master determined that "plastic leaded chip carrier," as used in 1983, was a generic term that included both PLCCs and SOJs. After review of the prosecution history, the special master concluded that the term "plastic leaded chip carrier" in Wang's patents, as well as Wang's use of "PLCC" in publicity submitted as part of the patent prosecution file, did not denote PLCCs as such, but was employed to distinguish Wang's patent claims from existing ceramic carriers.

The court accepts the proposition that "plastic leaded chip carrier" is a generic term covering multiple versions of such a carrier. Furthermore, the Federal Circuit held that Wang's patent language "does not limit the claims to a particular make and model of plastic chip carrier." *See* Mitsubishi III, 103 F.3d at 1582. This interpretation of the scope of the claim is entitled to *stare decisis* treatment, as discussed above. Therefore, the court accepts the special master's determination that the Wang patents include modules using both SOJ and PLCC chip carriers.

Notice

As a final matter, Wang claims that Oki lacks standing to proceed on its bifurcated claim that Wang's patents are invalid because Oki has failed to satisfy the threshold requirements for a challenge to the validity of Wang's patents. According to Wang, both the licensing agreement between Wang and Oki and patent law require that Oki be given notice of its intent before bringing such a challenge. Wang argues that Oki's failure to give notice prior to bringing its claim bars Oki from asserting the pending invalidity counterclaims that have been bifurcated from the issues discussed above. Wang therefore seeks summary judgment on these counterclaims.

[19] Nothing in the Wang-Oki license agreement requires Oki to give notice if it plans to challenge the validity of Wang's patents. Wang points to s. 5.01 of the agreement, but this provision only sets forth an address to which notices may be sent and specifies registered mail as the method of communication. Section 4.03 of the agreement states only that Oki may terminate any of its licenses granted therein upon thirty days notice, but makes no mention of challenges to patent validity.

[20] [21] [22] It appears, despite this dearth of contract language, that Wang is entitled to partial summary judgment as a matter of patent law on the issue of patent validity. In order to raise a defense of patent invalidity when sued for nonpayment of royalties, a licensee must have notified the patent holder that it challenges the validity of the patents at the time payment ceased. *See* Studiengesellschaft Kohle, M.B.H. v. Shell Oil Co., 112 F.3d 1561, 1568 (Fed.Cir.1997); Hull v. Brunswick Corp., 704 F.2d 1195, 1203 (10th Cir.1983); Schwarzkopf Devel. Co. v. Ti-Coating, Inc., 7 U.S.P.Q.2d 1557, 1558 (S.D.N.Y.1988). The licensee need not file suit to give notice of its intent to challenge the validity of a patent; it need only take some affirmative act or provide some clear communication. *See* Schwarzkopf, 7 U.S. P.Q.2d at 1558-59.

Moreover, the licensee must relate its cessation of payment to the validity challenge. *See* Hull, 704 F.2d at 1203 ("If licensees wish to preserve patent invalidity as a defense to litigation over unpaid royalties, the licensees must notify the licensors that they are suspending payments because they question the validity of the patents.") (citing Bristol Locknut v. SPS Technologies, Inc., 677 F.2d 1277, 1283 (9th Cir.1982); American Sterilizer Co. v. Sybron Corp., 614 F.2d 890, 895-98 (3d Cir.1980)).

[23] [24] Oki informed Wang in its letter of May 27, 1993, that it refused to pay royalties because it had "reconsidered the scope of the Wang Patents in light of the Federal Circuit's (*Toshiba*) decision and ha[d] decided that they do not cover leadless modules." The letter does not amount to notice that Oki intended to mount a validity challenge to the patents. In the alternative, Oki claims that the licensing agreement itself provided the necessary notice, because that agreement only required Oki to pay royalties on valid patents. If Oki had not given an alternative reason for stopping payment, the licensing agreement arguably might have given rise to an inference that Oki no longer believed the Wang patents to be valid. Again, however, when Oki stopped paying, it pointed to the scope of patent coverage, rather than validity of the patents, as the reason for its conduct.

In addition to the communications described above, Oki filed an *amicus* brief in the *Toshiba* case on April 9, 1992, stating that Oki believed the Wang patents to be invalid. Oki took the same action in *Mitsubishi II* on August 1, 1992. Although these actions probably did place Wang on notice that Oki questioned the validity of Wang's patents, Oki never asserted the requisite nexus to cessation of payments. Oki separately challenged the patent and stopped paying royalties, as opposed to informing Wang that it was ceasing its payments *because* it challenged the validity Wang's patents. Therefore, royalties were due until Oki gave effective notice, including the information that Oki challenged the validity of the patents and was stopping payment for that reason.

Such notice was given on the date that Oki filed an answer in this case, on November 16, 1993. *See* Schwarzkopf, 7 U.S.P.Q.2d at 1558 (raising invalidity in an answer is sufficient notice). Once Wang received Oki's answer, it was on notice that subsequent non-payment of royalties related to the invalidity claim.

Therefore, Oki has "standing" or, more appropriately, has complied with the threshold requirements for raising an invalidity defense. Any royalties accrued subsequent to November 16, 1993 remain at issue in this case, and Oki's counterclaim may proceed with respect to them.

Conclusion

As set forth above, the court finds that Wang did not breach its licensing agreement with Oki by violating the most favored licensee clause in that contract. Oki's motion for partial summary judgment on that issue therefore is DENIED. The court further has determined that Oki's Leadless modules are covered by Wang's '605 and '513 patents, despite differences in module length, mounting technique, and chip carrier structure. Consequently, Oki's motion for a declaration that its leadless memory modules are not covered by the patents at issue is DENIED. Finally, the court has ruled that Oki may challenge the validity of Wang's patents with respect to royalties accrued after November 23, 1993. Oki has failed to comply with the notice prerequisite to attack the validity of Wang's patents with respect to royalties accrued before that date, and partial summary judgment in Wang's favor therefore is ALLOWED on the question of Oki's failure to provide notice before November 23, 1993.

So Ordered.

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