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PALOMAR TECHNOLOGIES, INC.,)	
)	
Plaintiff,)	
)	Civil Action No.
v.)	18-10236-FDS
)	
MRSI SYSTEMS, LLC,)	
)	
Defendant.)	
)	

SAYLOR, C.J.

This is a patent infringement dispute between two companies involved in the production and distribution of “die attach” systems. Plaintiff Palomar Technologies, Inc., has brought suit against defendant MRSI Systems, LLC. The complaint asserts a claim for patent infringement pursuant to 35 U.S.C. § 271.¹

Palomar has moved for partial summary judgment on the basis of statutory estoppel under 35 U.S.C. § 315(e)(2). MRSI had previously requested *inter partes* review (“IPR”) of the patent on the grounds that it was anticipated and obvious in light of certain prior art. The Patent Trial and Appeal Board granted that request, and then upheld the validity of all the claims but one. Palomar now seeks to prevent MRSI from raising additional invalidity defenses based on prior art not raised in the IPR proceeding.

¹ The complaint also asserts a claim for induced infringement and a claim for contributory infringement under § 271.

In a previous memorandum and order, the Court granted in part a motion by Palomar for summary judgment raising the issue of statutory estoppel. The Court granted the motion as to many of the prior-art references, but ruled that an evidentiary hearing was required as to others to resolve disputed factual issues.

That hearing has now been held. The parties narrowed the dispute before the hearing to the question of whether MRSI was estopped from asserting defenses based on two references, neither of which was raised in the IPR proceeding: U.S. Patent 5,035,047 (the “Harigane reference”) and PCT Patent Publication 01/72097 (the “Ueno reference”). For the reasons set forth below, the motion for partial summary judgment will be denied, and the estoppel bar will not be applied to the two references.

I. Background

A. The ’327 Patent

Palomar Technologies, Inc., is the owner and assignee of U.S. Patent No. 6,776,327 (“the ’327 Patent”), entitled “High-Accuracy Placement Method Using Double Pick and Place.” The ’327 Patent was issued on August 17, 2004. (*Id.*).

The ’327 Patent generally relates to a “method for high accuracy placement of a first workpiece onto a second workpiece for attachment of the two workpieces.” (*Id.* col. 1 ll. 7-9). More particularly, the patent relates to a “high accuracy [automated] placement method which utilizes double pick and place of the first workpiece to enhance the final placement accuracy of the first workpiece onto the second workpiece.” (*Id.* col. 1 ll. 9-13).

According to the patent, in the production of many electronic applications, dies, or tiny semiconductor devices, are attached to circuit bodies. (*Id.* col. 1 ll. 16-24). The process of attaching a die to a circuit body typically involves an initial step, called a “pick and place”

operation, in which “the die is picked from a remote location by a tool and placed on the circuit body at the location where attachment is desired.” (*Id.* col. 1 ll. 25-28).

The patent’s automated placement method involves two steps. Initially, the “first workpiece, which is preferably a die,” is “positioned at the origination location.” (*Id.* col. 1 ll. 63-64 & col. 2 ll. 8). During the “first place step,” the first workpiece is “displace[d] . . . from the origination location to an intermediate location different from the origination and attach locations.” (*Id.* col. 1 ll. 66-67 & col. 2 ll. 1-2). Then, during the “second place step,” the first workpiece is “displace[d] . . . from the intermediate location to the attach location and the first workpiece is attached to the second workpiece at the attach location.” (*Id.* col. 2 ll. 2-5).

MRSI Systems, LLC designs, manufactures, and supplies “fully automated, ultra-high precision die-attach and epoxy dispensing tools,” including the “MRSI-M3 Assembly Work Cell.” (Compl. ¶ 4, 12, ECF 1). According to Palomar, MRSI employs a method that infringes on the ’327 Patent. (*Id.* ¶ 15).

B. The *Inter Partes* Review

On July 6, 2015, Palomar filed this action against MRSI in the Southern District of California. (*See* Compl., ECF 1). On October 13, 2015, MRSI petitioned the Patent Trial and Appeal Board (“PTAB”) for *inter partes* review of the patent. (ECF 113-1) (PTAB IPR2016-00043). That petition requested that an IPR be instituted as to all 48 claims of the ’327 Patent on one or more of six grounds. (*Id.* at 1-9). All of the grounds raised by MRSI were for anticipation or obviousness in light of five prior-art references. (ECF 113-2 at 5).² In addition to those references, which formed the basis for one or more of the specific grounds, MRSI’s

² The prior-art references specifically cited for invalidity were (1) U.S. Patent No. 5,446,960, (2) U.S. Patent No. 4,878,610, (3) U.S. Patent No. 6,148,511, (4) Daniel Z. Bauks, *Automated Hybrid-Circuit Assembly*, 6 MICROELECTRONIC MFG. & TESTING 31, 31-32 (1983), and (5) Gerald L. Ginsberg, *Chip and Wire Technology: The Ultimate in Surface Mounting*, 25 ELEC. PACKAGING & PROD. 78, 82-83 (1985).

petition advanced five others as background references. (*Id.* at 4).³

On April 7, 2016, the PTAB instituted review on each of the six grounds raised in the petition. (*Id.*). On March 29, 2017, the PTAB issued its final written decision. (ECF 113-3). That decision upheld the validity of claims 1-47 and invalidated claim 48. (*Id.*). MRSI did not appeal.

C. Litigation after the IPR Proceeding

Palomar's action against MRSI had been stayed by the Southern District of California during the IPR proceedings. On February 5, 2018, that action was transferred to this Court. (ECF 53).

On August 3, 2018, MRSI filed its preliminary invalidity and non-infringement contentions. (ECF 104). MRSI contends that all of the claims asserted by Palomar are invalid. (*Id.* at 1). In support of its contentions, MRSI provided various prior-art references that allegedly render the patent invalid based on anticipation and obviousness. (*Id.* at 5-10).⁴

On August 27, 2018, Palomar filed a motion for partial summary judgment contending that MRSI was estopped under 35 U.S.C. § 315(e)(2) from using those references to challenge the patent's validity.

D. March 27, 2019 Memorandum and Order

On March 27, 2019, this Court issued a memorandum and order addressing the issue of statutory estoppel. (ECF 393). The Court held that all challenges based on prior-art references on which the PTAB based its final written decision, as well as five other references that MRSI cited but did not specifically assert, were barred by 35 U.S.C. § 315(e)(2). (*Id.* at 10-12).

³ The five additional prior-art references were (1) U.S. Patent No. 4,919,586, (2) U.S. Patent No. 5,040,291, (3) U.S. Patent No. 6,085,407, (4) U.S. Patent No. 5,657,533, (5) U.S. Patent No. 5,639,203. (ECF 113-2 at 4-5).

⁴ MRSI also raised additional invalidity contentions not based on prior art, which are not relevant here.

The Court also held that it could not resolve the issue as to certain references because there were disputed issues of material fact as to whether MRSI actually knew about the references and the contours of a reasonably diligent search. The Court thus could not grant summary judgment as to those references, and instead directed that an evidentiary hearing be held to resolve the factual disputes.

E. Evidentiary Hearing

Beginning on October 16, 2019, the Court held a three-day evidentiary hearing. (*See* Tr., ECF 615-617). The hearing was limited to the issue of statutory estoppel under § 315(e)(2) and was further limited (by agreement of the parties) to only two specific references: U.S. Patent 5,035,047 (the Harigane reference) and PCT Patent Publication 01/72097 (the Ueno reference). Both sides presented evidence, with the principal focus on the actual searches that had been performed and whether those searches were objectively reasonable.

II. Legal Standard

A. Statutory Standard

As noted in the Court's previous memorandum and order, a prior-art reference not raised in the IPR proceeding is subject to the statutory bar of 35 U.S.C. § 315(e)(2) if (1) the IPR petitioner actually knew of the reference or (2) a skilled searcher conducting a diligent search reasonably could have been expected to discover the reference. *See Clearlamp, LLC v. LKQ Corp.*, WL 4734389, *7-8 (N.D. Ill. Mar. 18, 2016); *Asetek Danmark A/S v. CoolIT Systems Inc.*, 2019 WL 7589209, *7 (N.D. Cal. Dec. 30, 2019); *Contour IP Holding, LLC v. GoPro, Inc.*, 2020 WL 109063, *3 (N.D. Cal. Jan. 9, 2020); *Vaporstream, Inc. v. Snap Inc.*, 2020 WL 136591, *22-3 (C.D. Cal. Jan. 13, 2020). The standard thus has a subjective prong (did the IPR petitioner actually know about the reference?) and an objective prong (would a reasonable search have

discovered the reference?).

To be clear, the standard cannot be that a reasonable search could have, or might have, discovered the disputed reference. It is almost always possible to construct a search scenario—particularly with the benefit of hindsight—under which a skilled searcher could locate a reference with a relatively small number of steps. Instead, the standard must account for the fact that the relevant databases are huge, the technology is often complex, and there are almost infinite ways to construct a search. The touchstone is reasonableness, not perfection. Accordingly, the appropriate standard for the objective prong is one of probability, not possibility: that is, whether it is more probable than not that a skilled searcher conducting a diligent search reasonably could have been expected to discover the disputed reference.

B. Burden of Proof

A further question is which party bears the burden of proof. Typically, estoppel is an affirmative defense; several courts—including this one—have therefore held that “[i]t is the proponent of an estoppel argument [under § 315(e)(2)] that bears the burden.” *Clearlamp, LLC*, WL 4734389, at *9 (citing *Kennedy v. United States*, 965 F.2d 413, 417 (7th Cir. 1992)). Under that standard, a party seeking to estop another party from asserting a prior-art reference under § 315(e)(2) must prove that both the subjective and objective prongs have been satisfied.

It is not obvious, however, that this is the appropriate way to allocate the burden of proof. The statute does not provide for the application of common-law estoppel, and indeed does not use the term. Instead, and as noted, it provides that the petitioner in an IPR proceeding “may not assert” in a later civil action “that the claim is invalid on any ground that the petitioner raised or reasonably could have raised” in the IPR. 35 U.S.C. § 315(e)(2).

The use of the phrase “reasonably could have raised” suggests that the statute

incorporates a standard analogous to that of a discovery rule. In the statute of limitations context, a claim filed outside the limitations period is normally time-barred. However, if a discovery rule is available, a plaintiff may establish that the cause of action did not accrue until he or she actually knew, or reasonably should have known, the cause of the injury. *See, e.g., Bowen v. Eli Lilly & Co.*, 408 Mass. 204 (1990). Because the statute of limitations is an affirmative defense, the defendant has the burden of asserting it. But once the defendant does so, and shows that the claim on its face was filed outside the limitations period, the plaintiff then bears the burden of proving that the discovery rule applies and the action was timely commenced. *See, e.g., Parr v. Rosenthal*, 475 Mass. 368, 376 (2016). That allocation of the burden of proof is surely based on considerations of fairness and practicality: the plaintiff should be required as a matter of fairness to prove why the exception to the normal rule should apply, and is normally in a far better position to prove that it should than the defendant is to disprove it.

Here, the statute does not allocate the burden of proof. Arguably, it could be read to place it on either party. And the issue does not appear to have been addressed by the Federal Circuit. In the absence of any statutory or appellate guidance, it appears that the most sensible solution is to allocate the burden of proof in a manner similar to statutes of limitations and discovery rules: that is, the initial burden to assert estoppel should be on the party seeking to invoke it (by raising it as a defense, and making a *prima facie* showing that it applies), after which the burden shifts to the responding party to show that the prior-art reference could not reasonably could have been raised in the IPR proceeding.

That approach best comports with the purpose of the estoppel bar, which is essentially an equitable device to prevent a litigant from withholding references at the IPR proceeding in order

to use them in later litigation.⁵ As a matter of fairness, surely the party that failed to assert the reference ought to be compelled to prove why the exception ought to apply. It also addresses a serious problem with placing the burden of proof on the party seeking to invoke the estoppel bar. In most instances, a principal focus of the inquiry will be the reasonableness of any prior-art search that was actually performed on behalf of the IPR petitioner. That search will be relevant to both the subjective prong (to ascertain whether the actual search identified the reference) and the objective prong (how the actual search was conducted is likely to be evidence bearing on the question of how a reasonable search would have been conducted). However, it is often the case that an IPR petitioner has engaged counsel to conduct all or part of the relevant search. The petitioner could thus block any subsequent inquiry into the actual search on privilege grounds. And that, as a practical matter, might materially limit the scope of the factual inquiry, if not thwart it entirely. Nor is it completely satisfactory to conclude that the privilege would be waived under such circumstances; the power to create such a waiver cannot be given to the other party, who could trigger a waiver simply by asserting a challenge.

Accordingly, and pending further direction from the Court of Appeals, the Court concludes that the estoppel bar under 35 U.S.C. § 315(e)(2) is an affirmative defense that must be raised in the first instance by the party seeking to invoke the bar. Once a *prima facie* showing has been made, the burden will be on the opposing party (that is, the petitioner in the IPR proceeding) to show that it could not have reasonably have raised the ground at issue in the IPR.

Here, Palomar has raised the issue of the statutory estoppel bar. And MRSI seeks to rely

⁵ Fortunately, there is little incentive for a party to make a deliberate decision to hold back a reference in the IPR proceeding. By doing so, the party would run the risk of being estopped from relying on that reference in subsequent litigation. Furthermore, the presumption of a validity of the patent does not apply during the IPR proceeding, and the standard of proof in that proceeding is preponderance of the evidence. *See* 35 U.S.C. § 316(e). By contrast, in litigation, a party seeking to invalidate a patent must prove its case by clear and convincing evidence. *See Microsoft Corp. v. i4i Ltd. Partnership*, 565 U.S. 91, 95 (2011); 35 U.S.C. § 316(e). .

on the Ueno and Harigane references, neither of which were asserted during the IPR proceeding. Accordingly, Palomar has made a *prima facie* showing that the estoppel bar applies. MRSI will therefore have the burden of proving both (1) that it did not actually know about the references and (2) that a skilled searcher conducting a diligent search reasonably could not have been expected to discover the references.

One issue remains: at the time of the hearing, the parties were proceeding under the assumption that Palomar had the burden of proof on all issues. Both parties, however, presented evidence as to all disputed factual matters, and it does not appear that either party reserved any evidence, or otherwise failed to address any issues. It appears that the only potential question concerns matters protected by the attorney-client privilege; if MRSI had known it had the burden of proof, it might have decided to waive the privilege in order to establish the reasonableness of its search efforts. However, the Court has reviewed at least some of the privileged materials *in camera*, and has concluded that they are of only marginal importance and would not affect the outcome of the decision even if they had been made part of the public record. The Court will therefore resolve the matter on the present factual record. Any party seeking to supplement the record, or otherwise address any evidentiary issue arising from this ruling on the burden of proof, will be given an opportunity to file a motion seeking appropriate relief fourteen days from the date of this order.

III. Evidentiary Hearing

The evidence presented at the hearing is summarized below.

A. Patent Classifications Generally

Because the United States Patent Office has issued more than ten million of patents, and because there are also millions of foreign patents and technical publications, it is not a simple

matter to search for prior art. (*See* Tr. at 2:134-35). In order to help facilitate such searches, various systems have been developed to classify patents according to the nature of the invention. The '327 Patent was issued in 2004, and was therefore classified under the United States Patent Classification ("USPC") system, the system in effect in the United States at the time.⁶ The USPC system does not, however, include either foreign patents or non-patent literature.

Under the USPC system, all patents were assigned by the patent examiner to a mandatory principal, or original, classification, which included both a class and a subclass. (*See* Tr. 1:50, 1:78, 2:68, 3:13). A patent may also have been assigned to one or more cross-reference classes/subclasses. (*See* Tr. 2:51-53, 3:10). In addition, the cover page of a patent will list a "field of search," indicating the classes/subclasses that the patent examiner searched, and "references cited," indicating prior art listed by the patentee or found by the examiner. (*See* Tr. 1:50, 2:85, 3:10).

B. Searching Patent Databases Generally

Performing a search is not a simple matter of reviewing other patents within the relevant classes. To begin, and as noted, the USPC system covers only U.S. patents, and therefore does not include foreign patents, which at the time were classified under a separate system. Nor does it include technical literature, whether foreign or domestic, which is not classified under either system.

Within the USPC system, there are hundreds of classes and thousands of subclasses. A particular subclass may include many hundreds of patents. (*See, e.g.*, Tr. 2:90). Furthermore, placing a patent within a class and subclass involves a series of judgments by the reviewer, a

⁶ The USPC classification system is no longer in active use by the Patent Office. Beginning January 1, 2015, the Patent Office adopted the CPC classification system to promote international classification uniformity. (*See* Tr. 2:71).

process that inevitably results in inconsistencies. As a result, relevant patents may have been placed in other classes or subclasses, not considered by the reviewer.

Furthermore, all references, whether relevant or not, are technical documents that normally require considerable time and effort to consider once located. Searches are also made more complicated if a patent has an unusually large number of claims, or unusually broad claims. (*See* Tr. 2:124-25).

There is no set way of conducting search, and searching for prior art is something of an art, not an exact science. (Tr. 2:136 & 2:61). Searchers cannot reasonably limit themselves to the subclasses listed on the face of the patent, but neither can they be expected to read and consider every patent in every conceivably relevant subclass. The former approach would do little more than repeat the efforts of the patent examiner, while the latter approach could involve searching tens of thousands of patents. (*See, e.g.*, Tr. 3:27).

Accordingly, an important component of almost any reasonable search strategy is the use of keyword searching of the relevant databases, not strict reliance on the classification system. (*See* Tr. 2:62-70). Due to the volume and complexity of the information being searched, any keyword search must be carefully focused. (Tr. 2:120).

C. The '327 Patent

The '327 Patent was issued on August 17, 2004, with 48 claims. ('327 Patent, col. 13-18). It was classified by the patent examiner under the USPC system in class 228, subclass 102, or 228/102. (*Id.* at [52]).⁷ Class 228 is “metal fusion bonding,” and subclass 102 is “with

⁷ The '327 Patent was also classified in International Classification B23K 31/02. ('327 Patent at [51]).

condition responsive, program, or timing control.” (Ex. 5).⁸ Subclass 102 is “indented” under (that is, is a subclass of) subclass 101, “process.”

The ’327 Patent was also given cross-reference classifications of 228/49.5, 228/103, and 228/232. (’327 Patent at [52]). Under “field of search,” the examiner listed eight classes/subclasses, all under class 228. (*Id.* at [58]). Under “references cited,” the examiner listed fourteen U.S. patent documents, eight of which were in class 228. (*Id.* at [56]). Two were in class 29: 29/25.01 and 29/430. (*Id.*). The remaining four were in classes 356, 348, 716, and 250. (*Id.*).

D. The Harigane Reference

The Harigane reference is U.S. Patent No. 5,035,047, filed on June 16, 1989, and issued on July 30, 1991. (’047 Patent at [45]). It was classified by the patent examiner in class 29 (“metal working”), subclass 740 (“chip component”), and is cross-referenced to class 29/836. (*Id.* at [52]).⁹

E. The Ueno Reference

The Ueno reference is a World Intellectual Property Organization Publication that was published on September 27, 2001. (Ex. 17). It is the actual reference at issue. However, both parties appear to agree that the that a skilled searcher conducting a diligent search would have readily found that publication had he found the Ueno patent. For that reason, the Ueno patent was the primary object of focus of the testimony at the hearing. (*See* Tr. 1:50-52).

⁸ The selection of class 228, “metal fusion bonding,” is perhaps curious, as the patent makes no claim of any kind involving soldering, welding, or indeed any form of fusion or bonding between parts. Instead, the method described in the patent concerns the placement or arrangement of pieces for assembly.

⁹ Class 29/740 (“chip component”) is “indented” under class 29/739, (“means to fasten electrical component to wiring board, base, or substrate”).

The Ueno patent, U.S. Patent No. 7,020,953, was issued on April 4, 2006. It was classified as 29/740, with cross-references to classes 29/739 and 29/833. (Ex. 18).

F. Palomar's Expert Witness

Palomar presented the testimony of an expert witness, Stephen G. Kunin. Kunin was employed by the patent office from 1970 to 2004, originally as a patent examiner, and eventually becoming Deputy Director for Patent Examinations. (Tr. 1:27-32). He has practiced at a patent firm since 2004. (Tr. 1:31-32).

Kunin testified about the function and importance of the patent classification system. (Tr. 1:33-36). He provided testimony on the nature of patent classifications generally and how those classifications play a role in conducting patent searches. (*See* Tr. 1:35-42). He explained how searches could be conducted utilizing the USPTO Seven-Step U.S. Patent Search Strategy Guide to search databases that are publicly available at Patent and Trademark Resource Centers to find relevant prior art. (Tr. 1:36-38). The most important steps in those searches involve selecting appropriate patent classes and subclasses based on the substance of the patent, and then selecting keywords with which to further refine the search results. (Tr. 1:43, 46-47).

Kunin opined, in substance, that a skilled researcher conducting a reasonable search would have located both the Harigane and Ueno references. (Tr. 1:54-55). He also testified, in substance, that the searches performed by the two outside firms engaged by MRSI were not reasonably diligent. (Tr. 1:60-64). Applying the methods he outlined, Kunin testified as to the existence of search strings that could located the Harigane and Ueno references. He testified that searches conducted by his firm produced relatively manageable result sets that included both patents. (Tr. 1:46-49).

Kunin's analysis depended heavily on the Isaacs patent (U.S. Patent No. 5,446,960, filed

Feb. 15, 1994), which was submitted by MRSI during the IPR proceeding. Isaacs was classified under the USPC system as 29/833, and cross-referenced in classes 29/759, 29/407, 29/464, 29/740, and 228/180.2. (‘960 Patent at [52]). The thrust of Kunin’s testimony was that MRSI had identified Isaacs for the IPR proceeding; that Isaac was cross-referenced in class 29/740; that both Harigane and Ueno were classified as 29/740; and that using Isaacs as a starting point, a properly targeted keyword search would have located both references.

Specifically, Kunin testified that searching the USPC database under class 29/740, and further narrowing the results with the key words “mounting,” “chip,” and “component” produced 161 results, and adding the key words “electronic” and “intermediate” narrowed the search to 35 results. (Tr. 1:47). Both result sets included the Harigane reference. (Tr. 1:47).

Kunin further testified that a search of class 29/739, further refined with the key words “mounting,” “moving,” and “component,” produced the Ueno reference as the 37th result. (Tr. 1:49). He testified that the Kramer firm, which performed a search on MRSI’s behalf, actually searched class 29/739 and should have found Ueno as a result. (Tr. 1:49).

G. MRSI’s Fact Witnesses

Michael Chalsen, President of MRSI, testified that he “lead[s] the [patent] litigation” for the company. (Tr. 2:7). He testified that he was not aware of the existence of the Harigane and Ueno references at the time of the IPR proceeding. (Tr. 2:11-22). He employed two search vendors, Techmark Global LLC and Kramer IP Search, to conduct invalidity searches; neither discovered the references. (Tr. 2:7). In addition, the Milbank law firm, which represented MRSI in the IPR proceeding, also conducted a search, which likewise did not discover the references. (3:39-40).¹⁰

¹⁰ Chalsen testified that he personally ran an informal prior-art search, using widely available online search engines, shortly after hearing about Palomar’s lawsuit. (Tr. 2: 22-23). Evidence was submitted of a similar search

Techmark Global LLC is a firm is operated by Jacques Coderre. (Tr. 2:25). Starting from the '327 Patent, Techmark's search was conducted over approximately 10 hours by researching scientific literature in the field of microelectronics assembly using Google Scholar. (Tr. 2:38-44). Coderre located the Isaacs reference prior to the IPR proceeding. (Tr. 2:43-44).

Kramer IP Search is a firm operated by Terry Kramer, a registered patent attorney. (*See* Tr. 2:47-63). Kramer performed two searches, both using classification-based searching with keyword limitations. (*See* Tr. 2:58-92). The first, which was in advance of the IPR proceeding, took about 32 hours. (Tr. 2:75). He used a proprietary system that has access to different databases. (Tr. 2:77-78). Although he searched class 29, he did not search class 29/740; among other things, he was not aware of the Isaacs reference at the time. (Tr. 2:94-97, 2:102). He searched class 29/739, but did not locate the Ueno reference. (Tr. 2:112). The 29/739 subclassification has more than 900 patents. (Tr. 3:26).

Kramer's second search, which also took about 32 hours, was conducted after the IPR proceeding. (Tr. 2:92-93, 2:98-99). By that point, he had the benefit of the Isaacs reference. (Tr. 2:92-93). He located the Harigane reference in the second search. (Tr. 2:99).

Kramer also testified that the '327 Patent issued with 48 claims, which is significantly more than the average patent. (Tr. 2:124-25). According to Kramer, the large number of claims complicated the search process. (Tr. 2:124-25).

As noted, the IPR proceeding concluded on March 29, 2017. Chalsen first learned about the Harigane reference on July 19, 2018. (Tr. 2:17). He first learned about the Ueno reference on July 24, 2018. (Tr. 2:9-10, 2:19).

conducted by Cyriac Devasia, MRSI's vice president of engineering. (Tr. 2:24-26; Ex. 25). Neither individual seems to have found either the Ueno or Harigane references in those searches, but they could not recall the results of their searches in any detail. (*See* Tr. 2:24 & 2:34; Ex. 25). Furthermore, MRSI appears to have claimed privilege as to certain findings from those searches, particularly that conducted by Devasia. (*See* Mot. in Lim., ECF 579, Ex 4).

H. MRSI's Expert Witness

MRSI also presented the testimony of an expert witness, Robert Stoll. Stoll is a partner at the law firm of Drinker Biddle & Reath, LLP. He began working in the USPTO in 1982 as an examiner. (Tr. 2:129-30). Between 2009 and 2011, he was the Commissioner for Patents at the USPTO. (Tr. 2:130).

Stoll testified as to the various types of prior art searches (for example patentability or invalidity searches) and the fact that skilled searchers, even within the Patent Office, might utilize varying procedures and methods. (Tr. 2:133-37). He further testified that the search methodology outlined by Kunin relies heavily on the Seven-Step Guide, which is “really for people who don’t know whether or not they want to seek a patent. [Because] the professionals develop their own best methods and methodologies for both patentability and invalidity searches.” (Tr. 3:7).

Stoll also testified as to when a skilled searcher might conclude a diligent prior art search. In his view, “one logical end point is when [a skilled searcher] has a rejection against all of the claims, . . . [having] spent a significant amount of time looking . . . and [the searcher doesn’t] expect that there’s any more [useful prior art] out there.” (Tr. 3:9).

Stoll testified as to how he would have conducted a search when starting from the same place as MRSI, which was with only the ’327 Patent. His own preference for conducting a search involves the substantial use of word searches within patent databases. (Tr. 3:7). If starting from the ’327 Patent, he would also look at the patent classifications (both within the USPC system and international classification), the fields of search, and the references listed by the examiner and applicant. (Tr. 3:10). He would also look at the file history of the patent. (Tr. 3:10). Finally, he would consider the classification system and the subject matter of the patent,

with the goal of isolating fruitful areas for prior art. (Tr. 3:10).

Stoll also testified as to the nature and diligence of the invalidity searches conducted by parties to this case. He testified that based on their backgrounds, Kramer and Coderre (of Techmark) were qualified searchers, and that their methods and results indicated diligent searching by skilled searchers. (Tr. 3:15-22). He noted that it was reasonable to conclude an invalidity search when, as here, a searcher had spent a significant amount of time searching (combined, at least 40 hours) and had located ten references that provided rejection arguments against all claims. (Tr. 3:19, 3:14-15, & 3:7-8). He further noted that the references located led to the institution of an IPR proceeding as to all of the claims, suggesting that the references located were relatively strong. (Tr. 3:18).

Stoll further testified that it was not reasonable to expect that a skilled researcher would examine all patents in the same subclassifications as the patents submitted in the IPR proceeding. (Tr. 3:27-28). Under that method, the ten references supplied to the PTAB in the IPR proceeding would lead a searcher to examine approximately 27,000 references. (Tr. 3:27). Furthermore, that number excludes non-patent publications, which would make the number of potential references stemming from those submitted to IPR even larger. (Tr. 3:26-27).

Finally, Stoll testified that Palomar's expert, Kunin, did not appear to have started his search from the same place as Kramer and Techmark. (Tr. 3:20-21). Kunin's search strings appeared to rely heavily on knowing the exact target—the Harigane and Ueno references—and on already having the Isaacs reference. (Tr. 3:20). In Stoll's view, Kunin was describing a “scorched-earth” methodology of prior art searching, which did not align with what a skilled searcher conducting a diligent search would actually do. (Tr. 3:28).

IV. Analysis

A. Whether MRSI Had Actual Knowledge of the Disputed References

The first issue under § 315(e)(2) is the subjective question: that is, whether MRSI actually knew of the disputed prior-art references at the time of the IPR.

As noted, MRSI presented testimony from its president, Michael Chalsen, who testified that he directed the IPR process on behalf of MRSI. (Tr. 2:7). Chalsen testified that he was not aware of either the Ueno or Harigane references until July 2018, more than two years after the IPR was filed. (Tr. 2:11-22). Similarly, both Terry Kramer and Jacques Coderre, who runs Techmark, testified that they conducted searches and did not find either reference. (Tr. 2:38-44, 2:112). The search performed by Kramer prior to the IPR took about 32 hours of total searching. (Tr. 2:77-78).

The Court has also reviewed documents concerning the review performed by the Milbank law firm *in camera*, and there is no evidence or suggestion that either the lawyers or the client actually knew of either reference.

Palomar has presented no evidence to the contrary, or even casting doubt on the issue of actual knowledge. Accordingly, the Court finds that MRSI was not actually aware of the Ueno or Harigane references at the time of the IPR proceeding. The subjective prong of the estoppel bar has therefore been satisfied in favor of MRSI.

B. Whether MRSI Reasonably Should Have Been Expected to Discover the Disputed References

The second issue under § 315(e)(2) is the objective question: whether a skilled searcher conducting a diligent search reasonably could have been expected to discover the Harigane and Ueno references. Because the inquiry is objective, any actual search performed at the relevant time is not conclusive evidence of a reasonable search. Nonetheless, evidence concerning the

design, performance, and results of such a search may be relevant on the issue of what a reasonably diligent search would have produced.

1. MRSI's Case

As noted, Robert Stoll, a former patent examiner and the Commissioner of Patents from 2009 to 2011, presented expert testimony on behalf of MRSI. In substance, he opined that a skilled searcher conducting a diligent search would not reasonably have located the Harigane and Ueno references. He also testified that the actual searches conducted by Techmark and Kramer were reasonable. Finally, he criticized the testimony of Stephen Kunin, Palomar's expert, on a variety of grounds.

2. Palomar's Case

As also noted, Palomar presented expert testimony from Stephen Kunin, a former patent examiner and the Deputy Director for Patent Examinations. MRSI raised multiple objections to the testimony of Kunin. Among other things, MRSI contends that he was not qualified to give expert testimony concerning invalidity searches; that he improperly relied upon searches conducted by an associate; and that he improperly defined the best practices for a search according to the USPTO Seven-Step Guide. MRSI also contends that Kunin's proposed search strategy was not reasonable, principally because it rests on a foundation of hindsight.

a. MRSI's General Objections to the Expert Testimony

The Court will first consider MRSI's more generalized objections, and turn next to issue of Kunin's testimony concerning a reasonably diligent search.

MRSI first contends that Kunin's testimony "should be given little weight because he is not an expert in search methodology, his experience is out of date, and his experience is limited to patentability searches, which are not at issue in the case." (Def. Mem. at 18, ECF 639).

Among other things, MRSI points out that he has not personally conducted a search in many years, and has never personally conducted an invalidity search. (*Id.* at 19-20). It further contends that he is not a person of skill in the art with respect to the relevant technology. (*Id.* at 21-22).

MRSI next notes that the actual work determining the relevant search strategy and conducting the search was performed by an associate, not Kunin, and that Kunin simply repeated the conclusions and opinions of that individual. (*Id.* at 26-29).

MRSI further contends that Kunin's opinion gives undue weight to the USPTO Seven-Step Guide, which is "a short pamphlet designed to give novice searchers an understanding of the tools available at USPTO Patent and Trademark Resource Centers," not a standard by which a diligent search should be judged. (*Id.* at 23, 26). Among other things, MRSI notes that the Seven-Step Guide applies only to U.S. patents, and therefore does not include either foreign patents or non-patent literature; the steps outlined in the guide therefore could not have been used to locate the Ueno reference, which is a foreign publication (although it could have located the Ueno U.S. patent, from which the actual reference could have easily been located). (*Id.* at 25).

There is substantial merit to many of MRSI's criticisms, which bear on the credibility of the opinion Kunin rendered in this proceeding. Nonetheless, the opinion will not be struck or disregarded entirely; rather, both the opinion and the criticisms will be considered as part of the mix of information available to the Court. Furthermore, and as set forth below, the opinion suffers from more significant flaws, and therefore will not be given substantial weight in the analysis of the estoppel issue.

b. Whether Palomar's Proposed Searches Were Reasonable

Kunin testified, in substance, that a reasonably diligent searcher would have used the USPC system; that a reasonable search would have located and searched classes 29/740 and 29/739 within that system; and that a reasonably designed word search within those classes would have located both the Harigane and Ueno references. Each of those conclusions, however, is problematic, and all suffer from the same basic issue: they are clearly influenced by a hindsight analysis.

i. The Choice of the USPC Database

According to the evidence presented, the search performed by Kunin's firm was performed only in the USPC, not the broader and more current CPC system. It is unclear why that limitation was imposed at the outset of the search. It is inconsistent with the Seven-Step Guide on which Kunin relies, which states directly that "[a] comprehensive prior art search would also include foreign patent publications and non-patent literature." (Ex. 4). Furthermore, it is unclear how a reasonable searcher would know, without the benefit of hindsight, that it would not be necessary to search databases that contained such foreign and non-patent information. Of course, a search becomes simpler and more manageable if confined to a single database representing a subset of the available art. And a simpler and more manageable search—in the right database—is more likely to discover the disputed reference. But Kunin never explained how it was that the hypothetical reasonable searcher would have known to apply that limitation at the very beginning.

ii. The Choice of the 29/740 and 29/739 Classes

Kunin further testified, in substance, that a reasonable search should have been conducted in the USPC system in classes 29/740 and 29/739, and he identified various search strings within

those classes generated by his firm that located the reference. According to the evidence, no other search, in any other class, was performed by his firm.

According to Kunin, the search should have focused on class 29/740 because the Isaacs patent was a primary reference used in the IPR proceeding, and because Isaacs was cross-referenced to that class. (Tr. 1:53-55; '960 Patent at [52]). He also testified that the search should have focused on class 29/739 ("metal working"/"means to fasten electrical component to wiring board, base, or substrate"), because that class deals with relevant subject matter, which is fastening an electrical component to some form of circuit board. (Tr. 1:42).

Again, the primary class of the '327 Patent is 228/102. Neither the 29/740 nor 29/739 classes appear on the face of the '327 Patent, whether as a secondary classification, a field of search, or a cited reference.¹¹ The patent examiner thus did not search either 29/740 or 29/739 in the course of the application process.

In any event, as to the Harigane reference, Kunin's opinion requires that a searcher would focus attention on class 29/740 as part of a reasonably diligent search. Indeed, the searches he identified that located the Harigane reference were all performed in that class. His theory as to why this class ought to have been searched appears to rely entirely on the Isaacs reference. Again, the primary class of Isaacs is 29/834; one of the five secondary classes of Isaacs is 29/740. Kunin therefore clearly started with the assumption that Isaacs had been located, and that it was the jumping-off point for the searches that located Harigane.

But the reality, of course, is that Isaacs itself was only located by MRSI after

¹¹ The primary class of the '327 Patent, and all subclasses, were in class 228. The primary class of the Harigane and Ueno patents, and all subclasses, were in class 29. The '327 Patent listed nothing in the "field of search" under class 29. Although two of the fourteen "references cited" were in class 29, they did not include 29/739 or 29/740. Neither Harigane nor Ueno listed a "field of search" nor cited any prior-art references in class 228.

considerable search effort. It is certainly true that MRSI located Isaacs before the IPR proceeding, that Isaacs was recognized to be an important reference, and that finding Isaacs could have led a searcher to 29/740. It does not follow, however, that a reasonably diligent search should have started with Isaacs; it in fact should have started (and did start) with the '327 Patent. *Cf. Asetek Danmark*, WL 7589209, *8–9 (concluding that a skilled searcher conducting a diligent search ought to have found three references at issue prior to the filing of IPR where the classes for all three were on the face of the patent). However one defines the scope of a reasonable search—hours consumed, references reviewed, searches performed, or some combination of those factors or others—surely any reasonable search must begin with the '327 Patent itself.¹²

Put another way, if a skilled searcher started with the Isaacs reference as it ran an invalidity search for the '327 Patent, the Harigane reference could be found without undue effort. After all, that is exactly what happened when Kramer was retained by MRSI to run a second invalidity search. (*See* Ex. 15, 2). Kunin has shown that starting from the same place as Kramer's second search, he could reach the same result. But that is not the same as showing that starting with just the '327 Patent, a skilled searcher conducting a diligent search would have found the Harigane reference with a reasonable degree of time and effort. *But see Wi-LAN USA, Inc. v. LG Electronics, Inc.*, 2019 WL 5698259, *9 (S.D. Cal. Nov. 4, 2019) (“[T]he fact that LG eventually found the three references at issue through a prior art search is compelling evidence itself that LG reasonably could have discovered these references through a diligent search.”).

Finally, every reasonable search must have a stopping point. Kunin's opinion assumes

¹² It is certainly doubtful whether a reasonable search requires that every subclass of every helpful patent that the searcher locates must also be searched. If that were the standard, a diligent searcher should have not only conducted the searches that led to Isaacs, but then in turn searched the primary class of Isaacs and all five secondary classes. The Court declines to impose such a standard here.

that a reasonably diligent searcher would have not stopped once Isaacs was located, and would have continued beyond that point. But without hindsight analysis, a searcher would have no reason to know that additional helpful references existed and remained undiscovered. Nor, for that matter, would a diligent search necessarily continue if significant prior art had already been located.

As to the Ueno reference, Kunin's focused his search on class 29/739. That class, like 29/740, has a promising title: "means to fasten electrical component to wiring board, base, or substrate" (although, again, the patent here involves the *placement* of workpieces, not their *fastening*). And, indeed, Kramer searched that very subclass, although he did not locate the Ueno reference. (Tr. 1:49). But it does not follow that a reasonable search would have necessarily focused on class 29/739. As before, that class appears nowhere on the face of the '327 Patent. Nor does it appear in either Harigane or Isaacs. Thus, even accepting Kunin's argument, a reasonably diligent searcher would have missed Ueno unless he happened to focus on class 29/739 solely on the basis of its title. Furthermore, class 29/740 ("chip component") is "indented" from 29/739, suggesting that it may have been more reasonable to focus on the narrower class than to search the broader one.

In short, Kunin did not provide a compelling reason why a reasonably diligent searcher, at the beginning of the search, starting only with the '327 Patent, and without knowing where he wanted to wind up, would focus the search effort solely on classes 29/740 and 29/739.

iii. The Choice of the Search Terms

Finally, and perhaps most importantly, Kunin's search strings were clearly developed with the benefit of hindsight.

As to the Harigane reference, Kunin testified that searches performed in class 29/740

produced 161 results when using the keywords “mounting,” “chip,” and “component”; 148 results when using “mounting,” “chip,” component,” and “electronic”; 89 results using with “mounting,” “electronic,” “component,” and “intermediate”; and 35 results when using “mounting,” “chip,” “component,” “electronic,” and “intermediate.” (Tr. 1:46-47).¹³ All four of those result sets included the Harigane reference.

As to the Ueno reference, Kunin testified that searches performed in class 29/739 produced 121 results when refined with the keywords “mounting,” “moving,” and “component,” of which the Ueno patent was the 37th result. (Tr. 1:49). He also testified that a skilled searcher, having found the Ueno patent, would have found the PCT publication, the actual reference at issue. (Tr. 1:50-53).¹⁴

Kunin did not testify that his firm created any other search strings. He therefore did not testify that a hypothetical diligent searcher would have conducted a variety of unsuccessful searches before hitting on the right combination of search terms necessary to find Harigane or Ueno. Indeed, taking his testimony on its face, a hypothetical searcher would not have even conducted searches using the basic terms in the title or the abstract of the ’327 Patent, but instead would have gone straight to the exact combination of synonyms necessary to discover the references.¹⁵

Thus, although the ’327 Patent covers a “method . . . for placement of a first workpiece

¹³ All search strings proposed by Kunin also contained date limitations from January 1, 1790, through November 5, 2002 (the filing date for the ’327 Patent). There is no dispute that the date limitations are reasonable.

¹⁴ Again, there is no dispute that a skilled searcher would have quickly found the Ueno reference had he or she found the Ueno patent.

¹⁵ Of course, it is highly unlikely that Kunin intended to suggest anything so absurd. But there was no testimony as to what degree of effort and expense would be required for a reasonably diligent searcher to hit upon the right combination of keywords in the right classification in the right database. Instead, his opinion simply ignored that aspect of the issue.

onto a second workpiece” (’327 Patent at [57]), Kunin’s search strings did not use the terms “placement,” or any variation of the word, nor did they use “first,” “workpiece,” or “second.” Furthermore, the basic underlying concept of the patent is the use of an “intermediate location” between an “origination location” and an “attach location” to increase the “accuracy and precision” of assembling products. (’327 Patent at [57]). But Kunin did not search the terms “location,” “origination,” “attach,” “accuracy,” or “precision” (although he did search the term “intermediate”). And while the title of the patent is “High-Accuracy Placement Method Utilizing Double Pick and Place,” he did not search the terms “double,” “pick,” or “place.”

Instead, the search strings developed by Kunin’s firm that located the references used terms that do not appear in the specification, or barely at all. All four search strings use the term “mounting,” which does not appear anywhere in the patent, and the term “component,” which appears only once. (Tr. 1:46-47). And three use the term “electronic,” which only appears twice. (Tr. 3:115).

The dependence on the terms “mounting” and “component” is particularly significant. That word choice undoubtedly helps narrow the set of search results without excluding the Harigane and Ueno references. Harigane bears the title “Electronic Component Mounting Apparatus,” and Ueno bears the title “Apparatus and Method for Mounting Component.” (Exs. 16, 17).¹⁶ According to MRSI, the word “mounting” occurs 66 times in Harigane and 78 times in Ueno. (Def. Mem. at 30). The term “component” appears 79 times in Harigane and 344 times in Ueno. (*Id.*).

As noted, the word “mounting” does not appear in the ’327 Patent. It is true that the term

¹⁶ Kunin’s search strings used three of the four words in the Harigane title: “electronic,” “component,” and “mounting.”

“mounted,” which is a variation, does appear twice in the specification. (*See, e.g.*, ’327 Patent, Col. 1, 1.24; Col. 5, 1.39). But why would a skilled searcher be expected to select the term “mount” (or a variation) instead of the term “place” (or a variation), which is the term actually used throughout the ’327 Patent? Or to select “mount” instead of a variation of “locate” or “attach,” which again are used throughout? Why “mount,” rather than “deposit,” “set down,” or “put”? And even if the searcher decides to use the term “mount,” how would he or she know to limit the search to “mounting,” and eliminate other variations of the word?

The word “component” does appear once in the ’327 Patent. But again, why would a skilled searcher select the term “component,” instead of the term “workpiece,” the term actually used throughout the ’327 Patent? Why “component,” rather than “part,” “piece,” or “subassembly”?

To make matters worse, Kunin’s firm created different search strings for the two searches. The terms “chip,” “electronic,” and “intermediate” were used in the search string for Harigane, but not the search string for Ueno. According to MRSI, “chip” appears 240 times in Harigane, “electronic” 72 times, and “intermediate” twice. (Def. Mem. at 30). But none of the three words appears in Ueno, and therefore a new search string had to be devised to locate that reference.

The reason, of course, that Kunin was able to use those search terms to mark out a clear path to the disputed references is simple: he knew where he wanted to end up. It is one thing to identify a search path from one patent to another with a few simple steps. It is quite another to find a single reference, starting from scratch, among tens of millions of items in a database.

Of course, a diligent search should not be limited to the exact words of the patent, nor should it be limited only to the most frequently used words. Such a search would necessarily

consider reasonable synonyms and alternatives when constructing a keyword search. But a diligent search should not be expected in all instances to arrive at the precise combination of synonyms necessary to locate the reference in question. And the fewer the common terms between the patent and the reference, the more numerous the search possibilities become, and the less likely it is that the reference will be found.

Finally, it is not enough simply to locate a reference; that reference must be read, and interpreted, and understood in the context of the patent. The farther afield that the searcher goes from the actual words in the patent, the less likely it is that even a reasonably diligent searcher will not only locate the reference, but understand its potential significance.

It is true, as set forth above, that Kramer actually did search class 29/739 prior to the IPR proceeding, and failed to locate the Ueno reference. (Tr. 2:111-12). It is also true that several of the search terms Kramer used during that search appear in the Ueno patent; for example, the Ueno abstract contains the words “first,” “pickup,” “placement,” “station,” “place,” “substrate,” and “circuit,” each of which Kramer IP used for its search. (Tr. 2:113-14; *see* ‘953 Patent at [57]). Kramer surely came close to Ueno; it is possible that he even located it and passed over it. Again, however, the standard is reasonableness, not perfection. And the issue is not whether Kramer himself performed an objectively reasonable search (although the actual search he performed is evidence bearing on that inquiry). It is whether it is more probable than not that a (hypothetical) skilled searcher conducting a diligent search reasonably could have been expected to discover the reference.

In short, the testimony of Kunin is highly problematic, and in particular the fact that he obviously employed a hindsight approach. In the context of the estoppel bar of § 315(e)(2), courts should be particularly cautious about accepting a hindsight analysis. Whenever a party

seeks to invoke the estoppel bar, there will be both a challenged patent and a disputed reference that was not raised in the IPR proceeding. Almost by definition, the disputed reference will contain inventive concepts that are substantially related to the concepts in the challenged patent (otherwise, the party would not be attempting to assert the disputed reference). It stands to reason, therefore, that in hindsight there will almost always be a seemingly simple search pathway that could have led a searcher from the patent to the reference.

But that cannot be the standard by which to judge a reasonable search. Instead, the principal question is what a reasonable searcher should have been expected to do at the outset, and which requires consideration of a multitude of factors, including selecting the right places to search and using the right combination of keywords. Of course, what happens once the search is underway also bears on the inquiry; that involves not only making judgments as to what leads to pursue and what to ignore, but also when to stop the search altogether. An analysis tainted by hindsight sheds little light on that inquiry. For that reason, the Court will not give substantial weight to Kunin's opinion as to what an objectively reasonable search would have been.

3. Weighing the Evidence Presented on the Objective Prong

Again, the inquiry on the objective prong is whether it is more probable than not that a skilled searcher conducting a diligent search reasonably could have been expected to discover the reference. The case on the objective prong presented by MRSI was thin, even accounting for the fact that MRSI understood at the time of the hearing that Palomar had the burden of proof in all respects. The testimony of Stoll was at a high level of generality, with relatively little detail as to actual contours of a reasonable search, and virtually no evidence as to appropriate search strings.¹⁷ Stoll largely conflated his description of the actual search that had been performed by

¹⁷ The *Clearlamp* court stated that the way to show "what a skilled search would have found would be (1) to identify the search string and search source that would identify the allegedly unavailable prior art and

Techmark and Kramer and his view of an objectively reasonable search, placing considerable emphasis on the number of hours that the actual searches took and the fact that those searches produced results sufficient to cause an IPR proceeding to be instituted as to all claims. It would have been far preferable if he had actually outlined the parameters of a reasonable search strategy, addressing not only the relevant databases and classes within those databases, but reasonable search strings based on the language and technology in the patent.

Nonetheless, MRSI has persuaded the Court and carried its burden as to the objective prong of the inquiry. The evidence, taken as a whole, is sufficient to establish the following by a preponderance of the evidence:

1. In any search, the databases to be searched (which includes domestic and foreign patents and publications) contain enormous amounts of technical information, and any reasonable search requires careful attention to both the classifications to be searched and the choice of keywords to employ.
2. There is no set way to conduct an invalidity search, and reasonable experts could and do disagree as to the approach to take in a particular case.
3. An objectively reasonable search in this case would start with the '327 Patent.
4. The difficulty of the search here is compounded by the large number of claims in the '327 Patent.
5. The difficulty of the search is also compounded by the relatively common nature of the words used in the '327 Patent to describe the invention, and the large number of potential

(2) present evidence, likely expert testimony, why such a criterion would be part of a skilled searcher's diligent search." *Clearlamp, LLC*, WL 4734389, at *9. But that framework is not the exclusive method for such a proponent to make its case. For example, in *Ironburg Inventions LTD v. Valve Corp.*, the estoppel proponent demonstrated not only that the prior-art references at issue had been found by another party instituting IPR against the same patents, but that one of the references was found on the face sheets of both of the patents in suit. 2019 WL 5862790, *5–6 (W.D. Wash. Nov. 8, 2019).

synonyms of those words.

6. There is no overlap between the classes/subclasses on the face of the '327 Patent and the classes/subclasses on the faces of the Harigane and Ueno patents.

7. The overlap between the principal terms used to describe the '327 Patent (such as “placement” and “workpiece”) and those used to describe the Harigane and Ueno patents (such as “mounting” and “component”) is very limited.

8. Because of the large number of claims, the use of common terms in the patent, the lack of overlap in classifications, and the lack of overlap of principal terms, there is a substantially increased likelihood that a reasonable search could fail to uncover either the Harigane or the Ueno reference.

9. A reasonable search must have a stopping point, and both the number of hours spent searching and the results obtained from the search (including particularly whether the search has produced useful results) are important considerations in determining what that stopping point ought to be.

10. A reasonably diligent searcher, in this case, could conclude after spending more than 30 hours searching, and after locating prior art that provided reasonably strong rejections against all of the claims of the patent, that the search could be concluded.

11. It is therefore more probable than not that a skilled searcher conducting a diligent invalidity search concerning the '327 Patent reasonably could not have been expected to discover the Harigane and Ueno references.

The objective prong of the estoppel bar has therefore been satisfied in favor of MRSI. Because both the subjective and objective prongs have been resolved in favor of MRSI, the statutory estoppel bar of § 315(e)(2) will not prohibit it from asserting invalidity grounds based

on the Harigane and Ueno references.

V. Conclusion

For the foregoing reasons, the motion of plaintiff Palomar Technologies, Inc., for partial summary judgment on the basis of statutory estoppel under 35 U.S.C. § 315(e)(2) is DENIED.

Any party seeking to supplement the record, or otherwise address any evidentiary issue, arising out of the ruling concerning the allocation of the burden of proof should file a motion seeking appropriate relief fourteen days from the date of this order.

So Ordered.

Dated: May 4, 2020

/s/ F. Dennis Saylor IV
F. Dennis Saylor IV
Chief Judge, United States District Court