


ROBINSON, District Judge

I. INTRODUCTION

Plaintiff TruePosition, Inc. (“plaintiff”) filed this patent infringement action against Andrew Corporation (“defendant”) on October 25, 2005, alleging infringement of plaintiff’s U.S. Patent No. 5,327,144 (“the ‘144 patent”). (D.I. 1) Plaintiff alleged that defendant’s system for locating cellular telephones, called the Geometrix® Wireless Location System, infringed claims 1, 2, 22, 31 and 32 of the ‘144 patent. Both parties filed motions for summary judgment. On August 23, 2007, the court denied plaintiff’s motion for summary judgment of infringement, granted plaintiff’s partial motions for summary judgment with respect to no anticipation and on defendant’s unfair competition defense and counterclaim, and denied defendant’s motion for summary judgment that claim 22 of the ‘144 patent is invalid for indefiniteness. (D.I. 258, 259) A jury trial was held between September 4 and 14, 2007. On September 14, 2007, the jury returned a verdict in favor of plaintiff on each asserted claim. (D.I. 293) Specifically, the jury found that defendant directly infringed, contributorily infringed, and induced the infringement of the ‘144 patent, and that its infringement was willful. (Id.) The jury rejected defendant’s fraud and promissory estoppel defenses, and awarded plaintiff damages. (Id.) Defendant’s equitable defenses remain pending before the court and have been fully briefed based on the factual record created at trial.¹ Also presently before the court is defendant’s motion for judgment as a matter of law (“JMOL”) or, in the alternative, for a new trial (D.I. 318), and plaintiff’s motions for attorney fees (D.I. 314) and for a permanent injunction (D.I. 316). The court has

¹See D.I. 368 (memorandum order dated January 23, 2008); D.I. 325, 340, 351 (parties’ briefs).

jurisdiction over these issues pursuant to 28 U.S.C. §§ 1331, 1338(a) and 1400(b).

II. BACKGROUND²

A. The Technology at Issue

As discussed in the court's previous opinion (D.I. 258), this case involves a patented system for locating cellular telephones using signals which are transmitted from a cellular telephone to a cell site³ over a prescribed set of "reverse control channels." There are two basic types of data channels in a cellular network. Generally, control channels carry information to control the operations of the cellular network, while voice channels carry user data, such as the voice signals that a user generates during a call. Control channels are operative any time a cell phone is turned on, while voice channels are active only during a call.

Cellular networks use different protocols for describing how information is transmitted between a cell phone and a cell site. In Global System for Mobile Communications ("GSM") cellular networks, control channels are known as stand-alone dedicated control channels ("SDC" channels); voice channels are called traffic channels ("TCH" channels). Uplink Time Difference of Arrival ("UTDOA") is a network-based means of determining a cell phone's location by comparing and calculating the

²In support of its JMOL motion, defendant filed two lengthy appendices, the majority of which contained re-numbered pages of trial transcript; defendant proceeded to reference the testimony only by its newly assigned pagination. The court reminds local counsel that trial transcripts need not be submitted as a post-trial exhibit; citations should be made to the record directly.

³A network tower having antennae which is assigned a hexagonal-shaped service area, called a "cell."

difference in time required for the cell phone's signal to reach different cell sites.⁴

B. The Parties and the '144 Patent

Plaintiff is a Delaware corporation with a principal place of business in King of Prussia, Pennsylvania. Defendant is a Delaware corporation with a principal place of business in Westchester, Illinois.⁵ The parties compete directly in both domestic and foreign markets for cell phone location technologies. Defendant sells geolocation products under the tradename Geometrix®.

In the early 1990s, plaintiff's founder and two other inventors conceived and developed a system that allowed the location of a cell phone user to be determined from the transmissions normally emitted by the user's phone over the control channels. The application leading to the '144 patent was filed May 7, 1993; the '144 patent issued to plaintiff on July 5, 1994. The '144 patent generally relates to a cell phone location system for automatically recording the location of cell phones having several cell site locations. Claims 1, 22, and 31 are independent claims describing, in most general terms, a location system, a ground-based location system, and a method for determining the location of cellular telephones. Each asserted claim 1, 2, 22, 31 and 32 requires that signals be transmitted over a prescribed set of "reverse control channels."

C. Standardization Bodies

Both plaintiff and defendant have participated in the Third Generation

⁴The UTDOA technique uses the known (fixed) speed of the radio waves to calculate the distance in arrival time; hyperbolas are thereafter constructed that are used to calculate the location of the transmitting device.

⁵Defendant's base of operations for its cell phone location technologies is in Virginia.

Partnership Project (“3GPP”), an international standardization body in the cell phone industry, through one of its five recognized organization partners, the European Telecommunications Standards Institute (“ETSI”). 3GPP prepares, approves and maintains “Technical Specifications” and “Technical Reports” (known generally as “standards”) for various cell phone systems. ETSI has an intellectual property rights (“IPR”) policy which states that each member must timely inform ETSI of any “essential IPRs”; an IPR is “essential” when it is not technically possible to implement a standard without infringing that intellectual property. (PTX-363, secs. 4.1, 15) UTDOA was at one time part of a 3GPP standard, but was subsequently removed prior to the following events.

D. Timeline of Events Regarding the Parties’ Relationship and Standardization Efforts

On December 29, 2000, plaintiff’s counsel sent a letter to defendant discussing the “FCC’s⁶] mandate requiring wireless carriers to report their plans for implementing E-911 Phase II, including the technology they plan to use to provide caller location[.]” (PTX-7) Plaintiff informed defendant that it held patents in this area, including the ‘144 patent, and enclosed a copy of the ‘144 patent for review. (Id.) The letter “ask[ed] that [defendant] kindly investigate whether [it’s] Geometrix location system employs TruePosition’s patented TDOA and AOA processing methods and systems,” and stated that if defendant “would like to inquire about a license or need[ed] further information, please contact [counsel] directly.” (Id.) Defendant did not respond to this letter. (D.I. 298 at 149:9-151:13; D.I. 299 at 498:8-499:22)

⁶Federal Communications Commission.

On December 11, 2001, plaintiff and KAI filed an infringement action against Allen Telecom LLC, defendant's predecessor, (the "Allen suit"), in which plaintiff asserted that Geometrix® infringed several of its patents. Plaintiff did not assert the '144 patent against Allen; defendant,⁷ however, did rely upon the '144 patent as a primary prior art reference in support of its invalidity defenses. (D.I. 299 at 499:24-501:4)

Several significant events occurred between 2001 and 2002, while the Allen suit was pending. In November 2001, plaintiff's representatives attended a 3GPP meeting in Cancun, Mexico. At this meeting, plaintiff submitted a "Work Item Request" to include UTDOA in the GERAN⁸ specifications, which request was rejected.⁹ (DTX-901)

Plaintiff noted:

Significant to note the importance with which acceptance of UTDOA into the GERAN specs depends on it being a "multi-vendor" system. This means that we may need to cooperatively share the concepts and system designs but license the higher-value IPRs, as required to allow other vendors to produce UTDOA systems. One strategy may be to share the concepts required to produce moderately accurate systems, but retain the high-value algorithms that allow for higher accuracy.

(Id.; see also D.I. 299 at 240:7-16) This reflected ETSI's "general practice" of having multiple vendors for standardized systems. (D.I. 299 at 243:9-16) Plaintiff agreed to undertake a feasibility study "to address the concerns of the GERAN members." (D.I.

⁷While the Allen suit was pending, defendant acquired Allen and became its successor in interest.

⁸GERAN stands for GPRS and EDGE radio access network. (D.I. 299 at 247:20)

⁹Plaintiff sought to re-standardize UTDOA in the 3GPP technical specifications because standardization would result in an increase in sales of its UTDOA products. (D.I. 298 at 234:10-20)

901) Plaintiff also noted a desire to “[d]evelop additional relationships with vendors and operators.” (Id.)

Plaintiff joined ETSI in January 2002. (DTX-62; D.I. 299 at 245:5-7) In April 2002, plaintiff presented its “Feasibility Study” discussing the feasibility of applying TDOA to locate GSM cell phones. (PTX-364; D.I. 298 at 170:16-22) The Feasibility Study submitted by plaintiff to ETSI discussed the location of cell phones using the SDC channel. Notably, it contained the following “Intellectual Property Consideration”:

TruePosition, Incorporated may hold one or more patents or copyrights that cover information contained in this document. A license will be made available to applicants under reasonable terms and conditions that are demonstrably free of any unfair competition.

(PTX-364 at Sec. 3.3.5) The Feasibility Study is publicly available through 3GPP.

The parties discussed settling the Allen suit with a license and, on November 2, 2002, plaintiff’s counsel sent an email to defendant containing a list of patents that it “anticipate[d] the license would cover,” including the ‘144 patent. (PTX-8; D.I. 299 at 502:18-504:6) The discussion did not lead to any offers. (Id.)

Defendant’s business director and standards body representative, Oscar Magnusson, reviewed the Feasibility Study and shared this information with defendant’s vice presidents of business development and engineering. (D.I. 304 at 1644:11-1649:2) Subsequently, and based in part on this review, defendant applied to become an ETSI member in January 2003. (Id.; DTX-154)

Defendant’s first UTDOA product, Geometrix®, began development in 1992 but was not deployed until 2001. (D.I. 305 at 1855:6-18) Geometrix® located cell phones only using the voice channel at this time. (D.I. 299 at 317:19-24 (voice channel only

used in November 2002), 322:18-323:1 (same), 353:17-384:1 (voice channel only utilized between 1995 and 2007))

In 2003 and 2004, defendant worked extensively with plaintiff to get UTDOA standardized. In early 2003, defendant and plaintiff worked on a "Project Specification TDOA System Study," which was a "system study for the TDOA positioning procedure in a GSM radio access network."¹⁰ (DTX-844-A) The "Ground Rules" for the study group, agreed to by all participants and memorialized in a project specification dated February 7, 2003, provided:

7) No lawyers. We understand that we all come from different companies that to some extent are competitors and to some extent are customers and suppliers. We all work with the understanding that what we do here is to **create a solution that we all benefit from**. We respect that in some cases we do not have to know all details that might be sensitive for other companies to provide. We respect each other's positions in this regard.

(Id. at sec. 6.3) (emphasis added) In connection with the TDOA system study, plaintiff and defendant had meetings, weekly conference calls, and exchanged over a thousand emails all related to the project. (D.I. 304 at 1665:23-1666:24, 1671:11-24) The result was the creation of a document entitled "UTDOA System Study, Architecture" in April 2003; the document reflects the original architecture and a revised network architecture for the addition of UTDOA to GSM. (DTX-130) The technical work completed in the system study was submitted to the 3GPP standards body. (D.I. 304 at 1671:5-10) Between April 2003 and November 2004, plaintiff and defendant traveled to 3GPP

¹⁰Ericsson, Nokia, AT&T Wireless, and Cingular also participated in the TDOA system study group. (DTX-844-A) The study originated from AT&T's agreement to purchase a TDOA solution from defendant, and its request for a study on how TDOA would affect its network. (Id. at sec. 1.4)

standards meetings in the U.S., Germany, Hungary, Iceland, Mexico, Spain, Canada, and South Africa in an effort to persuade the standards body to add UTDOA to the GSM standard. (e.g., DTX-1125; D.I. 299 at 440:13-18; D.I. 304 at 1671:11-1674:16; 1677:3-25)

In December 2003 and January 2004, plaintiff and defendant engaged in settlement negotiations regarding the Allen suit. A settlement agreement was executed on January 16, 2004, wherein defendant agreed to license several of plaintiff's patents relating to voice channel location of cell phones. (PTX-15R at ¶ 6) The '144 patent was not included amongst the licensed patents. The settlement agreement specifically provided that:

TruePosition hereby grants to Andrew a worldwide non-exclusive license to make, use, offer to sell, sell, and import geolocation equipment under the patents and patent applications listed in Exhibit B hereto

TruePosition represents that the patents and patent applications listed in Exhibit B hereto include all of its patents and patent applications **except for the '144 and '410 patents**[.]

(Id.) (emphasis added) Further, plaintiff provided a covenant not to sue defendant for infringement of the '144 patent "for domestic applications by Andrew relating solely to tasking E-911 geolocation . . . so long as said applications do not enable or permit locations to be performed for any task other than E-911. . . ." (Id. at ¶ 8) The agreement specifically defined the hardware and software for the excluded Geometrix® system; Geometrix® was defined as wireless equipment that determines cell phone location "by determining TOA, AOA, and/or TDOA of a signal transmitted by a wireless telephone's voice or traffic channel (**but not the control channel** or access channel signals)[.]" (Id. at ¶ 9) (emphasis added) The settlement agreement was dated

February 1, 2004 (PTX-15R); the Allen suit was subsequently dismissed on February 13, 2004.

Following the submission of dozens of standards “Change Request[s]” by the parties (e.g. DTX-414), UTD OA for GSM was standardized by 3GPP in November 2004. (DTX-50; DTX-846) Only a month later, in December 2004, defendant bid on, and ultimately won, a contract to supply a cell phone geolocation system to Saudi Telecom (“STC”) in Saudi Arabia.¹¹ Defendant’s bid was prepared by two employees located in the United States: Joseph P. Kennedy, Jr., based in Ashburn, Virginia, drafted the offer and provided it to Mohammad Eissa, based in Orland Park, Illinois. (PTX-142; D.I. 300 at 699:25-700:16) The bid was submitted to STC by Andrew Middle East (“AME”), a branch of defendant located in Dubai formed in July 2004, through its Saudi agent, the Almisehal Group. (PTX-141; PTX-142; PTX-158; PTX-146; D.I. 305 at 1863:1-17) The bid referenced “Andrew Corporation” and “Andrew,” not AME specifically (e.g., PTX-146), and boasted in its summary that “Andrew Corporation is one of the world’s largest suppliers of wireless telecommunication infrastructure subsystems” (*id.*). The bid was sent to STC under the cover of a letter from Mr. Eissa and the general manager of AME, listing AME, Almisehal Group, and Mr. Eissa as the “points of contact for Andrew on this offer”; defendant’s Virginia address was provided as the return address on the letter. (PTX-142) Specific pricing was included (PTX-153 at 5), as was a technical description of a cell phone location system that included

¹¹Defendant’s bid was in response to a “Request for Proposal” issued by STC for a project named the “GSM VAS Project,” to be implemented in several phases. (PTX-141; D.I. 305 at 1863:19-21)

coverage for 2866 cell sites in STC's network to be implemented in multiple phases. (PTX-171 at 20)

In August 2005, defendant built and demonstrated its first control channel location system in the United States at its Ashburn, Virginia facility ("the Ashburn demonstration"). (PTX-304; D.I. 305 at 1860:15-17) Defendant's President, Terry Garner, testified that the Ashburn demonstration was conducted for an agency of the U.S. Government, who told him the event would be "classified." (D.I. 305 at 1860:15-17, 1869:19-1871:18)

Defendant was awarded a contract with STC in September 2005.¹² (D.I. 298 at 120:21-25). The STC contract is awarded in five phases. Andrew was awarded a rollout of 600 cell sites for Phase 1, and 383 sites for Phase 2. (D.I. 305 at 1906:15-24) As of the trial, defendant has received a formal commitment for Phase 3; the value of that contract is known but the cell sites and equipment involved are yet to be determined. (Id. at 1906:25-1907:9) Mr. Garner testified that each phase is independent of each other; it is possible that Phases 4 and 5 could be awarded to other suppliers. (D.I. 305 at 1863:18-1865:5) Plaintiff's damages expert, Carla Mulhern, testified that the evidence she had reviewed, including defendant's press releases and revenue forecasts, indicated that defendant had won the entire contract, which was being rolled out in phases. (D.I. 303 at 1185:5-1187:9)

Plaintiff first learned about the STC offer around August of 2005. (D.I. 299 at 517:6-8) On September 30, 2005, plaintiff sent defendant a cease and desist letter

¹²The final contract for the first phase of the STC deal was not executed until February of 2006. (D.I. 301 at 772:13-20)

stating its “concern[] that Andrew is, or may in the future be, supplying geolocation equipment from the United States to Saudi Arabia or elsewhere in violation of its ‘144 patent,” which it did not intend to license. (PTX-17) Defendant asked for more information. (D.I. 299 at 518:19-21) A second letter was sent to defendant on October 13, 2005, this time attaching the ‘144 patent and a claim chart comparing the claims to defendant’s “apparent or contemplated activities.” (PTX-18) Defendant did not respond by plaintiff’s requested date of October 18, 2005. (D.I. 299 at 518:18-23)

Plaintiff filed this infringement suit on October 25, 2005. Throughout the litigation, defendant asserted that it would never have assisted plaintiff in advocating the UTDOA standard had it known that plaintiff construed the ‘144 patent to cover UTDOA technology. Plaintiff has never declared the ‘144 patent “essential” to any 3GPP standard.

E. Geometrix®

Defendant’s current Geometrix® geolocation product, found infringing by the jury, uses a UTDOA technique to locate signals sent over a SDC channel (when a user is not on a call) or a TCH channel (when a user is on a call). The Geometrix® system comprises a central computer, called a Geolocation Control Server (“GCS”), and wireless location sensors (“WLS”) that are each installed at a cell cite. (D.I. 301 at 795:11-796:16) With UTDOA, a cell phone transmits a signal that is received by several WLS located at a cell site. The incoming signal is converted to a baseband frequency and, using the time the signal arrived at the cell site, a digital frame called the “DF Results Message” is created, sending the respective times of arrival to the GCS. (PTX-139 at 24-25; D.I. 301 at 830:17-832:22, 866:24-867:6) The GCS then

associates the frames received from different cell sites, determines the differences in arrival time, and using the fixed known rate of travel of radio waves (the speed of light), determines the location of the cell phone. (Id.)

F. Jury Findings

The jury found that defendant's Geometrix® system infringes independent claims 1, 22, and 31 of the '144 patent, and that defendant contributes to and induces infringement of the '144 patent. Defendant's infringement was found to be willful. The jury found that plaintiff did not commit fraud by failing to declare its '144 patent as essential to an ETSI standard. Neither defendant's statements nor its course of conduct were construed to constitute a promise to license the '144 patent. The jury did not pass judgment on the defenses of equitable estoppel, implied license and unclean hands, which were concurrently tried to the court.¹³ Having found against the defenses before it, the jury awarded plaintiff \$45.3 million in compensatory damages for defendant's infringement. (D.I. 293) This award reflected Ms. Mulhern's estimation of lost profits damages for all five phases, fulfilled and unfulfilled, of the STC deal. (D.I. 303 at 1184:19-1185:18)

III. LEGAL STANDARDS

A. Motion for Judgment as a Matter of Law

To prevail on a renewed motion for judgment as a matter of law following a jury trial under Federal Rule of Civil Procedure 50(b), the moving party "must show that the jury's findings, presumed or express, are not supported by substantial evidence or, if

¹³No additional testimony or evidence outside of that presented to the jury was received by the court in support of these defenses.

they were, that the legal conclusions implied [by] the jury's verdict cannot in law be supported by those findings.” Pannu v. Iolab Corp., 155 F.3d 1344, 1348 (Fed. Cir. 1998) (quoting Perkin-Elmer Corp. v. Computervision Corp., 732 F.2d 888, 893 (Fed. Cir. 1984)). “‘Substantial’ evidence is such relevant evidence from the record taken as a whole as might be acceptable by a reasonable mind as adequate to support the finding under review.” Perkin-Elmer Corp., 732 F.2d at 893. In assessing the sufficiency of the evidence, the court must give the non-moving party, “as [the] verdict winner, the benefit of all logical inferences that could be drawn from the evidence presented, resolve all conflicts in the evidence in his favor, and in general, view the record in the light most favorable to him.” Williamson v. Consol. Rail Corp., 926 F.2d 1344, 1348 (3d Cir. 1991); Perkin-Elmer Corp., 732 F.2d at 893. The court may not determine the credibility of the witnesses nor “substitute its choice for that of the jury between conflicting elements of the evidence.” Id. In summary, the court must determine whether the evidence reasonably supports the jury's verdict. See Dawn Equip. Co. v. Kentucky Farms Inc., 140 F.3d 1009, 1014 (Fed. Cir. 1998).

B. Motion for a New Trial

The decision to grant or deny a new trial is within the sound discretion of the trial court and, unlike the standard for determining judgment as a matter of law, the court need not view the evidence in the light most favorable to the verdict winner. See Allied Chem. Corp. v. Darflon, Inc., 449 U.S. 33, 36 (1980). Federal Rule of Civil Procedure 59(a) provides, in pertinent part:

A new trial may be granted to all or any of the parties and on all or part of the issues in an action in which there has been a trial by jury, for any of the reasons for which new trials have heretofore been granted in actions

at law in the courts of the United States.

New trials are commonly granted in the following situations: (1) where the jury's verdict is against the clear weight of the evidence, and a new trial must be granted to prevent a miscarriage of justice; (2) where newly-discovered evidence surfaces that would likely alter the outcome of the trial; (3) where improper conduct by an attorney or the court unfairly influenced the verdict; or (4) where the jury's verdict was facially inconsistent. See Zarow-Smith v. N.J. Transit Rail Operations, 953 F. Supp. 581, 584 (D.N.J. 1997) (citations omitted). The court, however, must proceed cautiously and not substitute its own judgment of the facts and assessment of the witnesses' credibility for the jury's independent evaluation. Nevertheless,

[w]here a trial is long and complicated and deals with a subject matter not lying within the ordinary knowledge of jurors a verdict should be scrutinized more closely by the trial judge than is necessary where the litigation deals with material which is familiar and simple, the evidence relating to ordinary commercial practices. An example of subject matter unfamiliar to a layman would be a case requiring a jury to pass upon the nature of an alleged newly discovered organic compound in an infringement action.

Lind v. Schenley Indus. Inc., 278 F.2d 79, 90-91 (3d Cir. 1960).

IV. DISCUSSION

A. Defendant's Motion for JMOL or, in the Alternative, a New Trial

1. The JMOL issues properly before the court

At the conclusion of plaintiff's case-in-chief, counsel for defendant stated that defendant would "move for judgment as a matter of law for infringement on all the claims, for all the accused products, and for damages[.]" (D.I. 303 at 1388:13-16) Counsel then put several motions for JMOL on the record: (1) no proof of an offer to

sell within the United States (id. at 1389:1-1391:10); (2) because there was no proof of an offer to sell within the United States, damages should be limited to damages on equipment that was actually shipped to Saudi Arabia (id. at 1391:15-1392:11); (3) no infringement of the means-plus-function elements of claims 1 and 22, insofar as there was a failure of proof on the corresponding structures (id. at 1392:12-1396:16).¹⁴

Counsel stated, “I won’t belabor the record with the reasons, but just so I’m not waiving anything, of course, I have plenty of other detailed motions I could make with respect to why they have not met the other claim terms, why they have not met your Honor’s construction, and on all the infringement issues. But these are the ones I think we should at least take up now[.]” (Id. at 1396:18-25) Plaintiff argues that defendant is now barred from challenging the jury’s findings in a Rule 50(b) motion on any other issue not specifically mentioned, including its own defenses. (D.I. 345 at 11-14) In response, defendant asserts that it was not required to move for JMOL on its own claims and, notwithstanding, under Federal Circuit precedent, “general pre-verdict JMOLs” are sufficient to preserve its rights under Rule 50(a).¹⁵ (D.I. 349 at 33-34)

The question at bar is whether defendant’s pre-verdict JMOL motions regarding infringement (no offer for sale and failure of proof on claims 1 and 22) and damages, and/or its counsel’s statements, are sufficient to support its post-trial JMOL motion on

¹⁴Counsel also moved for JMOL of no infringement by the doctrine of equivalents; this issue ultimately did not go to the jury.

¹⁵Because the issue of the scope of defendant’s motion regarding infringement and accompanying damages is one unique to patent law, the law of the Federal Circuit applies. See Duro-Last, Inc. v. Custom Seal, Inc., 321 F.3d 1098, 1107-08 (Fed. Cir. 2003).

its other claims, such as: (1) willfulness (D.I. 318, ground V); (2) no lost profits damages based on the existence of non-infringing alternatives (id., ground VII); (3) the defenses of “government use” under 28 U.S.C. § 1498 (id., ground III); (4) fraud (id., ground X); and (5) promissory estoppel (id., ground XI).¹⁶ Rule 50(a) requires the movant to “specify the judgment sought and the law and facts that entitle the movant to judgment.” “The purpose of th[is] requirement is to afford the opposing party an opportunity to cure the defects in proof that might otherwise preclude the party from taking the case to the jury.” Duro-Last, 321 F.3d at 1105. The caselaw indicates that a Rule 50(b) JMOL motion is properly founded where: (1) an oral Rule 50(a) motion was lodged; or (2) a mere technical failure to comply with Rule 50(a) occurred, i.e., “the party **clearly** challenged the sufficiency of the evidence on the disputed issue at some point during trial, thereby alerting the opposing party as to the grounds on which the evidence is allegedly insufficient,” Duro-Last, 321 F.3d at 1106 (emphasis added); and (3) both motions are sufficiently detailed in describing the basis of the claim. The level of specificity required has been the subject of interpretation, and may vary depending on the circumstances of the case. See Fresenius Medical Care Holdings, Inc. v. Baxter Intern., Inc., No. Civ. A. 03-1431, 2007 WL 518804, *5 (N.D. Cal. Feb. 13, 2007) (collecting Federal Circuit authority).

¹⁶In its response to defendant’s email request for emergency relief dated October 11, 2007, plaintiff stated that defendant “filed eleven JMOLs unaccompanied by briefs, only three of which were preserved at trial.” (D.I. 350 at C1) On October 12, the court issued a standard scheduling order noting that defendant filed a motion “setting forth 11 grounds for granting JMOL” and setting the briefing schedule for all post trial motions. (D.I. 320) Defendant’s assertion that the court has already ruled on this issue by way of a notation in a routine scheduling order, and prior to any briefing on this complex procedural issue, is misplaced.

Very brief, oral Rule 50(a) motions have been deemed sufficient where the grounds of the motion were named, and the subject was “the central issue in th[e] case.” Gaus v. Conair Corp., 363 F.3d 1284, 1287 (Fed. Cir. 2004) (declining to upset district court’s determination that plaintiff sufficiently challenged infringement under the doctrine of equivalents in his Rule 50(a) motion, a “terse” and “even cryptic” statement referencing the “all elements” rule and “specification estoppel,” where the district court previously determined that the patent was not literally infringed); compare Malta v. Schulmerich Carillons, Inc., 952 F.2d 1320, 1324-25 (Fed. Cir. 1991) (oral, pre-verdict motion requesting judgment of no infringement was sufficient to support a post-verdict motion concerning the doctrine of equivalents, where the jury had found one claim to be invalid under the doctrine of equivalents, noting that “[c]learly the trial judge had no doubt, nor do we, that the ground stated in the first motion for directed verdict and in support for the motion for JNOV were one and the same”).

As stated previously, defendant’s counsel in this case simply stated that defendant would move for JMOL on “all the claims, for all the accused products, and for damages.” No mention, even generally, was made to the issues of willfulness, fraud, promissory estoppel, or the government use defense. These issues involve different elements of proof than infringement and damages and were not sufficiently raised by counsel’s pre-verdict motion so as to provide the requisite notice to plaintiff. See Duro-Last, 321 F.3d at 1107-08 (finding raising inequitable conduct and on-sale bar issues at the close of evidence insufficient to preserve the right to make a post-verdict JMOL motion on obviousness, as “the various unenforceability and invalidity defenses that may be raised by a defendant– inequitable conduct, the several forms of anticipation

and loss of right under § 102, and obviousness under § 103— require different elements of proof”). Counsel’s reference to damages was limited to the availability of damages for future shipments of product under 35 U.S.C. § 271(f). (D.I. 303 at 1391:15-1392:11) Defendant’s Rule 50(b) motion addressing the availability of acceptable non-infringing alternatives, therefore, also addresses an issue outside of the scope of counsel’s original motion and is impermissible. Id.

Finally, defendant’s assertion that it did not need to move for JMOL on its own claims (D.I. 349 at 34) is without merit. Rule 50 plainly requires a party to specify the “judgment sought” regardless of which party ultimately bore the burden of proof on the issue. Defendant offers no caselaw to the contrary. Moreover, the Federal Circuit has affirmed the preclusion of defendants’ Rule 50(b) motions on invalidity where both a pre-verdict and post-verdict motion occurred. See Junker v. Eddings, 396 F.3d 1359, 1364 (Fed. Cir. 2005) (“Although Galt’s post-verdict motion was somewhat more specific [than its oral Rule 50(a) motion], it too was not sufficiently detailed in describing the facts and ornamental features upon which [it] based its claim of invalidity”) (holding that district court did not err in precluding defendant’s Rule 50(b) motion on invalidity); Duro-Last, 321 F.3d at 1107-08 (citing Union Carbide Chems. & Plastics Tech. Corp. v. Shell Oil Co., 308 F.3d 1167, 1188 (Fed. Cir. 2002) (holding that pre-verdict JMOL regarding anticipation by prior public knowledge did not support post-verdict JMOL motion on obviousness)); W.S. Molnar Co. v. IKG Industries, Nos. Civ. A. 95-1352, 95-1364, 1996 WL 128262, *1 (Fed. Cir. Mar. 21, 1996) (unpublished) (“A general reference to a count . . . is insufficient to meet the rule’s requirements.”) (citation omitted) (affirming decision of district court that defendant did not preserve its right to

move for JMOL on its best mode defense). If no pre-verdict notice were required, defendants' right to pursue JMOL claims post-verdict would be automatic; this is clearly not the case. See Duro-Last, 321 F.3d at 1107 ("In view of a litigant's Seventh Amendment rights, it would be constitutionally impermissible for the district court to re-examine the jury's verdict and to enter JMOL on grounds not raised in the pre-verdict JMOL."); see also nCUBE Corp. v. SeaChange Intern., Inc., 313 F. Supp. 2d 361, 381 (D. Del. 2004) (declining to review defendant's contentions with regard to validity where no oral motion was presented to preserve its rights).

For the aforementioned reasons, the court finds that defendant is precluded from bringing its JMOL motion on willfulness,¹⁷ fraud, promissory estoppel,¹⁸ and the government use defense. The court will examine defendant's JMOL motion with respect to damages to the extent it relates to sales to STC, commensurate with its pre-verdict motion.¹⁹

2. Infringement of the means-plus-function limitations of claims 1 and 22: corresponding structures

Plaintiff's burden on infringement of the means-plus-function claims 1 and 22

¹⁷Notwithstanding, the Federal Circuit has specifically rejected the theory that a pre-verdict JMOL motion on infringement can support a post-verdict JMOL motion relating to willful infringement. See Orthokinetics, Inc. v. Safety Travel Chairs, Inc., 806 F.2d 1565, 1579 (Fed. Cir. 1986).

¹⁸Because the court does not review the jury's finding of no promissory estoppel, defendant's arguments that the damage award should be overturned because plaintiff promised to license the '144 patent (D.I. 327 at 68-69) is nullified.

¹⁹Although it did not factor in the court's decision, defendant admitted that additional JMOL challenges would unlikely be successful. (See D.I. 303 at 1388:2-4 ("I would like to put my JMOL motions on the record and there are some that actually should be granted rather than the usual pro forma.")).

was twofold. First, plaintiff was required to identify a Geometrix® structure that performs the functions recited in the claims. In its claim construction order, the court defined the “means for processing,” “means for determining” (claim 1), and “locating means” (claim 22) each as a “computer processor programmed to perform [a specific] algorithm.” (D.I. 257) Plaintiff does not allege that the Geometrix® system, as a whole, is such a computer processor; therefore, it was obligated to point to such a processor, or its equivalent, in Geometrix®.²⁰

Second, plaintiff was required to prove that this processor (or equivalent) performs the claimed “means for processing,” “means for determining,” and/or “locating” functions, despite any differences between it and the processor described in the specification. The court defined these functions as inclusive of one or more of Figures 8A-8D, as follows:

“means for processing . . .” (claim 1)	Pursuant to § 112, the function of the disclosed structure is to analyze the cellular telephone signals in order to generate a table that identifies the differences in times of arrival of said signals. The means of the disclosed
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²⁰The Federal Circuit’s decision in Caterpillar Inc. v. Deere & Co., 224 F.3d 1374 (Fed. Cir. 2000), makes clear that a “component-by-component” analysis vis-a-vis the processor or processor-equivalent is impermissible; “individual components [if any] of an overall structure that correspond[] to the claimed function are not claim limitations. . . the claim limitation is the overall structure corresponding to the claimed function.” Id. at 1380 (citing Odetics, Inc. v. Storage Tech. Corp., 185 F.3d 1259, 1268 (Fed. Cir. 1999)). In the context of this case, the comparison may not be between components or sub-parts of the computer processor (or equivalent) structures; only the claimed processor and alleged infringing processor (or equivalent) **overall** may be compared in terms of their respective functions. The fact that the processor is a subpart of Geometrix®, the infringing product, does render the latter an impermissible “component-by-component” analysis under Caterpillar.

	<p>structure is a computer processor programmed to perform the algorithm disclosed at col. 13, ll. 33-56 (ending with the acronym "TDOA"); Fig. 7 at the first four blocks and table; col. 17, ll. 26-68 (minus any reference to "frequency difference data" or "frequency difference results"); and Figs. 8A-8B (minus any reference to "frequency differences"); or equivalents of such a computer processor.</p>
<p>"means for determining . . ." (claim 1)</p>	<p>Pursuant to § 112, the function of the disclosed structure is to determine, on the basis of time of arrival differences, the locations of the cellular telephones whose signals are received. The means of the disclosed structure is a computer processor programmed to perform the algorithm disclosed at col. 13, l. 58 (beginning with the word "This") through col. 13, l. 62 (ending with the letter "C"); Fig. 7 at the fifth and sixth blocks; col. 18, ll. 1-34 (ending with "0.0001," but minus any reference to "frequencies"); and Fig. 8C through top four elements of Fig. 8D (minus any reference to "frequencies"); or equivalents of such a computer processor.</p>
<p>"locating means . . ." (claim 22)</p>	<p>Pursuant to § 112, the function of the disclosed structure is to determine, without a specific request to do so, the locations of cellular telephones by receiving and analyzing the signals that the cellular telephones broadcast periodically over the reverse control channel. The means of the disclosed structure is a computer processor programmed to perform the algorithm disclosed at col. 13, ll. 33-62 (ending with the letter "C"); Fig. 7 at the first six blocks and table; col. 17, l. 26 - col. 18, l. 34 (ending with "0.0001," but minus any reference to "frequency difference data,"</p>

	<p>“frequency difference results,” or “frequencies”); and Figs. 8A through the top four elements of Fig. 8D (minus any reference to “frequency differences” or “frequencies”); or equivalents of such a computer processor.</p>
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Defendant asserts that the jury’s finding of infringement of claims 1 and 22 is unsupported because plaintiff failed to compare Figures 8A-8D with Geometrix®. (D.I. 327 at 27-29) In response, plaintiff points to the testimony of its technical expert, Dr. Oded Gottesman. (D.I. 345 at 26-30) Plaintiff describes in detail Dr. Gottesman’s testimony regarding Figure 7, which the patent describes as “a simplified flowchart of the processing performed by the central site system[,]” i.e., an “overview” of the patented location system.²¹ (‘144 patent, col. 13, ll. 30-34) With respect to the algorithm described in Figures 8A-8D, plaintiff points to two segments of testimony. (D.I. 345 at 29) First, Dr. Gottesman explained that “Figure 8A to the top four blocks of Figure 8E are just a more detailed description of the first six blocks of Figure 7,” and “the Geometrix source code . . . does substantially the same as Figure 8A through the top four elements of Figure 8D.” (D.I. 302 at 960:7-961:16)) Dr. Gottesman then testified that the central computer of the GCS performs the “means for processing” as described by the first four blocks of Figure 7 (id. at 983:6-16), that the Geometrix®

²¹For example, Figure 7 summarily provides that the system will “receive 1 frame of data from all cell sites” and “cross-correlate data.” In contrast, Figures 8A-8E make up a flowchart of specific algorithms employed by the location system to obtain the necessary correlation data and time delay data and to estimate the location of a cell phone.

source code is equivalent to the first four blocks of Figure 7 (id. at 984:8-13) and, generally, that Geometrix® performs the function identified by the court’s claim construction order (id. at 983:22-984:7). Dr. Gottesman also testified that Geometrix® contains a “means of determining,” because it has the structure identified by the fifth and sixth blocks of Figure 7 and the “corresponding portions of Figure 8” (id. at 985:6-14).

The court agrees with defendant to the extent that the aforementioned testimony was neither concise nor easy to follow.²² Upon careful review, however, the court finds the testimony sufficient to support the verdict of infringement. Put another way, Dr. Gottesman tied Figures 8A-8D to Figure 7 and, within this context, testified that Geometrix® has a computer processor for performing the claimed functions as described by the figures. The court declines to upset the jury’s determination of infringement on this record.

3. Offer for sale infringement– claims 1, 22, and 31

Defendant asserts that plaintiff did not carry its burden in proving that the offer for sale of Geometrix® to STC occurred “within the United States” as required by 35 U.S.C. § 271(a). (D.I. 327 at 14-17) Defendant argues that it never had any contact with STC; communications with STC were hand-delivered by AME or its Saudi agent Almisehal. The manner of delivery of the communications is undisputed.

²²During Dr. Gottesman’s testimony, plaintiff’s counsel displayed one of two exhibits on the projector: PTX-477 and PTX-478. (D.I. 302 at 986:3-7) The court was unable to correlate any particular page of these lengthy exhibits with Dr. Gottesman’s infringement testimony. Counsel did not articulate what demonstratives Dr. Gottesman may have been using to demonstrate his points for purposes of the record.

Defendant relies on the Federal Circuit's decision in Rotec Industries, Inc. v. Mitsubishi Corporation, 215 F.3d 1246 (Fed. Cir. 2000). (D.I. 327 at 16) In Rotec, the Federal Circuit affirmed the district court's finding that no infringing offer for sale occurred from within the United States, despite the following evidence of record: (1) the offering parties met nine times in the United States; (2) the contemplated system was designed and priced in the United States; and (3) the written offer identified defendant's (American) design partner as the supplier. 215 F.3d at 1255. Central to the Federal Circuit's holding was the fact that none of the evidence presented "establish[ed] any communication by defendants with any third party," making it "difficult to imagine any commercial detriment of the rightful patentee [having] tak[en] place." Id.

In the case at bar, there was evidence which could establish that defendant communicated with STC. As noted previously, the bid referenced "Andrew Corporation," and "Andrew," not AME, referenced defendant's size as one of the "world's largest" suppliers, and listed U.S.-based Mr. Eissa as a "point[] of contact" along with AME and the Almisehal group. Plaintiff's theory of infringement rested upon the following evidence: (1) defendant is based in the United States; (2) the offers themselves were prepared by Mr. Garner, Mr. Kennedy and Mr. Eissa, who are based in the United States (PTX-142; D.I. 300 at 700:1-2²³); (3) the cover letter on defendant's December 2004 bid lists Ashburn, Virginia as the return address (PTX-142); (4) Mr. Garner signed both a cover letter and the associated contract of the October 2005 offer in the United States and dispatched it from the United States (PTX-232 (cover letter);

²³Mr. Kennedy testified that he was a "principal author" on many of the documents "from a content standpoint."

PTX-216 (contract); D.I. 305 at 1862:25-1863:8); and (5) the offers were unaltered by AME before they were dispatched to STC (PTX-142)²⁴. There is no indication that AME played any role in formulating the offer or did anything more than relay the bid from defendant in the United States. On this record, the jury's determination that defendant, and not AME, made the offer for sale is supported. Defendant's motion for JMOL of no infringing offer for sale under § 271(a) is denied.

B. Defendant's Remaining Equitable Defenses

1. Issue preclusion

As an initial matter, plaintiff asserts that defendant is precluded as a matter of law from bringing its equitable defenses because: (1) the jury found defendant to be a willful infringer; (2) the jury has found against defendant's fraud and promissory estoppel claims based on the same factual background; and (3) the integration clause of the parties' settlement agreement precludes the possibility of any implied agreement or promises not expressed in that agreement. (D.I. 340 at 13-17) The court addresses these assertions in turn.

a. Willful infringement

Plaintiff asserts that defendant's "infringement of the '144 patent is, in itself, sufficient basis to dismiss [its] equitable defenses." (Id. at 13) The caselaw demonstrates, however, that willfulness, alone, is insufficient to preclude the application

²⁴Plaintiff characterizes defendant's bid as "sealed." In its reply brief, defendant states that plaintiff's characterization is unsupported by the record; it does not specifically argue that the offer was, in fact, unsealed, or provide any citations to evidence tending to indicate that the contents of the bid were subject to change by AME. (D.I. 349 at 1)

of equitable defenses. See Odetics, Inc. v. Storage Tech. Corp., 14 F. Supp. 2d 800, 806 (E.D. Va. 1998) (collecting cases); W. Elec. Co. v. Piezo Tech., Inc., No. Civ. A. 81-694, 1990 WL 126269, *10 (M.D. Fla. Mar. 22, 1990) (“[A] plaintiff’s allegations of ‘willful infringement’ do not automatically bar the alleged infringer from asserting the laches and estoppel defenses; this is a matter for the court to determine in its equitable discretion”); see also gen. Scholle Corp. v. Blackhawk Molding Co., Inc., 133 F.3d 1469, 1473 (Fed. Cir. 1998) (willfulness evidence insufficient to trump equitable estoppel despite infringer’s late obtaining of opinion of counsel, where product was a design-around of another product accused of infringing and defendant had shown design to plaintiff and requested whether it disagreed with conclusion of noninfringement). The court “must compare the relative quality of the parties’ conduct to determine whether the scales of equity tip significantly in plaintiff’s favor.” Odetics, 14 F. Supp. 2d at 806 (citing A.C. Aukerman Co. v. R.L. Chaides Construction Co., 960 F.2d 1020, 1033 (Fed. Cir. 1992) (internal quotations omitted) (hereinafter “Auckerman”)), aff’d, 185 F.3d 1259 (Fed. Cir. 1999). A finding of egregious conduct, above willful infringement, typically justifies preclusion of an equitable defense. See Odetics, 14 F. Supp. 2d at 806 (collecting cases); see also Gasser Chair Co., Inv. v. Infanti Chair Mfg. Corp., 60 F.3d 770, 775-76 (Fed. Cir. 1995) (holding that district court erred in holding infringement suit barred by equitable estoppel despite evidence of deliberate copying of invention); Bott v. Four Star Corp., 807 F.2d 1567, 1576 (Fed. Cir. 1986) (known copying of invention by defendant, who “inexcusably accelerated its infringing sales after [the Federal Circuit] had affirmed the district court’s decision on liability,” sufficiently “egregious conduct” to bar laches defense); Loral Corp. v. B.F.

Goodrich Co., No. Civ. A. 3-86-216, 1989 U.S. Dist. LEXIS 16865, *133-34 (S.D. Ohio Jan. 27, 1989) (“[Defendant’s] carbon brake activities following the notice and successful completion of the patent reexamination, its knowledge that [plaintiff] believed [its] brakes were infringing products, and its failure to obtain an opinion of counsel which might otherwise justify its actions, constitutes willful infringement of a sufficiently egregious nature to preclude [defendant] from relying on the equitable estoppel defense.”) (cited by plaintiff at D.I. 340 at 13).

To this end, plaintiff has not identified conduct on the part of defendant that is particularly and comparably egregious. Plaintiff asserts that, since the jury was charged under the Federal Circuit’s “new, tougher” standard set forth in In re Seagate Tech., LCC, 497 F.3d 1360 (Fed. Cir. 2007), the jury necessarily found that defendant’s infringement was egregious.²⁵ (D.I. 340 at 15) Plaintiff offers no caselaw in support of this proposition. Moreover, the court declines to find (as a matter of first impression) that, to the extent Seagate increased the threshold for willful infringement, it raised the bar so high so as to render “objective recklessness” and “egregiousness” virtually indistinguishable. Plaintiff points to no particular actions on the part of defendant that

²⁵In Seagate, the Federal Circuit held:

[T]o establish willful infringement, a patentee must show by clear and convincing evidence that the infringer acted despite an objectively high likelihood that its actions constituted infringement of a valid patent. The state of mind of the accused infringer is not relevant to this objective inquiry. If this threshold objective standard is satisfied, the patentee must also demonstrate that this objectively-defined risk (determined by the record developed in the infringement proceeding) was either known or so obvious that it should have been known to the accused infringer.

497 F.3d at 1371. This court instructed the jury on this standard. (D.I. 291 at 34)

could bridge this gap. The court, therefore, does not bar defendant's equitable claims on this ground.

b. Jury findings of no fraud or promissory estoppel

Plaintiff next argues that, since the proofs required for defendant's equitable claims are "the same as for the fraud and promissory estoppel issues that [have] already lost before the jury, the defenses are not viable." (D.I. 340 at 17) As the Federal Circuit has noted, a district "court may not make findings in conflict with those of the jury." Therma-Tru Corp. v. Peachtree Doors Inc., 44 F.3d 988, 994 (Fed. Cir. 1995) (judge's decision on inequitable conduct following jury verdict and without explanatory opinion reversed). That is, the court may not make "findings independent of and contrary to the facts found by the jury in reaching its verdict." Id. at 995 (collecting cases). "[A]ll findings necessarily made by the jury in awarding the verdict to a party are binding on the parties as well as the trial court." Williams v. City of Valdosta, 689 F.2d 964, 976 (11th Cir. 1982) (brackets omitted).

The court begins by comparing the findings of the jury to the pending issues. To bar plaintiff's recovery for infringement by reason of equitable estoppel, defendant must establish, inter alia, that

[t]he patentee, through misleading conduct, [led] the alleged infringer to reasonably infer that the patentee [did] not intend to enforce its patent against the alleged infringer. "Conduct" may include specific statements, action, inaction, or silence where there was an obligation to speak.

Auckerman, 960 F.2d at 1028. While equitable estoppel focuses on whether "misleading conduct" suggesting that plaintiff would not enforce the '144 patent existed, implied license "looks for an affirmative grant of consent or permission to make, use, or

sell, i.e., a license.” Wang Labs., Inc. v. Mitsubishi Electronics Am., 103 F.3d 1571, 1581 (Fed. Cir. 1997). An implied license by equitable estoppel requires proof that this affirmative grant occurred through either statements or conduct. See Winbond Electronics Corp. v. Intern. Trade Com’n, 262 F.3d 1363, 1374 (Fed. Cir. 2001), opinion corrected, 275 F.3d 1344 (Fed. Cir. 2001).

“The doctrine of unclean hands is a self-imposed ordinance that closes the doors of a court of equity to one tainted with inequity or bad faith relative to the matter in which he seeks relief, however improper may have been the behavior of the defendant.” Princess Cruises, Inc. v. U.S., 397 F.3d 1358, 1369 (Fed. Cir. 2005) (citing Precision Instrument Mfg. Co. v. Auto. Maint. Mach. Co., 324 U.S. 806, 814 (1945) (internal quotation omitted)). This court has broad discretion under the doctrine of unclean hands. Id. (citation omitted).

In reaching its verdict of no fraud, the jury was not asked to describe which element(s) of fraud were not demonstrated by defendant by a preponderance of the evidence. (D.I. 293) Although the verdict indicates that plaintiff did not make a misrepresentation or omission of material fact with the requisite knowledge and with the intent to mislead defendant, there is no specific finding of fact with respect to whether an omission of material fact occurred.

In reaching its verdict of no promissory estoppel, the jury found that plaintiff never made a promise to defendant not to enforce the '144 patent against it.²⁶ (Id.) The absence of a promise does not preclude a finding that plaintiff’s conduct or

²⁶Consequently, the jury also found that plaintiff did not “intend[] to induce Andrew’s action or inaction based on the promise.” (D.I. 293)

silence communicated to defendant that it would not enforce the '144 patent against it. See gen. Encyclopedia Brown Productions, Ltd. v. Home Box Office, Inc., No. Civ. A. 91-4092, 1998 WL 734355, *13-14 (S.D.N.Y. Oct. 15, 1998) (in copyright infringement action, finding equitable estoppel where facts did not permit a finding of promissory estoppel) (granting cross-motion for summary judgment).

In view of the foregoing, the court finds that the jury did not render findings of fact sufficient to preclude defendant's equitable estoppel and implied license defenses outright. The court may consider what the jury did not, specifically, whether plaintiff's silence or conduct conveyed to defendant that it would not file suit. However, a finding of unclean hands, predicated on inequity or bad faith, would be inconsistent with the lack of culpability already determined by the jury in rejecting defendant's assertion that plaintiff intended to mislead defendant. The court cannot properly consider defendant's unclean hands defense.²⁷

c. Integration clause

According to plaintiff, "[e]ven if an implied agreement or promise had been made [by plaintiff], it could not survive the integration clause" of the settlement agreement, dated February 1, 2004. (D.I. 340 at 15 (citing PTX-15R at ¶ 22)) Plaintiff's argument in this regard is, essentially, an attack on the merits of defendant's claims, rather than an

²⁷Even if unclean hands were properly before the court, the court notes that it would decline to exercise its discretion to apply the unclean hands doctrine in the case at bar for the reasons discussed previously, and in view of the lack of affirmative conduct on the part of plaintiff that could have conveyed to defendant a permission to use UTDOA/SDCCH after the execution of the settlement agreement. Notably, defendant cites no authority for its proposition that a misleading statement or omission before a standards body can justify the wholesale exclusion of patent infringement claims brought in a subsequent suit.

argument of issue preclusion; it will be addressed infra.

2. Findings of fact and conclusions of law

Turning now to the merits of defendant's equitable claims, the court makes the following findings of fact and conclusions of law.

a. Equitable estoppel

1. In order to prove its equitable estoppel claim, defendant was required to demonstrate, by a preponderance of the evidence, three elements: (1) plaintiff, through misleading conduct, led defendant to reasonably infer that plaintiff did not intend to enforce the '144 patent against it; (2) defendant relied on that misleading conduct; and (3) as a result, defendant will be materially prejudiced if plaintiff is allowed to proceed with its infringement claims. Auckerman, 960 F.2d at 1028.

2. Defendant's evidence paints a picture of a company that changed its tune about its willingness to license the '144 patent over the course of several years. In 2000, prior to standardization, plaintiff approached defendant about a license under the '144 patent; at this time, defendant was only practicing UTDOA on the TCH channel, and was not competing with plaintiff with respect to UTDOA on the SDC channel ("UTDOA/SDCCH"). (PTX-7) Knowing it was important to ETSI to have a multi-vendor system (DTX-901), in 2002, plaintiff assured ETSI that a "license will be made available to applicants [on any patents it may have on UTDOA/SDCCH] under reasonable terms and conditions." (PTX-364 at sec. 3.3.5) Defendant joined ETSI and worked with plaintiff for two years to get UTDOA/SDCCH standardized. Plaintiff never declared the '144 patent as "essential IPR." After standardization was achieved, and after defendant

began to compete with plaintiff by practicing UTDOA/SDCCH and had won the STC contract in 2005, plaintiff refused to license the '144 patent and promptly sued for infringement. (PTX-17)

3. As an initial matter, the relationship between the parties during the standardization period does not bring the case at bar within the purview of Lukens Steel Company v. American Locomotive Company, 197 F.2d 939 (2d Cir. 1952), as defendant asserts. In Lukens, the Second Circuit affirmed the district court's decision barring plaintiff's infringement suit on the grounds of equitable estoppel under the following factual circumstances: (1) the engineering departments of both plaintiff and defendant "worked together in a sincere effort to develop a satisfactory [diesel] engine design"; (2) plaintiff "submitted a design which [defendant's] engineers approved"; (3) this design "apparently embodied [plaintiff's] patent but nothing was said about the patent at that time, nor thereafter [for five years]"; (4) during the five year period, defendant increased the manufacturing capacity of its plant, at a cost of half a million dollars, and produced 252 frames valued at \$3500 each; and (5) only thereafter did plaintiff file its infringement suit. Id. at 940. Against this backdrop, the court found that "the doctrine of equitable estoppel was properly applicable, because [plaintiff's] conduct was such as to lead [defendant] to believe that the patent would not be used against it." Id.

4. The case at bar is factually distinguishable. Plaintiff and defendant did not jointly develop UTDOA/SDCCH technology. Plaintiff did not submit design plans incorporating its patented technology to defendant for the purpose of manufacture by defendant. Nor did plaintiff fail to act after such notice or after several years of product

manufacture – plaintiff notified defendant of its infringement promptly after it learned of the STC deal in 2005. Although plaintiff and defendant jointly advocated a standard to ETSI which incorporated, among others, a technology patented by plaintiff, this does not dictate a finding of equitable estoppel under Lukens.

5. Nevertheless, the court notes that plaintiff's failure to declare the '144 patent as "essential IPR" was misleading vis-a-vis its intent to sue others for practicing UTDOA/SDCCH. Plaintiff's justification for not declaring the '144 patent as "essential IPR" is that the '144 patent only covers "one implementation of one option of the standard," which includes four general options for the location of cell phones (timing advance, enhanced observed time difference, global positioning system, and UTDOA) and two sub-options under UTDOA (SDC channel and TCH channel). (D.I. 340 at 28) That is, the standard can be practiced in several ways without infringing the '144 patent.

The parties have fought throughout this litigation over whether the ETSI IPR policy should be interpreted to require disclosure of patents covering "any" implementation of the standard. ETSI required the disclosure of IPR where "it is **not possible** on technical (but not commercial) grounds" to practice the "standard" without infringing that IPR. (PTX-363 at sec. 15) Plaintiff does not dispute that it is not possible to practice UTDOA/SDCCH, as described in the standard, without infringing the '144 patent. The court takes the view that the availability of other options in the standard (e.g., global positioning) does not affect plaintiff's disclosure duty vis-a-vis UTDOA/SDCCH. In other words, there is a "standard" for each option. This interpretation is consistent with the definition of "standard" in the ETSI IPR Policy, which

states that “‘STANDARD’ shall mean **any** standard adopted by ETSI **including options therein**. . . .” (Id.) (emphasis added)

6. Notwithstanding, the February 2004 settlement agreement between the parties is the proverbial wrench in the gears of defendant’s estoppel case. The settlement agreement is the product of several meetings between the parties. It specifically addressed defendant’s rights under the ‘144 patent, and provided that only certain uses of plaintiff’s technology were permissible (E-911 domestic geolocation). (PTX-15R at ¶¶ 6, 8) UTDOA/SDCCH was not amongst these permitted uses; in fact, the agreement noted and excluded using TDOA on the control channel. (Id. at ¶ 9) Against this backdrop, plaintiff’s conduct, however potentially misleading in other respects, could not have led defendant to reasonably infer that plaintiff would not enforce its ‘144 patent for uses specifically excluded from the settlement agreement. That defendant was not practicing UTDOA/SDCCH at the time the settlement agreement was executed does not justify a contrary expectation. The court finds that defendant has not demonstrated by a preponderance of the evidence that, when viewed as a whole, plaintiff’s conduct was sufficiently misleading such as to bar recovery for defendant’s infringement of the ‘144 patent.²⁸

b. Implied license

7. “An implied license signifies a patentee’s waiver of the statutory right to exclude others from making, using, selling, offering to sell, or importing the patented invention.” Wang, 103 F.3d at 1580. In order to establish an implied license, defendant

²⁸Having failed on its burden of proof under the first prong of Auckerman, the court does not address defendant’s reliance or material prejudice to defendant.

must show a nexus between the patentee's purported waiver of its rights and the defendant's allegedly infringing course of action. Winbond, 262 F.3d at 1374; Stickle v. Heublein, Inc., 716 F.2d 1550, 1559 (Fed. Cir. 1983). The Federal Circuit has recognized implied licenses through: (1) equitable estoppel; (2) legal estoppel; (3) acquiescence; and (4) conduct.²⁹ Wang, 103 F.3d at 1580. "These labels describe not different kinds of licenses, but rather different categories of conduct, which lead to the same conclusion: an implied license." Id. at 1580.

8. Implied license is a legal conclusion. As the Supreme Court has stated,

[n]o formal granting of a license is necessary in order to give it effect. Any language used by the owner of the patent, or any conduct on his part exhibited to another from which that other may properly infer that the owner consents to his use of the patent in making or using it, or selling it, upon which the other acts, constitutes a license and a defense to an action for a tort. Whether this constitutes a gratuitous license, or one for a reasonable compensation, must of course depend upon the circumstances; but the relation between the parties thereafter, in respect of any suit brought, must be held to be contractual and not [in tort].

De Forest Radio Telephone Co. v. U.S., 273 U.S. 236, 241 (1927). A defendant may establish a defense of implied license by showing that: (1) a relationship existed between plaintiff and defendant; (2) within that relationship, plaintiff granted defendant a right to use plaintiff's patents; (3) plaintiff received valuable consideration for the grant of right; (4) plaintiff's statements and conduct created the impression that plaintiff consented to defendant's use of plaintiff's patents; and (5) plaintiff denied that defendant had an implied license. Wang, 103 F.3d at 1579. The burden of proof rests with defendant. See Met-Coil Sys. Corp. v. Korner Unlimited, Inc., 803 F.2d 684, 687

²⁹Equitable estoppel has been addressed above. Defendant does not assert legal estoppel.

(Fed. Cir. 1986).

9. The court finds that defendant has established that plaintiff and defendant had a relationship from 2003-2004 when the parties jointly and extensively worked to standardize UTDOA for the SDC channel.

10. Defendant seeks to establish an affirmative grant of permission to use the '144 patent in several ways. First, defendant asserts that plaintiff's December 2000 offer to license the '144 patent was never specifically revoked and, therefore, plaintiff's offer to license remained open until September of 2005 when it sent the first cease and desist letter to defendant. (D.I. 351 at 11) Even if this were the case, the integration clause of the settlement agreement, dated February 1, 2004, extinguished all prior agreements between the parties.³⁰

11. Defendant also asserts that a permissive message was conveyed by plaintiff's statement in the Feasibility Study in 2002 that "[a] license will be made available to applicants under reasonable terms and conditions." (D.I. 351 at 10-11) Again, even assuming permission to use the '144 patent without a license was

³⁰Defendant asserts that the clause was only partially integrated because plaintiff's "intent was to reassure the industry that it would be able to purchase UTDOA from multiple vendors." (D.I. 351 at 24) Defendant essentially asks the court to believe that plaintiff intended to license the '144 patent while, at the same time, specifically excluding the '144 patent from the settlement agreement, and that only thereafter did plaintiff change its mind. The essential issue is whether plaintiff misled the industry with its statement that certain technologies would be licensed; there is no indication that plaintiff ever intended to license the '144 patent for UTDOA/SDCCH.

Defendant also attempts to avoid the effect of the integration clause by arguing that, because certain technologies under the '144 patent were excluded from the settlement agreement, UTDOA/SDCCH is not the same "subject matter" as contained in the agreement. Defendant's argument is, at best, wholly unpersuasive. The settlement agreement specifically discussed technologies under the '144 patent; this is the same subject matter of the present dispute.

automatically conveyed by this statement (a view not shared by the court), such an open offer would have been extinguished by the integration clause in the parties' 2004 contract.

12. Defendant's final assertion is that plaintiff conveyed permission to use the invention by virtue of its "being an ETSI member but not communicating an unwillingness to license the '144 patent during standardization." (D.I. 351 at 10, 13) Defendant asserts that the case at bar is comparable to Wang, in which the Federal Circuit found that a consent to use plaintiff's patented technology could be inferred from plaintiff's course of conduct. (D.I. 325 at 44-45) In Wang, while plaintiff was pursuing patent rights in computer memory modules called "SIMM"s, it participated in a panel before the computer industry press and announced it would not produce SIMMs itself. 103 F.3d at 1575. Other panelists announced, without objection from Wang, "that Wang was not seeking patent rights in the SIMM [and] that no licensing agreements were involved for the companies approached by Wang to make SIMMs, and that SIMM makers could sell their products to third parties." Id. Wang subsequently brought SIMMs embodying its proprietary design to the Joint Electronic Device Council ("JEDEC"), the standards body in this field, and successfully argued for the adoption of the SIMM as the industry standard over the course of three years. Id. During this time, Wang met with defendant, "supplied drawings and other details to Mitsubishi and repeatedly requested that Mitsubishi manufacture SIMMs." Id. The parties conducted several meetings, and Mitsubishi went on to mass-produce SIMMs, with a design modification suggested by Wang. Wang purchased SIMMs from Mitsubishi and did not inform Mitsubishi of its pending patent applications. Id. Wang first notified Mitsubishi of

its intent to sue in a letter six years after the parties' first meeting. Id. at 1575-76.

Under these circumstances, the court affirmed the district court's determination that Wang granted a royalty-free license to use the patent at issue since it "consented to [defendant's] use of the invention, granted the right to make, use, or sell the patented SIMMs without interference from Wang, and received consideration." Id. at 1582.

Both plaintiffs in this case and in Wang both advocated a standard before the relevant standards body that incorporated their patented technologies. The case at bar, however, is factually distinguishable from Wang insofar as plaintiff at bar did not: (1) provide designs, suggestions and samples to defendant; (2) request that defendant enter the UTDOA/SDCCH market; (3) purchase allegedly infringing product from defendant; or (4) fail to initiate suit for years while defendant produced UTDOA/SDCCH systems. Viewed as a whole, plaintiff's conduct is not as egregious as that presented in Wang; Wang, therefore, does not compel a finding of implied license in this case.

13. In view of the settlement agreement, for reasons discussed previously, the court finds that defendant has not met its burden to prove that plaintiff granted defendant a right to use the '144 patent within the context of the parties' relationship. Defendant points to no affirmative conduct on the part of plaintiff that could have conveyed to defendant a permission to use UTDOA/SDCCH after the execution of the settlement agreement. Its implied license defense fails, therefore, as a matter of law.

C. Damages and Permanent Injunction

1. Lost profits

Having upheld the jury's verdict of infringement and found against defendant's

remaining equitable claims, the court turns to the jury's award of damages. To recover lost profits damages, plaintiff was required to demonstrate that, "but for" the infringement, it would have made the sales that were made by defendant. Rite-Hite Corp. v. Kelley Co., Inc., 56 F.3d 1538, 1545 (Fed. Cir. 1995).

In making a case for lost profits, [plaintiff] need only show a reasonable probability that it would have made additional profits "but for" the infringement. Although [plaintiff] must support [its] positions with sound economic proof, absolute certainty is not required, for reconstruction of the "but for" market is "by definition a hypothetical enterprise" based on the evidence introduced at trial.

Fiskars, Inc. v. Hunt Mfg. Co., 279 F.3d 1378, 1383 (Fed. Cir. 2002) (internal citations omitted). The Federal Circuit has adopted a four-factor test, first articulated in Panduit Corp. v. Stahl Bros. Fibre Works, Inc., 575 F.2d 1152 (6th Cir.1978), as a standard, non-exclusive method for a patentee to establish entitlement to lost profits damages.³¹ Under the Panduit test, plaintiff must prove: (1) demand for the patented product; (2) absence of acceptable non-infringing substitutes;³² (3) manufacturing and marketing capability to exploit the demand; and (4) the amount of the profit it would have made. Id.

At trial, plaintiff sought lost profits damages based only on defendant's sales to STC. (D.I. 345 at 63) Plaintiff and defendant are the only suppliers of UTDOA systems in the world and, thus, were the only bidders for the UTDOA portion of the STC

³¹Besides the Panduit test, the Federal Circuit has recognized that a patentee also may prove lost profits under a market share theory. State Indus., Inc. v. Mor-Flo Indus., Inc., 883 F.2d 1573, 1577 (Fed. Cir. 1989). The parties did not address this alternative method of demonstrating lost profits in their respective briefs.

³²As discussed previously, defendant did not challenge plaintiff's evidence regarding the lack of non-infringing alternatives in its Rule 50(a) motion; the court does not consider defendant's Rule 50(b) motion on this ground.

proposal. (D.I. 303 at 1150:1-6; D.I. 305 at 1922:5-23) As of trial, defendant had secured a commitment from STC for three product rollouts. For phase 1, defendant shipped equipment for 600 sites. As of the date of Dr. Mulhern's expert report, defendant had shipped equipment for 383 sites for phase 2.³³ According to Dr. Mulhern, damages based on defendant's sales for these 983 sites total \$18.6 million.³⁴ (D.I. 303 at 1184:2-1185:1) Defendant has been awarded a commitment for phase 3; the maximum value of this commitment is known (approx. 35 million Saudi riyal),³⁵ but the number of sites and precise nature and quantity of the equipment to be supplied were not settled as of trial. (D.I. 305 at 1906:25-1907:9)

The jury in this case awarded plaintiff \$45.3 million in damages, mirroring Ms. Mulhern's conclusion as to the total lost profits to plaintiff. This amount is based on plaintiff's bid, reflecting the amount plaintiff would have shipped had it won the STC contract.³⁶ (D.I. 303 at 1169:25-1171:14, 1173:11-18, 1183:19-25) According to Ms.

³³Defendant's damages expert, Mr. Wayne Hoberlein, testified that 380 sites were supplied for phase 2. (D.I. 305 at 1903:18-24) Defendant acknowledges in its brief that it supplied equipment for 383 sites for phase 2. (D.I. 327 at 70)

³⁴Ms. Mulhern testified that, as of trial, approximately 404 sites had been supplied; damages are "approximately \$20 million" for 1004 sites (600 for phase 1 and 404 for phase 2). (D.I. 303 at 1184:2-1185:1) Plaintiff points to no testimony regarding additional sites beyond the uncontested 383 for phase 2, and Ms. Mulhern did not further expand upon what evidence she may have been relying for the estimation of 404 sites for phase 2 or what precise number "approximately \$20 million" represents.

³⁵Ms. Mulhern testified that the cap for phase 3 does not represent the cap STC would have allotted plaintiff for its UTDOA system, insofar as competition has driven down prices in the market. (D.I. 303 at 1172:5-16, 1237:2-8)

³⁶Plaintiff's original bid to STC was for 2,088 sites for a total of \$86 million. (D.I. 303 at 1171:12-14)

Mulhern, the \$45.3 million figure represents lost profits damages from three sources: (1) the initial installation of hardware and software, \$27.7 million; (2) the sale of spare parts, \$2.1 million; and (3) operation and maintenance, \$15.5 million. (Id. at 1144:1-5) Defendant points out that STC's maintenance purchases have been only a little more than \$1 million to date. (D.I. 305 at 1904:9-12 (Mr. Hoberlein)) In addition, STC has only purchased around \$600,000 in spare parts. (Id. at 1904:24-1905:5) Ms. Mulhern testified, generally, that it is customary for buyers to protect themselves with maintenance contracts. (D.I. 303 at 1166:23-1167:6) Plaintiff does not refute defendant's numbers but states, without citing any supporting testimony, that "that is to be expected in the early days of a contract, when the system is not yet fully operational." (D.I. 345 at 74)

Defendant asserts that 35 U.S.C. § 271(f)(1) precludes an award of damages on components defendant has not yet supplied to STC from the United States and, similarly, that an award of damages that includes future phases is "too speculative to stand" since defendant may not secure all five phases, and the nature of the commitment for future phases is unknown.³⁷ (D.I. 327 at 70)

Section 271(f)(1) provides that

[w]hoever without authority supplies or causes to be supplied in or from the United States all or a substantial portion of the components of a patented invention, where such components are uncombined in whole or in part, in such manner as to actively induce the combination of such components outside of the

³⁷The court considers the latter challenge to the speculative nature of the damages awarded on future shipments to be sufficiently similar to counsel's § 271(f) challenge regarding unshipped (future) allotments to have been preserved by its pre-verdict JMOL motion. (D.I. 303 at 1392:1-11) Moreover, plaintiff does not specifically address § 271(f) in its reply brief. (D.I. 345)

United States in a manner that would infringe the patent if such combination occurred within the United States, shall be liable as an infringer.

“[T]he language of § 271(f) clearly contemplates that there must be an intervening sale or exportation; there can be no liability under § 271(f)(1) unless components are shipped from the United States for assembly.” Pellegrini v. Analog Devices, Inc., 375 F.3d 1113, 1117 (Fed. Cir. 2004). Ms. Mulhern’s \$45.3 million figure includes damages for both shipments actually made by defendant to STC and yet to be made by defendant to STC. Therefore, under Pellegrini, the jury’s award exceeded the permissible amount of damages under section 271(f).

Even were this not the case, however, the court finds that the evidence does not reasonably support the jury’s award of \$45.3 million because of its speculative nature. The Federal Circuit has affirmed future lost profit awards where the patentee has presented reliable economic evidence of “but for” causation. See Shackle v. Alcan, Inc., 248 F.3d 1349, 1362 (Fed. Cir. 2001). “Sound economic models and evidence” are required, “not pure guesswork.” Id. (citing Oiness v. Walgreen Co., 88 F.3d 1025, 1031 (Fed. Cir. 1996)). “The burden of proving future injury is commensurately greater than that for damages already incurred, for the future always harbors unknowns.” Brooktree Corp. v. Advanced Micro Devices, Inc., 977 F.2d 1555, 1581 (Fed. Cir. 1992). The Federal Circuit has found that this burden may be met where there is a two-supplier market, and “evidence of actual pre-infringement and post-infringement growth rates” resulting from the “extrapolation of actual data” were found by the district court. Lam, Inc. v. Johns-Manville Corp., 718 F.2d 1056, 1068 (Fed. Cir. 1983) (“post-infringement growth rate is certainly admissible evidence to form a basis for inferring

that [plaintiff] would have grown at the pre-infringement rate had [defendant] not infringed”).

The court assumes that the jury credited Ms. Mulhern’s testimony over that of Mr. Hoberlein and, in so doing, found that defendant had won the entire STC contract (5 phases) covering “thousands of sites” and that defendant expected to make sales from the remaining phases. (D.I. 303 at 1185:15-1187:9). Notwithstanding, Ms. Mulhern arrived at her \$45.3 million figure by beginning with the amount of plaintiff’s original bid (\$86 million) and from there, subtracting various costs and expenses, and applying a 12% discount to account for “future uncertainty.”³⁸ (Id. at 1173:11-1183:18) She also assumed STC would not pay for its 2006 sales until 2007. (Id. at 1179:1-11) Ms. Mulhern did not take into account the actual amount of maintenance and spare parts purchased by STC thus far, nor the possibility of a decreasing purchase trend, as evidenced by its orders for 600 sites for phase 1 but only 383 for phase 2.

The court finds that Ms. Mulhern did not meet the heightened burden required to prove future lost profits damages. Ms. Mulhern’s calculations do not represent an extrapolation of actual data. Her calculations were based on one bid, not sales trend data, such as the pre-infringement growth rate present in Lam. From this bid, calculations were extended over several years while ignoring (or not discounting) much of the actual data of record that bears on the “but for” scenario: the actual number of sites for which STC has ordered equipment, and the actual money spent by STC for

³⁸The court notes that it appears that the demonstratives used by Ms. Mulhern during her direct examination explaining her calculations were not admitted into evidence and are not part of the trial record.

maintenance and parts for phases 1 and 2. The court finds Ms. Mulhern's calculation to be a prediction based more on speculation than sound economic evidence; the jury's award, therefore is reversible on this alternative ground. See gen. Oiness v. Walgreen Co., 88 F.3d 1025, 1029-30 (Fed. Cir. 1996) (noting speculation at every step of damages calculation, including use of five-year projection that "[did] not account for market fluctuations over time") (reversing jury verdict).

Based upon the foregoing, the court remits the jury award to \$18.6 million, representing those damages based on defendant's completed phase 1 and phase 2 sales (983 sites).³⁹ See id. (Federal Circuit follows the maximum recovery rule, requiring remittur to the highest amount the jury could have properly awarded based on the relevant evidence) (citation omitted). As discussed infra, the court enjoins defendant from making any additional sales to STC. See gen. Trans-World Mfg. Corp. v. Al Nyman & Sons, Inc., 750 F.2d 1552, 1565 (Fed. Cir. 1984) ("Ordinarily an injunction is designed to prevent future infringement, and damages are awarded as compensation for past infringement.").

2. Enhanced damages

Plaintiff seeks enhanced treble damages for defendant's willful infringement of the '144 patent. Pursuant to 35 U.S.C. § 284, a court may, in its discretion, "increase the damages up to three times the amount found or assessed." Where the fact-finder has determined that "an infringer is guilty of conduct upon which enhanced damages may be based, the court next determines, exercising its sound discretion, whether, and

³⁹As of February 12, 2006.

to what extent, to increase the damages award given the totality of the circumstances.”
Jurgens v. CBK, Ltd., 80 F.3d 1566, 1570 (Fed. Cir. 1996). As the Federal Circuit has explained,

[t]he principal considerations in enhancement of damages are the same as those of the willfulness determination, but in greater nuance as may affect the degree of enhancement. Thus egregiousness of the infringer’s conduct may receive greater emphasis, as may any mitigating factors.

SRI Intern., Inc. v. Advanced Technology Labs., Inc., 127 F.3d 1462, 1469 (Fed. Cir. 1997) (citing Read Corp. v. Portec, Inc., 970 F.2d 816, 826-27 (Fed. Cir. 1992) (hereinafter, “Read”)).

Factors the court may take into consideration when determining whether, and to what extent, to exercise its discretion include: (1) whether the infringer deliberately copied the ideas or design of another; (2) whether the infringer, when he knew of the other’s patent protection, investigated the scope of the patent and formed a good-faith belief that it was invalid or that it was not infringed; (3) the infringer’s behavior as a party to the litigation; (4) the infringer’s size and financial condition; (5) the closeness of the case; (6) the duration of the infringer’s misconduct; (7) any remedial action by the infringer; (8) the infringer’s motivation for harm; and (9) whether the infringer attempted to conceal its misconduct. Johns Hopkins Univ. v. CellPro, Inc., 152 F.3d 1342, 1352 n.16 (Fed. Cir. 1998) (citing Read, 970 F.2d at 827). The Federal Circuit has also condoned the enhancement of damages based upon the improper conduct of parties. See Amstead Indus. Inc. v. Buckeye Steel Castings Co., 24 F.3d 178, 184 (Fed. Cir. 1994) (“The decision whether to increase damages provides an opportunity for the trial court to balance equitable concerns as it determines whether and how to recompense

the successful litigant.”) (internal quotation and citation omitted). The ultimate question remains, however, “whether the infringer, acting in good faith and upon due inquiry, had sound reason to believe that it had the right to act in the manner that was found to be infringing.” SRI Int’l, 127 F.3d at 1464-65.

Plaintiff argues that enhanced damages are warranted in this case for several reasons, namely: (1) defendant was aware of the ‘144 patent yet infringed without regard for plaintiff’s rights; (2) this infringement was in response to competitive pressures; (3) defendant did not take discovery regarding any duty to disclose the ‘144 patent to ETSI, suggesting its fraud defense was “litigation inspired”; (4) none of defendant’s defenses or counterclaims (or elements of same) were found by the jury, indicating that the case was not close; (5) defendant did not undertake any remedial action; and (6) defendant is a large company in good financial condition. (D.I. 315) The Read factors will be addressed in turn.

i. Copying

There is no evidence of deliberate copying of record. The record reflects that defendant did its own research on and development of Geometrix®. (D.I. 305 at 1855:6-16) This factor tips in favor of no enhanced damages.

ii. Knowledge of and beliefs regarding the ‘144 patent

Prior to its infringement, and while it was still performing UTDOA on the TCH channel, defendant relied on the ‘144 patent as prior art in the Allen suit. The ‘144 patent was also the subject of several letters from plaintiff to defendant prior to suit. Undoubtably, defendant was familiar with the scope of the ‘144 patent.

Defendant asserts that it had a good faith belief it would not infringe the '144 patent by offering technology that was standardized by ETSI. (D.I. 334 at 11) Conclusory statements in this regard, without more, do not constitute persuasive evidence of "good faith belief." Defendant also asserts that it mounted several strong non-infringement arguments, highlighted by the fact that this case presented many hard-fought claim construction issues. (Id. at 12) The court notes that it declined to adopt any of defendant's proposed claim constructions; the court agrees, however, that infringement was not a foregone conclusion under its constructions. In view of the extent of defendant's familiarity with the '144 patent prior to its infringement, and the absence of testimony or other evidence regarding why defendant believed Geometrix® did not meet the limitations of the '144 patent, the court finds that this factor tips slightly in favor of enhancing damages.

iii. Litigation behavior

Plaintiff asserts that defendant's conduct during this litigation "taken in the best light, is a neutral factor, and taken in the true light of day is a factor that weighs in favor of enhancement." (D.I. 344 at 5) Specifically, plaintiff notes that defendant: (1) asserted invalidity based on obviousness, filed an expert report omitting a discussion on obviousness, and did not concede that it was not pursuing this defense until its Daubert reply brief; (2) raised a new defense of indefiniteness for the first time at summary judgment; (3) raised its government use defense for the first time on the eve of trial; (4) attempted to reargue claim construction at trial, prompting a warning by the court,⁴⁰ and

⁴⁰(D.I. 304 at 1616:10-19)

(5) produced 42,000 pages of documents to plaintiff days before trial, which had been in the possession of a former employee on defendant's witness list for trial and that had not been previously produced pursuant to plaintiff's subpoena.

With respect to defendant's document production, there is no indication from plaintiff that these documents contained non-duplicative information. (See D.I. 298 at 9:5-10:8). Defendant's litigation strategies were borderline unacceptable; nevertheless, the court does not find defendant's conduct to be sufficiently deplorable to find enhancement on this factor.

iv. Size and financial condition of the parties

Defendant is a large company that generates 1.84 billion dollars in revenue per year (PTX-154) and spends over \$120 million per year in reserach and development alone (D.I. 305 at 1850:23-24). An enhanced damages award will not jeopardize defendant's financial well-being; this factor favors enhancing damages. See Black & Decker Inc. v. Robert Bosch Tool Corp., No. Civ. A. 04-7955, 2006 WL 3359349, *9 (N.D. Ill. Nov.20, 2006) ("Bosch is a large corporation with millions of dollars in sales each year. As such, Bosch's size and financial condition suggest that enhanced damages would not significantly jeopardize Bosch's financial well-being."); nCUBE Corp. v. SeaChange Intern., Inc., 313 F.Supp.2d 361, 390 (D. Del. 2004) (holding that financial condition factor weighted in favor of enhancing damages where defendant had over \$92 million in cash holdings, total assets exceeding \$150 million, and generated over \$31 million in sales of its infringing system).

v. Closeness of the case

Plaintiff suggests that the case was not close, insofar as the jury did not find for defendant on any element of any defense, found in favor of plaintiff on all counts, and awarded plaintiff its requested damages. (D.I. 315 at 6) As an initial matter, defendant cannot both assert that it developed and sold its UTDOA/SDCCH technology because it believed plaintiff communicated that it would not sue on the '144 patent, yet also assert that the willfulness case was a close one. The court agrees, however, that the questions of infringement, as well as several of defendant's defenses addressing plaintiff's failure to declare the '144 patent as "essential IPR," the merit of which was discussed previously, were sufficiently close as to merit this factor neutral.

vi. Duration of the infringement

Defendant's infringement commenced in December 2004 when it bid on the STC contract. At trial, plaintiff asserted, and the jury found, that defendant won the entirety of the STC deal. This finding implies that the STC contract is one deal to be completed in five phases, not five separate deals; defendant's supply of Geometrix® to STC is one continuing tort. Notwithstanding, this one deal is worth millions of dollars and has been ongoing for several years. It commenced well after defendant first became aware of the '144 patent (and, in fact, asserted it as a prior art reference in litigation) and continues despite the instant litigation. This factor weighs in favor of enhanced damages.

vii. Remedial measures

There is no indication that defendant has stopped its supply to STC in response to the present suit (or jury verdict). This factor favors enhanced damages.

viii. Motivation to harm

Plaintiff suggests that, insofar as there is a two-supplier market, it is foreseeable that any sales by defendant in the UTDOA/SDCCH market necessarily harms plaintiff. (D.I. 344 at 12) Plaintiff and defendant are direct competitors in a competitive industry. Defendant asserts that the fact that it joined forces with plaintiff to get UTDOA/SDCCH standardized demonstrates that it did not intend to harm plaintiff. (D.I. 334 at 22) In the court's view, defendant's pre-infringement standardization effort does not mitigate against the obvious and foreseeable harm that infringement posed to plaintiff. The court finds this factor weighs in favor of enhanced damages. See nCUBE, 313 F.Supp.2d at 390 (finding that infringement by direct competitor in a highly competitive two-supplier industry mitigates in favor of enhanced damages).

ix. Attempt to conceal infringement

There is no indication that defendant attempted to conceal its infringement; this factor tips in favor of no enhanced damages.

x. Discussion

Five of the Read factors suggest that enhanced damages may be appropriate in this case. Defendant knew of the '144 patent, and it points to no evidence of a good faith belief that Geometrix® did not infringe; defendant has continually infringed over the course of several years and has not taken any remedial measures; defendant was presumptively motivated to harm plaintiff as its only market competitor; and defendant's size and financial condition are such that an enhanced damage award will not jeopardize it. Two factors are neutral: The closeness of the case and litigation

conduct. Two factors, the lack of evidence of copying or of concealment, weigh against enhancing damages.

The court concludes that the jury's finding of willful infringement and the five aggravating factors discussed above support the imposition of enhanced damages in this case. The court finds that plaintiff is entitled to an enhancement of 25% percent on the award of \$18.6 million, based on these circumstances. See IMX, Inc. v. LendingTree, LLC, 469 F.Supp.2d 203, 223 (D. Del. 2007) (awarding jury award plus fifty percent where three Read factors suggested enhancement, including failure to remediate following the jury verdict coupled with an announcement of its intention to continue its infringement) (collecting cases). Prejudgment and post-judgment interest shall also be assessed in the court's order.⁴¹

3. Attorney fees and costs

Plaintiff also argues that defendant's willful infringement, lack of a good faith belief that it did not infringe, and litigation tactics, discussed supra, support a finding that this case is exceptional pursuant to 35 U.S.C. § 285. (D.I. 272 at 11-13)

In deciding whether to award attorney fees, the court must undertake a two-step inquiry. See Interspiro USA, Inc. v. Figgie Intern. Inc., 18 F.3d 927, 933 (Fed. Cir. 1994). First, the court "must determine whether there is clear and convincing evidence

⁴¹Section 35 U.S.C. § 284 provides for the calculation of damages "together with interest . . . as fixed by the court." Prejudgment interest should ordinarily be awarded absent some justification for withholding such an award. See General Motors Corp. v. Devex Corp., 461 U.S. 648, 657 (1983).

Section 28 U.S.C. 1961(a) provides that post-judgment interest "shall be calculated from the date of the entry of the judgment, at a rate equal to the weekly average 1-year constant maturity Treasury yield, as published by the Board of Governors of the Federal Reserve System, for the calendar week preceding."

that the case is 'exceptional.'" Id. Second, the court must determine whether "an award of attorney fees to the prevailing party is warranted." Id. Exceptional cases include: "[i]nequitable conduct before the PTO; litigation misconduct; vexatious, unjustified, and otherwise bad faith litigation; a frivolous suit or willful infringement." Epcon Gas Sys., Inc. v. Bauer Compressors, Inc., 279 F.3d 1022, 1034 (Fed. Cir. 2002).

As discussed previously, defendant's trial tactics in this case did not rise to the level of bad faith or vexatious litigation. Despite the verdict, defendant put plaintiff to its proofs. The court finds that there was nothing exceptional about this infringement case. The court declines to award attorney fees based upon the jury's finding of willfulness, absent more. Accordingly, plaintiff's motion shall be denied with respect to attorney fees and costs.

4. Permanent injunction

a. Permanent injunction standard

In eBay Inc. v. MercExchange, L.L.C. (hereinafter "eBay"), the Supreme Court overruled the Federal Circuit's prior "general rule that courts will issue permanent injunctions against patent infringement absent exceptional circumstances." 126 S.Ct. 1837 (2006) (vacating and remanding MercExchange, L.L.C. v. eBay Inc., 401 F.3d 1323, 1339 (2005)). Under eBay, permanent injunctions in patent cases must be based on a case-by-case assessment of the traditional equitable factors governing injunctions. 126 S.Ct. at 1839. That is, to be awarded a permanent injunction, a plaintiff must demonstrate: "(1) that it has suffered an irreparable injury; (2) that remedies available

at law, such as monetary damages, are inadequate to compensate for that injury; (3) that, considering the balance of hardships between the plaintiff and defendant, a remedy in equity is warranted; and (4) that the public interest would not be disserved by a permanent injunction.” Id. “[T]he decision whether to grant or deny injunctive relief rests within the equitable discretion of the district courts, and that discretion must be exercised consistent with traditional principles of equity, in patent disputes no less than in other cases governed by such standards.” Id. at 1841.

b. Discussion

1. Irreparable harm

The eBay Court specifically cautioned against the application of categorical rules, classifications and assumptions in these analyses. Id. at 1840. Nevertheless, courts, presumably struggling to balance the absence of a presumption of irreparable harm with a patentee’s right to exclude, have frequently focused upon the nature of the competition between plaintiff and defendant in the relevant market in the context of evaluating irreparable harm and the adequacy of money damages.

Courts awarding permanent injunctions typically do so under circumstances where plaintiff practices its invention and is a direct market competitor.⁴² Plaintiffs are

⁴²See, e.g., Muniauction, Inc. v. Thomson Corp., 502 F. Supp. 2d 477, 482 (W.D. Pa. 2007) (“Plaintiff and defendants are direct competitors in a two-supplier market. If plaintiff cannot prevent its only competitor’s continued infringement of its patent, the patent is of little value.”) (granting permanent injunction); Johns Hopkins Univ. v. Datascope Corp., 513 F. Supp. 2d 578, 586 (D. Md. 2007) (granting permanent injunction where infringing product was plaintiffs’ “only competition” and “thus, its sale reduce[d] the [p]laintiffs’ market share”); Transocean Offshore Deepwater Drilling, Inc. v. GlobalSantaFe Corp., No. Civ. A. 03-2910, 2006 WL 3813778, *4 (S.D. Tex. Dec. 27, 2006) (granting permanent injunction requiring structural modifications to infringing deepwater drilling rigs where “the customer base for deep water drill rigs is small, and

also frequently successful when their patented technology is at the core of its business, and/or where the market for the patented technology is volatile or still developing.⁴³

Both sets of circumstances are present in the case at bar.

Plaintiff and defendant are the only two competitors for UTDOA/SDCCH technology worldwide. (D.I. 303 at 1150:1-6; D.I. 305 at 1922:5-23) Therefore, a sale to defendant is the loss of a sale to plaintiff. Through the STC contract, defendant made the first (infringing) sale of a UTDOA/SDCCH system for security applications outside the United States. (D.I. 299 at 520:25-521:12) Prior to losing the STC business to defendant, plaintiff had conducted a successful trial of its own UTDOA/SDCCH technology in Saudi Arabia and submitted its own detailed proposal to STC. (D.I. 298 at 155:14-156:9) Plaintiff had also informed its largest shareholder of the upcoming deal. (517:12-17) Ms. Mulhern testified that defendant secured the “flagship” sale in the Middle East and secured a favorable position in terms of gaining future business in the region. (D.I. 303 at 1187:19-1188:6) Ms. Mulhern testified that

[defendant] has not only used [its] rigs equipped with the infringing structure to compete for the same customers and contracts as [plaintiff], but also to win contracts over competing bids from [plaintiff]).

⁴³See Martek Biosciences Corp. v. Nutrinova Inc., 520 F. Supp. 2d 537, 558-59 (D. Del. 2007) (granting permanent injunction where plaintiff was a direct competitor “likely to lose market share that it may not be able to recapture,” as plaintiff’s patented technology was its primary revenue source, and defendant was plaintiff’s only competitor and was “targeting [plaintiff’s] customers in that industry”); Tivo, Inc. v. EchoStar, 446 F. Supp. 2d 664 (E.D. Tex. 2006) (granting permanent injunction where: (1) parties were direct competitors; (2) “plaintiff [was] losing market share at a critical time in the market’s development”; (3) the parties agreed that customers in the relevant market tend to remain customers of the company they first purchased from; and (4) as a “relatively new company with only one primary product,” plaintiff’s “primary focus is on growing a customer base specifically around the product” competing with the infringing product).

she has already seen some evidence of lost business to plaintiff. (Id. at 1188:7-9) Defendant's infringement, therefore, has necessarily affected its goodwill and its reputation as the first company to provide UTDOA/SDCCH outside the U.S. As plaintiff and defendant are the only suppliers in a two-supplier market, defendant's infringement has necessarily affected plaintiff's market position. On this record, plaintiff has established irreparable harm. See Muniauction, 502 F. Supp. 2d at 482; Novozymes A/S v. Genecor Intern., Inc., 474 F. Supp. 2d 592, 612-13 (D. Del. 2007) ("These are head-to-head competitors, and Novozymes has a right, granted by Congress, not to assist its rival with the use of proprietary technology.") (granting permanent injunction).

2. Remedies at law

Legal remedies are not adequate to compensate plaintiff for the infringement of its patent. This conclusion is bolstered by the jury's finding that defendant's infringement of the '144 patent was willful. See Muniauction, 502 F. Supp. 2d at 483. As discussed previously, the jury has necessarily found that defendant has secured or will secure the remaining phases of the STC contract. However, the value of defendant's continued infringement (phases 3, 4, and 5) is unknown. Defendant has taken from plaintiff not only this important business, but the recognition of being a technology innovator and the first global supplier of the patented technology, and an unquantifiable amount of business opportunities flowing therefrom.⁴⁴ Such harms are not compensable in damages.

3. Balance of hardships and public interest

⁴⁴The court notes that, as in Muniauction, there appears to be no indication that defendant will cease offering Geometrix® in the absence of an injunction.

In opposing plaintiff's motion, defendant claims that it would suffer hardship because it is "locked into practicing standardized technology." (D.I. 335 at 26) According to defendant, it was "specifically targeted" to be the victim of a "cold and calculated" plan by plaintiff to gain standardization assistance. (Id. at 27) While the court is sensitive to the fact that defendant invested time and money in the standardization process, it remains free to practice non-patented options.⁴⁵ In contrast, absent an injunction, plaintiff will continue to suffer encroachment of its patent rights, loss of customers, injury to goodwill and reputation, and diminished market share.

In the context of the fourth factor, defendant cites to the Third Circuit's recent opinion in Broadcom Corporation v. Qualcomm Incorporated, 501 F.3d 297 (3d Cir. 2007), which discussed at length the pitfalls of deceptive conduct before standards-setting bodies such as ETSI. The Broadcom Court noted that "participants rely on structural protections, such as rules requiring the disclosure of IPRs," and "are less likely to be wary of deception and may not detect such conduct and take measures to counteract it until after lock-in^[46] has occurred. At that point, the resulting harm to competition may be very difficult to correct." Id. at 312.

Broadcom was an antitrust case, not a patent case. The issue before the Broadcom Court was whether plaintiff stated actionable anticompetitive conduct with allegations that defendant deceived the standards body by committing to license its

⁴⁵Defendant does not quantify the cost of switching to one of the other available non-infringing forms of geolocation technology (global positioning, timing advance, or enhanced observed time difference).

⁴⁶The point at which it becomes "prohibitively expensive to abandon their investment and to switch to another standard." Broadcom, 501 F.3d at 310.

technology (prior to standardization) and later, after lock-in occurred, demanding royalties. The Court found in the affirmative.⁴⁷ Id. at 314. The case at bar is also distinguishable from Broadcom insofar as plaintiff did not declare the '144 patent as essential IPR, promise to license it, then subsequently breach its promise. The application of Broadcom to this case at bar is, at best, questionable.

Notwithstanding, the court declines to find Broadcom's dicta (regarding the potential unfair advantage to be gained from an intentional false promise to a standards body) tips the balance of hardships in favor of defendant, in view of: (1) the lack of evidence of an intentional false promise by plaintiff to license the '144 patent followed by a demand for royalties, i.e. no "patent hold-up"; (2) the availability of several non-infringing forms of geolocation technology; (3) the absence of evidence regarding the cost to defendant to switch to one of these forms; and (4) the injuries suffered by plaintiff in this two-supplier market, as found by the jury in this case. For the same reasons, the court declines to find Broadcom persuasive in the context of the fourth factor (the public interest). Additionally, the jury found that defendant willfully infringed the '144 patent; denying injunctive relief to plaintiff would not well serve the public interest in protecting patent rights. Based on the foregoing, the court finds that a

⁴⁷Specifically, the Court held that:

(1) [I]n a consensus-oriented private standard-setting environment; (2) a patent holder's intentionally false promise to license essential proprietary technology on [fair, reasonable, and non-discriminatory] terms; (3) coupled with a [standards-determining organization's] reliance on that promise when including the technology in a standard; and (4) the patent holder's subsequent breach of that promise, is actionable anticompetitive conduct.

Broadcom, 501 F.3d at 314.

permanent injunction is appropriate, and turns next to the scope of the relief afforded.

4. Scope of the injunction

At trial, plaintiff established that it has lost the STC business to defendant, potentially worth \$45.3 million over five phases; it has also lost the opportunity to make the “flagship” sale of UTDOA/SDCCH overseas and associated goodwill.⁴⁸ The court has remitted the jury’s damage award to \$18.6 million, the highest amount permitted based upon the evidence presented at trial, representing the damages based on defendant’s sales to STC shipped as of trial. Defendant shall be hereinafter enjoined from making, using, selling, or offering for sale any UTDOA/SDCCH system, including (but not limited to) further sales of the infringing Geometrix® system to STC.⁴⁹

V. CONCLUSION

For the reasons discussed above, the court finds against defendant’s remaining

⁴⁸As this court’s prior jurisprudence has established, a plaintiff must forward sufficient proof of market competition and/or market harm vis-a-vis the broad scope of the relief requested. See IMX, Inc. v. LendingTree, LLC, 469 F. Supp. 2d 203, 226 (D. Del. 2007) (declining to grant permanent injunction “[a]bsent any specific information regarding the effect of defendant’s infringing operation of the LendingTree Exchange on plaintiff’s business” such as “the effects of defendant’s infringement on plaintiff’s business and of a potential permanent injunction on the public and the marketplace”); Praxair, Inc. v. ATMI, Inc., 479 F. Supp. 2d 440, 443 (D. Del. 2007) (declining to grant permanent injunction where plaintiff and defendant were only two market competitors, where evidence indicated that sales of the patented technology accounted for low percentages of each party’s business, and plaintiff did not “provide[] or describe[] any specific sales or market data to assist the court, nor [did] it identif[y] precisely what market share, revenues, and customers [lost to defendant]”).

⁴⁹Plaintiff originally sought an injunction based on future sales to “any customer other than STC” under the assumption that the jury’s damages award, based on all five phases of the STC deal, would be upheld. (D.I. 316) Plaintiff, however, did reserve the right to seek injunctive relief for the remaining phases of the STC contract. (D.I. 345 at 72 n.21)

equitable defenses, denies defendant's motion for JMOL or, in the alternative, for a new trial (D.I. 318), grants in part plaintiff's motion for enhanced damages (D.I. 314), and grants plaintiff's motion for a permanent injunction (D.I. 316). An appropriate order shall issue.

September 19, 2007, at a rate equal to the weekly average 1-year constant maturity Treasury yield, as published by the Board of Governors of the Federal Reserve System for the calendar week preceding.

5. Plaintiff's motion for a permanent injunction (D.I. 316) is granted. The parties shall submit a more detailed permanent injunction order, commensurate with the court's opinion, on or before August 27, 2008.


United States District Judge