

IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF WISCONSIN

WISCONSIN ALUMNI RESEARCH
FOUNDATION,

Plaintiff,

v.

APPLE, INC.,

Defendant.

OPINION AND ORDER

14-cv-062-wmc

In this opinion and order, the court addresses a slew of post-trial motions. The jury returned a verdict in favor of plaintiff Wisconsin Alumni Research Foundation (“WARF”) and awarded damages in the amount of \$234 million. Invoking Federal Rules of Civil Procedure 50(b) and 59(3), defendant Apple, Inc., challenges virtually every aspect of the jury’s verdicts, and myriad decisions made both before and during the trial by the court. (Dkt. #677.) For the reasons that follow, the court will deny that motion in its entirety. WARF also moves under Rule 59(e) to alter the court’s grant of judgment in Apple’s favor on plaintiff’s willful infringement claim. Applying the new standard articulated by the United States Supreme Court in *Halo Electronics, Inc. v. Pulse Electronics, Inc.*, 136 S. Ct. 1923 (2016), the court again concludes that WARF has failed to meet its burden of demonstrating willful infringement. Accordingly, that motion will also be denied.

The remaining motions are all WARF’s: for equitable relief (dkt. #683); for an accounting, supplemental damages through the date of judgment, and pre- and post-judgment interest (dkt. #685); and for taxation of costs (dkt. ##689, 725). For the reasons that follow, the court will award an ongoing royalty rate of \$2.74 per unit from

the date of judgment, October 25, 2015. The court will also award supplemental damages at the per unit royalty rate awarded by the jury from June 27, 2015, to October 25, 2015.¹ The court will also award pre-judgment interest at the prime rate, compounded quarterly, and will award post-judgment interest at the statutory rate, compounded annually. The calculations for supplemental damages and pre-judgment interest will await further submissions by the parties. Finally, the court will award WARF costs in the total amount of \$841,587.66.

BACKGROUND

In this patent lawsuit, WARF alleged that Apple infringed U.S. Patent No. 5,781,752 (the “752 patent”). In response, Apple asserted various counterclaims, which challenge the validity of the patent. On the parties’ cross motions for summary judgment, the court granted partial judgment to WARF on: (1) Apple’s counterclaims and defenses for anticipation under 35 U.S.C. § 102 with respect to U.S. Patent No. 5,619,662 (“Steely or the “Steely patent”); and (2) Apple’s counterclaim and defense for indefiniteness under 35 U.S.C. § 112 ¶ 2 with respect to claims 5 and 6 of the ‘752 patent. (8/6/15 Op. & Order (dkt. #193).)

The case then proceeded to a jury trial. The jury returned a verdict in favor of WARF, finding that Apple infringed all six of the asserted claims and rejecting Apple’s invalidity defense as to each of those six claims. (10/13/15 Liability Special Verdict (dkt.

¹ As described below, the court will also consider awarding supplemental damages for the A9 and A9x chips, which Apple now concedes infringe (while maintaining its objections to the jury’s verdict). This issue will, however, require additional briefing.

#603).) In the second phase of the trial, the jury answered two more questions in favor of WARF, finding Apple vicariously liable for Samsung's manufacture of Apple products, and awarded WARF \$234,277,669.00 in damages. (10/19/15 Damages Special Verdict (dkt. #642).)

During the course of trial, the court also granted WARF judgment as a matter of law on one of Apple's noninfringement defenses based on the claim of a "prediction threshold detector preventing data speculation for instructions having a prediction within a predetermined range," finding that Apple had failed to put forth a factual basis for that defense to support a reasonable jury finding noninfringement on that basis. (10/16/15 Op. & Order (dkt. #639).) Finally, the court granted judgment in favor of Apple on WARF's willful infringement claim. (10/15/15 Op. & Order (dkt. #623).)

OPINION

I. Apple's Renewed Motion for Judgment as a Matter of Law and/or New Trial (dkt. #677)

Under Federal Rule of Civil Procedure 50, judgment as a matter of law may be granted where there is no "legally sufficient evidentiary basis" to find for the party on that issue. Fed. R. Civ. P. 50(a). In considering a Rule 50(a) motion, the court is to "construe the facts strictly in favor of the party that prevailed at trial." including drawing "[a]ll reasonable inferences in that party's favor and disregarding all evidence favorable to the moving party that the jury is not required to believe." *May v. Chrysler Group, LLC*, 692 F.3d 734, 742 (7th Cir. 2012) (internal citations and quotation marks omitted), *withdrawn in part on reh'g*, Nos. 11-3000, 11-3109, 2013 WL 1955682 (7th Cir. May 14,

2013). In particular, the court does not make credibility determinations or weigh the evidence, although the court must assure that “more than ‘a mere scintilla of evidence’ supports the verdict.” *Id.* (quoting *Hossack v. Floor Covering Assocs. of Joliet, Inc.*, 492 F.3d 853, 859 (7th Cir. 2007)). Essentially, the court’s “job is to decide whether a highly charitable assessment of the evidence supports the jury’s verdict or if, instead, the jury was irrational to reach its conclusion.” *May*, 692 F.3d at 742.

A further limitation applies as well: “Because the Rule 50(b) motion is only a renewal of the preverdict motion, it can be granted only on grounds advanced in the preverdict motion.” *Wallace v. McGlothan*, 606 F.3d 410, 418 (7th Cir. 2010); *see also Thompson v. Mem’l Hosp. of Carbondale*, 625 F.3d 394, 407 (7th Cir. 2010) (refusing to consider the defendant’s argument that plaintiff failed to demonstrate that he suffered an adverse employment action, in part, because the defendant did not raise argument in Rule 50(a) motion); *see also* Fed. R. Civ. P. 50 cmt. 1991 Amendments (“A post-trial motion for judgment can be granted only on grounds advanced in the pre-verdict motion.”).

Defendant also moves for a new trial under Federal Rule of Civil Procedure 59. “A new trial may be granted only if the jury’s verdict is against the manifest weight of the evidence.” *King v. Harrington*, 447 F.3d 531, 534 (7th Cir. 2006) (citing *ABM Marking, Inc. v. Zanasi Fratelli, S.R.L.*, 353 F.3d 541, 545 (7th Cir. 2003)). To meet this standard, defendant must demonstrate that *no* rational jury could have rendered a verdict against Apple. *King*, 447 F.3d at 534 (citing *Woodward v. Corr. Med. Servs. of Ill., Inc.*, 368 F.3d 917, 926 (7th Cir. 2004)). In making this evaluation, the court must view the evidence

in a light most favorable to plaintiff, leaving issues of credibility and weight of evidence to the jury. *King*, 447 F.3d at 534. “The court must sustain the verdict where a ‘reasonable basis’ exists in the record to support the outcome.” *Id.* (quoting *Kapelanski v. Johnson*, 390 F.3d 525, 530 (7th Cir. 2004)).

In this case, the evidence easily supports the jury’s findings of infringement on all three disputed elements of the asserted claims of the patent-in-suit: (1) “detecting a mis-speculation”; (2) “the particular data consuming instruction”; and (3) “flag value.” (Def.’s Mot. (dkt. #555) 4-9.) While Apple’s Rule 50(b) motion extends beyond the arguments raised in its 50(a) motion, WARF does not oppose it on that basis. As such, the court will address that motion, briefly, while ultimately rejecting all of the arguments raised by Apple.

A. Infringement

In its pending Rule 50(b) motion, Apple contends the accused products lack at least three elements required by the ‘752 patent, and, therefore, no reasonable jury could find that Apple literally infringed any of the asserted claims of the ‘752 patent. *First*, Apple contends that no reasonable jury could have found that Apple’s accused products satisfy the “detecting a mis-speculation” and “mis-speculation indication” elements. Apple argues that the accused products detect only data dependence, not mis-speculations, but WARF submitted evidence -- largely through its expert Professor Conte -- showing Apple’s data speculation circuit, the Load-Store Unit, is capable of both detecting data dependence and detecting mis-speculation.

Specifically, Conte testified that the Load Queue in the Load-Store Unit detects a mis-speculation between a Load and a Store by comparing the program order of the older Store and younger Load, confirming that the instructions have an address overlap, and ensuring that the younger Load has in fact executed before the older Store. (*See* Pl.’s Opp’n (dkt. #711) 21 (citing Conte testimony).) When a mis-speculation is detected, the Load Store Unit then produces a Store-Hit-Younger-Load Redirect, which is a mis-speculation indication. (*See id.*) Conte further testified that, and provided an illustration for the jury to better understand how, the timing of Apple’s processor necessarily satisfies the “detecting a mis-speculation” and “mis-speculation indication” elements. (*Id.* at 31-32.) In other words, this step is “baked into” Apple’s processor. (*Id.* at 31.)

In its reply, Apple argues principally that “a processor cannot literally detect or indicate a mis-speculation absent an *explicit* check.” (Def.’s Reply (dkt. #728) 15 (emphasis added).) Whatever Apple means by “explicit,” the construction of “mis-speculation” agreed on by the parties contains no such requirement. (*See* 8/6/15 Op. & Order (dkt. #193) 10.) Instead, true to the language of the claim, all that is required is that (1) mis-speculations occur and (2) Apple’s processor is capable of detecting and indicating such occurrences. Drawing all reasonable inferences in favor of WARF, therefore, the jury’s finding of infringement of this element was certainly *not* irrational. *May*, 692 F.3d at 742.

Second, Apple challenges the jury’s finding that the “particular data consuming instruction” element is satisfied. Specifically, Apple argues that the evidence demonstrates that “each entry of Apple’s LSD Predictor includes a Load Tag and

counter,” and that the Load Tags are generated using a hashtag function and are not associated with a “particular” load instruction. (Def.’s Opening Br. (dkt. #678) 17-18.) The court rejects Apple’s challenge for the same reason it denied Apple’s Rule 50(a) motion, “a reasonable jury could conclude that a prediction was associated with a particular load []instruction even if that same prediction may be associated with other load instructions.” (10/26/15 Op. & Order (dkt. #655) 4-5.) In its reply brief, Apple appears to step back from any defense based on aliasing and the frequency of aliasing. Even if this shift does not amount to waiver, the court agrees with WARF that the Apple’s processors are capable of operating for periods of time during which at least some of the load tags will not alias. As such, the jury reasonably rejected any non-infringement defense based on that theory. (See Pl.’s Opp’n (dkt. #711) 44 (citing *Broadcom Corp. v. Emulex Corp.*, 732 F.3d 1325, 1333 (Fed. Cir. 2013) (“[A]n accused device that sometimes, but not always embodies a claim[] nonetheless infringes.” (internal citation and quotation marks omitted)).) For these reasons, the court concludes that the jury reasonably found this element satisfied.

Related to its Rule 50(b) challenge, Apple also seeks a new trial based on the court’s failure to instruct the jury on the meaning of “the particular.” During trial, WARF moved to exclude evidence and argument on Apple’s aliasing non-infringement theory, on the basis that this theory was one of claims construction, and Apple waived any construction of the term “the particular” by failing to raise it timely. In response, it was *Apple* who argued that the term “the particular” should be given its plain and ordinary meaning of “of, relating to, or being a single person or thing,” no doubt at least

in part to avoid a waiver for failing to seek a timely construction. (Def.'s Br. (dkt. #552) 3.) Regardless, the court agreed with Apple's interpretation, concluding that claim 1 "disclosed a prediction associated with a single load instruction," but given that this interpretation was consistent with the plain meaning of the claim terms "the" and "the particular" declined to insert a specific, untimely construction in the closing instructions. (10/8/15 Op. & Order (dkt. #559); 10/9/15 Text Order (dkt. #575).) Moreover, in the closing instructions, the jury was told that "[a]ll other claim terms should be given their plain and ordinary meaning as viewed from the perspective of a person of ordinary skill in the art or field of the invention." (Closing Liability Instructions (dkt. #646) 5.) Finally, Apple has failed to explain adequately how it was prejudiced by the denial of its request, or why a new trial is required under Rule 59(a).

Third, Apple challenges the jury's finding that Apple's accused products satisfy the "flag value indicating whether the certain respective date producing [store] instruction has been executed" in claims 5 and 6. Apple argues that the Armed Bit in the LSD Predictor only indicates "whether the store instruction is in the Reservation Station, not whether it 'has been executed'" as would be required to have a "flag value" under those claims. (Def.'s Opening Br. (dkt. #678) 22.) As WARF explains, largely through Dr. Conte's review of RTL code, however, the change from 0 to 1 indicates that the Store instruction is in the reservation and not yet executed, and then the change from 1 to 0, further indicates that the stores are "data resolved," issued from the Reservation Station, and thus have been executed. (Pl.'s Opp'n (dkt. #711) 48-49.) In response, Apple simply argues that WARF's explanation does not account for the Armed Bit value being

“0” both before and after execution. (Def.’s Reply (dkt. #728) 25-26.) Apple’s argument, however, fails to consider the passage of time and Conte’s testimony that the value changed from 0 to 1 and then the de-assertion from 1 to 0. Since the jury reasonably credited Conte’s testimony, the court sees no basis for upsetting that finding.

In addition to raising challenges under Rule 50(b), Apple also argues that a new trial on infringement is necessary because the court erred during the liability phase of trial, granting WARF judgment as a matter of law on one of Apple’s non-infringement theories -- namely, Apple’s defense with respect to the “prediction threshold detector” limitation. (Def.’s Opening Br. (dkt. #678) 29.) Certainly, the court granted judgment as a matter of law on this noninfringement theory in response to WARF’s oral motion. The court subsequently issued an opinion and order more fully explaining its reasons for doing so. (10/16/15 Op. & Order (dkt. #639).) Since Apple’s Rule 59 motion raises no new bases for reviewing that decision, the court simply rejects Apple’s arguments for the reasons already stated on the record during the trial and in its subsequent written order.

Finally, in a one-paragraph throw-away challenge, Apple purports to seek a new trial on the basis that the jury’s infringement verdict was against the manifest weight of the evidence. The court rejects this motion for the same reasons the court rejected Apple’s challenges under Rule 50(b).

B. Invalidity

Apple also seeks judgment as a matter of law as to its defenses and counterclaims of invalidity with respect to two other arguments: (1) claims 1, 2, 3, 5, 6 and 9 of the ‘752 patent were obvious in view of U.S. Patent No. 5,666,506 (“Hesson”) and U.S.

Patent No. 5,619,662 (“Steely”); and (2) claims 1, 2, 3 and 9 of the ‘752 patent are anticipated by, or at least obvious in view of, the Chen prior art references.

“A party seeking to invalidate a patent based on obviousness must demonstrate ‘by clear and convincing evidence that a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention, and that the skilled artisan would have had a reasonable expectation of success in doing so.’” *Procter & Gamble Co. v. Teva Pharm. USA, Inc.*, 566 F.3d 989, 994 (Fed. Cir. 2009) (quoting *Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1361 (Fed. Cir. 2007)). Again, in the context of a post-verdict motion, the court is directed to “presume that the jury resolved the underlying factual disputes in favor of the verdict winner and [to] leave those presumed findings undisturbed if they are supported by substantial evidence.” *Jurgens v. McKasy*, 927 F.2d 1552, 1557 (Fed. Cir. 1991). The court then “examine[s] the legal conclusion *de novo* to see whether it is correct in light of the presumed jury fact findings.” *Id.* In conducting this analysis, courts are instructed to “consider all of the *Graham* factors prior to reaching a conclusion with respect to obviousness.” *Kinetic Concepts, Inc. v. Smith & Nephew, Inc.*, 688 F.3d 1342, 1360 (Fed. Cir. 2012) (citing *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966) describing four underlying factors for deciding obviousness: (1) the scope and content of the prior art; (2) the differences between the claims and the prior art; (3) the level of ordinary skill in the art; and (4) objective indicia of nonobviousness).

As for the first defense, based on the Hesson and Steely patents, the court considered this theory in its opinion and order granting Apple judgment on WARF’s

willful infringement claim. (10/15/15 Op. & Order (dkt. #623) 3-4.) While the court found Apple's defense reasonable, the court also determined that the jury acted reasonably in rejecting the defense, likely "because of the investment in computer software simulations, and time and effort required to confirm that the '752 patented invention would prove valuable in practice sometime in the future when processing speeds had increased by a factor of 10 or more." (*Id.* at 4.) As WARF's expert, Dr. Mudge, and others explained, WARF put forth sufficient evidence from which the jury reasonably could have found that one skilled in the art would not have combined Steely's memory reference tags with Hesson's solution to the problem of mis-speculations of store instructions. At the very least, Apple failed to prove this defense by clear and convincing evidence. Once again, therefore, the court sees no basis for upsetting the jury's factual findings as to Apple's obviousness defense by combining the Steely and Hesson patents.

Apple also seeks a favorable judgment on its anticipation / obviousness defense based on the Chen references. Through the testimony of the co-author of three of the four Chen references -- Professor Scott Mahlke -- WARF put forth sufficient evidence from which the a reasonable jury could have found, and indeed did find that (1) the reordering contemplated in Chen is done in a software compiler *not* by a processor; and (2) the focus of Chen is on in order, rather than out of order, executions. (Pl.'s Opp'n (dkt. #711) 134-40.) Based on this, the jury reasonably concluded that Chen did not disclose claims 1, 2, 3 and 9 of the '752 patent, or, again, the jury at least had a sound basis for finding that Apple had not met its burden of demonstrating an anticipation defense by clear and convincing evidence.

As for its related obviousness defense, Apple argued that it would have been an obvious to apply Chen to software. Putting aside WARF's challenges to Apple's anticipation defense, experts and others skilled in the art testified persuasively to the deep divide between hardware-based and software-based approaches. (*Id.* at 143-33.) A jury reasonably could have relied on this testimony to conclude that one skilled in the art would not have combined these fundamentally different approaches. As such, the court also rejects Apple's motion to invalidate certain claims of the '752 patent based on obvious in view of the Chen prior art references.

C. Vicarious Liability

Next, Apple seeks judgment as a matter of law or a new trial as to the jury's finding that: (1) the wafers infringe when they leave the United States; and (2) Samsung's manufacturing is attributable to Apple. These findings were material to the jury's determination of damages, specifically the appropriate royalty base. Post-trial, Apple raises three core challenges with respect to these jury findings.

First, Apple argues that no reasonable jury could have found that the wafers were capable of infringing before they left the United States for further processing overseas. Specifically, Apples argues -- as it did unsuccessfully to the jury -- that the wafers "are not capable of performing the claimed functionality until 'bumping' occurs to apply power in order for the circuitry to be able to function." (Def.'s Opening Br. (dkt. #678) 51; *see also* Def.'s Reply (dkt. #728) (arguing that the wafers also must be "fused and singulated" before they can satisfy the claim limitations").)

This argument ignores the evidence presented largely through the testimony of Dr. Conte, that “the circuitry in Accused Processors are defined by their RTL code, that this circuitry contains each of the elements specific in the asserted claims, and *all* of the circuitry” in the wafers is in place before being shipped overseas. (Pl.’s Opp’n (dkt. #711) 149.) Moreover, Dr. Conte testified that the wafers can be powered on and tested on a test fixture after the wafer is manufactured in Austin, *but before being shipped overseas*. (*Id.* at 154.) This evidence provided a sufficient basis for the jury to find that the wafers were capable of infringement and indeed did infringe, before leaving the United States.

Second, Apple argues that no reasonable jury could find that Samsung’s manufacturing was attributable to Apple. In so arguing, Apple contends that plaintiff must prove that Apple and Samsung have a principal-agent relationship. (Def.’s Opening Br. (dkt. #678) 55.) The court considered and previously rejected this argument as well, relying principally on the Federal Circuit’s *en banc* decision in *Akamai Technologies, Inc. v. Limelight Networks, Inc.*, 797 F.3d 1020 (Fed. Cir. 2015). In that case, the court explained that “Section 271(a) is not limited solely to principal-agent relationships, contractual arrangements, and joint enterprise[.]” *Id.* at 1023. Instead, the court held that vicarious liability for purposes of establishing direct infringement “can also be found when an alleged infringer conditions participation in an activity or receipt of a benefit upon performance of a step or steps of a patented method and establishes the manner or timing of that performance.” *Id.*

While recognizing that there may be important distinctions between apparatus and method claims, the court rejects Apple’s attempt to distinguish *Akamai* on the basis

that its holding is limited to method claims. *See Centillion Data Sys., LLC v. Qwest Commc'ns Int'l, Inc.*, 631 F.3d 1279, 1282 (Fed. Cir. 2011) (similarly focusing on “control or direct” actions of another in determining whether there was vicarious liability for non method claim). As the court explained in its opinion and order on Apple’s Rule 50(a) motion, “the Federal Circuit is certainly moving in the direction of a more expansive view of what satisfies control and direction in order to bring a third party’s actions within the purview of the alleged infringer.” (10/26/15 Op. & Order (dkt. #655) 7.)²

Finally, Apple argues that if the “control or direction” standard is correct, WARF still failed to demonstrate that it controlled and directed Samsung, because Samsung independently determined to manufacture the wafers in the United States as opposed to doing so in Korea. The court agrees with WARF that this argument conflates two separate questions -- whether Samsung’s actions are attributable to Apple and whether infringement occurred within the United States. (Pl.’s Opp’n (dkt. #711) 187.) There is *no* merit to Apple’s argument that it needed to direct Samsung to manufacture the wafers in the United States. As for Apple’s other arguments that it did not control or direct Samsung’s actions, as the court indicated in its opinion and order on Apple’s Rule 50(a) motion, there was more than sufficient evidence in the form of two related manufacturing contracts for a reasonable jury to conclude that Apple did control or direct Samsung’s actions.

² For this same reason, the court rejects Apple’s arguments that a new trial is warranted because of the court’s instruction to the jury that Apple was vicariously liable “if Samsung performed an act of infringement under Apple’s control or direction” and because the evidence goes against the manifest weight of the evidence. (Def.’s Opening Br. (dkt. #678) 65-66.)

Third, Apple seeks a new trial on the basis that the court erred in allowing WARF to try its vicarious liability claim during the damages phase of trial. Apple contends that it was prejudiced by the decision. The argument is silly and warrants little attention. As Apple itself acknowledges, the court has wide discretion under Rule 42(b) to determine how best to try a case. Here, the first phase of the trial covered a lot of ground -- both infringement and invalidity. To have added WARF's vicarious liability claim would have unnecessarily complicated that first phase of trial since this issue was only material to the question of the scope of damages. If the jury had found no infringement or had found the patent invalid, there would have been no need for the evidence and argument on vicarious liability to be presented to the jury.³

Nor is the court convinced by Apple's argument that the jury was confused by the vicarious liability questions given statements in the instructions that the jury had already found infringement. In particular, the instructions explained that the vicarious liability questions concerned processors manufactured in part in the United States and in part overseas. (Closing Damages Instructions (dkt. #649) 1 ("In determining whether to include these [wafers] in the damages award, you must *first* consider whether the products infringe *at the time they leave the United States*, before any additional manufacturing or processing occurs outside of the United States.")) Accordingly, there appeared no risk of confusion. Indeed, the jury certainly was capable of understanding

³ Admittedly, all of Apple's processors were manufactured in part overseas, then the calculus would have been different. This is because the issue of vicarious liability would have been *central* to plaintiff's infringement claims and, therefore, those two questions likely would have been posed in the first phase of trial, and likely as the first two questions on the verdict form, but those were *not* the facts of this case.

why it was being asked these questions in the second phase of the trial and how those answers impacted the damages award.

D. Damages

Apple finally raises a variety of challenges to the jury's damages award, which roughly fall into three buckets: (1) the admission of certain evidence and expert testimony; (2) errors in the instructions; and (3) the damages award was not supported by the manifest weight of the evidence. The court will address each challenge in turn.

i. Evidentiary Rulings

Apple challenges the introduction of evidence regarding patents that Apple asserted in litigation were infringed by Samsung and the royalties that Apple sought from Samsung. Specifically, Apple argues that those patents did not involve comparable technology, are reflective of the competitive relationship between Apple and Samsung, and were adopted in an unrelated litigation. The court already considered these arguments in ruling on motions *in limine* and finds no basis for reconsidering its decision to admit such evidence now. (9/29/15 Op. & Order (dkt. #468) 25-26.) For the most part, the evidence was used by WARF to rebut Apple's damages position. Moreover, Apple was not unduly prejudiced by the evidence as it was free to present testimony and argue -- and it did both -- that: these patents are not comparable; the negotiation between Apple and Samsung involved a competitive dynamic not at issue in this litigation; and the royalties were sought in the context of litigation. All of this simply goes to the weight the jury may assign to the patents and their royalties, not the

admissibility.⁴ See *Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1326 (Fed. Cir. 2014) (“[W]hether these licenses are sufficiently comparable such that Motorola’s calculation is a reasonable royalty goes to the weight of the evidence, not its admissibility.”).

Apple also challenges the admissibility of WARF’s expert Catharine Lawton’s testimony that the parties would have agreed to split the profits 50/50. Here, too, the court touched on this challenge at trial and sees no basis for revisiting its decision to allow her testimony. (9/29/15 Op. & Order (dkt. #468) 36-37.) Lawton testified that she isolated the patents attributable to the patented invention, and based on “conversations with [WARF’s long-serving managing director] Dr. Gulbrandsen and WARF’s history of licensing and negotiation and the nature of this technology, that WARF would have sought at this hypothetical negotiation 50 to 70 percent of the incremental additional profit that Apple realized.” (10/14/15 Trial Tr. (dkt. #671) 171-72.) The court found that Lawton sufficiently tied her 50% profit split to the facts of the case, and therefore her testimony is distinguishable from impermissible “rule of thumb” expert opinions. See *Carnegie Mellon Univ. v. Marvell Tech. Grp., Ltd.*, No. 09-290, 2012 WL 3679564, at *6 (W.D. Pa. Aug. 24, 2012) (distinguishing the holding in *Uniloc* from expert testimony “tied to the facts of the case”). Here, too, the jury was free to place little or no weight on this testimony, but Apple’s challenge does not go to its admissibility.

⁴ Because the court rejects each of these challenges, the court need not address WARF’s argument that even without this evidence, there was sufficient support from unchallenged evidence to sustain the jury’s award. (Pl.’s Opp’n (dkt. #711) 212-15.)

Also with respect to Lawton, Apple challenges the introduction of her testimony regarding an estimated market price of the A7 chip. The court addressed this challenge in its motions *in limine* order, and again sees no reason to revisit its decision allowing her testimony and introduction of evidence. (9/29/15 Op. & Order (dkt. #468) 35-36.) Whether Lawton's cost estimate was inflated was proper fodder for cross-examination -- and Apple did explore this at trial -- but Apple's arguments fall short of demonstrating that her analysis was so unreliable that the court erred in not excluding it.

Finally, with respect to the first category of challenges to the damages award, Apple contends that the court erred in allowing Dr. Knittel to present his regression analysis. Apple also challenges the admissibility of Dr. Knittel's testimony as part of its motions *in limine*. Here, too, the court rejected Apple's challenge, finding that it went to the weight the jury may place on his opinion, not its admissibility. (9/29/15 Op. & Order (dkt. #468) 32-25.) The court sees no basis to reconsider that decision either.⁵

ii. Jury Instructions

Apple takes issue with two aspects of the damages instructions. First, Apple contends that the court erred in including all fifteen of the *Georgia-Pacific* factors in the instructions. Relying on *Ericsson Inc. v. D-Link Systems, Inc.*, 773 F.3d 1201 (Fed. Cir. 2014), Apple argues that the court failed to consider the facts of this case in determining

⁵ As part of this challenge, Apple also claims that the court limited its cross-examination of Dr. Knittel, thereby undermining its attempts to challenge this methodology. The court has reviewed the portions of the trial transcript Apple cited in support of this argument, which actually reflect an attempt to manage the trial and not undue interference with Apple's cross-examination. Moreover, Apple's contention that the court required Apple to submit a proffer on further cross-examination of Knittel is belied by the record -- as WARF points out in its opposition brief. (Def.'s Opp'n (dkt. #711) 258-60.) Regardless, Apple dropped this challenge in its reply brief.

which factors were relevant for the jury's consideration. While certain of the factors were more central to the parties' respective damages cases, WARF's expert did provide a slide on all fifteen factors. (Demonstrative Ex. 93 (dkt. #650-9) 74.) Moreover, Apple fails to explain how it was prejudiced from an instruction that permitted the jury to *consider* certain factors rather than require consideration. (Intro. Damages Instr. (dkt. #649) 2 ("The following is not every possible factor, but it will give you an idea of the kinds of things to consider in setting a reasonable royalty.")) More specifically and unlike *Ericsson*, Apple fails to explain what factors would have been contrary to the licensing requirements. (Pl.'s Opp'n (dkt. #711) 261-62.)

Apple also challenges the court's refusal to provide a special instruction on non-infringing alternatives and switching costs. As an initial point, the court *did* instruct the jury to consider "the availability of other non-infringing alternatives" in determining a reasonable royalty. The court simply rejected a more detailed instruction offered by Apple, which the court deemed unnecessary and more suitable for argument. In no way did the court restrict Apple's efforts to produce evidence or argument on this factor. As for switching costs, Apple acknowledged in its reply (Def.'s Reply (dkt. #728) 151) that it failed to present any evidence on this subject which rendered the proposed instruction irrelevant.

iii. Manifest Weight of Evidence

Apple further contends that the verdict went against the manifest weight of the evidence. In support of this challenge, Apple repeats the same arguments made to the jury as to the lack of comparability of the 2009 WARF-Intel license and Apple licenses,

as well as the importance of WARF's pre-litigation valuation of the patent. The jury could have accepted those arguments, but obviously opted otherwise. As for Apple's challenge to specific evidence, a party "must do more than identify favorable evidence that, if isolated from . . . opposing evidence, would support [its] conclusion." *Plyler v. Whirlpool Corp.*, 751 F.3d 509, 513 (7th Cir. 2014).

As WARF described in its opposition, the record as a whole provides sufficient support for the jury's award. Specifically, the jury reasonably could have relied on the 2009 Intel agreement for \$110 million, the significant performance and energy-saving benefits Apple achieved through its use of the patented invention and the economic importance of the invention to the exponentially faster processing speed now necessary for Apple's iPhones. (Pl.'s Opp'n (dkt. #711) 212-15.) Given this, Apple has not established that the jury's award went against the manifest weight of the evidence so as to warrant a new trial.

II. WARF's Motion to Alter or Amend Judgment as to Willful Infringement (dkt. #681)

After the court granted Apple's motion for judgment as a matter of law on WARF's willful infringement claim, the United States Supreme Court articulated a different standard for proving such a claim. *Halo Electronics, Inc. v. Pulse Electronics, Inc.*, 136 S. Ct. 1923 (2016). Shortly after the Court granted *certiorari* in *Halo*, WARF filed the present motion, anticipating that the standard defined in *In re Seagate Technology, LLC*, 497 F.3d 1360 (Fed. Cir. 2007 (*en banc*)), would be vacated and that the Supreme Court would adopt a similar totality of the circumstances test described in *Octane Fitness*,

LLC v. ICON Health & Fitness, Inc., 134 S. Ct. 1749 (2014), with respect to claims for attorneys’ fees and costs under 35 U.S.C. § 285. WARF’s motion proved prescient, but it does not change the result here.

In *Halo*, the Supreme Court rejected the “unduly rigid” objective and subjective prongs set forth in *Seagate*, instead allowing courts to award enhanced damages based on “subjective willfulness of a patent infringer, intentional or knowing, . . . without regard to whether his infringement was objectively reckless.” 136 S. Ct. at 1933. Moreover, the Court rejected *Seagate*’s requirement that willful infringement be shown by a heightened clear and convincing evidence standard, instead adopting a preponderance of the evidence standard. *Id.* at 1934. In adopting a more flexible standard, however, the Court still cautioned that the award of enhanced damages should be limited to “egregious cases of misconduct beyond typical infringement.” *Id.* at 1935.

In its original opinion and order granting judgment to Apple on WARF’s willful infringement claim, this court applied the then-controlling two-part *Seagate* test, concluding that certain of Apple’s invalidity defenses were not objectively unreasonable. Certainly, *Halo* calls into questions whether Apple, and in turn this court, may rely on an objective showing of plausible defenses absent a further showing that Apple actually believed that the ‘752 patent was invalid at the time it commenced infringing the patent. Indeed, the Supreme Court was quite critical of this aspect of the *Seagate* test:

The existence of such a defense insulates the infringer from enhanced damages, even if he did not act on the basis of the defense or was even aware of it. Under that standard, someone who plunders a patent—infringing it without any reason to suppose his conduct is arguably defensible—can

nevertheless escape any comeuppance under § 284 solely on the strength of his attorney's ingenuity.

Halo, 136 S. Ct. at 1933.

While *Halo* certainly grants more discretion in determining whether enhanced damages are appropriate under § 284, a threshold element remains proof that the defendant necessarily knew of the patent. *Id.* Prior to the court issuing its decision on WARF's willful infringement claim, the parties submitted briefs on their respective positions on this claim. (Dkt. ##587, 606.) Each side devoted a few pages to the "subjective prong," which primarily concerned Apple's knowledge of the patent. The court had no reason to previously consider these arguments, given that it rested its decision on the objective prong but will do so now.

There appears to be no dispute that Apple was aware of the '752 patent before the filing of this lawsuit. Apple engineer Stephen Meier testified at his deposition that he was given the '752 patent by outside patent prosecution counsel for Apple in November 2013. The timing of Meier's knowledge of the patent is interesting: it occurred two months *after* Apple began selling iPhones containing the accused A7 chip, and two months *before* WARF filed the present lawsuit. However, WARF argues that Apple was aware of the patent as early as 2010 based on: (1) it being briefly mentioned in an article that at least some Apple engineers reviewed; and (2) it being disclosed in one of Apple's own patent applications. As for the first basis, the patent was briefly mentioned in an academic article, without any significant description. As for the second piece of evidence, WARF merely offers a single reference to the '752 patent among more than twenty other patent references cited in a patent issued for a memory-hazard detection and avoidance

instructions for vector processing. (Def.'s Ex. 1176 (U.S. Patent No. 8,019,976B2).) Without some linkage between the inventors of this patent or others working on that technology and the inventors of Apple's LSD Predictor, much less actual proof of Apple's copying of the '752 patented technology, this is not enough to impute knowledge to Apple. See *Potter Voice Techs., LLC v. Apple Inc.*, 24 F. Supp. 3d 882, 886 (N.D. Cal. 2014) ("In the context of willful infringement, it is safe to say that the employees required to have knowledge of the asserted patent must have some connection to the decision willfully to infringe."). Even viewed together, this limited evidence does not provide a sufficient basis for the court to find knowledge of the '752 patent pre-dating November 2013.

The timing of Apple's knowledge is material because a finding of willfulness "will depend on an infringer's prelitigation conduct." *In re Seagate Tech., LLC*, 497 F.3d at 1374, *abrogated on other grounds by Halo Elecs., Inc. v. Pulse Elecs., Inc.*, 136 S. Ct. 1923 (2016).⁶ As the Federal Circuit explained:

It is certainly true that patent infringement is an ongoing offense that can continue after litigation has commenced. However, when a complaint is filed, a patentee must have a good faith basis for alleging willful infringement. Fed. R. Civ. Pro. 8, 11(b). So a willfulness claim asserted in the original complaint must necessarily be grounded exclusively in the accused infringer's pre-filing conduct. By contrast, when an accused infringer's post-filing conduct is reckless, a patentee can move for a preliminary injunction, which generally provides an adequate remedy for combating post-filing willful

⁶ While the Supreme Court rejected the standard for determining willful infringement under § 284 in *Halo Elecs.*, the opinion did not upset the Federal Circuit's holding in *Seagate* that the focus of such a claim should be on prelitigation conduct. See *Dorman Prod., Inc. v. Paccar, Inc.*, No. CV 13-6383, 2016 WL 4440322, at *9 (E.D. Pa. Aug. 23, 2016), as amended (Oct. 17, 2016).

infringement. See 35 U.S.C. § 283; *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1350 (Fed. Cir. 2001). A patentee who does not attempt to stop an accused infringer's activities in this manner should not be allowed to accrue enhanced damages based solely on the infringer's post-filing conduct. Similarly, if a patentee attempts to secure injunctive relief but fails, it is likely the infringement did not rise to the level of recklessness.

Id.; see also *Dorman Prod., Inc. v. Paccar, Inc.*, No. CV 13-6383, 2016 WL 4440322, at *9 (E.D. Pa. Aug. 23, 2016), *as amended* (Oct. 17, 2016) (rejecting willful infringement claim based primarily on post-litigation conduct, explaining Dorman's conduct during the brief pre-filing period is insufficient to allow PACCAR's claims for willful infringement 'in the main' to be based on pre-filing conduct" (citing *Seagate*, 497 F.3d at 1374)).

Similarly, WARF's willful infringement claim is based solely on the two months period before the filing of this lawsuit. Moreover, all the evidence shows that at the time Apple learned of the '752 patent, it had already designed, manufactured and begun to sell phones containing the infringing processor. In other words, there is no evidence of copying or other egregious misconduct that would warrant a finding of willful infringement. Indeed, once the case was filed -- assuming the court can consider post-litigation conduct -- Apple developed and pursued an invalidity defense, which the court found to be objectively reasonable, albeit ultimately unsuccessful. Viewing the record as a whole, under *Halo*, therefore, the court again concludes that WARF has failed to demonstrate willful infringement by a preponderance of the evidence. Accordingly, WARF's motion to alter or amend the court's order granting judgment to Apple on that claim is denied.

III. WARF's Motion for Equitable Relief (dkt. #683)

A. Apple's Motion to Strike

In support of its motion for a equitable relief, WARF filed two reply declarations of its damages experts, Lawton and Knittel, providing *Georgia-Pacific* analysis on WARF's requested ongoing royalty rate. WARF's managing director also provided a declaration, describing WARF's desire to maintain exclusivity over its patents and submitting documents in support of that contention. Apple moved to strike these declarations, and the portions of WARF's reply brief relying on those declarations, on the basis that they should have been submitted with the initial motion pursuant to Federal Rule of Civil Procedure 62(c)(2). (Dkt. #744.) In response, WARF argues that: (1) Apple's concession in its opposition brief that the A9 and A9x chips infringe the '752 patent justified the reply declarations; and (2) the experts were simply responding to Apple's own expert's *Georgia-Pacific* analysis.

Without going through each argument, the court generally agrees with Apple that as the party with the burden of proof, WARF should have provided Lawton and Knittel's analysis as part of its opening submission, not in reply. In particular, the court fails to see Apple's concession of infringement as any justification for the submission of otherwise untimely expert opinions in support of WARF's motion. As such, the court will grant Apple's motion to strike Lawton's and Knittel's reply declarations.

As for Gulbrandsen's declaration and Exhibits 6, 7 and 8 to Proctor's declaration (dkt. ##734-6, 734-7, 734-8), the court again agrees with Apple that WARF's focus on exclusive licenses -- as distinct from its interest in excluding infringers from practicing its

patents -- is a new argument raised for the first time in reply. Accordingly, the court will also grant the motion to strike this declaration and supporting exhibits.

B. Permanent Injunction

To be entitled to a permanent injunction, a patentee must show: (1) it has suffered an irreparable injury; (2) remedies available at law are inadequate to compensate for that injury; (3) considering the balance of hardships between the plaintiff and defendant, a remedy in equity is warranted; and (4) the public interest would not be disserved by a permanent injunction. *See Douglas Dynamics, LLC v. Buyers Prod. Co.*, 717 F.3d 1336, 1344 (Fed. Cir. 2013) (citing *eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388, 391 (2006)). Despite these requirements, the Supreme Court has rejected a categorical rule barring non-practicing entities from seeking a permanent injunction: “University researchers or self-made inventors might reasonably prefer to license their patents, rather than undertake efforts to secure the financing necessary to bring their works to market themselves. Such patent holders may be able to satisfy the traditional four factor test, and we see no basis for categorically denying them the opportunity to do so.” *eBay Inc.*, 547 U.S. at 393. Even so, the awards of injunctive relief in cases since *eBay* appear limited to cases where “a party that does not practice the asserted patent” still “sells a competing product.” *Trebro Manufacturing, Inc. v. Firefly Equipment, LLC*, 748 F.3d 1159, 1171 (Fed. Cir. 2014) (citing cases).

Here, WARF does not manufacture or sell any competing product. WARF nevertheless offers various theories to support a finding of irreparable injury: (1) “[t]he meaningful threat of an injunction is necessary to support a viable voluntary licensing

program for WARF for this industry”; (2) “having to initiate serious litigation against Apple to address its ongoing infringement causes significant and not quantifiable reputational harm to WARF”; and (3) litigation costs off-set WARF’s financial contributions to the University of Wisconsin. All of these theories rest on an assumption that a threat of a permanent injunction would motivate patent infringers to negotiate a license upfront thus limiting the need for future litigation to enforce its patent rights. While this theory may have some merit, it only works if the patent infringement is knowing -- absent knowledge of the patent the alleged patent infringer would have no basis for seeking a license. Otherwise, WARF is effectively proposing a new presumption in favor of the entry of a permanent injunction that would be applicable in all cases. Moreover, the award of an ongoing royalty and the threat of treble damages for willful infringement still provide significant motivation for potential patent infringers to negotiate licenses upfront.

There is also a flip-side to WARF’s theory, as Justice Kennedy explained in his concurring opinion in *eBay*:

An industry has developed in which firms use patents not as a basis for producing and selling goods but, instead, primarily for obtaining licensing fees. For these firms, an injunction, and the potentially serious sanctions arising from its violation, can be employed as a bargaining tool to charge exorbitant fees to companies that seek to buy licenses to practice the patent. When the patented invention is but a small component of the product the companies seek to produce and the threat of an injunction is employed simply for undue leverage in negotiations, legal damages may well be sufficient to compensate for the infringement and an injunction may not serve the public interest.

eBay Inc., 547 U.S. at 396–97 (Kennedy, J., concurring). As Apple points out, courts routinely refuse to award injunctive relief where the patentee’s “motivation in seeking an injunction is less about preventing irreparable harm and more about extracting . . . leverage in negotiating with [the defendant].” *Hynix Semiconductor Inc. v. Rambus Inc.*, 609 F. Supp. 2d 951, 983 n.29 (N.D. Cal. 2009). (See also Def.’s Opp’n (dkt. #709) 26-28 (discussing other cases where a court’s finding of irreparable harm due to damage to reputation was at least based on the patentee competing in some form with the patent infringer).)

The court is also unconvinced that WARF’s pursuit of patent litigation meaningfully harms its reputation as an inventor. In seeking an injunction, WARF demonstrates that it is serious about enforcing its patent rights; the court’s decision denying an injunction does not change that fact. Similarly, WARF filed this lawsuit and another lawsuit against Apple, not to mention the earlier lawsuit on the same patent against Intel -- all of which shows that WARF will pursue litigation to enforce its intellectual rights.

Of course, as an affiliate of an institution of higher learning that generally promotes the open exchange of scientific and other knowledge, there may be a downside to WARF’s litigation strategy, including its expressed concern about being lumped in with so-called patent trolls as supported by newspaper articles identifying WARF as just that. (See Pl.’s Opening Br. (dkt. #683) 16.) However, any reputational damage is caused by the filing of litigation itself, and would, if anything, presumably be worsened by the entry of an injunction in this case. However as Apple points out, the press’s

characterization of WARF as a patent troll pre-dates this litigation (Def.'s Opp'n (dkt. #709 23-24).

Given the court's skepticism that the threat of a permanent injunction would limit (as opposed to foster) litigation, the court remains unconvinced that any reputational injury caused by pursuing litigation serves as a credible basis for finding irreparable harm, not to mention the obvious distinction between a research institution tied to a public university protecting the patented work of its professors and entities from an entity that simply buys up patent rights for purposes of extracting licenses through the threat of litigation. Regardless, adding the threat of permanent injunctive relief going forward would only enhance such a reputation.

At the end of the day, the court concludes that WARF has not met its burden of demonstrating irreparable harm, and even if it had, the balance of equities and the public interest both weigh in favor of denying entry of a permanent injunction. If the court were to enter an injunction, Apple would have to disable the LDS Predictor, which would likely prevent Apple from using non-infringing features, including features covered by Apple's own patents. Most importantly, until an alternative, non-infringing alternative can be incorporated into the iPhone, removing the LSD Predictor may well deprive the public of all of the technology contained in that product, not just the infringing technology.

C. Ongoing Royalty

Likely recognizing that its request for a permanent injunction was a long-shot, WARF also seeks, as an alternative, an award of an ongoing royalty based on per unit

sales. In its response, Apple also concedes that such an award is warranted. (Def.'s Opp'n (dkt. #709) 39 ("Apple does not dispute that WARF is entitled to an ongoing royalty for any infringement occurring after the entry of final judgment (and supplemental damages before that time).").) So the only question is what that royalty should be.

WARF seeks an ongoing royalty of three times the implied jury's per unit rate but provided little justification for this figure in its opening brief. WARF does offer additional support in reply -- some of which the court struck above -- mainly focused on the changed circumstances post-verdict, which obviously alters the parties' relative bargaining positions. WARF also argues that Apple's now willful infringement supports the requested per unit royalty rate.

In contrast, Apple urges the court to delay ruling on any ongoing royalty until after resolution of any appeal of the jury's findings of infringement and rejection of Apple's invalidity challenges. Alternatively, Apple proposes that the court provide an opportunity for the parties to negotiate an ongoing royalty rate. Barring either of those proposals, Apple argues that the court should simply adopt the same implied per unit rate awarded by the jury as an ongoing royalty.

As an initial matter, the court can see little efficiency or justice in forgoing a decision as to the award of an ongoing royalty. Absent a ruling, the Federal Circuit would obviously be prevented from taking up the entire case in one appeal. Such a piecemeal review on appeal seldom makes sense, especially now that this remaining issue is fully briefed. *See Nystrom v. TREX Co.*, 339 F.3d 1347, 1350 (Fed. Cir. 2003) (describing

policy behind 28 U.S.C. § 1295). As for Apple’s request to allow the parties to negotiate the ongoing royalty rate first, the court recognizes that the Federal Circuit has encouraged this approach, but again sees little purpose in further postponing the inevitable. *See Paice LLC v. Toyota Motor Corp.*, 504 F.3d 1293, 1313 (Fed. Cir. 2007). As WARF describes in its reply brief, the parties have already endeavored to negotiate an award and obviously failed to reach a resolution. (Pl.’s Reply (dkt. #736) 35.) Regardless, given the parties’ behavior and failure to reach a settlement to date, the court finds the likelihood of a negotiated, ongoing royalty unlikely. *See Apple, Inc. v. Samsung Elecs. Co.*, No. 12-cv-00630-LHK, 2014 WL 668122, at *13 (N.D. Cal. Nov. 25, 2014) (“[T]he parties’ behavior indicates that any order to negotiate ongoing royalties is likely to be futile and only delay the entry of final judgment.”).

With those preliminaries aside, the court takes up the appropriate amount of an ongoing royalty. Apple’s proposal that the court simply award the rate awarded by the jury for the past infringing sales is a non-starter. The Federal Circuit “easily dispose[d]” of that very argument in *Amado v. Microsoft Corp.*, 517 F.3d 1353 (Fed. Cir. 2008):

On the other side of the dispute, Microsoft argues that the district court was entitled to award Amado no more than \$0.04 per infringing unit, the amount the jury found to be a reasonable royalty. We easily dispose of this argument as well. The jury’s award of \$0.04 per unit was based on Microsoft’s infringing conduct that took place *prior to the verdict*. There is a fundamental difference, however, between a reasonable royalty for pre-verdict infringement and damages for post-verdict infringement. *Cf. Paice LLC v. Toyota Motor Corp.*, 504 F.3d 1293, 1317 (Fed. Cir. 2007) (“[P]re-suit and post-judgment acts of infringement are distinct, and may warrant different royalty rates given the change in the parties’ legal relationship and other factors.”) (Rader, J., concurring). Prior to judgment, liability for infringement, as well as the

validity of the patent, is uncertain, and damages are determined in the context of that uncertainty. Once a judgment of validity and infringement has been entered, however, the calculus is markedly different because different economic factors are involved.

Id. at 1361-62 (emphasis added). Since then, the Federal Circuit has reiterated its holding that in the ongoing royalty context, courts should “take into account the change in the parties’ bargaining positions, and the resulting change in economic circumstances, resulting from the determination of liability.” *ActiveVideo Networks, Inc. v. Verizon Communications, Inc.*, 694 F.3d 1312, 1343 (Fed. Cir. 2012) (quoting *Amado*, 517 F.3d at 1362).

Predictably, WARF also stakes out an extreme position, primarily relying on a willful infringement framework in seeking an ongoing royalty rate -- thus, explaining its request for a tripling of the jury’s award. The court finds this is also an ill-fit. While equitable considerations certainly come into play, the court rejects WARF’s attempt to describe Apple’s infringement post-jury verdict as willful, which would justify a pragmatic trebling of damages under § 284. Rather, Apple reasonably believed that the court would not enter a permanent injunction, after entry of judgment on October 26, 2015, and instead would award an ongoing royalty based on a hypothetical negotiation -- an expectation shared by this court. Given this context, Apple knew it was going to have to pay for its continued use of the infringing technology, unlike a willfully infringing party who hopes to conceal its knowing infringement. This then leaves the court with the task of arriving at the parties’ bargaining positions and the outcome of the hypothetical negotiation here.

At the outset, the court credits the jury's consideration of the *Georgia-Pacific* factors in setting an implied per unit rate for past infringement. From that amount, the court is instructed to consider changes in the parties' bargaining positions. *See Amado v. Microsoft Corp.*, 517 F.3d at 1361-62. Certainly, the jury's finding of infringement bolsters WARF's bargaining position in the hypothetical negotiation which is to occur on the date of the jury's verdict. In light of that change, WARF is in a better position to demand a greater percentage of Apple's profits that are attributable to the LSD predictor than awarded by the jury. Relying on the expert testimony of Julie L. Davis, WARF sought a royalty rate of \$2.74 per unit, which the jury discounted, presumably because the jury found WARF's bargaining position during the hypothetical negotiation was not as strong as it maintained. In light of WARF's improved bargaining position after the jury's finding of infringement and validity, the court finds that the \$2.74 rate is fair and reasonable. Accordingly, the court will award that amount as an ongoing royalty for all sales of iPhones containing the LSD predictor from October 26, 2015, to the end date of the patent.

IV. WARF's Motion for Accounting, Supplemental Damages through the Date of Judgment, Prejudgment Interest and Post-judgment Interest (dkt. #685)

A. Accounting

WARF seeks an accounting to determine the unit sales for purposes of establishing supplemental and ongoing royalty payments. Apple contends that the motion is unnecessary because it will voluntarily produce the financial data as available. Regardless, Apple is obligated to produce financial data showing the number of sales for

the court to calculate a supplemental and ongoing damages award, and that the financial data should include sales of phones containing the A9 and A9x chips. Should WARF believe in good faith that Apple has been dilatory or inaccurate in disclosing this data, it may certainly pursue post-judgment and supplement discovery. Absent proof of either, however, the court is disinclined to order a formal accounting. The parties are instructed to act in good faith with respect to any discovery *and* efforts to arrive at the appropriate figures, including a “meet and confer” before bringing any disputes before this court.

B. Supplemental Damages

WARF also seeks an award of supplemental damages, based on the jury’s per unit award, from June 27, 2015 -- the end date of the parties’ stipulation on accused units sold -- through the date of judgment, October 26, 2015. Here, too, Apple does not oppose the request, but contends that any supplemental damages rate should also cover sales through the date of the resolution of all post-trial motions. As referenced above, the court agrees with WARF that the date of judgment, October 26, 2015, is the appropriate date from which to calculate an ongoing royalty. *See Carnegie Mellon Univ. v. Marvell Tech. Grp., Ltd.*, 807 F.3d 1283 (Fed. Cir. 2015). While the court will enter an amended judgment, the amended judgment does not alter the jury’s finding of liability, nor the changed circumstances from that decision, which in turn alters the ongoing royalty rate. *See Kaiser Aluminum & Chem. Corp. v. Bonjorno*, 494 U.S. 827, 835 (1990) (“By linking all post-judgment activity to the entry of judgment, the courts have been provided a uniform time from which to determine post-judgment issues.” (internal

quotation marks omitted)). As such, the court will award supplemental damages at the per unit royalty rate awarded by the jury from June 27 to October 25, 2015.

Preserving its right to appeal the jury's findings on liability and damages, Apple also seeks to include its products containing the A9 and A9x chips in the supplemental damages award, since it concedes that the jury's finding of infringement covers those chips as well.⁷ In response, WARF complains about Apple's last minute switch in position, especially in light of its earlier representation that these later chips may undergo design changes as well as its unwillingness to engage in discovery of the A9 and A9x chips. While the court is sympathetic to WARF's position, it fails to provide a credible reason why the jury's royalty rate for pre-judgment infringement as well as the court's awarded ongoing royalty rate for post-judgment infringement, should not apply to the A9 and A9x chips.

While WARF speculates that the jury *may* have awarded higher damages if it had known about the A9 and A9x chips, the court is hard-pressed to understand how the continued use of the LSD predictor would appreciably have changed either parties' bargaining position at the time of the hypothetical negotiation in 2013, particularly since the negotiated royalty rate was for ongoing use. All of this is to say, that the court is inclined to include the sale of A9 and A9x (and possibly A10) chips, both in calculating a supplemental damages award and in setting an ongoing royalty rate. Both sides as

⁷ In the light of the above discussion, the supplemental damages award for those chips would also cover all sales up to the date of judgment, October 26, 2015, with all other sales presumably falling under the ongoing royalty rate.

directed to brief their positions for consolidating the 15-cv-621 case with this action and awarding damages for infringement of the A9, A9x and A10 chips as part of this case.

C. Pre-judgment Interest

Next, WARF seeks an award of pre-judgment interest of 5.65% compounded quarterly, from the date of infringement through the date of judgment. Title 35 U.S.C. § 284 governs the award of prejudgment interest in patent infringement claims. “In the typical case an award of prejudgment interest is necessary to ensure that the patent owner is placed in as good a position as he would have been in had the infringer entered into a reasonable royalty agreement.” *Gen. Motors Corp. v. Derex Corp.*, 461 U.S. 648, 655 (1983). For this reason, “prejudgment interest should be awarded under § 284 absent some justification for withholding such an award.” *Id.* at 657; *see also Energy Transp. Grp., Inc. v. William Demant Holding A/S*, 697 F.3d 1342, 1358 (Fed. Cir. 2012) (“The award of pre-judgment interest is the rule, not the exception.”) (quotation and citation omitted). Consistent with this case law, Apple concedes that a pre-judgment interest award is warranted, but argues that the court should award interest at the near record T-bill rate, currently 0.31%, and that the interest should be compounded annually, not quarterly.

As for the appropriate rate, the court rejects both parties’ positions. Instead, it will follow the practice approved by the Federal Circuit and Seventh Circuit, which is also consistent with its own practice, by awarding prejudgment interest based on the prime rate. *See Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 939 F.2d 1540, 1545 (Fed. Cir. 1991) (explaining that a district court “is afforded wide latitude in the selection of interest rates” and “may award interest at or above the prime rate”); *First Nat. Bank of*

Chi. v. Standard Bank & Trust, 172 F.3d 472, 480 (7th Cir. 1999) (ordinarily, to “award something other than the prime rate is an abuse of discretion”); *Partington v. Broyhill Furniture Indus., Inc.*, 999 F.2d 269, 274 (7th Cir. 1993) (in federal cases, “district judges should use the prime rate” for prejudgment interest); *see also Chesemore v. Alliance Holdings*, No. 09-cv-413, 2014 WL 4415919, at *8 (W.D. Wis. Sept. 5, 2014); *Nat’l Pasteurized Eggs, Inc. v. Michael Foods, Inc.*, No. 10-cv-646-wmc, slip op. at *36 (W.D. Wis. Mar. 29, 2013) (dkt. #550). As for compounding, the court credits WARF’s evidence and argument that payment of running royalties on a quarterly basis is consistent with both Apple’s and WARF’s respective practices. (Pl.’s Br. (dkt. #685) 15-16.) Accordingly, the court will award prejudgment interest at the prime rate, compounded quarterly. Because pre-judgment interest should also apply to the award of supplemental damages, the court will await entering a pre-judgment interest award until the supplemental damages have been calculated.

D. Post-judgment Interest

Finally, WARF seeks an award of post-judgment interest in the amount of 0.23% compounded annually, as provided under 28 U.S.C. § 1961(a). Apple does not oppose this request. As such, that motion will be granted as unopposed.

V. WARF's Motion for Taxation of Costs (dkt. #689); Amended Bill of Costs (dkt. #725)⁸

This brings us to the last pending motion. WARF seeks an award of costs allowed to the prevailing party under Federal Rule of Civil Procedure 54(d)(a). Specifically, WARF seeks reimbursement of the following costs:

- (1) fees of the clerk and *pro hac vice* fees, totaling \$750.00;
- (2) fees for the service of summons and subpoena, totaling \$339.72;
- (3) fees for printed and electronically recorded transcripts, totaling \$154,814.68;
- (4) witness travel fees, totaling \$26,943.96;
- (5) fees for exemplification and the costs of printing and photocopying, totaling \$878,709.35;
- (6) rental fees of photocopiers, totaling \$5,475.24; and
- (7) Apple infringing device purchases of \$5,497.74.

(Pl.'s Mot. (dkt. #690).)

In response, Apple takes issue with certain categories of costs, arguing that the fees requested are excessive or are inappropriate and should be eliminated. *First*, with respect to WARF's request for \$878,709.35 in exemplification and copying, Apple contends that the fees should be reduced by over \$500,000. Specifically, Apple challenges WARF's inclusion of office supplies and freight costs, as non-taxable costs under Seventh Circuit law. (Def.'s Opp'n (dkt. #705) 8.) While WARF concedes in its reply that the \$4,500 cost for transporting documents (e.g., the freight cost) should be deducted, it contends that its request for custom tabs and binders prepared by third-party copy vendors are

⁸ The Amended Bill of Costs moots the original submission (dkt. #688).

taxable, and distinguishable from general office supplies not allowed by the Seventh Circuit. (Pl.’s Reply (dkt. #726) 4-5 (citing cases).) The court agrees with WARF that the \$18,023.13 actually incurred in “office supplies” charges used to compile documents by a third-party vendor for use in this case are taxable. Accordingly, the court rejects Apple’s objection as to this category. Accordingly, the amended bill of costs will reflect only WARF’s deduction of the \$4,500 cost for transporting documents.

In that same category, Apple objects to photocopying costs associated with five of WARF’s depositions, and specifically, objects to the number of pages of exhibits that were printed by WARF, pointing out that the number of pages of exhibits actually used during the depositions was substantially less than that printed, and WARF opted for tens of thousands of expensive color copies, rather than black and white. As for this request, Apple seeks a reduction in taxable costs of \$28,993.53. The court agrees with WARF that requiring a justification on a document-by-document basis is “preposterous.” (Pl.’s Reply (dkt. #726) 5 (citing *NOW, Inc. v. Scheidler*, 750 F.3d 696, 698 (7th Cir. 2014)).) While perhaps WARF could have been more measured in its printing of exhibits, the court will not fault it for thorough preparation to the extent the costs are amply documented. Moreover, color copies, especially in the context of a deposition concerning technical issues, appear reasonable. Accordingly, the court rejects this challenge to WARF’s cost request.⁹

⁹ Even so, the court notes that WARF’s amended bill of costs appropriately reduced the amount for photocopying after finding some duplication. (Pl.’s Reply (dkt. #726) 6.)

Next, Apple challenges the invoices submitted by local counsel, Godfrey & Kahn, and by WARF's graphics vendor, arguing that they do not provide sufficient detail to know whether the costs are appropriately taxable, and requests a reduction of \$3,660.45 for the former and \$202,478.31 for the latter. The court credits Attorney Gregor's affidavit, and sees no basis for requiring additional detail as to the copying costs incurred by Godfrey & Kahn. As for the graphics vendor, here, too, the invoice is sufficiently detailed to award costs, with the exception of certain categories identified by WARF in its reply, totaling \$3,274.64. WARF's amended bill of costs also reflects this reduction. Both objections are, however, otherwise overruled.

Under the same exemplification and copying category, WARF seeks \$115,475.55 in data storage costs for its e-discovery database. Since the parties' briefing on WARF's bill of costs, this court adopted the majority opinion, which "interpret[es] narrowly the meaning of 'making copies' in § 1920(4) in the context of electronic discovery." *Split Pivot, Inc. v. Trek Bicycle Corp.*, 154 F. Supp. 3d 769, 780 (W.D. Wis. 2015). Under that approach, the court will award costs only for the copying of electronic data, including copying metadata and hard drives. *Id.* As such, the court rejects WARF's request for costs of storing its e-discovery database. Apple's objection, therefore, is sustained, and the court will deduct \$115,475.55 from WARF's request for fees for exemplification and copying.

Relatedly, Apple also challenges WARF's request for \$147,757.00 for ESI and electronic discovery work performed by Irell & Manella's litigation and database support department personnel. The timesheets describe tasks ranging from converting documents

to PDF format, OCR'ing and uploading data to the database, or preparing documents for production, and creating "review bins" based on attorney instructions, among other tasks. (Def.'s Opp'n (dkt. #705) 16.) The court agrees with Apple that costs for creating review bins and database management are *not* taxable for the same reasons that the court does not tax data storage costs. The court further agrees with Apple that a reduction by 50% is appropriate in light of the difficulty, if not impossibility, of determining which of the costs are taxable and which are not. Accordingly, this objection also is sustained, and the court will reduce the fees requests by an additional \$73,878.50.

Finally, with respect to exemplification costs, Apple also challenges WARF's request for reimbursement of \$30,616 in data purchases made by two of WARF's experts. For reasons set forth above, the court again agrees with Apple that these costs do not constitute copying under § 1920(4). Accordingly, the court sustains this objection, and will deduct an additional \$30,616.00. Based on all of the decisions above, this means the court will award fees for exemplification and copying in the total amount of \$658,739.30.

Second, with respect to WARF's request for \$154,814.68 in fees for printed or electronically recorded transcripts, Apple challenges various transcript fees as unreasonable or not necessary. WARF seeks \$4,220.65 for deposition videos of its ten experts, which Apple inexplicably contends was unnecessary because WARF intended to call its experts live at trial. While these videos were not used at trial, the court finds that the expense was reasonable for trial preparation purposes. Therefore, that objection is overruled.

Apple also challenges WARF's expenses for rough transcripts, expedited transcripts, Realtime and other miscellaneous deposition expenses, and seeks a reduction of \$51,580.35. Here the court agrees with WARF that the complexity of patent litigation justifies these expenses. Indeed, both sides appear to have benefitted from the use of all of these technologies. Accordingly, this objection is overruled as well.

Third, Apple objects to certain witness travel fees as being unreasonably high, and seeks a reduction of \$6,034.78. Specifically, Apple contends that WARF scheduled depositions in Los Angeles for the convenience of counsel, thereby requiring WARF's witnesses to travel for depositions. Apple maintains that it was willing to travel to the witness's city for those depositions. The court agrees with WARF that in light of the complexity of this case, this challenge is silly and the objection is overruled.

Fourth, and finally, Apple objects to WARF's request for \$5,497.74 for reimbursement of device purchases, listed as an "other" cost category. WARF does not maintain that these devices were used as demonstrative evidence or introduced into evidence, unlike the costs for devices allowed in the *Apple, Inc. v. Samsung Electronics* case. Moreover, WARF fails to cite to controlling case law allowing this category of costs as taxable. As such, the court will sustain the objection and deduct that amount from the bill of costs.

In sum, the court will award costs in the total amount of \$841,587.66.

ORDER

IT IS ORDERED that:

- 1) Defendant Apple Inc.'s renewed motion for judgment as a matter of law and/or new trial (dkt. #677) is DENIED.
- 2) Plaintiff Wisconsin Alumni Research Foundation's motion to alter or amend judgment as to willful infringement (dkt. #681) is DENIED.
- 3) Plaintiff's motion for equitable relief (dkt. #683) is GRANTED IN PART AND DENIED IN PART. Plaintiff's motion for a permanent injunction is denied, but its motion for an award of an ongoing royalty is granted. The going royalty rate is set at \$2.74 per unit.
- 4) Defendant's motion to strike declarations and portions of reply brief (dkt. #744) is GRANTED.
- 5) Plaintiff's motion for accounting, supplemental damages through the date of judgment, prejudgment interest and post-judgment interest (dkt. #685) is GRANTED IN PART AND RESERVED IN PART.
 - a. Plaintiff's unopposed motion for an accounting is denied without prejudice to plaintiff renewing the motion if discovery efforts fail.
 - b. Plaintiff's motion for supplemental damages through the date of judgment is granted. Once the accounting is complete, the court will award plaintiff supplemental damages on infringing units sold from June 27, 2015 through the date of judgment, October 26, 2015. The court reserves on whether the supplemental damages award should cover Apple products containing the A9, A9x and A10 chips.
 - c. Plaintiff's motion for prejudgment interest is granted. The court awards plaintiff prejudgment interest at the prime rate, compounded quarterly. The court reserves on the amount of prejudgment interest, awaiting calculation of supplemental damages award.
 - d. Plaintiff's motion for post-judgment interest is granted. The court awards plaintiff post-judgment interest at the statutory rate, compounded annually, pursuant to 28 U.S.C. § 1961(a).
- 6) Plaintiff's motion for taxation of costs (dkt. #689) and amended bill of costs (dkt. #725) is GRANTED IN PART AND DENIED IN PART. The court awards plaintiff costs in the total amount of \$841,587.66.

- 7) On or before June 20, 2017, the parties should submit a joint statement, if possible, updating the court on the status of discovery requests material to the supplemental damages award.
- 8) On or before June 20, 2017, plaintiff should submit a brief responding to the court's proposal to award supplemental damages at the jury-awarded per unit royalty rate for all sales of infringing Apple products containing A9 and A9x chips prior to the entry of judgment and awarding an ongoing royalty for all sales of Apple products containing the A9, A9x and A10 chips post-judgment. Defendant may have until July 7, 2017, to respond.

Entered this 6th day of June, 2017.

BY THE COURT:

/s/

WILLIAM M. CONLEY
District Judge