

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

AVM TECHNOLOGIES, LLC,

Plaintiff;

v.

INTEL CORPORATION,

Defendant.

Civil Action No. 15-33-RGA

MEMORANDUM OPINION

Benjamin J. Schladweiler, Esq., ROSS ARONSTAM & MORITZ LLP, Wilmington, DE; Nicholas D. Mozal, Esq., ROSS ARONSTAM & MORITZ LLP, Wilmington, DE; David Boies, Esq., BOIES, SCHILLER & FLEXNER LLP, Armonk, NY; Rosanne C. Baxter, Esq., BOIES, SCHILLER & FLEXNER LLP, Armonk, NY; D. Michael Underhill, Esq., BOIES, SCHILLER & FLEXNER LLP, Washington, DC; Eric J. Maurer, Esq., BOIES, SCHILLER & FLEXNER LLP, Washington, DC; Patrick M. Lafferty, Esq., BOIES, SCHILLER & FLEXNER LLP, Washington, DC; Jon R. Knight, Esq., BOIES, SCHILLER & FLEXNER LLP, Washington, DC; Patrick H. Bagley, Esq., BOIES, SCHILLER & FLEXNER LLP, Palo Alto, CA; Edward H. Takashima, Esq., BOIES, SCHILLER & FLEXNER LLP, Santa Monica, CA.

Attorneys for Plaintiff

David E. Moore, Esq., POTTER ANDERSON & CORROON LLP, Wilmington, DE; Bindu A. Palapura, Esq., POTTER ANDERSON & CORROON LLP, Wilmington, DE; David C. Marcus, Esq., WILMERHALE AND DORR LLP, Los Angeles, CA; William F. Lee, Esq., WILMER CUTLER PICKERING HALE AND DORR LLP, Boston, MA; Lauren B. Fletcher, Esq., WILMER CUTLER PICKERING HALE AND DORR LLP, Boston, MA; Jordan L. Hirsch, Esq., WILMER CUTLER PICKERING HALE AND DORR LLP, Boston, MA; Kevin A. Goldman, Esq., WILMER CUTLER PICKERING HALE AND DORR LLP, Boston, MA; Claire M. Specht, Esq., WILMER CUTLER PICKERING HALE AND DORR LLP, Boston, MA; Todd Zubler, Esq., WILMER CUTLER PICKERING HALE AND DORR LLP, Washington, DC; Jason Kipnis, Esq., WILMER CUTLER PICKERING HALE AND DORR LLP, Palo Alto, CA.

Attorneys for Defendant

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ANDREWS, U.S. DISTRICT JUDGE:

Presently before the Court is Defendant's Motion to Exclude Certain Testimony of Marwan Hassoun (D.I. 428) and related briefing (D.I. 429, 491, 541) and Defendant's Motion to Exclude the Testimony of John A. Hatch (D.I. 426) and related briefing (D.I. 427, 487, 529). The parties have submitted additional letter briefing related to the Motion to Exclude Certain Testimony of Marwan Hassoun. (D.I. 626, 627, 643, 644). For the reasons that follow, Defendant's Motion to Exclude Certain Testimony of Marwan Hassoun and Motion to Exclude the Testimony of John A. Hatch are granted.

I. Background

In this infringement action, Plaintiff alleges that Defendant has infringed claims 1-7, 8, 9, 12-14, 16, and 18-21 of U.S. Patent No. 5,859,547 ("the '547 patent"). (D.I. 614 at 4). The testimony of each of the two experts that Defendant seeks to exclude relates to Plaintiff's theory of damages. Defendant's products are microprocessor chips that are binned, or classified, based on their speed and power consumption characteristics. Generally speaking, faster chips command a higher price.

Dr. Hassoun's testimony forms the foundation for Plaintiff's damages theory. Dr. Hassoun modeled a limited number of circuits, one or two from each of the accused products, and estimated the speed benefit that Defendant's products enjoy from allegedly practicing the '547 patent with respect to each of these four circuits. (D.I. 440-1 at 3, ¶603 ("I can then use this model to describe the speed advantages provided by using the '547 patent.")).

Dr. Hatch combined Dr. Hassoun's estimated speed benefit with the incremental price benefit provided by Dr. Knittel, Plaintiff's statistics expert, to arrive at a total damages estimate for all of the accused products. (D.I. 441-1 at 73-76, ¶192-201). Specifically, Dr. Hatch used Dr.

Hassoun's calculated speed reduction to determine the price reduction according to Dr. Knittel's regression for each individual product. (*Id.* at 73, ¶¶191-94). Dr. Hatch then applied this price reduction to the total revenue for each product to estimate the total increase in value due to Defendant allegedly practicing the '547 patent. (*Id.* at 73, ¶193).

Dr. Hassoun created five different Tech Models. (D.I. 440-1 at 6-26, ¶¶606-45). In arriving at his final damages estimate, Dr. Hatch considered each of the Tech Models and determined that the parties would rely on either Tech Model 1 or Tech Model 3, depending on which of the asserted claims Defendant is found to have infringed. (D.I. 441-1 at 75-76, ¶¶198, 200). Defendant focused on Tech Models 1 and 3 in its initial briefing on its Motion to Exclude Dr. Hassoun's testimony. (D.I. 429 at 8). At the Court's direction, the parties submitted additional briefing as to whether Tech Models 4 and 5 suffer from the same infirmities Defendant has alleged render Tech Models 1 and 3 unreliable. (D.I. 643, 644).

II. Legal Standard

"[T]he district court acts as a gatekeeper" to ensure that expert testimony is reliable and helpful. *Schneider v. Fried*, 320 F.3d 396, 404 (3rd Cir. 2003). "The primary locus of this obligation is [Federal Rule of Evidence] 702." *Daubert v. Merrell Dow Pharma., Inc.*, 509 U.S. 579, 589 (1993). It reads:

A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if:

- (a) the expert's scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue;
- (b) the testimony is based on sufficient facts or data;
- (c) the testimony is the product of reliable principles and methods; and
- (d) the expert has reliably applied the principles and methods to the facts of the case.

Fed. R. Evid. 702.

Rule 702, as amended in 2000, codified the Supreme Court's holding in *Daubert*. *Daubert* imposes a "trilogy" of requirements: (1) qualification, (2) reliability, and (3) fit. *Schneider*, 320 F.3d at 404. My determination that proffered testimony complies with these prerequisites is governed by Federal Rule of Evidence 104(a). *Daubert*, 509 U.S. at 592. As such, I must find *Daubert*'s trilogy of requirements is met by a preponderance of the evidence. *In re Paoli R.R. Yard PCB Litig.*, 35 F.3d 717, 744 (3rd Cir. 1994).

On the one hand, this showing requires the party proffering expert testimony do more than make a *prima facie* case of reliability. *Id.* at 743. On the other hand, the "evidentiary requirement of reliability is lower than the merits standard of correctness." *Id.* The proffering party does not "have to prove their case twice—they do not have to demonstrate to the judge by a preponderance of the evidence that the assessments of their experts are *correct*, they only have to demonstrate by a preponderance of evidence that their opinions are reliable." *Id.* at 744.

Defendant's objections to each of these expert's challenged testimony fall within the reliability prong of the *Daubert* trilogy. Under this prong, "an expert's testimony is admissible so long as the process or technique the expert used in formulating the opinion is reliable." *Paoli*, 35 F.3d at 742. Reliability does not require certainty, *Daubert*, 509 U.S. at 590, but does require "validity," *Paoli*, 35 F.3d at 742. The Third Circuit has warned, however, that "the reliability requirement must not be used as a tool by which the court excludes all questionably reliable evidence." *Id.* at 744. An expert's opinion must be founded on good grounds, not perfect ones. *Id.* I can conclude there are good grounds for the opinion even if I "think[] there are better grounds for some alternative conclusion" or that the expert's methodology "has some flaws such that if they had been corrected, the scientist would have reached a different result." *Id.* The Third Circuit has directed that a "judge frequently should find an expert's methodology helpful

even when the judge thinks that the expert's technique has flaws sufficient to render the conclusions inaccurate." *Id.* at 744–45.

III. Discussion

A. Dr. Hassoun's Damages Opinion – Tech Models 1 and 3

The core of Defendant's argument for excluding Dr. Hassoun's damages testimony is that his analysis is premised on an assumption for which there is no supporting evidence.

Specifically, Defendant objects to Dr. Hassoun's reliance on four representative circuits, out of the millions of accused circuits, to calculate the speed benefit Defendant receives by allegedly practicing the '547 patent. (D.I. 429 at 4). Plaintiff responds by arguing that the circuits Dr. Hassoun analyzed are critical circuits and any slowdown in those circuits would affect the overall performance of the accused product. (D.I. 491 at 14).

Defendant argues that Dr. Hassoun's methodology is flawed because, while Plaintiff has accused over one million circuits, Dr. Hassoun used only four circuits, one from each of the four accused products, to develop the Tech Models on which Plaintiff's damages calculations are based. (D.I. 429 at 9). According to Defendant, Dr. Hassoun used these four circuits to calculate the amount by which each of the accused products would slow down if the circuits were altered to avoid the alleged infringement. (*Id.*). For Dr. Hassoun's conclusions to hold, Defendant argues, the circuits he used in his Tech Models must necessarily be the speed-limiting circuits. (*Id.* at 10). Since Dr. Hassoun has admitted that he does not know which circuit in each of the products is the speed-limiting circuit, Defendant contends that Dr. Hassoun's calculations of the amount of slowdown are based on an assumption that is unsupported by evidence.¹ (*Id.* at 17).

¹ Defendant also argues that the Performance Verification ("PV") data it produced during discovery shows that the circuits Dr. Hassoun chose to model are not the speed-limiting circuits in each of the chips. (D.I. 429 at 20). Plaintiff counters that "Dr. Hassoun gave eleven separate reasons why" this data is unreliable. (D.I. 491 at 21)

Plaintiff counters that, during discovery, Defendant improperly withheld the data that is necessary to definitively identify the speed-limiting circuits and, therefore, Defendant should not now be allowed to attack Dr. Hassoun's determination that the circuits he modeled are speed-limiting. (D.I. 491 at 13). Plaintiff argues in the alternative that Dr. Hassoun did not actually assume that these circuits are speed-limiting. (*Id.* at 14). Plaintiff further asserts that such an assumption is not even necessary to Plaintiff's theory of damages. (*Id.*).

As an initial matter, I reject Plaintiff's attempt to relitigate its previous request to impose discovery sanctions on Defendant. During discovery, a dispute arose as to whether Defendant had improperly failed to produce the Class Test Database, which Plaintiff contends includes "information on the limiting circuit in each manufactured chip." (D.I. 491 at 13). Plaintiff argues now, as it did during the dispute, that, because of Defendant's failure to produce the database, Defendant should not be allowed to argue that the circuits Dr. Hassoun modeled are not the limiting circuits. (*Id.*). This is not consistent with what the Magistrate Judge held during the discovery dispute, however. The only sanction imposed as a result of this discovery dispute is that Defendant may not rely on data from the Class Test Database that goes to which circuits are limiting. (D.I. 373 at 57-58). In other words, Defendant is precluded from relying on data that was not produced during discovery, but is not precluded from arguing that the circuits Dr. Hassoun analyzed are not the limiting circuits.

Plaintiff next responds that Dr. Hassoun's conclusions are not based on any assumptions about whether the circuits he chose to model are limiting circuits. (D.I. 491 at 14). According to

(emphasis omitted). It seems to me that there is a dispute of fact as to whether the PV data shows which circuit is definitively the speed-limiting circuit. For the purposes of this *Daubert* motion, I will assume that the jury would find in favor of Plaintiff on this question and assume the PV data does not provide definitive proof of which circuit is speed-limiting.

Plaintiff, Dr. Hassoun's conclusion is that if Defendant did not practice the '547 patent, its products would experience "a proportional chip slowdown and performance deterioration." (*Id.*). Plaintiff further states, "Dr. Hassoun's analysis determined that each infringing circuit is a critical circuit that operates at or near performance limits." (*Id.*). Dr. Hassoun's statements, in fact, indicate that he "did not opine on which one of the Accused Circuits . . . was the one and only limiting path." (D.I. 440-2 at 276, ¶194). Rather, Dr. Hassoun opined that "it was reasonable to attribute timing advantages in the register files to the overall chip." (*Id.* at 277, ¶194). Dr. Hassoun reached this conclusion based on evidence in the record "indicating that the register files . . . were critical to timing and limiting the performance of the chips." (*Id.* at 276, ¶194). Dr. Hassoun further opined that "even if there were other limiting paths . . . [Defendant] still considered the register files (plural) critical and therefore changes to their design would likely affect the performance in the actual chips." (*Id.* at 277, ¶194).

It seems to me that there is no dispute about the fact that Dr. Hassoun did not identify the speed limiting circuit in his analysis. What is in dispute, however, is whether this renders his analysis unreliable. It seems clear to me that Dr. Hassoun's failure to analyze the speed limiting circuit is fatal to his ultimate conclusions and renders his damages testimony unreliable.

In his analysis, Dr. Hassoun calculates the speed degradation that would result for the chip as a whole if Defendant's products did not practice the '547 patent. In order to calculate this degradation in speed, Dr. Hassoun modeled a single circuit in each of the accused products without knowing whether that circuit is the limiting circuit. The conclusion that the entire chip would suffer the same exact speed degradation as this single circuit depends on that circuit being, definitively, the limiting circuit. Dr. Hassoun's opinion that any slowdown in the circuits he chose "would likely affect" performance of the chip as a whole is insufficient to support his

ultimate conclusions, which are very precise measurements of the speed degradation in each chip.

What Dr. Hassoun actually calculated in each of his models is the amount by which the circuits he modeled would be slower without the benefit of the invention. He concludes from this result that the entire chip would suffer an identical speed degradation. It is this conclusion that is unsupported by the evidence. None of Dr. Hassoun's statements about the likelihood of this particular circuit being a "critical" path support the conclusion that the entire chip would be slower by the same amount. As Defendant's expert, Dr. Subramanian, points out, if this particular circuit is not the limiting circuit, the amount by which the chip as a whole is slowed would be less than his calculated slowdown, and could potentially have no effect at all on the speed of the overall chip. (D.I. 444-1 at 389, ¶693 n.766).

A simple example illustrates the fundamental flaws in Dr. Hassoun's analysis. If another circuit in the chip is already slower than the modeled circuit by 10 picoseconds, a 15 picosecond slowdown of the circuit Dr. Hassoun modeled would result in, at most, a 5 picosecond slowdown of the chip as a whole, all other things being equal. If, on the other hand, another circuit is already slower by 20 picoseconds, a 15 picosecond slowdown of Dr. Hassoun's chosen circuit would have no effect at all on the overall speed of the chip. Therefore, Dr. Hassoun's calculations represent, at best, guesses as to the amount by which the entire chip is slowed. This is not sufficiently reliable under *Daubert* to support Plaintiff's damages calculations.

Plaintiff's assertions that it does not matter whether these circuits are speed limiting are unavailing. Plaintiff's damages calculations rest on the theory that Defendant's products enjoy an economic benefit from the increased speed that results from allegedly practicing the invention. Dr. Hassoun's models lay the foundation for these damages calculations with his

measurements of speed degradation. These precise measurements of speed degradation are then used by Plaintiff's damages expert to calculate damages. If the circuit modeled by Dr. Hassoun is not the speed limiting circuit, the damages calculation Plaintiff advocates for is necessarily much larger than the actual economic benefit Defendant enjoys. In fact, if another circuit in the chip is sufficiently slower than the one Dr. Hassoun chose to model, such that the chip is no slower overall without practicing the patent, Plaintiff would not be entitled to any damages under this theory. Without knowing whether these circuits are the limiting circuits, any damages theory that depends on the fact that they are the limiting circuits is necessarily unreliable. This is the flaw in Plaintiff's damages theory, which rests solely on the amount by which the chip as a whole would be slowed.

Simply put, despite Plaintiff's assertions to the contrary, Dr. Hassoun's conclusions that the chip would be slowed by the same amount his chosen circuit would be slowed rests on the assumption that this circuit is the limiting circuit. Under no other circumstances could this conclusion logically follow from his analysis. Since the evidence clearly establishes that Dr. Hassoun has not identified which circuit is the limiting circuit in any of these chips, his analysis and conclusions are unreliable. Dr. Hassoun's arguments that this single circuit is "critical" or "could be" a limiting circuit are insufficient to support this foundational basis for his opinion in the absence of any evidence that his assumption is correct. It is not the case that there simply "is not 100% certainty associated with Dr. Hassoun's analysis." (D.I. 491 at 10). Rather, the factual basis that lays the foundation for Plaintiff's entire damages theory finds no support in the evidence of record and Dr. Hassoun's conclusion is, therefore, unreliable. For these reasons, I find that Dr. Hassoun's testimony as to Tech Models 1 and 3 is inadmissible under *Daubert*.

B. Dr. Hassoun's Damages Opinion – Tech Models 4 and 5

In its opening brief on the Motion to Exclude, Defendant focused on Tech Models 1 and 3 because these were the models Dr. Hatch used to calculate damages. (D.I. 429 at 8). Plaintiff argued in reply that even if the Court excluded Dr. Hassoun's testimony about Tech Models 1 and 3, Defendant failed to challenge Tech Models 4 and 5 and, therefore, Dr. Hassoun's testimony as to those models should not be excluded. (*Id.* at 20; D.I. 626 at 3). Defendant counters that Tech Models 4 and 5 suffer from the same infirmities as Tech Models 1 and 3, and should be excluded for the same reasons. (D.I. 627 at 3). At the Court's direction, the parties submitted additional briefing directed to the question of whether Tech Models 4 and 5 depend on the assumption that the circuits Dr. Hassoun modeled are the speed-limiting circuits. (D.I. 643, 644).

Plaintiff argues strenuously that Tech Models 4 and 5 “measure the voltage benefit” associated with practicing the invention. (D.I. 643 at 4) (emphasis omitted). Defendant counters that measuring the voltage benefit is “a distinction without a difference because . . . Dr. Hassoun's calculations in Tech Models 4 and 5 use voltage as an alternative means of measuring the alleged speed benefit.” (D.I. 644 at 3) (emphasis omitted).

I agree with Defendant that Dr. Hassoun's calculation in Tech Models 4 and 5 of a voltage benefit instead of a speed benefit is a distinction without a difference. Plaintiff's arguments against excluding these Tech Models closely track the arguments it made with respect to Tech Models 1 and 3, arguments I have already rejected. Furthermore, it seems clear from Dr. Hassoun's discussion of Tech Models 4 and 5 that not only was his ultimate goal to calculate a speed benefit, but he also explicitly assumed that the circuits he modeled were speed-limiting.

For example, Dr. Hassoun states, “As discussed earlier in this report, I have simulated RF read paths from the core section of each of the Accused Products to demonstrate the effects of using the contention as claimed in the ‘547 patent on Vccmin for the Accused Products.” (D.I. 440-1 at 16, ¶627). The RF read paths Dr. Hassoun used in Tech Models 4 and 5 were chosen for the same reasons (and in some cases are the very same circuits) as the read paths used in Tech Models 1 and 3. (*See, e.g.*, D.I. 440-1 at 16-17, ¶630 (stating that practicing the invention “has a direct effect on the already documented limiting read path of the RF circuitry”)). Dr. Hassoun chose these circuits because “the performance of a microprocessor is limited by its weakest link,” which means “the slowest circuit . . . and least robust.” (D.I. 439-1 at 892, ¶557). Dr. Hassoun argued that the same circuits were both speed-limiting and voltage limiting. (*Id.* at 892-97, ¶¶558-67). In other words, Dr. Hassoun explicitly argued that the circuits he chose to model are critical circuits for both the timing and voltage limitations of the microprocessor as a whole.

Dr. Hassoun uses the effects on voltage obtained through these models to calculate a timing benefit for each accused product. (*See, e.g.*, D.I. 440-1 at 16-17, ¶630 (“The effect on Vccmin is a delay in the circuit operation that is shown in the table below.”)). In fact, the goal of Dr. Hassoun’s model was to determine the voltage necessary to “recover that delay (maintain the frequency of operation of the chip).” (*Id.*). In other words, Dr. Hassoun’s models determine the increased voltage necessary to compensate for the reduction in speed that would result from not practicing the ‘547 patent. Dr. Hassoun then converts the voltage advantage into a timing advantage. (*Id.* at 23-24, ¶¶637-38). Thus, Dr. Hassoun’s Tech Models 4 and 5 are fundamentally no different from Tech Models 1 and 3; these models begin with the assumption

that the circuits are speed-limiting and end with a calculation of the timing advantage gained by allegedly practicing the '547 patent.

Since Tech Models 4 and 5 suffer from the same infirmities as Tech Models 1 and 3, I find that Dr. Hassoun's testimony as to these models is unreliable. Therefore, Defendant's Motion to Exclude Certain Testimony of Marwan Hassoun is granted.

C. Dr. Hatch's Damages Opinion

Dr. Hatch's damages opinion suffers from the same flaws as Dr. Hassoun's. Specifically, Dr. Hatch used Dr. Hassoun's Tech Models to calculate damages by calculating the increased revenues Defendant received due to the speed benefit attributable to allegedly practicing the '547 patent. (D.I. 441-1 at 73, ¶¶192-94). Since I have determined that Dr. Hassoun's testimony about Tech Models 1, 3, 4, and 5 is unreliable, I must also find Dr. Hatch's damages testimony unreliable. Not only are Dr. Hatch's damages calculations founded on Dr. Hassoun's unreliable conclusions, but Dr. Hatch based his analysis on the assumption that the entire chip would suffer the decrease in speed Dr. Hassoun calculated for the circuits he modeled. (*Id.* at 73, ¶192). Therefore, Dr. Hatch's damages opinion is unreliable under *Daubert* and I will grant Defendant's Motion to Exclude the Testimony of John A. Hatch.

IV. Conclusion

For the reasons set forth above, Defendant's Motion to Exclude Certain Testimony of Marwan Hassoun and Motion to Exclude the Testimony of John A. Hatch are granted.

An appropriate order will be entered.