

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

EMC CORPORATION, EMC
INTERNATIONAL COMPANY, and EMC
INFORMATION SYSTEMS
INTERNATIONAL,

Plaintiffs,

v.

PURE STORAGE, INC.,

Defendant.

Civil Action No. 13-1985-RGA

MEMORANDUM OPINION

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February 11, 2016


ANDREWS, U.S. DISTRICT JUDGE:

Before the Court are various motions filed by Defendant Pure Storage, Inc. (“Pure”) and by Plaintiffs EMC Corporation, EMC International Company, and EMC Information Systems International (collectively, “EMC”). Pure brings three separate motions presently under consideration: Motion for Summary Judgment (D.I. 198) and related briefing (D.I. 199, 258, 298); Motion to Exclude Expert Opinions and Testimony (D.I. 204) and related briefing (D.I. 205, 240, 296); and Motion to Strike Untimely Evidence and Expert Opinions (D.I. 302), related briefing (D.I. 303, 321, 324), and related letters (D.I. 345, 347). EMC brings four separate motions presently under consideration: Motion for Partial Summary Judgment, and to Exclude Expert Testimony, Regarding Pure Storage’s Hypothetical Non-Infringing Alternatives (D.I. 206) and related briefing (D.I. 207, 243, 292); Motion to Exclude Certain Opinions of Dr. James Plank (D.I. 211) and related briefing (D.I. 212, 255, 294); Motion for Summary Judgment of Direct Infringement of Claims 1, 7, and 16 of U.S. Patent No. 7,434,015 (D.I. 214) and related briefing (D.I. 215, 252, 300); and Motion for Leave to File Sur-Reply in Opposition to Motion for Summary Judgment of Invalidity of U.S. Patent No. 7,434,015 (D.I. 317) and Pure’s response (D.I. 326). The Court heard oral argument on December 14, 2015. (D.I. 327).

For the reasons that follow: Pure’s motion for summary judgment (D.I. 198) is **GRANTED IN PART** and **DENIED IN PART**. Summary judgment is **DENIED** with respect to non-infringement of the asserted claims of the ’464 and ’556 patents and invalidity of the ’015 and ’556 patents. Summary judgment is **GRANTED** with respect to non-infringement of the asserted claims of the ’187 patent. Pure’s motion to exclude opinions and testimony of EMC’s ’464 patent infringement expert (D.I. 204) is **DENIED**. Pure’s motion to strike evidence and expert opinions regarding EMC’s attempt to swear behind the Krapp reference (D.I. 302) is

DENIED. Pure’s motion to exclude opinions and testimony of EMC’s damages expert (D.I. 204) is **DENIED.** EMC’s motion for summary judgment of direct infringement of claims 1, 7, and 16 of the ’015 patent (D.I. 214) is **GRANTED.** EMC’s motion for leave to file a sur-reply (D.I. 317) is **GRANTED.** EMC’s motion to exclude certain opinions of Pure’s ’556 patent expert (D.I. 211) is **GRANTED IN PART** and **DENIED IN PART.** EMC’s motion for partial summary judgment and to exclude expert testimony regarding Pure’s non-infringing alternatives (D.I. 206) is **DENIED.**

I. BACKGROUND

EMC Corporation filed a complaint on November 26, 2013 alleging that Pure infringed U.S. Patent Nos. 6,904,556 (“the ’556 patent”); 7,373,464 (“the ’464 patent”); 7,434,015 (“the ’015 patent”); and 8,375,187 (“the ’187 patent”).¹ (D.I. 1). On June 6, 2014, EMC filed an amended complaint, joining EMC International Company, and EMC Information Systems International as plaintiffs. (D.I. 37). EMC is seeking injunctive and equitable relief and damages in the form of reasonable royalties and lost profits. (D.I. 37 at 14–15). Pure answered the amended complaint on June 13, 2014. (D.I. 38). The Court held a *Markman* hearing on December 16, 2014 (D.I. 108) and subsequently issued a claim construction ruling (D.I. 115, 121). It became apparent at the December 14, 2015 hearing on the motions presently under consideration that the parties’ disputes with regard to certain of these motions related to their disagreement regarding the scope of several claim terms. (D.I. 327 at 125–37). The parties thereafter submitted supplemental claim construction briefing on those terms. (D.I. 332, 333, 334, 335). The Court heard oral argument on the supplemental claim construction on January 8, 2016 (D.I. 353) and issued an opinion on February 2, 2016 (D.I. 362).

¹ EMC also alleged infringement of U.S. Patent No. 6,915,475, but has since withdrawn the ’475 patent from this litigation.

The motions under consideration raise infringement and validity issues with respect to the asserted '464, '015, '556 and '187 patents. The '464 and '015 patents disclose systems and methods for providing efficient data storage that eliminate redundancy using deduplication techniques. (D.I. 92 at 18, 19; *see* '464 patent, 1:19–21; '015 patent, 1:18–20). Deduplication reduces the demand for storage space in a data storage system by ensuring that only a single copy of unique data is stored. (D.I. 215 at 10). The '556 patent discloses systems and methods of data storage involving parity-based fault tolerance techniques. ('556 patent, 1:6–8). The '187 patent discloses apparatuses and methods related to scheduling data transfers to and from data storage devices in flash-based data storage systems. ('187 patent, 1:5–7).

II. LEGAL STANDARDS

A. Summary Judgment

“The court shall grant summary judgment if the movant shows that there is no genuine dispute as to any material fact and the movant is entitled to judgment as a matter of law.” FED. R. CIV. P. 56(a). The moving party has the initial burden of proving the absence of a genuinely disputed material fact relative to the claims in question. *Celotex Corp. v. Catrett*, 477 U.S. 317, 330 (1986). Material facts are those “that could affect the outcome” of the proceeding, and “a dispute about a material fact is ‘genuine’ if the evidence is sufficient to permit a reasonable jury to return a verdict for the nonmoving party.” *Lamont v. New Jersey*, 637 F.3d 177, 181 (3d Cir. 2011) (quoting *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 248 (1986)). The burden on the moving party may be discharged by pointing out to the district court that there is an absence of evidence supporting the non-moving party’s case. *Celotex*, 477 U.S. at 323.

The burden then shifts to the non-movant to demonstrate the existence of a genuine issue for trial. *Matsushita Elec. Indus. Co. v. Zenith Radio Corp.*, 475 U.S. 574, 586–87 (1986); *Williams v. Borough of West Chester, Pa.*, 891 F.2d 458, 460–61 (3d Cir. 1989). A non-moving

party asserting that a fact is genuinely disputed must support such an assertion by: “(A) citing to particular parts of materials in the record, including depositions, documents, electronically stored information, affidavits or declarations, stipulations . . . , admissions, interrogatory answers, or other materials; or (B) showing that the materials cited [by the opposing party] do not establish the absence . . . of a genuine dispute” FED. R. CIV. P. 56(c)(1).

When determining whether a genuine issue of material fact exists, the court must view the evidence in the light most favorable to the non-moving party and draw all reasonable inferences in that party’s favor. *Scott v. Harris*, 550 U.S. 372, 380 (2007); *Wishkin v. Potter*, 476 F.3d 180, 184 (3d Cir. 2007). A dispute is “genuine” only if the evidence is such that a reasonable jury could return a verdict for the non-moving party. *Anderson*, 477 U.S. at 247–49. If the non-moving party fails to make a sufficient showing on an essential element of its case with respect to which it has the burden of proof, the moving party is entitled to judgment as a matter of law. *See Celotex Corp.*, 477 U.S. at 322.

B. Motions to Exclude Expert Opinions and Testimony

1. Motions to Exclude Under Federal Rule of Evidence 702 and *Daubert*

Federal Rule of Evidence 702 sets out the requirements for expert witness testimony and states:

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. The Third Circuit has explained:

Rule 702 embodies a trilogy of restrictions on expert testimony: qualification, reliability and fit. Qualification refers to the requirement that the witness possess specialized expertise. We have interpreted this requirement liberally, holding that “a broad range of knowledge, skills, and training qualify an expert.” Secondly, the testimony must be reliable; it “must be based on the ‘methods and procedures of

science' rather than on 'subjective belief or unsupported speculation'; the expert must have 'good grounds' for his o[r] her belief. In sum, *Daubert [v. Merrell Dow Pharm., Inc.]*, 509 U.S. 579 (1993) holds that an inquiry into the reliability of scientific evidence under Rule 702 requires a determination as to its scientific validity." Finally, Rule 702 requires that the expert testimony must fit the issues in the case. In other words, the expert's testimony must be relevant for the purposes of the case and must assist the trier of fact. The Supreme Court explained in *Daubert* that "Rule 702's 'helpfulness' standard requires a valid scientific connection to the pertinent inquiry as a precondition to admissibility."

By means of a so-called "*Daubert* hearing," the district court acts as a gatekeeper, preventing opinion testimony that does not meet the requirements of qualification, reliability and fit from reaching the jury. See *Daubert* ("Faced with a proffer of expert scientific testimony, then, the trial judge must determine at the outset, pursuant to Rule 104(a) [of the Federal Rules of Evidence] whether the expert is proposing to testify to (1) scientific knowledge that (2) will assist the trier of fact to understand or determine a fact in issue.").

Schneider ex rel. Estate of Schneider v. Fried, 320 F.3d 396, 404–05 (3d Cir. 2003) (footnote and citations omitted).²

The party offering the expert testimony bears the burden of proving admissibility.

Daubert, 509 U.S. at 592 n.10. "The expert must explain how and why he or she has reached the conclusion being proffered and must have as a basis more than a subjective belief or speculation." *Cryovac Inc. v. Pechiney Plastic Packaging, Inc.*, 430 F. Supp. 2d 346, 362 (D. Del. 2006); see *General Elec. Co. v. Joiner*, 522 U.S. 136, 144 (1997). "A court may conclude that there is simply too great a gap between the data and the opinion proffered." *Oddi v. Ford Motor Co.*, 234 F.3d 136, 146 (3d Cir. 2000) (citing *General Elec. Co.*, 522 U.S. at 146). A *Daubert* motion should be denied where there is a logical basis for the expert's opinion testimony. *Masimo Corp. v. Philips Elec. N. Am. Corp.*, 62 F. Supp. 3d 368, 388 (D. Del. 2014). In that case, "[t]he weight and credibility of an expert's testimony may be challenged through

² The Court of Appeals wrote under an earlier version of Rule 702, but the recent amendments to it were not intended to make any substantive change.

‘[v]igorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof.’” *Id.* (quoting *Daubert*, 509 U.S. at 596).

2. Motions to Exclude Under the Federal Rules of Civil Procedure

A party who has . . . responded to an interrogatory . . . must supplement or correct its disclosure or response . . . in a timely manner if the party learns that in some material respect the disclosure or response is incomplete or incorrect, and if the additional or corrective information has not otherwise been made known to the other parties during the discovery process or in writing.

FED. R. CIV. P. 26(e)(1)(A). Additionally, an expert’s report must contain “a complete statement of all opinions the witness will express and the basis and reasons for them; [and] the facts or data considered by the witness in forming them.” FED. R. CIV. P. 26(a)(2)(B). “Expert reports must also be supplemented when required in accordance with the provisions of Rule 26(e)(1).” *Alza Corp. v. Andrx Pharm., LLC*, 2008 WL 1886042, at *2 (D. Del. Apr. 28, 2008). The purpose of the disclosure requirements of Rule 26 “is to prevent a party from being unfairly surprised by the presentation of new evidence.” *Id.*

Federal Rule of Civil Procedure 37(c)(1) provides: “If a party fails to provide information . . . as required by Rule 26(a) or (e), the party is not allowed to use that information . . . to supply evidence on a motion, at a hearing, or at a trial, unless the failure was substantially justified or is harmless.” In determining whether a failure to disclose is harmless, courts in the Third Circuit typically consider the following factors:

(1) the importance of the information withheld; (2) the prejudice or surprise to the party against whom the evidence is offered; (3) the likelihood of disruption of the trial; (4) the possibility of curing the prejudice; (5) the explanation for the failure to disclose; and (6) the presence of bad faith or willfulness in not disclosing the evidence (the “*Pennypack* factors”).

Lab. Skin Care, Inc. v. Ltd. Brands, Inc., 661 F. Supp. 2d 473, 477 (D. Del. 2009) (citing *Meyers v. Pennypack Woods Home Ownership Ass’n*, 559 F.2d 894, 904–05 (3d Cir. 1977), *overruled on other grounds*, *Goodman v. Lukens Steel Co.*, 777 F.2d 113 (3d Cir. 1985)). It is well-

established that courts must assess these factors with the understanding that “[e]xclusion of critical evidence, such as an expert report on infringement, is an extreme sanction, not normally to be imposed absent a showing of willful deception or flagrant disregard of a court order by the proponent of the evidence.” *Power Integrations, Inc. v. Fairchild Semiconductor Int’l Inc.*, 763 F. Supp. 2d 671, 692 (D. Del. 2010) (quoting *In re Paoli R.R. Yard PCB Litig.*, 35 F.3d 717, 791–92 (3d Cir. 1994)) (internal quotation marks omitted). Courts in the Third Circuit favor resolution of disputes on their merits, particularly with respect to patent validity issues, which raise public interest concerns extending beyond the immediate dispute between the parties. *Novartis Pharm. Corp. v. Actavis, Inc.*, 2013 WL 7045056, at *12 (D. Del. Dec. 23, 2013).

III. ANALYSIS

A. ’464 Patent

The ’464 patent discloses systems and methods for providing efficient data storage that eliminate redundancy using deduplication techniques. (’464 patent, 1:19–21). EMC asserts that Pure’s FlashArray infringes claims 2, 3, 14, 19, 20, 21, and 32 of the ’464 patent. (D.I. 199 at 6).

Claim 32 of the ’464 patent is representative and states:

32. A computer program product for storing data, the computer program product being embodied in a computer readable medium and comprising computer instructions for:

receiving a data stream comprising a plurality of data segments wherein each data segment is associated with an identifier;

determining using a subset of identifiers that are stored in a low latency whether a data segments³ has been previously stored; and

returning the identifier for the data segment in the event the data segment is determined to have been stored previously.

(’464 patent, 12:35–47).

³ The parties agree that this is a typographical error and should read “a data segment.” (D.I. 121 at 2).

1. Pure's Motion to Exclude Opinions and Testimony of EMC's '464 Patent Infringement Expert

Pure moves to exclude the opinions and testimony of Mr. Ian Jestice, EMC's expert on the '464 and '015 patents, regarding infringement of the '464 patent under the doctrine of equivalents. (D.I. 205 at 22). The doctrine of equivalents function-way-result test "requires the evidence to establish what the function, way, and result of both the claimed device and the accused device are, and why those functions, ways, and results are substantially the same." *Malta v. Schulmerich Carillons, Inc.*, 952 F.2d 1320, 1327 n.5 (Fed. Cir. 1991) (emphasis omitted).

Pure objects that Mr. Jestice "offered nothing but his own say-so to support his opinions that: 1) a person of ordinary skill would understand returning to also include using indexes to accessible arrays or structures [(D.I. 217-1 at 183, ¶ 48)], and 2) the described return of an array index meets the same function, way, and result test for equivalence [(D.I. 217-1 at 184)]." (D.I. 205 at 23 (citations and internal quotation marks omitted)). Pure argues that Mr. Jestice's statement that a person of ordinary skill in the art would understand returning an identifier to include returning an index is a bare assertion without support. (*Id.* at 24). Pure contends that Mr. Jestice's report fails to present the particularized testimony required to sustain a doctrine of equivalents claim because it "does not explain the purpose for which the supposedly equivalent index is returned, how that index fits into the accused process, or even how the index is used after it is returned." (*Id.*).

Mr. Jestice opined that a person of ordinary skill would understand "'deliver back to a calling routine' to include not only returning the actual identifier, but also returning pointers and indexes to accessible arrays or structures (this is because pointers and indexes are used to reference other data)." (D.I. 217-1 at 183, ¶ 48). Although he did not specifically cite evidence

in support of this opinion, Mr. Jestice adequately explained his reasoning by reference to the function/way/result test. (*See id.* at 183–84, ¶¶ 48–49). Mr. Jestice explained that delivering an index in an array to an identifier yields the same result (“has the same effect”) as returning an identifier itself. (*Id.* at 183). Mr. Jestice explained that returning an index accomplishes the same function as returning the identifier in the claim because “[u]pon such return, the system is able to keep track of, and perform additional steps relating to, that potentially duplicate segment.” (*Id.* at 184). Finally, Mr. Jestice explained that the accused product’s returning an index functions in the same way as the claimed returning an identifier because the accused product “returns a representation of an identifier after a preliminary determination has been made that the identifier is associated with a duplicate data segment.” (*Id.*).

Mr. Jestice thus offered an explanation of how and why he concluded that “deliver back to a calling routine” includes not only returning an actual identifier, but also returning pointers and indexes to accessible arrays or structures. *Cf. Magnetar Techs. Corp. v. Six Flags Theme Parks Inc.*, 2014 WL 529983, at *8 (D. Del. Feb. 7, 2014) (excluding opinion and testimony where the expert merely “state[d] the claim limitations followed by general references to several documents and [deposition testimony]”); *MKS Instruments Inc. v. Advanced Energy Indus., Inc.*, 325 F. Supp. 2d 471, 473 (D. Del. 2004) (excluding opinion and testimony where expert “only pointed to evidence of literal infringement and argued that, by inference, this evidence also demonstrates infringement by equivalence”). Mr. Jestice based his opinion, not on speculation, but on analysis of Pure’s source code and his experience in the field. (*See* D.I. 217-1 at 7, 147–48, 183–84). Pure’s criticisms therefore go to the weight and credibility of Mr. Jestice’s DOE opinion and the appropriate vehicle for Pure’s challenges is cross examination and the presentation of contrary evidence. *See Inline Connection Corp. v. AOL Time Warner Inc.*, 470 F.

Supp. 2d 435, 439 (D. Del. 2007). Pure's motion to exclude Mr. Justice's opinions and testimony regarding infringement of the '464 patent under the doctrine of equivalents is therefore **DENIED**.

2. Pure's Motion for Summary Judgment of Non-Infringement of the '464 Patent Asserted Claims

Pure seeks summary judgment of non-infringement of the asserted claims of the '464 patent. (D.I. 199 at 10). A patent is directly infringed when a person "without authority makes, uses, offers to sell, or sells any patented invention, within the United States . . . during the term of the patent." 35 U.S.C. § 271(a). A two-step analysis is employed in making an infringement determination. *See Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 976 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370 (1996). First, the court must construe the asserted claims to ascertain their meaning and scope. *See id.* The trier of fact must then compare the properly construed claims with the accused infringing product. *See id.* at 976. This second step is a question of fact. *See Bai v. L & L Wings, Inc.*, 160 F.3d 1350, 1353 (Fed. Cir. 1998).

"Literal infringement of a claim exists when every limitation recited in the claim is found in the accused device." *Kahn v. Gen. Motors Corp.*, 135 F.3d 1472, 1477 (Fed. Cir. 1998). "If any claim limitation is absent from the accused device, there is no literal infringement as a matter of law." *Bayer AG v. Elan Pharm. Research Corp.*, 212 F.3d 1241, 1247 (Fed. Cir. 2000). If an accused product does not infringe an independent claim, it also does not infringe any claim depending thereon. *See Wahpeton Canvas Co. v. Frontier, Inc.*, 870 F.2d 1546, 1553 (Fed. Cir. 1989). However, "[o]ne may infringe an independent claim and not infringe a claim dependent on that claim." *Monsanto Co. v. Syngenta Seeds, Inc.*, 503 F.3d 1352, 1359 (Fed. Cir. 2007) (internal quotation marks omitted). A product that does not literally infringe a patent claim may still infringe under the doctrine of equivalents if the differences between an individual limitation

of the claimed invention and an element of the accused product are insubstantial. *See Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 24 (1997). The patent owner has the burden of proving infringement and must meet its burden by a preponderance of the evidence. *See SmithKline Diagnostics, Inc. v. Helena Labs. Corp.*, 859 F.2d 878, 889 (Fed. Cir. 1988).

When an accused infringer moves for summary judgment of non-infringement, such relief may be granted only if at least one limitation of the claim in question does not read on an element of the accused product, either literally or under the doctrine of equivalents. *See Chimie v. PPG Indus. Inc.*, 402 F.3d 1371, 1376 (Fed. Cir. 2005); *see also TechSearch, L.L.C. v. Intel Corp.*, 286 F.3d 1360, 1369 (Fed. Cir. 2002) (“Summary judgment of noninfringement is . . . appropriate where the patent owner’s proof is deficient in meeting an essential part of the legal standard for infringement, because such failure will render all other facts immaterial.”). “Thus, summary judgment of non-infringement can only be granted if, after viewing the alleged facts in the light most favorable to the non-movant, there is no genuine issue whether the accused device is encompassed by the claims [as construed by the court].” *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1304 (Fed. Cir. 1999).

Pure seeks summary judgment of non-infringement of the asserted claims of the ’464 patent on the ground that the FlashArray does not “return[] the identifier.” (D.I. 199 at 10). The asserted claims of the ’464 patent all require “returning the identifier” (or “to return the identifier”) after a data segment is determined to be a duplicate. (’464 patent, 10:14–21; 10:53–57; 11:17–26; 11:32–33; 12:35–47). The Court construed “return” to mean “deliver back.” (D.I. 115 at 8).

EMC asserts two theories in support of its argument that Pure’s FlashArray “return[s] the identifier.” (D.I. 258 at 12–17). First, EMC argues that the FlashArray returns the identifier

because it takes the identifier as input and returns an index representing the identifier to the calling routine that requested it. (*Id.* at 14–16). Second, EMC argues that the FlashArray delivers the identifier back to the first step in the deduplication process, the SD Table step. (*Id.* at 16–17). Pure argues that both infringement theories fail as a matter of law. (D.I. 199 at 11, 13–14). Pure maintains that the FlashArray does not “return the identifier,” either literally or under the doctrine of equivalents, by returning an index because an index is not an identifier. (*Id.*). Pure maintains that the FlashArray does not “deliver back” an identifier to the SD Table because the SD table did not previously contain the identifier. (*Id.* at 11).

The parties’ experts agree regarding the relevant operations of the FlashArray deduplication source code. (*See* D.I. 200-2 at 28–29).

[D]uring normal operation, the Accused Products first perform a lookup in the SD Table. This means that the hash signature of the newly written data is checked against the contents of the SD Table. If no match is found in the SD Table, the Accused Products then perform a lookup in the Recent Table. If a match is found in the Recent Table, and the segment is confirmed to be a duplicate through a byte-by-byte comparison, the hash signature of the confirmed duplicate is delivered back to the SD Table to record the hash signature as a successful duplicate.

(D.I. 217-1 at 86 (citations omitted); *see also* D.I. 199 at 11–12). The parties’ experts disagree, however, regarding whether the operation of the FlashArray falls within the plain and ordinary meaning of “returning the identifier.” (D.I. 199 at 10; D.I. 258 at 13).

There is a genuine dispute of material fact regarding whether the FlashArray “return[s] the identifier,” either literally or under the doctrine of equivalents, by returning an index representing the identifier to a calling routine that requested it. Mr. Jestice acknowledges that no FlashArray routines return the value of the identifier to the calling routine. (D.I. 200-2 at 28–30). Mr. Jestice opines, however, that FlashArray meets the “returning the identifier” claim limitation by returning an index representing the identifier to a calling routine. (D.I. 217-1 at

183–84). Mr. Jestice testified that returning an index is the same as returning an identifier to a person of skill in the art because indexes are often used to refer to data in a computer system. (*Id.*). Mr. Jestice also opines that returning an index is at least equivalent to returning an identifier. (*Id.*). Dr. Erez Zadok, Pure’s expert on the ’464 and ’015 patents, testified that an index representing an identifier is not the same as the identifier itself because it is a different piece of data altogether. (D.I. 201-3 at 42–43). Relying on Mr. Jestice’s testimony, a jury could reasonably conclude that returning an index representing the identifier either literally satisfies the claim language “returning the identifier” or satisfies it under the doctrine of equivalents.

There is also a genuine dispute of material fact regarding whether the FlashArray “return[s] the identifier” to the SD Table. The parties’ experts agree that, if an identifier is not located in the SD Table but is subsequently located in the Recent Table, the FlashArray updates the SD Table to add the identifier to the SD Table for the first time. (D.I. 200-2 at 11–14, 17–19; *see also* D.I. 199 at 11–12). Dr. Zadok opines that, because the last step of FlashArray deduplication is adding the identifier to a data structure that did not already contain it, the FlashArray does not “return” the identifier to the SD Table. (D.I. 201-3 at 41). Mr. Jestice opines that, because the SD Table is compared with the identifier at the first deduplication step, the FlashArray “return[s] the identifier” to the SD Table by delivering it back to the SD Table as the last step of the deduplication process. (D.I. 217-1 at 86; *see* D.I. 258 at 13–14). A reasonable jury could conclude, based on the evidence, that an identifier is delivered “back” to the SD Table, even though the identifier had not previously been stored in the SD Table, because the identifier is returned to the table against which it had previously been compared.

For the reasons stated above, Pure’s motion for summary judgment of non-infringement of the ’464 patent is **DENIED**.

B. '015 Patent

Like the '464 patent, the '015 patent discloses systems and methods for providing efficient data storage that eliminate redundancy using deduplication techniques.⁴ ('015 patent, 1:18–20; *see* '464 patent, 1:19–21). For purposes of this motion, claim 1 is representative.⁵

Claim 1 of the '015 patent states:

1. A method for storing data comprising:
receiving a data stream comprising a plurality of data segments;

assigning an identifier to one of the plurality of data segments; and

determining whether one of the plurality of data segments has been stored previously using a summary, wherein the summary is a space efficient, probabilistic summary of segment information.

('015 patent, 9:53–61).

1. EMC's Motion for Summary Judgment of Direct Infringement of '015 Patent Claims 1, 7, and 16

EMC seeks summary judgment of direct infringement of claims 1, 7, and 16 of the '015 patent. (D.I. 215 at 8). EMC argues that its expert, Mr. Jestice, has shown how the FlashArray meets every element of claims 1, 7, and 16 of the '015 patent. (*Id.* at 13). Dr. Zadok opines that the FlashArray does not “receiv[e] a data stream” or use a “summary,” as required by the claims. (D.I. 216-1 at 86–91). EMC contends that Dr. Zadok's opinions with respect to the receiving a data stream and using a summary elements are based on incorrect claim constructions and that there is no genuine dispute that the FlashArray infringes claims 1, 7, and 16 under the proper constructions. (D.I. 215 at 13). EMC also seeks partial summary judgment that Pure uses, sells,

⁴ The '464 and '015 patents share a specification. (*See* D.I. 216-1 at 43).

⁵ Claim 16 claims an apparatus that is used to perform the steps recited in claim 1. ('015 patent, 11:1–8). Claim 7 depends from claim 1 and Pure's non-infringement arguments for claim 7 are the same as those for claim 1. (*Id.* at 10:11–15; *see* D.I. 252 at 6–7; D.I. 216-1 at 86–94). EMC asserts that the FlashArray infringes claims 1, 2, 4, 7, 15, and 16 of the '015 patent. (*See* D.I. 215 at 8 n.3; D.I. 241-1 at 55; D.I. 252 at 5). EMC seeks summary judgment of direct infringement only of claims 1, 7, and 16. (D.I. 215 at 8).

or offers to sell the accused FlashArray and that Pure's customers use the accused FlashArray. (*Id.* at 26–28).

The Court construed “receiving a data stream” to have its plain and ordinary meaning. (D.I. 121 at 2). Pure initially argued that the FlashArray does not receive a data stream because a person of ordinary skill in the art would understand “data stream” to be a series of data segments related to each other by some characteristic, and EMC's expert agrees that the data segments received by the FlashArray are not necessarily related. (D.I. 252 at 10 & n.7). In conducting supplemental claim construction, however, the Court held that the term does not require “receiving a series of segments that are related to each other by some characteristic that distinguishes them from other received data streams.” (D.I. 362 at 8).

Pure argues that there is still a genuine factual dispute regarding whether the FlashArray receives a “data stream” as that term is understood by a person of skill in the art. (D.I. 252 at 16–17; D.I. 353 at 5–6). Pure contends that, even under the meaning of “data stream” proposed by EMC's expert, Mr. Jestice, the FlashArray does not receive a “data stream.” (*See* D.I. 252 at 12–13; D.I. 327 at 42; D.I. 353 at 5–6). Mr. Jestice opined that the plain and ordinary meaning of “data stream comprising a plurality of data segments” is “a flow of data that consists of a plurality of segments.” (D.I. 253-5 at 4; *see also* D.I. 253-4 at 4–5). Mr. Jestice explained that “random piecemeal transmissions” would not be a “flow” of data.⁶ (D.I. 253-5 at 5). Extrinsic

⁶ Pure previously described Mr. Jestice's opinion that “data stream” means “a flow of data as “do[ing] nothing to resolve the dispute about what is required for data segments to be part of a stream.” (D.I. 252 at 13). Pure said that “[a]t its core, Mr. Jestice's opinion is that a data stream is just any plurality of data segments.” (*Id.* at 13; *see also* D.I. 253-9 at 8 (Dr. Zadok's testimony that “Mr. J[estice] interprets data stream to be nothing more than a random sequence of segments.”)). At oral argument, however, Pure backed away from its position that Mr. Jestice's interpretation “reads the words ‘data stream’ out of the claims.” (D.I. 252 at 13; *see* D.I. 327 at 42). Pure now acquiesces to EMC's characterization of Mr. Jestice's opinion regarding the plain meaning of “data stream” as a continuous, not piecemeal, flow of data. (D.I. 327 at 10, 19–20, 36, 42).

evidence supports Mr. Jestice's view that data stream means a continuous flow of data. (*See, e.g.*, D.I. 254-2 at 31–32).

There is no genuine dispute regarding whether the FlashArray “receiv[es] a data stream comprising a plurality of segments.” Mr. Jestice and Dr. Zadok agree that the FlashArray receives 512-byte data sectors from a host. (*See* D.I. 217-1 at 42; D.I. 253-8 at 8; D.I. 254-2 at 67). Mr. Jestice opined that receiving the 512-byte data sectors constitutes “receiving a data stream.” (D.I. 217-1 at 29, 185). Dr. Zadok did not rebut Mr. Jestice's opinion that the FlashArray receives a continuous flow of data.⁷ Even so, Pure argues that there is no evidence in the record that “a host sends a data stream to the FlashArray such that the FlashArray could receive a data stream.” (D.I. 327 at 41–43). How data segments are sent to the FlashArray is irrelevant, however, because the claim does not impose any requirements on how data segments are sent, only on the manner in which they are received. A reasonable jury thus could not conclude that the FlashArray does not satisfy the “receiving a data stream” element of the '015 patent claims 1, 7, and 16.

There is no also genuine dispute that the FlashArray “determin[es] whether one of the plurality of data segments has been stored previously using a summary, wherein the summary is a space efficient, probabilistic summary of segment information.” (D.I. 215 at 18). Dr. Zadok opined that the FlashArray does not infringe the asserted claims of the '015 patent because the FlashArray does not use a “summary” to determine whether one of the plurality of data segments has been stored previously. (D.I. 216-1 at 86). Dr. Zadok stated that “[t]he additional context of the claims of the '015 patent demonstrate to one of ordinary skill . . . that the ‘summary’ cannot

⁷ Dr. Zadok did not address whether the FlashArray satisfies the receiving a data stream element under Mr. Jestice's view of the meaning of “data stream.” Instead, his reports focus on Pure's unsuccessful claim construction position that Mr. Jestice's understanding of the term “assigns no meaning to ‘stream’ and effectively reads it out of the claims.” (*See, e.g.*, D.I. 254-2 at 65).

be the same structure as the ‘subset of identifiers.’” (D.I. 216-1 at 87; *see* D.I. 216-1 at 43–44). Additionally, Dr. Zadok stated that “summary” refers to “a structure that summarizes the entire segment database, not just a portion of it.” (D.I. 216-1 at 47 (emphasis omitted)).

Claim construction is a legal question within the province of the court. *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 372 (1996). “No party may contradict the court’s construction to a jury.” *Exergen Corp. v. Wal-Mart Stores, Inc.*, 575 F.3d 1312, 1321 (Fed. Cir. 2009). In construing “summary,” I rejected Pure’s proposals to limit “summary” to a data structure that (1) is different from a subset of identifiers and (2) determines that a segment is not in the entire segment database. (D.I. 362 at 5–8). Thus, Dr. Zadok’s opinions regarding the additional limitations are irrelevant. *See Liquid Dynamics Corp. v. Vaughan Co.*, 449 F.3d 1209, 1224 n.2 (Fed. Cir. 2006) (affirming exclusion of expert testimony as irrelevant where it was based on an impermissible claim construction).

EMC presents undisputed evidence that, under the Court’s construction of “probabilistic summary,” the FlashArray’s SD Table and Recent Table are each a “data structure that indicates with possible uncertainty whether a data segment has already been stored.” (*See* D.I. 215 at 21–23 and documents cited therein). Indeed, Dr. Zadok explicitly acknowledged that, unless “summary” means a data structure that is different from a subset of identifiers and that can determine that a segment is not in the entire segment database, “a cached data structure such as the accused ‘successful dedupe’ table . . . fall[s] within the Court’s construction of a ‘probabilistic summary.’” (D.I. 216-1 at 48). Thus, there is no genuine dispute that, under the Court’s constructions of “summary” and “probabilistic summary,” the FlashArray “determin[es] whether one of the plurality of data segments has been stored previously using a summary,

wherein the summary is a space efficient, probabilistic summary of segment information.” (*E.g.*, ’015 patent, 9:58–61).

For the reasons stated above, there is no genuine dispute of fact regarding whether the FlashArray “receiv[es] a data stream” or uses a “summary” as required by claims 1, 7, and 16 of the ’015 patent. Additionally, there is no dispute that the FlashArray meets all other claim limitations of claims 1, 7, and 16 of the ’015 patent. In particular, there is no dispute that the FlashArray: (1) “assign[s] an identifier to one of the plurality of data segments” as required by claims 1, 7, and 16; (2) embodies “[a] computer program product for storing data, the computer program product being embodied in a computer readable storage medium and comprising computer instructions” as recited in the preamble to claim 16; or (3) “confirm[s] whether the one of the plurality of data segments has been stored previously using a relatively high latency memory” as required by claim 7. (*See* D.I. 216-1 at 86–93; D.I. 217-1 at 43–45, 55–57, 65; *see also* D.I. 215 at 23–25). There are also no genuine disputes that Pure has sold the FlashArray and offered it for sale (*see, e.g.*, D.I. 216-1 at 291–92) or that Pure used it in testing (*see, e.g.*, D.I. 216-1 at 192–94, 248, 250–51, 298, 300–01); *see Waymark Corp. v. Porta Sys. Corp.*, 245 F.3d 1364, 1366 (Fed. Cir. 2001) (“This court has established that testing is a use of the invention that may infringe under § 271(a).”). Finally, there is no genuine dispute that Pure’s customers use the FlashArray. (*See* D.I. 216-1 at 100–01 (Pure’s expert, Dr. Zadok, discussing analyzing customer log data “from [a] Pure Storage engineer . . . that represents many typical customers and their use of multiple FlashArrays”)).

EMC’s motion for summary judgment of direct infringement of claims 1, 7, and 16 of the ’015 patent is therefore **GRANTED**. EMC’s request for partial summary judgment that Pure

uses, sells, or offers to sell the accused FlashArray and that Pure's customers use the FlashArray is also **GRANTED**.

2. Pure's Motion to Strike Evidence and Expert Opinions Regarding EMC's Attempt to Swear Behind the Krapp Reference

Pure moved for summary judgment of invalidity of the '015 patent, arguing, among other things, that the asserted claims of the '015 patent are anticipated by U.S. Patent No. 6,889,297 (the "Krapp patent."). (D.I. 199 at 16, 28). In its opposition to Pure's motion for summary judgment of invalidity of the '015 patent, EMC asserted that the Krapp patent is not prior art because the '015 patent was invented no later than March 16, 2002—six days before the application resulting in the Krapp patent was filed. (D.I. 258 at 17–18). In support of its prior conception and diligent reduction to practice contentions, EMC filed a declaration by '015 patent co-inventor Dr. Kai Li and a declaration by Mr. Jestice, EMC's expert on the '015 and '464 patents. (D.I. 260; D.I. 260-1; D.I. 263; D.I. 263-1; D.I. 263-2). Pure moves to strike the declarations and the documents attached thereto under Federal Rule of Civil Procedure 37(c)(1) on the ground that EMC violated Rules 26(e)(1)(A) and 26(a)(2)(B). (D.I. 303 at 8).

The facts are undisputed. On March 21, 2014, Pure served EMC with its first set of interrogatories and requests for production of documents. (D.I. 27 at 1). Pure's Interrogatory No. 1 asked EMC to describe in detail all facts relating to the conception and reduction to practice of each asserted claim of the patents in suit, including but not limited to the conception date and the date of reduction to practice of the subject matter of each patent in suit, and all documents relating to conception and reduction to practice. (D.I. 304-1 at 3). Pure's Request No. 4 asked EMC to produce all documents "relating to the conception, reduction to practice, research, design, development, or testing of the inventions or subject matters disclosed, described, or claimed in any of the Patents-in-Suit or any related patent or related application,

including, but not limited to, the first written description or disclosure (including drawings) and the first prototype of such subject matter.” (D.I. 304-2 at 3). EMC responded to Pure’s discovery requests on April 24, 2014. (D.I. 32 at 1). EMC responded to interrogatory No. 1 by stating that the inventors conceived of the ideas claimed in the ’015 and ’464 patents “at least as early as June 4, 2002.” (D.I. 304-3 at 4). EMC responded to Pure’s request for production No. 4 by agreeing to “produce all non-privileged, responsive documents in its possession, custody, or control that relate to the inventions claimed in any of the Patents-in-Suit and that predate the effective filing date of the Patents-in-Suit, to the extent such documents exist and have been uncovered after a diligent search of a reasonable number of custodians most likely to possess relevant information.” (D.I. 304-4 at 3).

In its initial infringement contentions served on May 2, 2014, EMC asserted that the ’015 and ’464 patents are entitled to a priority date of December 20, 2002. (D.I. 33 at 1; D.I. 304-5 at 3). “EMC further contend[ed] that each asserted claim of each of the Asserted Patents is entitled to a priority date corresponding to its date of conception.” (D.I. 304-5 at 3). On June 6, 2014, Pure served its initial invalidity contentions, in which it asserted the Krapp patent as an obviousness reference. (D.I. 304-6 at 3, 7). Pure’s initial invalidity contentions listed the filing date of the Krapp patent as March 22, 2002, as indicated on the face of the patent. (D.I. 200-8 at 3; D.I. 304-6 at 3). Pure did not identify Krapp as an anticipation reference in its invalidity contentions. (*See* D.I. 192-1 at 126–29; D.I. 193 at 3).

On February 11, 2015, EMC supplemented its response to Interrogatory No. 1, identifying multiple documents that further reflected evidence of the conception, diligence, and reduction to practice of the ’015 and ’464 patents. (D.I. 304-8 at 5). None of the documents EMC identified in its February 11 supplemental response were dated earlier than May 30, 2002.

(D.I. 304 at 4). EMC's February 11 supplemental response did not identify a date of alleged conception earlier than June 4, 2002. (D.I. 304-8 at 5). On March 26, 2015, Pure deposed EMC's Rule 30(b)(6) designee on the topics of conception and reduction to practice of the inventions of the '015 and '464 patents. (D.I. 304-11 at 4-7). EMC's Rule 30(b)(6) designee testified that documents that would impact the areas of conception and reduction to practice of the '015 patent were produced and covered in an answer to an interrogatory and that "any proof [EMC] would have would be dependent on those documents." (*Id.*).

On May 15, 2015, Dr. Zadok identified Krapp as anticipatory prior art to the '015 patent and opined that Krapp discloses the elements of the asserted claims. (D.I. 201-2 at 1, 43-49; *see also* D.I. 196 at 28-29). In his reply report served on August 6, 2015, Dr. Zadok offered an expanded explanation of his opinion that the Krapp patent discloses the "summary" limitation of the '015 patent asserted claims. (D.I. 201-4 at 40-43). Although Mr. Jestice opined that Krapp does not anticipate the '015 and '464 patents, he did not challenge the prior art status of Krapp either in his rebuttal expert report or at deposition. (D.I. 200-2 at 43-44; *see* D.I. 260-1 at 122-26). Mr. Jestice also offered no opinions regarding the timing of conception or reduction to practice of the inventions claimed in the '015 patent. (*See* D.I. 260-1 at 3-4).

On September 30, 2015, EMC moved to strike the Krapp patent and Dr. Zadok's related anticipation opinion as untimely disclosed. (D.I. 192 at 3). At the hearing on October 2, 2015, the Court denied EMC's motion to strike, thus permitting Pure to rely on Krapp as an anticipation reference. (D.I. 196 at 32). Four days later, on October 6, 2015, the parties filed their summary judgment motions. (D.I. 198, 206, 214). On October 28, 2015, EMC served its opposition to Pure's motion for summary judgment. EMC argued in its opposition to Pure's motion for summary judgment that Krapp is not prior art to the '015 patent because the

inventions of the '015 patent were conceived no later than March 16, 2002. (D.I. 258 at 8–12). Also on October 28, 2015, EMC served a supplemental response to Pure's Interrogatory No. 1 that: (1) disclosed the March 16, 2002 date of conception; (2) identified, for the first time, technical specifications pre-dating May 30, 2002; and (3) incorporated by reference the declarations of Dr. Li and Mr. Jestice that EMC served with its opposition to Pure's motion for summary judgment. (D.I. 304-17 at 6).

The *Pennypack* factors militate against striking the Li and Jestice declarations and exhibits thereto. First, the Li and Jestice declarations are of critical importance to the issue of invalidity of the '015 patent because Pure has moved for summary judgment of invalidity of all asserted claims of the '015 patent on the ground that they are anticipated by the Krapp patent. Second, there is no reason to believe, at this point, that the trial will be disrupted if the declarations are not struck.

Third, Pure will not suffer incurable prejudice if the Court does not strike the Li and Jestice declarations. Pure has not demonstrated that it will suffer prejudice on the ground that, had it known earlier that EMC would assert a March 2002 conception date, it would have searched for prior art dated before March 2002 because, aside from the Krapp patent, all but one of Pure's invalidity references predate March 2002. (*See* D.I. 192-1 at 128). I am also unpersuaded that Pure will suffer prejudice because, had it known earlier that EMC would assert a March 2002 conception date, it would have moved for summary judgment of invalidity on the ground that a different prior art reference anticipates the asserted '015 patent claims. (*See* D.I. 303 at 21). Pure could have included such other anticipatory references in its summary judgment motion and yet chose not to mention them. Pure will still be able to assert them at trial. Finally, Pure will not suffer prejudice due to an inability to meaningfully cross examine Dr. Li and Mr.

Jestice regarding the prior conception and diligent reduction to practice evidence. Pure has had adequate time and an opportunity to conduct discovery to develop its response to EMC's assertion that the invention of the '015 patent predates the Krapp patent filing date. (*See* D.I. 327 at 122–23; D.I. 355 at 1).

Fourth, with respect to EMC's explanation for the failure to disclose and the presence of bad faith or willfulness, EMC argues that it did not have a reason to seek to antedate the Krapp patent until Pure served its reply expert report fully articulating its Krapp anticipation theory. (D.I. 321 at 17). Until Dr. Zadok fully articulated his anticipation theory, Pure described Krapp as disclosing techniques that the '015 patent itself identified as being used in the prior art. (*Id.* at 20). EMC contends that it promptly obtained and served the Li and Jestice declarations after Pure served Dr. Zadok's reply report. (*Id.* at 17). EMC maintains that the whiteboard photos were not in EMC's possession, custody, or control during fact discovery and that Dr. Li, a professor at Princeton University, is not an EMC employee. (*Id.* at 14, 19). The whiteboard photos attached as exhibits to Dr. Li's declaration were in his personal files until he located them while preparing the declaration. (D.I. 263 at 5). Pure argues, on the other hand, that EMC had a duty to seek relevant evidence from Dr. Li prior to Pure's deposition of EMC's Rule 30(b)(6) designee because Dr. Li was a member of EMC's Technical Advisory Board during the discovery period. (D.I. 324 at 8). As a member of the Technical Advisory Board, Dr. Li agreed to assist in litigation related to his services. (D.I. 345-1 at 5).

EMC's explanation for the failure to disclose is reasonable and Pure has not established the presence of bad faith. EMC's belated disclosure of evidence of prior invention was a consequence of Pure's belated disclosure of Krapp as an anticipatory reference. Further, EMC sought evidence of conception and reduction to practice from Dr. Li within a reasonable time

after learning of Pure's intention to assert the Krapp patent as an anticipatory reference. As an external technical advisor to EMC, Dr. Li had an obligation to cooperate in litigation related to his services as an advisor. (*Id.*). Dr. Li was not, however, under any contractual obligation to EMC with respect to the present litigation until after Pure filed its motion for summary judgment. (*See id.*; D.I. 347 at 2 & n.2; D.I. 347-1 at 5–6). Thus, EMC's failure to produce the whiteboard photos that had been stored in Dr. Li's files does not suggest bad faith. Further, the fact that Pure stated in its reply brief to this motion, filed December 10, 2015, that Dr. Li served on EMC's Technical Advisory Board during the discovery period undermines Pure's suggestion that it was unaware of that fact until January 5, 2016. (*See* D.I. 324 at 8; D.I. 345 at 2).

For the reasons stated above, Pure's motion to strike the declarations of Dr. Li and Mr. Jestice and the exhibits attached thereto is **DENIED**.

3. EMC's Motion for Leave to File a Sur-Reply to Pure's Motion for Summary Judgment of Invalidity of the '015 Patent

EMC seeks leave to file a short sur-reply regarding corroboration of conception in response to new legal issues Pure raised for the first time in its reply brief in support of its motion for summary judgment of invalidity of the '015 patent. (D.I. 317 at 3). Courts in this district disfavor sur-replies. D. Del. Loc. R. 7.1.2(b). Thus, generally, leave to file a sur-reply is granted only where the proposed brief responds to new evidence, facts, or arguments raised for the first time in the moving party's reply brief. *St. Clair Intellectual Prop. Consultants, Inc. v. Samsung Elecs. Co.*, 291 F.R.D. 75, 80 (D. Del. 2013). *But see S3 Graphics Co. v. ATI Techs., ULC*, 2015 WL 7307241, at *11 n.7 (Oct. 21, 2015) (granting leave to defendants to file sur-reply where plaintiff's inclusion of argument in its reply brief was not procedurally improper).

As discussed above, EMC asserted that the '015 patent is entitled to a priority date of March 16, 2002 for the first time in its opposition to Pure's motion for summary judgment of

invalidity. (*See* D.I. 321 at 13–14). In its reply, Pure maintained that Dr. Li’s declaration was legally insufficient evidence of conception and reduction to practice because it was not corroborated. (D.I. 298 at 13–14). Pure’s reply did not contain “new” argument to the extent it responded to the new argument EMC raised in its opposition to Pure’s motion for summary judgment. *See Siemens Med. Solutions USA, Inc. v. Humedica, Inc.*, 2015 WL 1738186, at *1 n.1 (D. Del. Apr. 8, 2015). Still, Pure’s reply undoubtedly raised legal arguments that EMC did not have an opportunity to rebut and relied on case law not cited in Pure’s opening brief. Further, EMC’s belated disclosure of evidence was a result of Pure’s belated disclosure of Krapp as an anticipatory reference. EMC’s proposed sur-reply is short and directed specifically to the question of prior invention. (*See* D.I. 317-1). The Court will therefore **GRANT** EMC’s motion for leave to file a sur-reply and consider the arguments therein. Pure’s request for leave to file a sur-sur reply is denied. (*See* D.I. 326 at 6).

4. Pure’s Motion for Summary Judgment of Invalidity of the ’015 Patent

Pure seeks summary judgment of invalidity of all asserted claims of the ’015 patent on the grounds that they are anticipated by the Krapp patent and are not enabled.⁸ (D.I. 199 at 16, 28). First, Pure seeks summary judgment of invalidity of the asserted claims of the ’015 patent on the ground that they are anticipated by the Krapp patent. (*Id.*). A patent claim is invalid as anticipated under 35 U.S.C. § 102 if “within ‘the four corners of a single, prior art document . . . every element of the claimed invention [is described], either expressly or inherently, such that a person of ordinary skill in the art could practice the invention without undue experimentation.’” *Callaway Golf Co. v. Acushnet Co.*, 576 F.3d 1331, 1346 (Fed. Cir. 2009) (alterations in original)

⁸ In the alternative, Pure seeks summary judgment of invalidity on the ground that the disclosures of the Krapp patent render each asserted ’015 patent claim obvious under 35 U.S.C. § 103. (D.I. 199 at 28 n.18). As this alternative is only mentioned in a footnote and is not briefed, it is not further considered.

(quoting *Advanced Display Sys., Inc. v. Kent State Univ.*, 212 F.3d 1272, 1283 (Fed. Cir. 2000)). As with infringement, the court construes the claims and compares them against the prior art. *See Enzo Biochem, Inc. v. Applera Corp.*, 599 F.3d 1325, 1332 (Fed. Cir. 2010). Anticipation “may be decided on summary judgment if the record reveals no genuine dispute of material fact.” *Encyclopaedia Britannica, Inc. v. Alpine Elecs. of Am., Inc.*, 609 F.3d 1345, 1349 (Fed. Cir. 2010).

The parties dispute whether the Krapp patent is prior art to the '015 patent and whether the Krapp patent discloses each element of the asserted claims. (D.I. 199 at 17; D.I. 258 at 18, 22; D.I. 298 at 12–14, 15; D.I. 317-1 at 7). A patent is prior art if it is filed before the date of invention of the asserted patent. 35 U.S.C. § 102(e). A patentee can swear behind an alleged prior art reference by providing evidence of prior invention. *Mahurkar v. C.R. Bard, Inc.*, 79 F.3d 1572, 1576 (Fed. Cir. 1996). Prior invention can be established by a showing that the inventor “was the first to conceive the invention and that it exercised reasonable diligence in later reducing that invention to practice.” *Id.* at 1577. “Conception is the formation in the mind of the inventor, of a definite and permanent idea of the complete and operative invention, as it is hereafter to be applied in practice.” *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1376 (Fed. Cir. 1986) (internal quotation marks omitted). Every limitation must be shown to have been known to the inventor at the time the invention is alleged to have been conceived. *Davis v. Reddy*, 620 F.2d 885, 889 (C.C.P.A. 1980). Reasonable diligence is established by evidence that there was “reasonably continuing activity to reduce the invention to practice.” *Mahurkar*, 79 F.3d at 1577.

“Because conception is a mental act, it must be proven by evidence showing what the inventor has disclosed to others and what that disclosure means to one of ordinary skill in the

art.” *In re Jolley*, 308 F.3d 1317, 1321 (Fed. Cir. 2002) (internal quotation marks omitted). Documentary evidence of conception need not be corroborated. *Mahurkar*, 79 F.3d at 1577–78. *But see Procter & Gamble Co. v. Teva Pharm. USA, Inc.*, 566 F.3d 989, 999 (Fed. Cir. 2009) (“The inventor must provide independent corroborating evidence in addition to his own statements and documents.” (citations and internal quotation marks omitted)). The testimony of an alleged prior inventor, however, must be corroborated. *Mahurkar*, 79 F.3d at 1577–78. The “testimony of one co-inventor cannot be used to help corroborate the testimony of another.” *Medichem, S.A. v. Rolabo, S.L.*, 437 F.3d 1157, 1171 (Fed. Cir. 2006). “[T]he sufficiency of corroborative evidence is determined by the ‘rule of reason.’” *Kridl v. McCormick*, 105 F.3d 1446, 1450 (Fed. Cir. 1997). Accordingly, a court must examine all pertinent evidence when weighing the credibility of an inventor’s story. *Id.* “Though the patentee has the burden of production in antedating a reference, the burden of persuasion, by clear and convincing evidence, remains with the party that challenges an issued patent’s validity.” *Stamps.com Inc. v. Endicia, Inc.*, 437 F. App’x 897, 907–08 (Fed. Cir. 2011) (citing *Mahurkar*, 79 F.3d at 1576).

EMC argues that the evidence shows that the date of invention of the ’015 patent predates the filing of the Krapp patent.⁹ (D.I. 258 at 18–21). Dr. Li, co-inventor of the ’015 patent, stated in a sworn declaration that he and his co-inventors conceived of the core deduplication concepts of the ’015 patent invention no later than March 16, 2002. (D.I. 263 at 5). In particular, Dr. Li describes a meeting with co-inventor Benjamin Zhu in February 2002 during which they prepared figures and notes on a whiteboard that explain the ’015 patent deduplication process. (*Id.*). Photos of the whiteboard notes are in the record. (D.I. 263-1 at 27–31). EMC also produced an Architecture Specification, the first version of which was dated March 16, 2002,

⁹ The bulk of the evidence on which EMC relies to establish that invention of the ’015 antedates the Krapp patent was the subject of Pure’s motion to strike, discussed above.

that details a system containing the '015 patent deduplication invention. (D.I. 263 at 4–5; D.I. 263-1 at 2–13). Mr. Jestice stated that all limitations of the '015 patent's asserted claims are disclosed in the Architecture Specification. (D.I. 260-1 at 9–11). Additionally, Hugo Patterson, another co-inventor of the '015 patent, testified at deposition that Dr. Li and Mr. Zhu developed the core deduplication concepts of the '015 patent before March 2002. (D.I. 259-1 at 93). EMC also argues that there is ample evidence of diligent reduction to practice. (D.I. 258 at 21). Dr. Li and Dr. Patterson stated that the co-inventors of the '015 patent dedicated significant time and resources to implementing the '015 patent invention. (D.I. 259-1 at 90; D.I. 263 at 6–7). A series of technical specifications from 2002 support EMC's claim to continuous effort to reduce the invention to practice. (D.I. 263-1 at 33–150; D.I. 263-2 at 1-108; *see also* D.I. 260 at 11–17; D.I. 263 at 6–7).

Pure argues that the evidence of prior conception and reduction to practice that EMC offers is insufficient as a matter of law to antedate the Krapp patent because it consists only in the uncorroborated testimony of co-inventors and the documents created and dated by the co-inventors. (D.I. 298 at 13). Additionally, Pure argues that the Architecture Specification, whiteboard photos, and technical specifications demonstrate at most that the inventors were in possession of “key concepts and claim limitations,” not all limitations of the asserted claims. (*Id.* at 14).

In *Procter & Gamble Co.*, a party sought to prove conception via the oral testimony of the inventor. 566 F.3d at 998. The court held that an unwitnessed entry in an inventor's laboratory notebook was insufficient, without more, to corroborate the inventor's testimony that he had conceived of the invention. *Id.* at 999. Dr. Li's whiteboard photos are analogous to the unwitnessed pages of a laboratory notebook and would therefore likely be insufficient on their

own to corroborate Dr. Li's testimony of prior conception. Similarly, as testimony of a co-inventor, Dr. Patterson's testimony on its own would be insufficient to corroborate Dr. Li's testimony as to the date of conception. *See Medichem, S.A.*, 437 F.3d at 1170. In addition to the whiteboard photos and Dr. Patterson's testimony, however, EMC has also offered the Architecture Specification and a series of technical specifications to corroborate the testimony of the '015 patent inventors with respect to conception and diligence with respect to reduction to practice. The documentary evidence and Mr. Jestice's expert opinions are consistent with Dr. Li's and Dr. Patterson's testimony. Thus, analyzing all of the pertinent evidence of prior conception, I conclude that EMC has satisfied its burden of production. *See Kridl*, 105 F.3d at 1450; *Price v. Symsek*, 988 F.2d 1187, 1195 (Fed. Cir. 1993). Pure does not offer evidence inconsistent with EMC's claim to the earlier date of conception such that no reasonable jury could conclude that the inventors were in possession of the claimed invention prior to the filing date of the Krapp patent. Thus, Pure's challenges with respect to conception and reduction to practice are subject to resolution by the jury.

There is likewise a genuine dispute of fact regarding whether the Krapp patent discloses each element of the asserted claims. (D.I. 199 at 17; D.I. 258 at 22; D.I. 298 at 15). Dr. Zadok opined that the Krapp patent discloses each element of the asserted '015 patent claims. (D.I. 201-2 at 43-47). EMC's expert Mr. Jestice opined that the Krapp patent does not disclose "determin[ing] whether one of the plurality of data segments has been stored previously using a summary, wherein the summary is a space efficient, probabilistic summary of segment information," as required by all of the asserted '015 patent claims. (*See* D.I. 260-1 at 123). Mr. Jestice acknowledged that the list of non-unique identifiers disclosed in Krapp is a "probabilistic summary" as that term has been construed by the Court in the context of the '015 patent. (D.I.

200-2 at 51–52). Still, Mr. Jestice explained that the Krapp patent does not disclose the probabilistic summary limitation of the asserted claims because the Krapp patent is directed toward improving the allocation of memory during runtime, which is different than deduplicating data during storage as is claimed in the '015 patent. (D.I. 260-1 at 19–20, 66–67, 122). Mr. Jestice also opines that the Krapp patent does not disclose the dependent claim 7 step of “confirming whether the one of the plurality of data segments has been stored previously using a relatively high latency memory.” (D.I. 260-1 at 125). There is thus a genuine dispute of fact with respect to whether the Krapp patent discloses every limitation of the asserted claims.

EMC has offered evidence in support of its arguments that invention of the '015 patent antedated the Krapp patent priority date and that Krapp does not disclose the “probabilistic summary” limitation of the asserted independent claims or the additional limitation of dependent claim 7. (See D.I. 258 at 22–26). Thus, Pure is not entitled to summary judgment of invalidity of the asserted claims of the '015 patent on the ground that they are anticipated by the Krapp patent. Whether the '015 inventors had conceived and reduced to practice the claimed inventions prior to the Krapp patent filing date is a question for the jury, as is the issue of what the Krapp patent discloses.

Second, Pure seeks summary judgment of invalidity of the '015 patent on the ground that it is not enabled. (D.I. 199 at 28). The enablement requirement is set forth in 35 U.S.C. § 112, ¶ 1: “The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same.” “[E]nablement requires that the specification teach those in the art to make

and use the invention without undue experimentation.” *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988).

Factors to be considered in determining whether a disclosure would require undue experimentation . . . include (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims.

Id. Whether undue experimentation is necessary is thus “a conclusion reached by weighing many factual considerations.” *Id.* This is a question of law based on subsidiary factual findings. *Alza Corp. v. Andrx Pharm., LLC*, 603 F.3d 935, 940 (Fed. Cir. 2010).

Pure argues that the only embodiment of a “probabilistic summary” that is disclosed in the ’015 patent is a Bloom filter summary vector. (’015 patent, 8:48–9:24, FIGS. 6A–6C; D.I. 201-2 at 50). Pure maintains that, under the Court’s broad construction of “probabilistic summary” as “[a] data structure that indicates, with possible uncertainty, whether a data segment is already stored” (D.I. 115 at 6; D.I. 362 at 8), the term is not limited to Bloom filters or even to data structures that, like Bloom filters, are capable of conclusively determining that a data segment has not already been stored. (D.I. 199 at 28). Pure maintains that the ’015 patent does not provide any guidance regarding how to make or use a probabilistic summary data structure other than a Bloom filter summary vector. (*Id.* at 29). Dr. Zadok opined that creating and using other types of probabilistic summary data structures for data deduplication would have involved undue experimentation as of the effective filing date of the patent. (D.I. 201-2 at 51, D.I. 201-4 at 49–50).

EMC disagrees that the Bloom filter is the only teaching relating to the claimed “probabilistic summary.” (D.I. 258 at 27). Further, EMC argues that even if the Bloom filter were the only disclosed “probabilistic summary,” the Court should deny Pure’s motion for

summary judgment because “the enablement requirement is met if the description enables any mode of making and using the invention” and because there exists a genuine dispute of material fact regarding whether undue experimentation would be required to implement a probabilistic summary other than a Bloom filter. (D.I. 258 at 27, 30 (quoting *Invitrogen Corp. v. Clontech Labs., Inc.*, 429 F.3d 1052, 1071 (Fed. Cir. 2005)) (internal quotation marks omitted)). Mr. Jestice opined that the specification enables one of skill in the art to implement the full scope of the asserted ’015 patent claims without undue experimentation. (D.I. 260-1 at 157). Mr. Jestice points to the patent’s disclosure of a cache that can store metadata information and that can be represented by a number of data structures disclosed in the patent, including “a hash table, a tree, a binary tree, a list, etc.” (D.I. 260-1 at 157 (quoting ’015 patent, 6:10–11) (internal quotation marks omitted)). EMC contends that “there is no evidence in the record that a Bloom filter is one member of a group of hundreds or thousands of analogous data structures and that extensive testing would be required to know which of these many data structures can function as a ‘probabilistic summary.’” (D.I. 258 at 29). In fact, Dr. Zadok identified only a single additional example of a “probabilistic summary” that he contends could fall within the scope of the term as the Court has construed it. (D.I. 201-2 at 51–52).

There are material disputes of fact underlying the determination whether the patent’s disclosures would enable a person of ordinary skill to implement probabilistic summaries other than a Bloom filter. The parties’ experts disagree regarding whether the specification discloses implementations of probabilistic summaries that would satisfy the Court’s construction. (D.I. 200-11 at 7–8; D.I. 201-4 at 50–53). The parties’ experts also disagree regarding the number of possible analogous data structures and whether a person of ordinary skill in the art at the time of invention would have had to conduct extensive testing to know which of the possible analogous

data structures could function as a probabilistic summary. (See D.I. 200-11 at 7–8; D.I. 201-2 at 50–51, 51–52; D.I. 201-4 at 52–53). Thus, summary judgment of invalidity of the asserted claims of the '015 patent on the basis of enablement is inappropriate. See *Transocean Offshore Deepwater Drilling, Inc. v. Maersk Contractors USA, Inc.*, 617 F.3d 1296, 1306–07 (Fed. Cir. 2010); *Netgear, Inc. v. Ruckus Wireless, Inc.*, 5 F. Supp. 3d 592, 617 (D. Del. 2013).

Accordingly, Pure's motion for summary judgment of invalidity of the asserted claims of the '015 patent is **DENIED**.

C. '556 Patent

The '556 patent discloses systems and methods of data storage involving RAID parity-based fault tolerance techniques. ('556 patent, 1:6–8; D.I. 199 at 30). EMC asserts that Pure's FlashArray infringes claims 6 and 7 of the '556 patent, which are directed to memory systems, and claim 16, which is directed to a method of using a memory system. (D.I. 199 at 6). Claim 6 of the '556 patent states:

6. A memory system, comprising:
 - a plurality of semiconductor memory segments, the segments being grouped into groups, each of the groups including N respective semiconductor memory segments, the number N being an integer, the N respective segments in each respective group comprising respective data segments and a respective parity segment; and
 - in each of the groups:
 - the respective parity segment stores a respective data value P that may be calculated by a logical exclusive-or of respective data values stored in the respective data segments, wherein:
 - the segments reside in memory regions of a memory board, and
 - each of the segments included in a respective memory region may be assigned a respective base memory address different from other respective base memory addresses that may be assigned to other segments included in the respective memory region.

('556 patent, 15:16–35). The claimed “memory system” includes “memory boards,” which in turn include “memory regions.” ('556 patent, 15:16–41; 16:49–17:7). Each “memory region” includes multiple “memory segments” for storing data values. (*Id.*). Each of the asserted claims

states or depends from a claim that states that the claimed memory system must be able to assign certain “base memory addresses” to certain “memory segments.” (*See id.* at 15:16–41; 16:49–17:7).

1. EMC’s Motion to Exclude Non-Infringement Opinions and Testimony of Pure’s ’556 Patent Expert

EMC moves to exclude under Federal Rule of Evidence 702 and *Daubert* certain opinions of Dr. James S. Plank, Pure’s expert on the ’556 patent. (D.I. 212 at 7). First, EMC argues that the Court should exclude Dr. Plank’s opinions that contradict the Court’s constructions of “memory system” and “memory board.” (*Id.* at 17). Second, EMC argues that the Court should exclude Dr. Plank’s opinions that depend on his positions that the claim scope is limited to RAID-5 and to systems in which N is constant throughout the memory system. (D.I. 212 at 21). Pure responds that each of Dr. Plank’s challenged opinions depends, not on constructions of claim terms that contradict the Court’s constructions, but on detailed analyses of the plain meaning of terms the Court has held should be given their plain meanings. (D.I. 255 at 5). Pure argues that Dr. Plank’s challenged opinions therefore present disputes of fact for the jury instead of disputes of claim scope that would require judicial resolution. (*Id.*).

“As expert testimony inconsistent with the Court’s claim construction is unreliable and unhelpful to the finder of fact,” it should be excluded under the *Daubert* standard. *Personalized User Model, L.L.P. v. Google, Inc.*, 2014 WL 807736, at *1 (D. Del. Feb. 27, 2014); *see also Exergen Corp. v. Wal-Mart Stores, Inc.*, 575 F.3d 1312, 1321 (Fed. Cir. 2009). Expert testimony based on an impermissible claim construction is properly excluded as irrelevant and on the basis that the evidence could confuse the jury. *Liquid Dynamics Corp. v. Vaughan Co.*, 449 F.3d 1209, 1224 n.2 (Fed. Cir. 2006). When a court does not construe a term or orders that ordinary meaning applies, expert testimony on the understanding of a skilled artisan is appropriate to

assist the jury. *Avid Tech., Inc. v. Harmonic, Inc.*, 2014 WL 7206301, at *4 (D. Del. Dec. 17, 2014); *Cave Consulting Grp., LLC v. OptumInsight, Inc.* 2015 WL 740379, at *15 (N.D. Cal. Feb. 20, 2015).¹⁰ Expert testimony regarding whether an accused device falls within the scope of a court’s claim construction is appropriate and raises a factual issue for the jury to resolve. *In re Maxim Integrated Products, Inc.*, 2015 WL 5311264, at *4 (W.D. Pa. Sept. 11, 2015).

EMC argues that Dr. Plank’s opinions on the meaning of “memory system” and “memory board” should be excluded because they directly contradict the Court’s construction of those terms. (D.I. 212 at 18). At *Markman*, I rejected Pure’s proposals to limit “memory system” and “memory board” to “cache memory system” and “memory board in a cache memory system.” (D.I. 115 at 17–18; *see also* D.I. 115 at 8 n.3). EMC maintains that Dr. Plank now opines that “memory system” and “memory board” are limited to a “global” memory system and boards that are a part thereof. (D.I. 212 at 13). EMC argues that such a limitation is improper because Dr. Plank considers “cache” and “global” to be synonyms. (D.I. 212 at 13–14; *see also* D.I. 213-1 at 25–26, 45, 78, 157). EMC argues that, consequently, the Court should exclude Dr. Plank’s opinion that the FlashArray does not infringe because it is not a “memory system” and lacks “memory boards.” (D.I. 212 at 18–19). Pure responds that Dr. Plank has not disregarded the Court’s claim construction in presenting his opinions regarding the plain meaning of “memory system” and “memory board” to one of ordinary skill in the art because Dr. Plank’s opinions are not limited to cache memory systems. (D.I. 255 at 6, 11–12 (citing, *e.g.*, Plank Depo. at 102:14–103:25)). According to Pure, Dr. Plank has undertaken an analysis of the ordinary meaning and opined that the ordinary meaning of “memory” in “memory system” and “memory board” refers to volatile memory (*e.g.*, cache memory, global DRAM memory) but not non-volatile memory

¹⁰ Such expert testimony, however, cannot amount to claim construction. *Cordis Corp. v. Bos. Scientific Corp.*, 561 F.3d 1319, 1337 (Fed. Cir. 2009).

(e.g., disk and flash). (D.I. 255 at 7 (citing D.I. 213-1 at 29–30, 46), 11). Dr. Plank also opines that a person of ordinary skill in the art would not consider the accused FlashArray solid-state storage devices (“SSDs”) to be a “memory system” containing “memory boards.” (D.I. 255 at 10). Although the Court’s claim construction rejected Pure’s proposals to limit “memory” to “cache” memory, the Court did not hold that the terms “memory system” and “memory board” must apply to all types and instances of memory. (See D.I. 115 at 17–18). Expert testimony regarding whether the accused device falls within the scope of the Court’s claim construction raises a factual issue for the jury. Thus, Dr. Plank’s opinions that the accused FlashArray or its SSDs are not a “memory system” that contains “memory boards” are not excluded.

The Court’s recent supplemental claim construction is relevant to deciding whether the Court should preclude Dr. Plank from testifying regarding opinions that the ’556 claims are limited to RAID-5 and to systems in which N is constant throughout the memory system. The Court’s construction of “a respective parity segment” as “one or more respective parity segments” contradicts Dr. Plank’s opinion that the claims are limited to RAID-5. (D.I. 362 at 10–11; see D.I. 257-2 at 34–35). Dr. Plank is therefore precluded from presenting opinions that the ’556 claims are limited to RAID-5. The Court also construed “each of the groups including N respective semiconductor memory segments” to mean that each of the claimed “plurality of semiconductor memory segments, the segments being grouped into groups . . .” must be grouped into groups of exactly N respective semiconductor memory segments, but that other groups in the memory system need not include N segments. (D.I. 362 at 11). Dr. Plank’s opinions to the contrary are excluded. (See D.I. 257-2 at 40–42).

For the reasons discussed above, EMC’s motion to exclude certain of Dr. Plank’s opinions and testimony is **GRANTED IN PART** and **DENIED IN PART**.

2. Pure's Motion for Summary Judgment of Non-Infringement of the '556 Patent Asserted Claims

Pure seeks summary judgment of non-infringement on the ground that there is no evidence that the FlashArray SSDs practice the “base memory address” element of the '556 patent asserted claims. (D.I. 199 at 30). The Court construed “base memory address” to mean “an address used as a reference point to which a relative address may be added to determine the address of the storage location to be accessed.” (D.I. 121 at 4). Pure initially proposed a construction of “base memory address” that was limited to a physical, rather than a physical or logical, memory address. (D.I. 259-1 at 248, 275, 305). EMC's opening *Markman* brief argued that “base memory address” need not be limited to a physical address. (*Id.* at 275). Pure then withdrew its proposed construction and agreed to EMC's proposed construction, which the Court ultimately adopted. (D.I. 216-1 at 305).

Pure argues that EMC specifically identifies the FlashArray's SSDs, which contain flash memory, as infringing the asserted claims of the '556 patent. (D.I. 199 at 31 (citing D.I. 200-15 at 5–6, 27–28)). Pure contends, however, that EMC has presented no evidence that the SSDs' controllers assign physical base memory addresses to memory segments in the memory regions of the accused SSD memory boards. (*Id.*). Pure argues that because EMC's expert, Dr. Mark T. Jones, did not analyze the SSD controller source code or describe the operation of the SSD controller, he does not know and cannot opine regarding whether the accused SSD performs the base memory address assignment on the memory board. (*Id.* at 32–33). In addition, Dr. Plank opines that the logical page number that EMC's expert identifies as the claimed “base memory address” is not a base memory address for a memory segment of the accused SSD memory board for various reasons. (D.I. 202-3 at 30–31, 39–42; *see* D.I. 199 at 33–35).

EMC responds that the Court should reject Pure’s argument that the assignment of the base memory address as recited by the claims must be performed by a particular component of the memory system. (D.I. 258 at 33). EMC also argues that the Court should reject Pure’s contention that the “base memory address” of a “memory segment” must be a physical address, rather than a logical address, because Pure initially took that position and then abandoned it during *Markman* and because it has no support in intrinsic or extrinsic evidence. (*Id.* at 32 (citing D.I. 259-1 at 208, 248, 275, 305)). EMC argues that there is ample evidence that, under the Court’s construction of “base memory address,” the FlashArray assigns base memory addresses as recited in the claims. (*Id.* at 31). In particular, EMC’s expert opined that the FlashArray meets the base memory address element because it organizes data into “pages” that each have their own page numbers and uses the page numbers, in conjunction with a relative address, as a reference point to determine the address of the storage location to be accessed. (D.I. 259-1 at 115; D.I. 261-1 at 52, 53–54, 56–57, 58, 84, 89–90, 100–01, 216–18). EMC further argues that, although the claims do not require the “base memory address” to be a physical address, Pure’s witnesses and EMC’s expert agree that the page numbers assigned by the FlashArray do correspond to a physical storage location. (D.I. 258 at 35 (citing D.I. 259-1 at 17, 27, 125, 127, 128; D.I. 261-1 at 57–58, 216–17)).

The parties’ experts disagree regarding whether the accused FlashArray practices the “base memory address” element of the asserted claims by its use of a page number. Whether the FlashArray assigns a base memory address as that term has been construed is a question properly left to the jury. Accordingly, Pure’s motion for summary judgment of non-infringement of the ’556 patent is **DENIED**.

3. Pure's Motion for Summary Judgment of Invalidity of the '556 Patent

Pure argues that, if EMC's characterization of the "base memory address" element of the '556 patent is accepted, then U.S. Patent No. 5,680,579 ("Young") anticipates the asserted claims of the '556 patent. (D.I. 199 at 35). That is, Pure argues that if the FlashArray performs the "base memory address element" by dividing the buffer memory into logical pages, then Young anticipates the '556 patent because it undisputedly discloses dividing buffer memory into logical pages and practices all other elements of the asserted claims. (*Id.* at 35–37).

As discussed above, there is a genuine dispute regarding whether the "base memory address element" of the '556 patent is met by a system that divides memory into pages each having its own page number and uses the page numbers, in conjunction with a relative address, as a reference point to determine the address of the storage location to be accessed. (*See* D.I. 199 at 33–35; D.I. 258 at 34–36). More importantly, Dr. Plank conceded that the base memory address limitation "would not be explicit" in Young and that the system disclosed in Young "probably could" function without satisfying the base memory address limitation. (D.I. 259-1 at 178–79). Additionally, EMC points to expert testimony that demonstrates disputes regarding whether other limitations of the '556 patent are disclosed in Young. (*See* D.I. 258 at 39–40). As such, Pure is not entitled to summary judgment of invalidity on the ground that the '556 patent is anticipated by Young. Pure's motion for summary judgment of invalidity of the '556 patent is therefore **DENIED**.

D. '187 Patent

EMC asserts that Pure's FlashArray infringes independent claims 1 and 5 and dependent claims 2, 4, 6, and 8 of the '187 patent. (D.I. 199 at 38). Claim 1 is representative. It states:

1. Apparatus for controlling the scheduling of data transfers between a buffer memory and a plurality of solid state storage devices in a data storage system, the apparatus comprising:

a controller for designating at least one of the plurality of solid state storage devices as a current write device such that there is always at least one solid state storage device scheduled as a current write device;

the controller designating the remainder of the plurality of solid state storage devices as current read device(s);

the controller storing write data from a host in the buffer memory;

the controller allowing storage device reads to occur only from the current read device(s);

the controller allowing storage device writes to occur only to the current write device(s) and to any available address location of the current write device(s);

the controller, responsive to a triggering event, updating the designations to cause a different and at least one of the plurality of solid state storage devices to be designated a new current write device, and the remainder of the plurality of solid state storage devices to be designated the current read device(s), wherein, as prerequisite to accomplishing the update of the designations, the controller allows write operations pending for each current write device to finish to that current write device and reads to occur from any of the solid state storage devices, including from each current write device.

(’187 patent, 12:36–63). All of the ’187 patent asserted claims include the limitation “that there is always at least one solid state storage device scheduled as a current write device.” (*Id.* at 12:36–13:4; 13:17–13:67). The Court construed the term “scheduled” to have its plain and ordinary meaning, “designated.” (D.I. 121 at 2). All of the ’187 patent asserted claims also require “allowing storage device reads to occur only from the current read device(s)” and “writes to occur only to the current write device(s).” (’187 patent, 12:36–13:4; 13:17–13:67).

Pure seeks summary judgment of non-infringement on two grounds. (D.I. 199 at 39, 43). First, Pure argues that the accused FlashArray does not schedule data transfers such that there is always at least one SSD scheduled as a current write device (“CWD”). (*Id.* at 39). Second, Pure argues that the FlashArray does not allow storage device writes to occur only to a CWD and reads to occur only from a current read device (“CRD”). (*Id.* at 43).

Pure does not infringe the '187 patent asserted claims because the FlashArray does not schedule data transfers such that there is always at least one SSD scheduled as a CWD. EMC does not dispute that the accused FlashArray write groups (each comprised of SSDs) will only have an SSD scheduled as a CWD if and when the write group receives a write request from a host; at all other times, the write groups default to having no scheduled CWDs. (D.I. 258 at 42–43; *see also* D.I. 199 at 39–40; D.I. 200-29 at 9–11, 19). The FlashArray contains no functionality to ensure that there is always at least one SSD scheduled as a CWD. (*See* D.I. 258 at 42–43; D.I. 199 at 39–40; D.I. 200-29 at 10–11). EMC argues, however, that the FlashArray literally infringes because it is capable of always having at least one SSD scheduled as a CWD, *i.e.*, if write requests are received at a fast enough rate. (D.I. 258 at 42–43). EMC relies on two statements in marketing materials that “at any given moment there will . . . be a number of drives checked out for writing” and “there’s constantly segments coming in and being written” to demonstrate that there is always at least one write request in the FlashArray. (D.I. 262-1 at 27–28). EMC argues, further, that the FlashArray infringes either literally or under the doctrine of equivalents because it always designates at least one CWD when writes are pending. (*Id.* at 45).

Pure responds that the prosecution history forecloses EMC’s suggestions that the claim is satisfied if the accused product is capable of always having at least one SSD scheduled as a CWD or if it always has at least one SSD scheduled as a CWD whenever there are host-generated writes pending. (D.I. 199 at 41). Pure argues that the FlashArray does not infringe, either literally or under the doctrine of equivalents, because the prosecution history is clear that “always” means “always operating exclusively” in a mode with a CWD. (*Id.*).

During prosecution, the examiner rejected the original claims of the '187 application in light of U.S. Patent No. 5,432,922 (“Polyzois”). (D.I. 200-23 at 5). Polyzois disclosed a storage

array with four possible operating modes, where the array did not have a scheduled CWD in one of the modes. (D.I. 200-24 at 6:36–44). To overcome Polyzois, the '187 applicants added the “always at least one solid state storage device scheduled as a current write device” limitation to “clarify that, in accordance with the invention, there is no case where there is no available claimed ‘current write disk.’” (D.I. 200-25 at 10–11). When the examiner rejected the claims again, the applicants reiterated their position that, according to the invention, “there is *always* at least one solid state storage device scheduled as a current write device.” (D.I. 200-26 at 9). The applicants explained that “Polyzois is not *always* operating exclusively” in a mode in which there is an SSD scheduled as a CWD. (*Id.* at 10). “Simply because there are modes of operation . . . during which a disk is a write device does not mean that there is always a designated current write device, as required by the applicant’s claims.” (*Id.* at 9). In response to the applicants’ arguments, the examiner allowed the claims. (D.I. 200-27 at 2).

The prosecution history is clear that the claim requires “always operating exclusively” in a mode with a CWD. The test for literal infringement is “not whether . . . the accused products sometimes come to the same particular result as an invention disclosed in a claim. . . . Rather, the test is whether the accused device sometimes embodies ‘the claim.’” *Garmin Ltd. v. TomTom, Inc.*, 468 F. Supp. 2d 988, 1018 (W.D. Wis. 2006) *amended*, 571 F. Supp. 2d 917 (2007) (emphasis omitted). Although there are times when the FlashArray has at least one SSD scheduled as a current write device, it never operates such that “there is always at least one” SSD scheduled as a CWD. *See id.* Thus, the FlashArray does not literally infringe the claim by operating such that there is at least one solid state storage device scheduled as a CWD, even if it often or even usually operates that way. As a result of patentees’ narrowing amendment, EMC is estopped from asserting infringement under the doctrine of equivalents by a device that can

operate in a mode in which there is not at least one SSD scheduled as a CWD. *See Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 736–37 (2002). Because there is no genuine dispute that the FlashArray is not configured, either by design or coincidence, to always operate exclusively in a mode with a CWD, Pure is entitled to summary judgment that the FlashArray does not infringe the asserted claims of the '187 patent either literally or under the doctrine of equivalents.

Additionally, Pure does not infringe the '187 patent's asserted claims because the FlashArray does not allow storage device writes to occur only to a CWD and reads to occur only from a CRD. Read and write scheduling in the FlashArray is handled by multiple modules, including the "platform_framework" and "ps_bdrv" modules. (D.I. 203-3 at 26–27). EMC does not dispute that the "platform_framework" and "ps_bdrv" modules send reads and writes to SSDs without regard to whether they are designated as CWDs. (D.I. 200-29 at 12–13). EMC argues, however, that the fact that the "platform_framework" and "ps_bdrv" modules may be non-infringing does not mean that other modules are non-infringing. (D.I. 258 at 49). EMC also argues that, even if the entire FlashArray is viewed as the claimed "controller," the "platform_framework" and "ps_bdrv" modules are irrelevant to the claimed method because the read and write requests they process are not from hosts. (*Id.*).

EMC's attempt to carve out the "platform_framework" and "ps_bdrv" modules from the accused device is unavailing. EMC's expert, Dr. Daniel A. Menascé, explains that the accused controller runs the FlashArray's Purity software and that the "platform_framework" and "ps_bdrv" modules are integral parts of the Purity software controller. (D.I. 200-29 at 5–6; D.I. 200-30 at 3; *see also* D.I. 200-33 at 3–6). EMC's argument that the "platform_framework" and "ps_bdrv" modules are irrelevant because they process read and write requests that are not from

hosts, while the claims are limited to read and write requests from hosts, also fails. The claim elements at issue are directed to “storage device reads/writes,” not “host reads/writes.” (’187 patent, 12:48–51). The patent makes clear that “host reads/writes” are distinct from “storage device reads/writes.” (*E.g., id.* at 6:21–22 (“write data from the hosts”); 12:65 (listing “host writes” separately from “storage device writes” as claimed triggering events.”). Thus, the “platform_framework” and “ps_bdrv” modules are not irrelevant to the claimed reads and writes because the read and write requests they process are not from hosts.

For the reasons stated above, Pure’s motion for summary judgment of non-infringement of the ’187 patent is **GRANTED**.

E. Damages

1. EMC’s Motion to Strike Opinions of Pure’s Expert Regarding Non-Infringing Alternatives

Pursuant to Federal Rule of Evidence 702 and Federal Rule of Civil Procedure 26(a)(2)(B)(ii), EMC moves to strike the opinions and testimony of Pure’s damages expert, Ms. Laura Stamm, regarding certain non-infringing alternatives. (D.I. 207 at 20–23). EMC argues that Ms. Stamm’s opinions and testimony regarding these non-infringing alternatives should be excluded because they lack adequate foundations and therefore will fail to assist the trier of fact and because she failed to adequately disclose the bases for her opinions. (*Id.* at 8). Ms. Stamm asserted that the following allegedly non-infringing alternatives were available to Pure during the damages period:

Posited non-infringing alternatives to the ’464 and ’015 patent technology:

1. Assign hash values for multiple sector blocks (D.I. 245-1 at 33, ¶ 66–67)
2. Turn off inline deduplication (D.I. 245-1 at 34–37, ¶ 70–74)

Posited non-infringing alternatives to the '464 patent technology:

3. No longer “return an identifier” by either reversing the order in which lookups are performed in Recent and SD tables or eliminating the Recent table (D.I. 245-1 at 34, ¶ 68)
4. Perform deduplication against a single table stored in relatively high latency memory (D.I. 245-1 at 34–35, ¶ 69)

*Posited non-infringing alternative to the '187 patent technology:*¹¹

5. Modify the `fpl_dev_agent` to allow mixed reads and writes (D.I. 245-1 at 38, ¶ 77)

Posited non-infringing alternative to the '556 patent technology:

6. Use non-XOR algorithms (D.I. 245-1 at 38–39, ¶ 79)

Ms. Stamm relies on various sources in support of her opinions regarding non-infringing alternatives. Ms. Stamm relies on the reports of Pure’s technical experts and on “discussions with Dr. Zadok, Pure’s technical expert on the ’464 patent and ’015 Patent.” (*E.g.*, D.I. 245-1 at 37 nn.215 & 220). “It is perfectly reasonable for a finance and damages expert to adopt the conclusions of other experts. Whether those conclusions are sound can be explored at trial through cross examination and other expert testimony.” *Formax, Inc. v. Alkar-Rapidpak-MP Equip., Inc.*, 2014 WL 3057116, at *2 (E.D. Wis. July 7, 2014). Her reliance on the opinions of other experts is not a ground for exclusion.

Ms. Stamm also relies on the sworn deposition testimony of and “discussions with Neil Vachharajani, Chief Product Architect at Pure,” for several of her opinions. (*E.g.*, D.I. 245-1 at 33 n.187; *see id.* at 33–39). Lay witness opinion testimony is limited to that “(a) rationally based on the witness’s perception; (b) helpful to clearly understanding the witness’s testimony or to determining a fact in issue; and (c) not based on scientific, technical, or other specialized

¹¹ Ms. Stamm discussed two additional non-infringing alternatives with respect to the ’187 patent: (1) the use of only Toshiba solid state drives and (2) the use of only the `fpl_dev_agent2` scheduler. (D.I. 245-1 at 37–38, ¶¶75–76). EMC does not raise these posited alternatives in its motion for summary judgment and I have not considered them.

knowledge within the scope of Rule 702 [governing expert testimony].” FED. R. EVID. 701. Rule 701 thus “requires that a lay opinion witness have a reasonable basis grounded either in *experience or specialized knowledge* for arriving at the opinion that he or she expresses.” *Asplundh Mfg. Div. v. Benton Harbor Eng’g*, 57 F.3d 1190, 1201 (3d Cir. 1995). The lay opinion witness’s experience or specialized knowledge must be both relevant to the opinion and sufficient to render it reliable. *Id.* at 1201–02.

Ms. Stamm relies on factual assertions and permissible lay opinions of Pure’s chief software architect. For example, Ms. Stamm properly relies on Mr. Vachharajani’s factual assertion that “Pure is currently in the process of developing a new architecture for its inline de-duplication.” (See D.I. 245-1 at 33 & n.187; *see also id.* at 33 & nn.189–90, 34 & n.193, 35 & n.204, 36 & n.214). Ms. Stamm also relies on the opinions of Mr. Vachharajani with respect to the feasibility of implementing certain non-infringing alternatives (*id.* at 34 & n.192, 34–35 & n.200, 36 & n.210, 39 & n.232) and the time frame within which Pure could have implemented certain non-infringing alternatives (*id.* at 34 & nn. 191 & 194, 35 & n.202, 36 & n.211, 37 & n.220, 38 & nn.223 & 225, 38–39 & n.231). Mr. Vachharajani is trained as a software engineer and is presently chief software architect at Pure. (D.I. 245 at 2). Mr. Vachharajani is responsible for designing the operating environment that runs on the FlashArray. (*Id.*). He has worked at Pure since 2010. (*Id.*). During his time at Pure and pursuant to his responsibilities, Mr. Vachharajani has become “familiar with the engineering staffing requirements, timeframes, and processes Pure employs to implement changes to existing source code of the FlashArray, and to develop new features or functionality.” (*Id.* at 3). Mr. Vachharajani thus possesses specialized knowledge and experience germane to his opinions regarding the feasibility of Pure’s implementing certain alternatives and the time it would have taken to implement them. I

conclude that Mr. Vachharajani's experience and specialized knowledge are sufficient to render his lay opinions reliable bases for Ms. Stamm's opinions. *See Eckert v. Aliquippa & S. R.R. Co.*, 828 F.2d 183, 185 n.5 (3d Cir. 1987) (reversing exclusion of brakeman's testimony as to whether injuries would have occurred had rail cars been properly coupled based on brakeman's thirty years' experience and familiarity with railroad procedures); *Teen-Ed, Inc. v. Kimball Int'l, Inc.*, 620 F.2d 399, 403 (3d Cir. 1980) (affirming permission of lay opinion testimony by appellant's accountant regarding how lost profits could be calculated because accountant acquired personal knowledge of the appellant's balance sheets as appellant's accountant). *Cf. Asplundh Mfg. Div.*, 57 F.3d at 1202 (reversing admission of lay opinion of fleet maintenance supervisor regarding cause of a break in a metal hydraulic cylinder part because supervisor lacked formal education in metal and material failures, had never conducted studies of materials, and had never designed or manufactured hydraulic cylinders).

EMC also argues that Ms. Stamm impermissibly relied on undisclosed and unexplained conversations. (D.I. 207 at 22). Pure responds that the contents of the discussions are clearly identified by the portions of the report to which her citations relate. (*See, e.g.*, D.I. 243 at 19). The purpose of the expert disclosure rule is to provide opposing parties a "reasonable opportunity to prepare for effective cross examination and perhaps arrange for expert testimony from other witnesses." FED. R. CIV. P. 26 (advisory committee note). EMC was not deprived of a meaningful opportunity to challenge Ms. Stamm's assertions where she relied on discussions with Pure's technical experts because she disclosed both the identities of the persons and the substance of the discussions in enough detail to permit EMC to conduct meaningful cross examination and other discovery. *Cf. Advanced Medical Optics, Inc. v. Alcon, Inc.*, 2005 WL 782809, at *11 (D. Del. Apr. 7, 2005) (holding that expert report in which "the only disclosed

basis . . . for th[e expert’s] opinion was the ‘discussions he had with . . . counsel’” violated disclosure requirements of the Federal Rules of Civil Procedure (alterations omitted); *Bray & Gillespie Management LLC v. Lexington Ins. Co.*, 2009 WL 1043974, at *4 (M.D. Fl. Apr. 17, 2009) (holding that an expert report that “did not provide the identities of all the individuals interviewed and consulted, or the substance of the discussions with identified and unidentified individuals” violated Rule 12(a)(2)(B)(ii)). Ms. Stamm’s citations to discussions with clearly identified knowledgeable persons follows common practice. In fact, EMC’s damages expert employs similar citations. (*See, e.g.*, D.I. 244-2 at 3 n.116, 4 n.126, 6 nn.149–50, 7 n.154). I therefore conclude that Ms. Stamm’s citations to “discussions with” persons identified in her report sufficiently disclosed the bases for her opinions regarding non-infringing alternatives.

For the reasons stated above, EMC’s motion to strike Ms. Stamm’s opinions regarding non-infringing alternatives is **DENIED**.

1. EMC’s Motion for Partial Summary Judgment that Pure’s Asserted Non-Infringing Alternatives Were Not Available to Pure During the Damages Period

EMC seeks summary judgment that Pure’s posited hypothetical non-infringing alternatives were not available during the damages period. (D.I. 207 at 8).

To recover lost profits in the form of lost sales, “the patent owner has an initial burden to show a reasonable probability that he would have made the asserted sales ‘but for’ the infringement.” *Grain Processing Corp. v. Am. Maize-Products Co.*, 185 F.3d 1341, 1349 (Fed. Cir. 1999). One way that an accused infringer can rebut a patent owner’s claim for lost sales is by presenting evidence of available non-infringing alternatives. *Id.* at 1351. Available non-infringing alternatives need not have been on the market during the time of the alleged infringement. *Id.* Where an alleged non-infringing alternative was not on the market during the period of infringement for which the patent owner claims damages, however, “a trial court may

reasonably infer that it was not available as a non-infringing substitute at that time. The accused infringer then has the burden to overcome this inference by showing that the substitute was available” during the relevant time period. *Id.* at 1353 (citation omitted).

“Having the necessary materials, equipment, know-how, and experience to make an alternative product during the relevant time may render the product ‘available.’” *Conceptus, Inc. v. Hologic, Inc.*, 771 F. Supp. 2d 1164, 1179 (N.D. Ca. 2010) (citing *Grain Processing Corp.*, 185 F.3d at 1353–55). The high cost of a necessary material or the fact that an alleged infringer had to design or invent around the patented technology to develop an alleged substitute weigh against finding that a posited non-infringing alternative was available. *Micro Chemical, Inc. v. Lextron, Inc.*, 318 F.3d 1119, 1123 (Fed. Cir. 2003). “Mere speculation or conclusory assertions will not suffice to overcome the inference” that posited non-infringing alternatives that were not on the market nevertheless were available during the relevant period of alleged infringement. *Grain Processing Corp.*, 185 F.3d at 1353.

Pure argues that the Court must reject EMC’s motion for summary judgment with respect to whether Pure’s alleged non-infringing alternatives were available because EMC has not met its prima facie burden to prove entitlement to lost profits and that, as a result, the burden has not shifted to Pure to prove availability. (D.I. 243 at 8). EMC’s motion, however, does not seek summary judgment with respect to lost profits generally. (See D.I. 206 at 9). Instead, EMC seeks partial summary judgment on the discrete issue of whether Pure’s posited non-infringing alternatives were “available” during the period of alleged infringement. (D.I. 292 at 8). The remainder of EMC’s claim for lost profits is therefore outside the scope of the present inquiry. In particular, whether EMC’s damages expert, Mr. Brian Napper, has adequately defined the relevant market is irrelevant to whether Pure’s posited non-infringing alternatives were available

to Pure during the damages period. (*Cf.* D.I. 243 at 9). Pure does not dispute that its posited non-infringing alternatives were not on the market during the time period of alleged infringement. Thus, Pure bears the burden to overcome the inference of non-availability. *See Grain Processing Corp.*, 185 F.3d at 1353. Although Pure bears the burden to establish the availability of its posited non-infringing alternatives, on summary judgment the Court must view the evidence in the light most favorable Pure and draw all reasonable inferences in its favor. *See Scott v. Harris*, 550 U.S. 372, 380 (2007); *Wishkin v. Potter*, 476 F.3d 180, 184 (3d Cir. 2007).

For each alleged non-infringing alternative, Pure presents evidence sufficient to raise a genuine dispute regarding whether that alternative was available during the damages period. Ms. Stamm opines regarding each alleged non-infringing alternative, pointing to relevant evidence of availability in the record. (*See* D.I. 245-1 at 33–39). For example, Ms. Stamm opines that the alternative of assigning hash values for multiple sector blocks of data would have been available because Pure could have redesigned the software code to be non-infringing during the damages period. (*Id.* at 34). In support of her opinion of availability, Ms. Stamm relies on discussions with Pure’s chief software architect, evidence that the redesign had already been in development, and on the reports of Pure’s technical expert, Dr. Zadok. (*Id.* at 33, 34; *see also* D.I. 209-1 at 266, 269). Ms. Stamm opines that the remaining alternatives would have been available during the damages period, either because it would have been relatively simple for Pure to redesign the code to implement the alternatives (*e.g.*, D.I. 245-1 at 38; *see also* D.I. 209-10 at 322), or because the alternative could have been implemented using existing tunable parameters, without redesigning the code (*e.g.*, D.I. 245-1 at 36; *see also* D.I. 209-1 at 269).

While EMC may succeed in convincing the jury that the proffered non-infringing alternatives were not available during the damages period, Pure has submitted evidence

sufficient to establish a genuine dispute of fact. For the reasons stated above, EMC's motion for partial summary judgment that Pure's posited non-infringing alternatives were not available during the damages period is **DENIED**.

3. Pure's Motion to Exclude Opinions and Testimony of EMC's Damages Expert

Pure moves to exclude certain opinions and testimony of Mr. Brian Napper for failure to comply with Federal Rule of Evidence 702. (D.I. 205 at 8). In particular, Pure argues that: (1) Mr. Napper's methodology for identifying the relevant market for estimating lost profits is fatally flawed and his conclusions are unsupported (*id.* at 8); (2) Mr. Napper's method for allocating lost profits in a but-for market on the basis of Pure's revenue, disregarding units or storage capacity, is flawed, his assumptions are inconsistent with other lost-profits opinions, and his conclusions are unsupported (*id.* at 12); and (3) Mr. Napper's reasonable royalty rate for the deduplication patents should be excluded because it fails to apportion the benefit between purportedly patented and unpatented features (*id.* at 19).

First, Pure argues that Mr. Napper's methodology for identifying the relevant market for estimating lost profits is flawed and his conclusions are unsupported. (*Id.* at 8). Instead of identifying a single but-for market in which to allocate lost sales, Mr. Napper opines that EMC would have made a share of Pure's sales in either of two market segments: the All-Flash Array Market or the Combined Flash and Hybrid Market. (D.I. 208-2 at 8). Mr. Napper expresses no opinion as to which of the two market segments more accurately models consumer behavior. (D.I. 208-1 at 31-32; D.I. 208-3 at 14). Pure argues that Mr. Napper's lost profits analysis is unreliable because it fails to define a single relevant but-for market and that it is improper for Mr. Napper to thus leave the ultimate question of the appropriate market segment to use for calculation of lost profits damages to the trier of fact. (D.I. 205 at 9). Pure also argues that the

two markets on which Mr. Napper bases his lost profits opinions are inconsistent with one another because they are based on contradictory assumptions regarding consumer behavior. (*Id.* at 10). EMC responds that there is no basis on which to exclude Mr. Napper's opinions because he used the two market segments to construct the endpoints of the range of possible damages on the basis of sound evidence. (D.I. 240 at 12–14, 17). EMC further argues that it is not improper for an expert to decline to opine on the ultimate issue of the appropriate award of damages. (*Id.* at 19).

Mr. Napper presented a range of appropriate damages. (D.I. 208-2 at 8–10). Pure does not take issue with the methodology underlying each of Mr. Napper's two market reconstructions and there is no reason not to consider each of the reconstructions, on its own, sufficiently reliable to be helpful to the trier of fact. (*See* D.I. 240 at 11–14, 17). Further, it is not improper for an expert to decline to opine on the ultimate issue of the appropriate award of damages. *See Dow Chem. Co. v. Mee Indus., Inc.*, 341 F.3d 1370, 1381–82 (Fed. Cir. 2003) (“[S]ection 284 is clear that expert testimony is not necessary to the award of damages, by rather ‘may be received . . . as an aid.’”). Thus, that Mr. Napper leaves to the factfinder the determination of predicate facts underlying an ultimate determination of the appropriate lost profits within the reliably established range is not a ground to exclude his opinions. I will therefore not exclude Mr. Napper's damages report on the ground that he declined to opine on actual customer behavior to determine which market segment model best reflects the actual world. Assuming (without expressing an opinion either way) that EMC can establish the endpoints of the range of lost profits in accordance with Mr. Napper's methodology, that by itself is not a basis on which the jury could choose the upper end of the range.¹²

¹² The Court is not aware whether EMC is going to present any evidence of actual customer preferences relevant to this question at trial.

Second, Pure argues that Mr. Napper's method for allocating lost profits in a but-for market on the basis of Pure's revenue and disregarding units, storage capacity, and differences in price is flawed; his assumptions are inconsistent with other lost-profits opinions; and his conclusions are unsupported. (D.I. 205 at 12). Pure objects that Mr. Napper's methodology for modeling customer behavior is unreliable because he failed to take into account the differences in capacities, prices, and features of competing arrays in the but-for markets. (*See id.* at 13–14). Pure also objects that Mr. Napper's methodology for allocating lost profits is unreliable because it assumed that the profit a new vendor would obtain in the but-for market would be the same as the profit Pure obtained in the actual world, regardless of whether the consumer would be able to purchase more or less storage capacity for its money from the new vendor than it did from Pure.¹³ (*See id.* at 14–15). Mr. Napper did not, however, simply ignore differences in storage capacity and price between EMC's and Pure's products. (D.I. 210-1 at 70, 211–17; D.I. 241-1 at 24–25, 26). Mr. Napper's analysis should not be excluded simply because there is a dispute regarding the facts underlying his lost profits methodology. *See Micro Chem., Inc. v. Lextron, Inc.*, 317 F.3d 1387, 1392 (Fed. Cir. 2003).

Third, Pure argues that Mr. Napper's reasonable royalty rate for the deduplication patents should be excluded because it fails to apportion the benefit between purportedly patented and unpatented features. (D.I. 205 at 19). Pure's FlashArray performs both inline and background deduplication. (D.I. 210-1 at 214 n.128). EMC accuses only inline deduplication. (*Id.*). Pure contends that Mr. Napper's entire royalty analysis is undermined by the fact that he calculates a reasonable royalty for the deduplication patents based on the purported value of deduplication

¹³ Pure also argues Mr. Napper's method for allocating lost profits in a but-for market on the basis of Pure's revenue rests on unverified assumptions regarding price erosion. (D.I. 205 at 17). EMC contends that Mr. Napper never asserted a price erosion claim. (D.I. 240 at 21). I take EMC at its word regarding its asserted damages claims.

generally, without allocating the value between background and inline deduplication. (D.I. 205 at 19–20). EMC contends that Mr. Napper’s reasonable royalty rate calculation did exclude the value of background deduplication. (D.I. 240 at 15–16 (citing D.I. 210-1 at 112 and D.I. 241-1 at 59 to show that that Mr. Napper relied on data reduction figures that EMC’s technical expert opined resulted from inline deduplication only); D.I. 241-1 at 35). That there is a factual dispute regarding whether Mr. Napper’s royalty rate captures the value of the non-accused background deduplication function militates against excluding his opinions and testimony under *Daubert*. See *Micro Chem., Inc.*, 317 F.3d at 1392. Even if Mr. Napper’s royalty rate calculation included both inline and background deduplication, Mr. Napper referred to evidence showing that the contribution of background deduplication is minimal. (See D.I. 210-1 at 22 n.29; 29–30, 107, 186, 190–92; D.I. 241-1 at 33–34). For the reasons stated above, Pure’s motion to exclude Mr. Napper’s reasonable royalty analysis for the deduplication patents is **DENIED**.

IV. CONCLUSION

For the reasons stated above: Pure’s motion (D.I. 198) is **GRANTED IN PART** and **DENIED IN PART**. Summary judgment is **DENIED** with respect to non-infringement of the asserted claims of the ’464 and ’556 patents and invalidity of the ’015 and ’556 patents. Summary judgment is **GRANTED** with respect to non-infringement of the asserted claims of the ’187 patent. Pure’s motion to exclude opinions of EMC’s ’464 patent infringement expert (D.I. 204) is **DENIED**. Pure’s motion to strike evidence and expert opinions regarding EMC’s attempt to swear behind the Krapp reference (D.I. 302) is **DENIED**. Pure’s motion to exclude opinions and testimony of EMC’s damages expert (D.I. 204) is **DENIED**. EMC’s motion for summary judgment of direct infringement of claims 1, 7, and 16 of the ’015 patent (D.I. 214) is **GRANTED**. EMC’s motion for leave to file a sur-reply (D.I. 317) is **GRANTED**. EMC’s

motion to exclude certain opinions of Pure's '556 patent expert (D.I. 211) is **GRANTED IN PART** and **DENIED IN PART**, as described above. EMC's motion for partial summary judgment and to exclude expert testimony regarding Pure's non-infringing alternatives (D.I. 206) is **DENIED**. An appropriate order will be entered.