

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

INTELLECTUAL VENTURES I, LLC and)
INTELLECTUAL VENTURES II, LLC,)
)
Plaintiffs,)
)
v.) Civ. No. 13-473-SLR
)
CANON INC., CANON USA, INC., AND)
CANON SOLUTIONS AMERICA, INC.,)
)
Defendants.)

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MEMORANDUM OPINION

Dated: November 9, 2015
Wilmington, Delaware


ROBINSON, District Judge

I. INTRODUCTION

On March 25, 2013, plaintiffs Intellectual Ventures I, LLC and Intellectual Ventures II, LLC (collectively “IV”) filed suit in this district against defendants Canon Inc., Canon U.S.A., Inc., and Canon Solutions America, Inc. (collectively “Canon”), alleging infringement of nine patents: U.S. Patent Nos. 5,444,728 (“the ‘728 patent”), 6,130,761 (“the ‘761 patent”), 6,435,686 (“the ‘686 patent”), 6,650,432 (“the ‘432 patent”), RE43,086 (“the ‘086 patent”), 7,315,406 (“the ‘406 patent”), 5,712,870 (“the ‘870 patent”), 6,754,195 (“the ‘195 patent”), and 6,977,944 (“the ‘944 patent”). (D.I. 1) IV amended its complaint on April 15, 2013 and January 14, 2014, adding U.S. Patent Nos. 7,817,914 (“the ‘914 patent”) and RE44,528 (“the ‘528 patent”), respectively. (D.I. 7; D.I. 46) The ‘686 patent was dismissed from the case on January 10, 2014 (D.I. 43), and the ‘195 patent was dismissed from the case on March 10, 2015. (D.I. 269) Ten patents (“the patents-in-suit”) remain asserted in the present case.

Following two Markman hearings, claim construction orders issued on January 23, 2015 and March 27, 2015. (D.I. 264; D.I. 272) Presently before the court are five motions for summary judgment,¹ Canon’s motion to strike portions of Mark N. Horensteins’ Supplemental Expert Report (regarding the ‘728 patent) (D.I. 334), and

¹ Canon’s motion for summary judgment of non-infringement of the ‘944 and ‘870 patents (D.I. 290); Canon’s motion for summary judgment of invalidity of the ‘944 and ‘870 patents (D.I. 291), Canon’s motion for summary judgment of non-infringement of the ‘728, ‘761, ‘432, ‘086, and ‘914 patents (D.I. 297); Canon’s motion for summary judgment of invalidity of the ‘728, ‘761, ‘432, ‘086, ‘914, ‘285, ‘406, and ‘528 patents and for summary judgment of no secondary considerations (D.I. 298); and IV’s cross motion for summary judgment of no invalidity of the ‘728, ‘761, and ‘914 patents (D.I. 304).

Canon's motion to sever and stay the '914 patent (D.I. 415). The court has jurisdiction pursuant to 28 U.S.C. §§ 1331 and 1338(a).

II. BACKGROUND

A. The Parties

Plaintiffs IV I and II are limited liability companies organized and existing under the laws of the State of Delaware, with their principal place of business in Bellevue, Washington. (D.I. 46 at ¶¶ 1-2) IV I owns the '728, '761, '432, '086, '406, '870, '944, and '528 patents. (*Id.* at ¶ 7) IV II owns the '914 patent. (*Id.*)

Defendant Canon Inc. is a corporation organized and existing under the laws of Japan, with its principal place of business in Tokyo, Japan. (*Id.* at ¶ 3) Defendants Canon U.S.A., Inc. and Canon Solutions America, Inc. (collectively with Canon, Inc., "Canon" or "defendants") are wholly-owned and controlled subsidiaries of Canon Inc., and are corporations organized and existing under the laws of the State of New York, with their principal place of business in Lake Success, New York. (*Id.* at ¶¶ 4-5)

B. The Patents-in-Suit

The '870 and '944 patents ("the WiFi patents") generally relate to wireless networking technologies such as quarterary phase shift keyed demodulation, methods for transitioning between these modulations, the use of channel impulse response estimates and the length of time necessary to achieve desired spectral characteristics while minimizing complexity. The remaining eight patents-in-suit ("the non-WiFi patents")² cover a range of technologies including laser driver circuits, scanning circuitry

² The non-WiFi patents include the '728, '761, '432, '406, '914, '086, '528, and '285 patents.

and motor timing, scanner software, camera software, and wireless communications, which patents are asserted against Canon printers, scanners, and cameras.

III. STANDARD OF REVIEW

“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 bears the burden of demonstrating the absence of a genuine issue of material fact. *Matsushita Elec. Indus. Co. v. Zenith Radio Corp.*, 415 U.S. 475, 586 n. 10 (1986). A party asserting that a fact cannot be—or, alternatively, is—genuinely disputed must be supported either by citing to “particular parts of materials in the record, including depositions, documents, electronically stored information, affidavits or declarations, stipulations (including those made for the purposes of the motions only), admissions, interrogatory answers, or other materials,” or by “showing that the materials cited do not establish the absence or presence of a genuine dispute, or that an adverse party cannot produce admissible evidence to support the fact.” Fed. R. Civ. P. 56(c)(1)(A) & (B). If the moving party has carried its burden, the nonmovant must then “come forward with specific facts showing that there is a genuine issue for trial.” *Matsushita*, 415 U.S. at 587 (internal quotation marks omitted). The court will “draw all reasonable inferences in favor of the nonmoving party, and it may not make credibility determinations or weigh the evidence.” *Reeves v. Sanderson Plumbing Prods., Inc.*, 530 U.S. 133, 150 (2000).

To defeat a motion for summary judgment, the non-moving party must “do more than simply show that there is some metaphysical doubt as to the material facts.”

Matsushita, 475 U.S. at 586-87; see also *Podohnik v. U.S. Postal Service*, 409 F.3d

584, 594 (3d Cir. 2005) (stating party opposing summary judgment “must present more than just bare assertions, conclusory allegations or suspicions to show the existence of a genuine issue”) (internal quotation marks omitted). Although the “mere existence of some alleged factual dispute between the parties will not defeat an otherwise properly supported motion for summary judgment,” a factual dispute is genuine where “the evidence is such that a reasonable jury could return a verdict for the nonmoving party.” *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 247-48 (1986). “If the evidence is merely colorable, or is not significantly probative, summary judgment may be granted.” *Id.* at 249-50 (internal citations omitted); *see also Celotex Corp. v. Catrett*, 477 U.S. 317, 322 (1986) (stating entry of summary judgment is mandated “against a party who fails to make a showing sufficient to establish the existence of an element essential to that party’s case, and on which that party will bear the burden of proof at trial”).

IV. THE WiFi PATENTS

Generally, the WiFi patents relate to wireless networking technologies where wireless networks connect devices (laptops) to each other and “access points.” Devices and access points communicate through radio signals, broadcast on particular frequencies. These signals encode “frames” (i.e., packets) with information arranged in specific patterns and fields. For instance, frames generally include a field for a destination address, specifying to whom the frame is being sent. The exact order and nature of the fields in each frame, however, are specified by the relevant wireless standard.

The background standards for the patents-in-suit are those issued by the Institute of Electrical and Electronic Engineers (“IEEE”) 802.11 wireless networking working

group, often called “wi-fi.” IEEE 802.11 is a standard for wireless communications that is comprised of specifications published and continuously updated by the IEEE. (D.I. 292 at 9) The first IEEE standard was published in 1997 and the IEEE continued to release subsequent standards, typically with faster transmission rates using additional technology, including that developed by the inventors of the patents-in-suit.

A. The ‘870 Patent

The ‘870 patent generally relates to receiving and demodulating radio frequency (“RF”) signals on a wireless network. (Abstract) It is directed to a device for detecting and decoding packets (i.e. frames) in a wireless network. In particular, it discloses a transceiver that may acquire and decode the preamble, header, and data, and check fields of a packet transmitted using BPSK and QPSK modulation. (4:44-56) The transceiver includes antennae, RF/IF converters, amplifiers, modulator/demodulators, and a baseband processor (which itself includes analog-to-digital converters, spreader/despreaders, and other components), all of which comprise a device that acquires and decodes incoming packets from radio waves and transmits outgoing packets by radio waves. (4:59-5:30) Claim 1 recites:

A circuit for detecting a message header in a signal which has been transmitted using direct sequence spread spectrum modulation, comprising a single device having:

means for receiving an analog signal having modulated thereon in a spread spectrum format a message having a header portion and a data portion;

means for converting said analog signal into a digital signal;

means for demodulating the header of the digital signal using digital binary phase shift keyed (BPSK) demodulation and for demodulating the data portion of the same message using quaternary phase shift keyed demodulation (QPSK);

means contained on said single device for timing a transition from BPSK [modulation] to QPSK modulation; and, means for providing the demodulated data signal to a media access control (MAC) layer.

(10:13-30)

1. Indefiniteness

The definiteness requirement is rooted in § 112, ¶ 2, which provides that “the specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.” “A determination of claim indefiniteness is a legal conclusion that is drawn from the court’s performance of its duty as the construer of patent claims.” *Personalized Media Comm., LLC v. Int’l Trade Com’n*, 161 F.3d 696, 705 (Fed. Cir. 1998). Reiterating the public notice function of patents, the Supreme Court recently explained that “a patent must be precise enough to afford clear notice of what is claimed, thereby ‘appris[ing] the public of what is still open to them.’” *Nautilus, Inc. v. Biosig Instruments, Inc.*, ___ U.S. ___, 134 S.Ct. 2120, 2129 (2014) (citations omitted). In balancing the need for clarity with the inherent limitations of the English language, 35 U.S.C. § 112, ¶ 2 requires “that a patent’s claims, viewed in light of the specification and prosecution history, inform those skilled in the art about the scope of the invention with reasonable certainty.” *Id.*

Canon alleges that the “means . . . for timing” of claims 1 and 3 and the “timer” limitations of the remaining claims are indefinite. (D.I. 292 at 23) In support, Canon submits that IV’s expert, Dr. Williams, argued that the “means . . . for timing” term requires a “single receive path,” the structure for which is not disclosed in the ‘870 specification of file history. (*Id.* at 24-25; D.I. 295, ex. 4 at 243:14-245:5) Because the

court construed “means . . . for timing” as a means-plus-function term, the term is indefinite as a matter of law without adequate structure. (D.I. 264 at 15-16; D.I. 292 at 15) Specifically, while “timer” is not a means-plus-function term, Canon argues it is nonetheless indefinite as IV’s expert argues that a “timer” also requires a “single receive path” without offering a definition of such “single receive path.” (D.I. 295, ex. 10 at ¶ 70; *id.* at ex. 4 at 235:7-10)

IV responds that the court already rejected Canon’s indefiniteness arguments during claim construction. (D.I. 310 at 31) Importantly, Canon’s expert offers no new opinions regarding indefiniteness to support its renewed argument. (D.I. 311, ex. 2 at 170:23-171:11) As IV points out, the court may change its mind, but Canon has offered no basis for the court to alter its opinion. (D.I. 310 at 31) IV’s expert did not mean “single receive path” to be a substantive claim limitation, but rather used it to distinguish prior art in the context of obviousness. (D.I. 311, ex. 3 at 270:10-271:1, 277:7-23, 278:19-279:2, 279:12-20, 280:20-281:7) In particular, IV’s expert stated that the ‘870 patent has a means for timing to “allow for a single receive path,” but never excluded the possibility of multiple paths. (D.I. 312, ex. 2 at ¶ 62; D.I. 311, ex. 3 at 236:9-17, 280:20-281:7)

The court agrees with IV in that Canon’s indefiniteness arguments were considered in its claim construction order and Canon offers no fresh reasons to compel a different conclusion. Essentially, this portion of Canon’s motion for summary judgment equates to an untimely motion for reargument. Nonetheless, Canon’s arguments regarding IV’s expert’s use of the words “single receive path” were taken out of context. Indefiniteness is not based on an expert’s utilization of a phrase to contrast

the invention with prior art. Rather, § 112, ¶ 2 requires “that a patent’s claims, viewed in light of the specification and prosecution history, inform those skilled in the art about the scope of the invention with reasonable certainty.” *Nautilus*, 134 S.Ct.at 2129. As the court previously held, this term meets that standard in light of the disclosures contained within the specification. (D.I. 264 at ¶ 26). The court, therefore, maintains that these claims are sufficiently definite.

2. Infringement

When an accused infringer moves for summary judgment of non-infringement, such relief may be granted only if one or more limitations 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 facts in the light most favorable to the non-movant, there is no genuine issue as to whether the accused product is covered by the claims (as construed by the court). See *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1304 (Fed. Cir. 1999).

a. Timer/timing limitations

Canon moves for summary judgment of non-infringement, asserting the accused products do not meet the timing/timer limitations of the ‘870 patent. (D.I. 315 at 9) In support of this proposition, Canon argues that under the court’s claim construction, the

claims of the '870 patent require a timer for transitioning between BPSK and QPSK demodulation and the accused products do not use time to determine the transition between modulation schemes. (*Id.*) Canon submits that various expert witnesses explain that the accused products do not use a timer, rather, the accused products count the number of bits using a counter and transition only when the correct number of bits have passed, irrespective of the time. (D.I. 294, ex. 1 at ¶¶ 392; D.I. 316, ex. 13 at 64:12-25, 143:3-9 (Marvell's 30(b)(6) witness); *id.* at ex. 14 at 221:3-222:4 (IV's expert)) Specifically, the "accused products will not transition from BPSK to QPSK if the required number of bits are not received (i.e., the accused products will stop demodulation) [T]he accused products determine, at each clock pulse, whether a bit has been received, and will increment a counter **only if** that bit has been received." (D.I. 398) (emphasis in original) Canon relies on its expert, Dr. Shoemake, who stated in his opening report that the "bit counter is incremented for each bit that is received, until the header_cnt signal has reached 48," and that the transition occurs after the counter reaches 48. (D.I. 294, ex. 1 at ¶¶ 339-40)

IV responds that the timer hardware and software in the accused products counts 48 symbol clock cycles prior to transitioning. (D.I. 355, ex. 3 at ¶¶ 91-102; D.I. 354, ex. 12 at 71:2-72:9, 75:3-23, 140:10-141:10) Because the counter has a clock signal with a period of one millisecond, it is equivalent to a digital timer. (D.I. 354, ex. 13 at 71:5-72:8, 83:4-85:5; D.I. 354, ex. 14 at 35; D.I. 355, ex. 5 at ¶ 10) IV's witness testified that the accused products work in concert with the signaling field to switch the receiver between BPSK and QPSK at the correct time, which is consistent with the court's definition. (D.I. 355, ex. 3 at ¶ 137) The inventor of the patent also described the

counter as “counting something in time.” (D.I. 354, ex. 15 at 71:22-72:23; see also D.I. 355, ex. 3 at ¶ 99) IV’s expert explained that the counter runs for 48 microseconds because there is a set number of symbols prior to the transition. (D.I. 354, ex. 12 at 140:10-141:10; 71:2-72:9; D.I. 355, ex. 3 at ¶ 96) In other words, the reason the counter is incremented once per bit is that, as Dr. Shoemake himself explained, the counter is incremented on each symbol clock pulse, which corresponds to 1 bit at the 1 MB/s BPSK data rate, but does not depend upon a bit being received. (D.I. 294, ex. 1 at ¶ 408)

The court agrees with IV as there is no evidence that the accused product stops demodulating if a bit is not received. Lacking such evidence, the court declines to find that, because Canon’s products count 48 bits (at a rate of one bit/second) rather than 48 seconds, they are not “timing” the transition between modulation schemes. For this reason, Canon’s motion that its products do not infringe because they lack a “timer/means for timing” is denied.

Canon additionally argues that summary judgment of non-infringement is appropriate because IV has failed to identify a “processor interface” that transitions from BPSK to QPSK. However, the court finds that a question of fact exists as to whether the processor in the accused devices acts like the processor interface identified as the “corresponding structure” in the court’s claim construction. The court construed the “means contained on said single device for timing a transition from BPSK modulation to QPSK modulation” as requiring a “processor interface.” (D.I. 264 at 15-16) In other words, the processor interface is the corresponding structure for the means for timing a transition. In arguing that IV has failed to identify a “processor interface” that transitions

from BPSK to QPSK, Canon alleges that IV's expert identifies a processor (D.I. 316, ex. 15 at ¶ 101) rather than a processor interface that transitions from BPSK to QPSK. (D.I. 315 at 13) IV responds that the SFD field in the accused products operates as a "signaling field," and that when the field is detected, the device counts 48 microseconds and then transitions from BPSK to QPSK. (D.I. 353 at 11) IV further argues that the court intended the processor interface to be able to time transitions and perform computing. (*Id.*) Although IV appears to concede that the accused devices do not have a processor interface, IV's experts argue that the accused processor acts like a processor interface. (D.I. 354, ex. 16 at 293:12-25, 295:15-296:1, 296:10-297:1, 297:9-19; D.I. 355, ex. 3 at ¶ 101) In fact, both parties' experts agree that a processor interface is different from a processor. (D.I. 294, ex. 1 at ¶ 112, D.I. 316, ex. 16 at 96:1-97:25, ex. 14 at 216:12-217:4; D.I. 295, ex. 11 at 6:50-62) Additionally, the '870 specification describes a processor interface, which is separate from the processor. (D.I. 295, ex. 11 at 8:62-65, 6:60-62) There is, therefore, a disputed question of fact that precludes summary judgment on this ground, as it is unclear whether the processor in the accused devices acts like the processor interface identified as the "corresponding structure" in the court's claim construction. Canon's motion for summary judgment on this theory is denied.

Finally, Canon contends that IV's expert argued that a "single receive" path is a claim limitation. (D.I. 316, ex. 14 at 224:16-225:4, 235:11-236:25, 237:14-18; D.I. 294, ex. 3 at ¶ 17) Canon's expert offered the unrebutted opinion that the accused products do not have single receive paths. (D.I. 316, ex. 16 at 207:6-23; D.I. 294, ex. 3 at ¶¶ 30-33) IV responds that Canon misconstrues IV's expert's attempt to contrast the claimed

invention from the prior art in the background of the '870 patent, rather than proffering a substantive claim limitation. (D.I. 353 at 21, 23) Further, IV argues, even if “single receive” path was a limitation, Canon’s devices would still infringe because a “single receive” path, as described in the patent, allows for multiple antenna and separate filtering and tuning. ('870 patent, fig. 2) Moreover, there is no indication that the accused products have multiple antennas.³ (D.I. 354, ex. 11 at 67:14-17)

The court acknowledges that there appears to be a “single receive” path in the sense that the claims require a timer to **time** the transition from BPSK to QPSK ex ante rather than demodulating along separate parallel paths and then reconciling BPSK and QPSK ex post. However, the term “single receive” does not appear in the '870 patent. More importantly, there is no “single receive” path limitation in the claims of the '870 patent. As discussed supra, Canon’s arguments regarding IV’s expert’s use of the words “single receive path” were taken out of context. Therefore, the court declines to grant summary judgment on this ground.

b. Single device limitation

Canon argues that the asserted claims of the '870 patent are not infringed because the accused components are not on the same “single device.” (D.I. 315 at 17) The court construed “single device” as “a single packaged device or module that may contain one or more integrated circuit chips.” (D.I. 264 at 10-11) Neither party disputes that the accused devices do not include all of the components in a single module given that the wireless module is separate from the antenna. (D.I. 294, ex. 1 at ¶ 296; D.I.

³ Canon replies that its 30(b)(6) deponent limited his testimony about multiple antennas to cameras and printers, not to the accused video cameras.

316, ex. 16 at 27:3-28:22) Canon alleges that Dr. Williams' (IV's expert's) opinion that devices on different boards that are "packaged together in some sense" are part of a "single device" (D.I. 316, ex. 17 at ¶ 4) is contrary to the court's claim construction. (D.I. 315 at 17) Moreover, Canon alleges that Dr. Williams' reliance on datasheets from third-party Marvell cannot establish a link between the datasheets and the accused products. (D.I. 316, ex. 14 at 166:15-20, 198:13-199:17)

IV responds that Dr. Williams addressed the single device limitation in his opening report (D.I. 355, ex. 3 at ¶¶ 54-60, 63-65, 126, and 156) and that Canon attempts to make this argument apply to all claims, when only claims 1 and 3 require a single device.⁴ IV argues that there is nothing in the court's construction of "analog receiver," which does appear in all claims, that requires that antenna must be part of the analog receiver. Moreover, the product upon which Canon relies to make its argument does not use the accused chipset. (D.I. 295, ex. 1 at ¶ 295; D.I. 355, ex. 3 at ¶ 50) Finally, the corporate designee on the Canon accused products admitted that the wireless modules include an antenna. (D.I. 354, ex. 11 at 67:11-13) Even if the antenna were on a different sub-module, the mother board is a "level of packaging" and can itself be a module. (D.I. 355, ex. 5 at ¶¶ 3, 7; D.I. 294, ex. 1 at ¶ 297)

In addition, IV argues that Canon's datasheets demonstrate that the antenna is part of a single module (D.I. 355, ex. 3 at ¶ 74, ex. 5 at ¶¶ 5-6, ex. 3 at ¶¶ 60, 73; D.I. 354, ex. 17 at CAN0120654, ex. 18 at CAN0120924-25), and that the court implicitly rejected Canon's argument that the antenna is on a different device and, therefore, has

⁴ Canon replies that the "single device" limitation applies to claims 1, 30, 10 and 17-19, as confirmed by the court's claim construction. (D.I. 264 at 10, n.16)

no structure by finding that the antenna has a corresponding structure. Finally, IV argues that its expert did establish a link between the datasheets and the accused products (D.I. 355, ex. 3 at ¶ 66) and was reinforced by testimony of Canon's corporate witness. (D.I. 354, ex. 11 at 30:7-20)

Like the "single receive" path discussed above, the claims of the '870 patent do not contain a specific "single device" limitation. While integration into a single device is disclosed as a preferred embodiment, the '870 patent specifies that "the present invention is not necessarily limited to a single device." (6:55-56) The court maintains its claim construction that a "single device" is "a single packaged device or module that may contain one or more integrated circuit chips." (D.I. 264 at 10-11) The ultimate issue is whether the antennas on the accused devices are part of the "single device." The court acknowledges that, while the experts agree that the accused devices do not include all of the components in a single module, they do not agree on this ultimate issue. Whether the antennas on the accused devices are part of the "single device" is a question of fact for the jury. This issue, therefore, is not appropriate for resolution by summary judgment.

c. Doctrine of equivalents

For there to be infringement under the doctrine of equivalents, the accused product or process must embody every limitation of a claim, either literally or by an equivalent. *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 40, 117 S. Ct. 1040, 1054 (1997). An element is equivalent if the differences between the element and the claim limitation are "insubstantial." *Zelinski v. Brunswick Corp.*, 185 F.3d 1311, 1316 (Fed. Cir. 1999). One test used to determine "insubstantiality" is whether the

element performs substantially the same function in substantially the same way to obtain substantially the same result as the claim limitation. See *Graver Tank & Mfg. Co. v. Linde Air Products Co.*, 339 U.S. 605, 608, 70 S.Ct. 854, 94 (1950). This test is commonly referred to as the “function-way-result” test. The mere showing that an accused device is equivalent overall to the claimed invention is insufficient to establish infringement under the doctrine of equivalents. The patent owner has the burden of proving infringement under the doctrine of equivalents and must meet its burden by a preponderance of the evidence. See *SmithKline Diagnostics, Inc. v. Helena Lab. Corp.*, 859 F.2d 878, 889 (Fed.Cir.1988) (citations omitted).

Canon argues that summary judgment of non-infringement is appropriate under the doctrine of equivalents for all claims and “statutory” equivalents for the means plus function limitations of claims 1 and 3. (D.I. 315 at 20) Specifically, Canon argues that IV did not provide sufficient expert disclosure regarding infringement under the doctrine of equivalents or literal infringement of the means-plus-function limitations based on statutory equivalents. (*Id.*) While Canon admits that IV’s expert did mention doctrine of equivalents for each disputed limitation, Canon proffers that the analysis is limited to a single “boilerplate” paragraph. (D.I. 316, ex. 16 at ¶¶ 63, 68, 95, 142; see also *id.* at ex. 14 at 211:25-212:23, 213:18-24, 217:16-219:2) Canon opines that the law is “clear” that this conclusory testimony is insufficient to establish infringement under the doctrine of equivalents.

IV responds that its expert provides ample analysis of the doctrine of equivalents in his opening report (see D.I. 355, ex. 3 at ¶¶ 91-102, ex. 5 at ¶¶ 10-14), and even refers back to this initial analysis later when addressing the “timer” limitations. (D.I. 312,

ex. 3 at ¶¶ 137-41) IV avers that its expert re-addressed the issue in his supplemental report. (D.I. 355, ex. 5 at ¶ 10)

The court agrees with IV to the extent that Dr. Williams has provided sufficient detail to establish at least a genuine issue of material fact. While Dr. Williams initially addresses the doctrine of equivalents and the “means for timing” limitation in a conclusory fashion as Canon asserts (D.I. 355, ex. 3 at ¶¶ 91, 95), he then intersperses doctrine of equivalents analysis throughout his analysis regarding this limitation. (D.I. 355, ex. 3 at ¶¶ 91-102) Specifically, Dr. Williams intersperses doctrine of equivalents discussion as he describes the operation of the means for timing in the accused products, explains that any differences between the structure disclosed in the ‘870 patent for timing the transition and the accused products are insubstantial, and describes the operation of the timing means for the accused products. (*Id.*) Based on this analysis, Dr. Williams then concludes that the accused products “contain a processor which processes the header, and times the transition from header to data, in a manner which is identical to or equivalent to the processor interface 114 of the 870 Patent.” (*Id.* at ¶ 101) He then opines that the accused products “time the transition from BPSK to QPSK modulation in a manner that is identical to or equivalent to the manner taught by the [‘]870 Patent.” (*Id.* at ¶ 102) Dr. Williams additionally addressed this limitation in his supplemental report, responding to Dr. Shoemake’s analysis that the accused products count bits rather than timing the demodulation transition. (D.I. 355, ex. 5 at ¶ 10) This dispute between experts illuminates an issue of fact for the jury, whether IV can satisfy its burden in proving the accused products embody every limitation of the claims. Specifically, whether the differences between this element of

the accused products and the claim limitations of the '870 patent are "insubstantial." *Zelinski*, 185 F.3d at 1316. Further, the court finds Dr. Williams' analysis is more than just "conclusory" and provides sufficient explanation for this theory to proceed to trial. Summary judgment of non-infringement under this theory is not appropriate.

d. Products in dispute

Canon alleges that Dr. Williams did not include in his expert report numerous products listed in IV's infringement contentions, and seeks summary judgment of non-infringement with respect to such "omitted" products. (D.I. 315 at 25) Because the parties have presented a very confusing record for the court in this regard,⁵ IV will be required to submit to the court the final list of accused products before the pretrial conference, so that the court can address at the conference the evidentiary issues raised by Canon's motion. In this regard, however, the court notes that a claim of infringement relating to a product identified in IV's infringement contentions but not in its expert's report shall be considered dismissed from the case with prejudice; i.e., it cannot be later asserted by IV against Canon in connection with the patents-at-issue. Judgment shall be entered in favor of Canon under these circumstances only if Canon has offered a substantive analysis of non-infringement to which IV has not responded in kind.

B. The '944 Patent

The '944 patent addresses backwards compatibility between IEEE 802.11b "legacy" devices and newer IEEE 802.11g "enhanced" devices. (Abstract; D.I. 310 at 8) Both legacy and enhanced devices recognize a Clear-to-Send ("CTS") signal that

⁵ Compare, e.g., D.I. 316, ex. 14 at 284-286 with D.I. 355, ex. 3 at ¶ 49

indicates that the shared communication medium is available for use. The '944 patent attempted to use this signal to allow an 802.11g device, which can also transmit using enhanced signals that are not recognized by 802.11b devices, to broadcast a CTS signal addressed to itself. This process would ensure the availability of the communication medium for a designated period of time despite the inability of 802.11b devices to recognize the subsequent enhanced transmission. Independent claim 7 recites:

A station comprising:

(a) a receiver for monitoring a shared-communications medium for an opportunity to transmit a first signal and a second signal; and

(b) a transmitter for:

(1) transmitting said second signal in accordance with a second modulation scheme on said shared-communications medium, wherein:

(i) said second signal conveys a frame indicating clear to send that is addressed to the sender of said frame indicating clear to send; and

(ii) said frame indicating clear to send comprises a duration field that has a value based on the expected length of time required to transmit at least one data frame; and

(2) transmitting said first signal in accordance with a first modulation scheme on said shared-communications medium after said second signal, wherein said first signal conveys said at least one data frame;

wherein said frame indicating clear to send and said at least one data frame are addressed to different stations.

(13:45-65)

1. Anticipation

Under 35 U.S.C. § 102(b), “[a] person shall be entitled to a patent unless the invention was patented or described in a printed publication in this or a foreign country . . . more than one year prior to the date of the application for patent in the United States.” The Federal Circuit has stated that “[t]here must be no difference between the claimed invention and the referenced disclosure, as viewed by a person of ordinary skill in the field of the invention.” *Scripps Clinic & Research Found. v. Genentech, Inc.*, 927 F.2d 1565, 1576 (Fed. Cir. 1991). In determining whether a patented invention is explicitly anticipated, the claims are read in the context of the patent specification in which they arise and in which the invention is described. *Glaverbel Societe Anonyme v. Northlake Mktg. & Supply, Inc.*, 45 F.3d 1550, 1554 (Fed. Cir. 1995). The prosecution history and the prior art may be consulted if needed to impart clarity or to avoid ambiguity in ascertaining whether the invention is novel or was previously known in the art. *Id.* The prior art need not be ipsissimis verbis (i.e., use identical words as those recited in the claims) to be anticipating. *Structural Rubber Prods. Co. v. Park Rubber Co.*, 749 F.2d 707, 716 (Fed. Cir. 1984).

A prior art reference also may anticipate without explicitly disclosing a feature of the claimed invention if that missing characteristic is inherently present in the single anticipating reference. *Continental Can Co. v. Monsanto Co.*, 948 F.2d 1264, 1268 (Fed. Cir. 1991). The Federal Circuit has explained that an inherent limitation is one that is necessarily present and not one that may be established by probabilities or possibilities. *Id.* That is, “[t]he mere fact that a certain thing may result from a given set of circumstances is not sufficient.” *Id.* The Federal Circuit also has observed that “[i]nherency operates to anticipate entire inventions as well as single limitations within

an invention.” *Schering Corp. V. Geneva Pharms. Inc.*, 339 F.3d 1373, 1380 (Fed. Cir. 2003). Moreover, recognition of an inherent limitation by a person of ordinary skill in the art before the critical date is not required to establish inherent anticipation. *Id.* at 1377.

An anticipation inquiry involves two steps. First, the court must construe the claims of the patent in suit as a matter of law. *Key Pharms. v. Hercon Labs Corp.*, 161 F.3d 709, 714 (Fed. Cir. 1998). Second, the finder of fact must compare the construed claims against the prior art. *Id.* A finding of anticipation will invalidate the patent. *Applied Med. Res. Corp. v. U.S. Surgical Corp.*, 147 F.3d 1374, 1378 (Fed. Cir. 1998).

a. Anticipation by IEEE 802.11-1997 standard

Devices attempting to communicate at the same time to the same device is known as a “collision.” (D.I. 292 at 6-7) The ‘944 patent attempts to address the collision problem by using a common modulated signal understood by both the older legacy, and the newer enhanced, devices. (*Id.*) This common signal is transmitted and addressed back to the sender; other devices hear the signal, and stop transmitting. (*Id.*) The common signal also contains a duration field, which indicates how long the requesting device intends to transmit data, which further helps to reduce collisions during a transmission. (3:28-37)

IV accuses Canon’s use of the RTS/CTS⁶ collision avoidance technique of infringing the ‘944 patent and specifically that Canon’s products meet the “receiver for monitoring” claim limitation by citing to a datasheet that describes the 802.11 functionality of RTS/CTS. (D.I. 292 at 7) As discussed supra, IEEE 802.11 is a

⁶ For the reasons explained below, IV is now accusing the CTS-to-Self collision avoidance technique rather than the legacy RTS/CTS technique.

standard for wireless communications that is comprised of specifications published and continuously updated by the IEEE. (D.I. 292 at 9) The 1997 IEEE standard describes “RTS/CTS,” while the newer technique (known as “CTS-to-Self”) was added to the IEEE 802.11 standard in 2002 as another collision avoidance option. (*Id.* at 9-10)

Canon alleges the RTS/CTS technique is admitted prior art disclosed in the ‘944 patent and that IEEE 802.11-1997 discloses each and every limitation of the asserted claims as construed by IV in its infringement contentions. (*Id.* at 10) Canon alleges the RTS/CTS functionality as disclosed anticipates and invalidates the asserted claims. (*Id.*) IV responds that it is accusing CTS-to-Self, rather than RTS/CTS. (D.I. 310 at 15) Although IV admits that it mentioned the RTS/CTS protocol in its infringement contentions, it arguably cited such only as evidence that the products were capable of sending and receiving CTS frames. (*Id.* at 15-16) According to IV, the infringement contentions also contain citations to deposition testimony by Canon’s representative that concerns the CTS-to-Self capabilities of Canon’s products (D.I. 295, ex. 3 at 10-12; D.I. 312, ex. 1 at 93-95), which implies that IV accused CTS-to-Self products of infringing.⁷

It appears both parties and their experts agree that the RTS/CTS collision avoidance mechanism disclosed in IEEE 802.11-1997 does not meet the CTS-to-Self limitation. (D.I. 311, ex. 1 at 159:13-20 (Canon’s validity expert); D.I. 311, ex. 3 at 124:25-125:6 (IV’s expert)) As the claims do not cover RTS/CTS signaling, summary judgment of anticipation by the IEEE 802.11-1997 standard is not appropriate.

⁷ Canon replies that the bulk of the cited testimony refers to RTS/CTS functionality. (D.I. 333, ex. 30 at 86)

b. Anticipation by Sherman

Canon asserts the claims of the '944 patent are rendered invalid by Sherman,⁸ either alone or in combination with IEEE 802.11-1997. (D.I. 292 at 14) Sherman addresses the problem of avoiding interference on wireless networks when new protocols are introduced. The collision avoidance technique at issue in Sherman is as follows:

It should be appreciated that the use of the techniques of this invention could be for sharing with non-802.11 protocol. If the medium is to be reserved for period of time for use by non-802.11 protocol the transmitting station could send message with the duration field set so as to prevent use of the medium by 802.11 stations when another 10 protocol is active. For example as shown in FIG 7, a station practicing the enhanced 802.11e standards could send a signal 80, such as a clear-to-send signal (CTS), to itself with duration field set to specified duration value. All stations including stations practicing the enhanced 802.11e standards would set their network allocation vectors (NAV) accordingly. The other unknown or foreign protocol would then have preferential use of the medium during that specified duration value interval. The stations practicing the 802.11 standards within the range of the clear-to-send signal (CTS) would set their network allocation vectors so as not to use the medium, even though [sic] they might not be able to detect the other protocol.

Sherman at 12:4-22. The parties dispute whether Sherman includes the same "transmitter" required by the '944 patent.⁹ (D.I. 292 at 14; D.I. 310 at 23) Claims 7 and 19 of the '944 patent require "[a] station comprising ... a transmitter for: (1) transmitting said second signal ... and (2) transmitting said first signal." Canon argues that there is

⁸ U.S. Patent No. 7,046,690, titled "Interference Suppression Methods for 802.11," listing Matthew Sherman as the inventor. (D.I. 295, ex. 9)

⁹ This issue was also before the Patent Trial and Appeal Board ("PTAB"), which found the limitation was not met by Sherman. (D.I. 311, ex. 6 at 10-11) Specifically, the PTAB found Canon failed to "explain how the statement in Sherman's discussion of Figure 7, that '[a]ll stations including stations practicing the enhanced 802.11e standards would set their network allocation vectors (NAV) accordingly,' would not apply to the station sending the self-addressed CTS." (*Id* at 10)

nothing in the '944 patent specification, claims, or the court's construction that requires a single transmitter. (D.I. 292 at 18) Canon additionally asserts that IV's argument is based on new, overly narrow claim constructions of the term "transmitter." (*Id.* at 14) IV responds that every embodiment of the '944 patent specification depicts a single transmitter sending the first and second signals. (D.I. 310 at 24; '944 patent, 6:6-58, 8:6-42, 9:12-49, 10:52-60) The court agrees with IV. First and foremost, the structure and plain language of claims 7 and 19 of the '944 patent require a station with a transmitter that transmits both the first and second signals. As the claims are written, there is only one transmitter that sends both signals. Plainly, the language of the claims does not allow for a second transmitter. Second, the description contained within the specification describes a single transmitter as follows: "[t]ransmitter 504 comprises the wireless or wireline or hybrid wireless and wireline interface circuitry that enables station 502-x to transmit data frames onto shared communications network 401." ('944 patent at 5:37-40) Based on this description, there is only a single transmitter. Finally, every embodiment in the '944 patent depicts a single transmitter. For example,

Figure 6 depicts a message flow diagram of the first variation of the first illustrative embodiment of the present invention. Signal stream 601-1 represents the sequence of messages transmitted by a first station on shared communications network 401, in which at least some of the messages are intended for a second station. ... Prior to sending a data frame, the first station transmits, as part of its signal stream 601-1, a frame indicating clear to send, CTS frame 602. CTS frame 602 contains a duration field with a value that covers time interval 603 associated with the frame exchange of pending data transmission and corresponding acknowledgement. ... The first station then immediately transmits data frame 604 using the enhanced first modulation format. The second station, upon receiving data frame 604, responds by transmitting ACK frame 605.

('944 patent at 6:6-58; see also Fig. 6; *Id.* at 8:6-42 and Fig. 8 (same, describing and depicting message flow for the "second variation of first illustrative embodiment"); 9:12-

49 and Fig. 9 (same, describing and depicting message flow for the “first variation of the second illustrative embodiment”); 10:52-60 (“FIG. 10 depicts the second variation of the second illustrative [embodiment] of the present invention. Signal stream 1001-1 as transmitted by a first station comprises CTS frame 1002, and data frames 1004, 1006, 1008, and 1011.”). For the reasons described above, the court concludes that the claim language and the specification demonstrates that a single transmitter transmits both the first and second signal in the ‘944 patent.

Since there is only a single “transmitter” in the ‘944 patent, the issue is whether Sherman discloses a transmitter sending data to another station after sending a CTS to itself, which is unclear. Dr. Williams notes, “[n]owhere does Sherman disclose the sending of a data message to another station by a transmitter after that same transmitter sent a CTS frame to itself.” (D.I. 312, ex. 2 at ¶ 196) For example, Figure 8, a flow chart in Sherman, mentions the possibility of a CTS-to-Self signal, but “does not disclose the sending of a data frame to another station by the same transmitter that previously transmitted the CTS signal to itself.” (*Id.* at ¶ 197) Instead, “Figure 8 of Sherman is merely a ‘flowchart illustrating a method of updating the network allocation vector (NAV).” (*Id.*; Sherman at 15:39-40) In summation, Dr. Williams proffers that “[n]othing in Sherman discloses the invention taught and claimed in the 944 Patent of a transmitter using a CTS-to-Self signal to quiet the network for a period and then transmitting, using the same transmitter, a data message to a different station during that period.” (D.I. 312, ex. 2 at ¶ 198) However, according to Canon, “nothing in Sherman [] limits the disclosure to two different transmitters and, as properly interpreted by one of ordinary skill in the art, describes transmitting both the first and second signal

using a single transmitter.” (D.I. 292 at 19) In fact, as Canon asserts, Dr. Williams “admits the disclosure in Sherman includes the transmission of a data message by the same transmitter that sent the ‘CTS signal to itself.” (*Id.*) Specifically, Dr. Williams stated that “[i]t is not disclosed that the other unknown protocol necessarily involves the transmission of a data message by the same transmitter that sent the CTS signal to itself.” (D.I. 295, ex. 10 at ¶ 194) Therefore, there is at least one question of fact regarding whether Sherman anticipates, specifically, whether Sherman discloses a transmitter sending data to another station after sending a CTS to itself.

Given the structure of the claim itself and the fact that every embodiment discloses a single transmitter (6:6-58; 8:6-42; 9:12-49; 10:42-60), a single transmitter transmits both the second and first signal. There is a question of fact as to whether Sherman discloses sending data to another station after sending a CTS to itself. For this reason, Canon’s motion for anticipation by Sherman is denied.¹⁰

2. Infringement

a. CTS-to-Self

Canon contends that summary judgment of non-infringement is appropriate because IV cannot establish that the accused products meet the CTS-to-Self requirements of the ‘944 patent. (D.I. 315 at 27) Each of the asserted claims of the ‘944 patent require a CTS signal be transmitted so other devices on the network stop transmitting for the specified duration. (*Id.*) This allows the device sending the CTS signal to transmit data using its preferred modulation scheme, and is required to avoid

¹⁰ Because there exists questions of fact as to anticipation, the court declines to analyze Canon’s obviousness arguments with respect to the ‘944 patent

collisions with data transmissions of other devices. (*Id.*) Canon argues that IV's expert only tested two of eighty-two accused products, and that IV merely relies on testimony and Marvell datasheets¹¹ to demonstrate that the remaining products have CTS-to-Self capabilities. (*Id.* at 28; D.I. 316, ex. 14 at 27:11-28:12) Canon additionally argues that the evidence shows that the default mode for Canon firmware is RTS/CTS, not CTS-to-Self (D.I. 315 at 28; D.I. 312, ex. 1 at ¶ 179; D.I. 294, ex. 1 at ¶ 486), and that at least three of the accused, untested products do not use CTS-to-Self (D.I. 294, ex. 1 at ¶ 485; D.I. 316, ex. 16 at 210:19-223:18; D.I. 317, ex. 4). Moreover, Canon asserts that IV's fact witness only testified generally about the accused products, which does not prove that the products actually use CTS-to-Self. (D.I. 316, ex. 18 at 88:19-89:4; D.I. 312, ex. 1 at ¶ 179) Further, while the Marvell datasheets suggest that the products may be configured to include CTS-to-Self functionality (D.I. 312, ex. 1 at ¶ 179), IV's witness does not establish to which accused products the documents apply. Canon finally points out that IV withdrew several products from its infringement contentions, and that this is evidence that the testing overall was inadequate.¹² (D.I. 315 at 36)

IV responds that Canon and Marvell's 30(b)(6) witnesses confirmed that Marvell chipsets are capable of practicing CTS-to-Self. (D.I. 353 at 32) For example, Canon's corporate representative, Mr. Mashimo, testified that based on Marvell datasheets and

¹¹ The accused products use Marvell chipsets to provide WiFi functionality. (D.I. 315 at 11, n. 3)

¹² The courts notes these products are the same products Canon later asserts IV has dropped with respect to the '944 patent, specifically, the PIXMA MP620, PIXMA MP620B, PIXMA MP980, and PIXMA MX860. (D.I. 315 at 36) Nonetheless, IV does not respond to this argument. Consistent with the court's position presented above regarding the '870 patent (*Supra*, IV.A.3.d. Products in dispute), the court dismisses these products (with respect to the '944 patent) from the case with prejudice.

Canon source code, “Canon wireless modules with Marvell chips from March 3, 2009 or later are setting the CTS-to-self mode on.” (D.I. 353 at 32-33; D.I 354, ex. 11 at 93:10-20, ex. 19) IV additionally reproduced Canon source code confirming bit 9 is set to zero, indicating that CTS-to-self was turned on. (D.I. 353 at 34) Moreover, there is evidence to establish that the accused products indeed practice CTS-to-Self functionality as IV’s expert, Dr. Williams, tested a few products for the sake of confirming the testimony. (*Id.* at 35) Specifically, Dr. Williams tested the VIXIA HF R30 video camera utilizing the Marvell 88W8787 chipset and the Canon MX 452 multi-function printer/scanner utilizing the Marvell 88W8786 chipset. (*Id.* at 35-36) Together, these products and respective chipsets represent 80 of the 96 accused Wi-Fi products. (*Id.*) As to the products tested by Canon’s expert, Dr. Shoemake, IV admits these products contained the chipset found in the four accused products that were later withdrawn. (*Id.* at 37-38) Thus the products tested by Dr. Shoemake were not the same products, nor the same chipsets, tested by Dr. Williams. (*Id.*)

Regarding the issue of whether adequate testing was performed, IV is entitled to rely on documentation produced during discovery, such as the Marvell datasheets described above. Moreover, based on the record before it, the court finds IV’s utilization and testing of the documents and products appears to be representative of at least 80 of the 96 accused products.¹³ As to the remaining 16 products, IV relies on Mr.

¹³ As to Canon’s argument that the default mode is set to RTS/CTS rather than CTS-to-Self (D.I. 315 at 28), the court notes the Federal Circuit’s precedent that “an accused device ‘need only be capable of operating’ in the described mode.” *Finjan, Inc. v. Secure Computing Corp.*, 626 F.3d 1197, 1204 (Fed. Cir. 2010) (citing *Intel Corp. v. U.S. Int’l Trade Comm’n*, 946 F.2d 821, 832 (Fed.Cir.1991)). In other words, “an accused device may be found to infringe if it is reasonably capable of satisfying the claim limitations, even though it may also be capable of noninfringing modes of

Mashimo's testimony described above and additional datasheets that confirm CTS-to-Self function. (*Id.* at 36) With the exception of the products IV has dropped with respect to the '944 patent, the court finds a genuine issue of material fact exists with respect to infringement of the '944 patent regarding the CTS-to-Self requirement. Canon's motion is denied in this regard.¹⁴

b. Station

Canon raises the issue of construction regarding the term "station" contained within each of the claims. (D.I. 315 at 31). As IV asserts, this defense was not properly raised during claim construction; instead, it was raised in Canon's expert's rebuttal report on non-infringement. (D.I. 355, ex. 5 at ¶ 17) Nonetheless, Canon contends that "station" should be given its ordinary meaning to a person of ordinary skill in the art at the time of the '944 invention, January 2002. (D.I. 315 at 31) At that time, Canon argues, a person of ordinary skill in the art would not construe "station" as inclusive of the accused products, rather, understanding "station" to mean a wireless network communication device, such as a terminal, that includes a MAC layer, such as a computer or a network router. (*Id.*) Regardless of the construction, Canon avers that IV's expert provided no "detailed analysis" of how the accused products meet the

operation." *Id.* (citing *Hilgraeve Corp. v. Symantec Corp.*, 265 F.3d 1336, 1343 (Fed.Cir.2001)).

¹⁴ Which products IV accuses is unclear, particularly given the potential existence of accused products that do not have WiFi capabilities. Therefore, IV will be required to submit to the court the list of accused products before the pretrial conference, so that the court can address at the conference the evidentiary issues raised by Canon's motion. Any products that do not have WiFi capability will be dismissed with prejudice as to the '870 and '944 patents.

“station” limitation, instead opining that almost anything can be a station. (*Id.* at 32; D.I. 316, ex. 14 at 49:8-14, 50:10-18, 54:5-7, 63:19-64:2)

IV’s expert, Dr. Williams, responds that the 1997 IEEE standard defines “station” as “[a]ny device that contains an IEEE 802.11 conformant medium access control (MAC) and physical layer (PHY) interface to the wireless medium (WM)” (D.I. 353 at 38; D.I. 355, ex. 5 at ¶ 17) He continues with a conclusory statement that “[a]s such, the accused instrumentalities are stations as that term is used in the [’]944 Patent as understood by one of ordinary skill in the art.” (*Id.*) In reply, Canon argues IV’s interpretation is “overly broad” and maintains that the term should be construed by the court. (D.I. 381 at 16). The parties additionally dispute whether the products can be considered after-arising technology and whether “station mode” falls within the scope of the term. (D.I. 353 at 39; D.I. 381 at 17)

Lacking further explanation as to a proper construction or how the accused products meet either parties’ “station” definition, the court finds neither party has met their burden of persuasion. On the record before it, the court is left without sufficient information to construe the term or determine if the accused products meet the “station” limitation. *Schumer v. Laboratory Computer Systems, Inc.*, 308 F.3d 1304, 1315 (Fed. Cir. 2002) (“It is not our task, nor is it the task of the district court, to attempt to interpret confusing or general testimony to determine whether a case of [infringement] has been made out, particularly at the summary judgment stage.”). Further, because resolution of the claim construction does not appear to be dispositive, the court will only construe the term if such construction becomes necessary before the case reaches the jury. The motion for summary judgment is denied.

c. Doctrine of equivalents

Canon additionally alleges that IV is estopped from asserting the doctrine of equivalents because the '944 patent narrowed claims and surrendered claim scope. (D.I. 315 at 33-36) Specifically, the original claims of the '944 patent were amended to include a "station" and a "second signal" that indicated "clear to send" and was "addressed to the sender." (See, e.g., D.I. 316, ex. 20 at CAN0100088, CAN0100116-21) Additionally, Canon alleges that, even if prosecution history estoppel does not apply, IV's expert provided no analysis for any of the limitations of the '944 patent beyond a "conclusory" sentence. (D.I. 312, ex. 1 at ¶ 178) IV asserts that the doctrine of equivalents is not properly invoked because there is literal infringement. (D.I. 353 at 40) Rather than respond to Canon's arguments regarding narrowed claims and surrendered claim scope, IV reasserts its infringement arguments regarding the station and CTS-to-Self limitations in the '944 patent. (*Id.*) Because IV fails to respond substantively to Canon's assertions, IV is precluded from raising infringement by equivalence at trial.

V. THE NON-WIFI PATENTS¹⁵

A. The '728 Patent

The '728 patent describes "a laser driver circuit" in a laser printer. (1:5-6) The circuit directs a "main current" either through the laser (turning the laser on), or through a bypass (turning the laser off). (2:37-42) "The two current paths rejoin at a current

¹⁵ Canon requested and IV did not oppose summary judgment of invalidity for the claims of the asserted non-WiFi patents containing limitations found indefinite by the court (D.I. 264; D.I. 272) – asserted claims of the '285, '406, and '528 patents; claims 5-8 of the '432 patent; and claims 6, 8, 21, and 23 of the '086 patent. The court grants Canon's motion for summary judgment of invalidity in this regard.

sensing device, such as a current-sensing resistor. A voltage drop across the current sensing resistor serves as a current sense signal indicating the magnitude of the total laser current which is the sum of the main current plus the bias current.” (2:60-65) “[B]y operation of the bypass switch in synchronism with the pulses of an input digital data signal, the laser emits a train of light pulses identical in format to the train of electrical pulses of the input digital signal.” (2:42-46)

Independent claim 17 reads:

A method of applying current to a laser comprising steps of:

providing a current bypass around the laser;

selectively switching a main current from a source of the main current alternately between said laser and said bypass to provide pulses of the main current of said laser;

monitoring a flow of current in said laser and in said bypass to provide a measure of current; and

controlling a magnitude of said main current in response to said current measure.

(18:38-48)

1. Anticipation

The parties filed competing motions as to whether Igaki¹⁶ anticipates claim 17.¹⁷ Canon’s expert, Dr. Carley, explains that the limitation “monitoring a flow of current in said laser and in said bypass to provide a measure of current”¹⁸ is satisfied by Igaki’s

¹⁶ Japanese Patent Pub. No. S62-130578, titled “Semiconductor Laser Driving Circuit,” listing Yoshihisa Igaki and Yasushi Tomita as inventors.

¹⁷ The parties agree that Igaki describes the preamble and “providing” step of claim 17. (D.I. 299 at 6; D.I. 301, ex. A, ¶¶ 124-125; D.I. 327, ex. 2A at ¶¶ 58-69)

¹⁸ The court construed the limitation “monitoring a flow of current in said laser and in said bypass” as “detecting a flow of current in said laser and a flow of current in said bypass.” (D.I. 264 at 1-2)

description of “detecting the flow of current in the laser diode 1 and in the bypass ([field effects transistor (“FET”)] 10) using resistor 2 to generate a voltage V that serves as a measure of the current flowing through resistor 2.” (D.I. 301, ex A at ¶ 131) More specifically, Dr. Carley opines that in Igaki, “[t]he voltage V at the top of resistor 2, as well as the amplified voltage at the output of amplifier 3, serves as a measure of the current flowing through resistor 2, as the bottom of resistor 2 is connected to ground.” (*Id.* at ¶ 132) In response, IV’s expert, Dr. Horenstein, disagrees that the limitation is met opining that

the voltage V serves as a node in the feedback loop of comparator 3, and it is a replica of the output of D/A converter 5 (divided by the gain of amplifier 3). This resistor neither detects nor monitors any current flow. . . . In the Igaki circuit, the value of resistor 2 sets the current flowing through the laser. Changing either the “Setting Data Value” input or the negative bus voltage (represented, e.g., by the downward arrow from resistor 2 in the Figure) will alter the current.

(D.I. 327 at ex. 2A, ¶ 64) Dr. Horenstein testified:

Q. And since resistor 2 is connected to ground, the voltage at the node labeled V is the same as the voltage drop across that resistor, right?

That’s straightforward.

A. Well, I’m not sure that [Igaki] ever says that the lower end of the resistor is connect[ed] to ground. It’s just an arrow.

(D.I. 325, ex. 1 at 208:4-10) The court concludes, based on the experts’ opinions, that there exist material questions of fact (at least) as to whether resistor 2 is connected to ground and whether it detects current, i.e., whether Igaki discloses the “monitoring” limitation.

With regard to the limitation “selectively switching a main current from a source of the main current alternately between said laser and said bypass to provide pulses of

the main current of said laser,”¹⁹ Dr. Carley explains that “FET 10 acts as a switch that directs the switching current either through the laser or through FET 10,” making the “FET current path . . . the ‘bypass.’ . . . The switching current is switched between the laser and the bypass based on the light emission control signal, thereby providing pulses of the switching current to the laser.” (D.I. 301, ex. A at ¶¶ 127-128) Canon argues that “Igaki clearly describes that the laser 1 emits light (i.e., is ‘on’) when the current I is flowing through it,” relying on Igaki’s disclosure that “an FET 10, as a switch for controlling the laser diode 1 so as to emit light or stop emitting light, depending on a light emission control signal, is connected in parallel with the laser diode 1.” (D.I. 299 at 8; D.I. 302, ex. 6 at CAN0265074)

IV concedes for this motion practice that “Igaki discloses a main current flowing from transistor 7, which is a current that is alternately switched by [FET] 10 (in response to a light emission control signal) between laser 1 (when FET 10 is on) and a bypass (when FET 10 is off).” (D.I. 321 at 3) However, IV disagrees that Igaki discloses “pulsing” of the laser, required to satisfy the limitation “provide pulses of the main current of said laser.” (*Id.* at 4) Dr. Horenstein opines that “while it is true that a current will be switched between the laser path and the bypass path, there is no teaching that the switching will cause the laser to pulse, because there is no teaching that the switching causes the current flowing through the laser to exceed the lasing threshold.” (D.I. 327, ex. 2A at ¶ 60) The experts’ disagreement²⁰ as to whether Igaki teaches

¹⁹ Dr. Carley asserts that the claim limitation should read “of the main current of [to] said laser.” (D.I. 299 at 7, n.4) Dr. Horenstein disagrees. (D.I. 321 at 4, n.4)

²⁰ Emphasized by the cited deposition testimony and attorney argument presented in the briefing.

“pulsing” is a question of material fact to be decided by a jury. The court denies the competing motions as to anticipation of the ‘728 patent.

2. Prior Art

The 35 U.S.C. § 102 printed publication bar states: “A person shall be entitled to a patent unless—(b) the invention was patented or described in a printed publication in this or a foreign country . . . more than one year prior to the date of the application for patent in the United States” 35 U.S.C. § 102(b). “The bar is grounded on the principle that once an invention is in the public domain, it is no longer patentable by anyone.” *In re Bayer*, 568 F.2d 1357, 1361 (C.C.P.A. 1978).

The linchpin for determining whether a reference constitutes a “printed publication” under 35 U.S.C. § 102(b) is “public accessibility.” *In re Hall*, 781 F.2d 897, 899 (Fed. Cir. 1986) (citing *In re Bayer*, 568 F.2d at 1359; *In re Wyer*, 655 F.2d 221, 224 (C.C.P.A. 1981)). “Because there are many ways in which a reference may be disseminated to the interested public, ‘public accessibility’ has been called the touchstone in determining whether a reference constitutes a ‘printed publication’ bar under 35 U.S.C. § 102(b).” *SRI Int’l, Inc. v. Internet Sec. Sys., Inc.*, 511 F.3d 1186, 1194 (Fed. Cir. 2008) (quoting *In re Hall*, 781 F.2d at 898-99 (Fed. Cir. 1986)).

A given reference is “publicly accessible” upon a satisfactory showing that such document has been disseminated or otherwise made available to the extent that persons interested and ordinarily skilled in the subject matter or art exercising reasonable diligence, can locate it and recognize and comprehend therefrom the essentials of the claimed invention without need of further research or experimentation.

Bruckelmyer v. Ground Heaters, Inc., 445 F.3d 1374, 1378 (Fed. Cir. 2006) (quoting *In re Wyer*, 655 F.2d at 226); see also *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1560, 1568 (Fed. Cir. 1988) (“Accessibility goes to the issue of whether interested

members of the public could obtain the information if they wanted to.”). “Whether an anticipatory document qualifies as a ‘printed publication’ under § 102 is a legal conclusion based on underlying factual determinations.” *SRI Int’l*, 511 F.3d at 1192 (citation omitted); see *In re Klopfenstein*, 380 F.3d 1345, 1347 (Fed. Cir. 2004) (“Where no facts are in dispute, the question of whether a reference represents a ‘printed publication’ is a question of law.”).

Dr. Thompson (the sole inventor of the ‘728 patent) defended his thesis²¹ (“the Thompson thesis”) on September 7, 1992, and the thesis was stamped as received by the Massachusetts Institute of Technology (“MIT”) library system on October 30, 1992. (D.I. 325, ex. 3) The Program Manager for Acquisitions and Discovery Enhancement at MIT stated that once a thesis is received by the MIT libraries, “the original print copy is sent to the Archives . . . at which point any member of the public may, if they know of the existence of the specific thesis by name, request to view a copy of it.” (D.I. 325, ex. 12 at ¶ 8) The Thompson thesis was cataloged in the MIT library system on April 13, 1993, available in search results one to three business days later, and placed on a shelf of the MIT libraries in two to four weeks. (*Id.* at ¶¶ 9-11, 14)

The patent application that would later become the ‘728 patent was filed on December 23, 1993. The critical date for purposes of determining prior art pursuant to 35 U.S.C. § 102(b) is December 23, 1992. The question is whether the Thompson thesis was “publically accessible” between its receipt on October 30, 1992 and December 23, 1992. The Thompson thesis was physically located in the Archives of

²¹ Master’s thesis of Dr. Marc Thompson, titled “High Power Laser Diode Driver with Plural Feedback Loops.”

the MIT library and available to a person who requested it. According to Canon, persons with knowledge of (or copies of) the Thompson thesis would include Dr. Thompson's advisers from MIT, MIT's Chairman of the Department Committee on Graduate Students, his advisor from Polaroid, and various employees within Polaroid. (D.I. 359 at 30) In *Bayer*, a graduate thesis in a university library was not catalogued or placed on the shelves. Only three faculty members even knew about the thesis. Therefore, "the thesis did not constitute a printed publication 'because a customary search would not have rendered the work reasonably accessible even to a person informed of its existence.'" *SRI Int'l*, 511 F.3d at 1196 (citing *Bayer*, 568 F.2d at 1358-62). In *In re Cronyn*, the Federal Circuit found no public accessibility for a thesis document shelved in a library with an alphabetical index by the author's name, because "the only research aid was the student's name, which, of course, bears no relationship to the subject of the student's thesis." *In re Cronyn*, 890 F.2d 1158, 1161 (Fed. Cir. 1989). In *Bruckelmyer*, the Federal Circuit found that a Canadian patent application, properly abstracted, indexed and catalogued, was a printed publication as it "was classified and indexed, as the abstract was in *Wyer*, further providing the roadmap that would have allowed one skilled in the art to locate" it. *Bruckelmyer*, 445 F.3d at 1379. The court concludes that the facts at bar are most similar to those in *Bayer* and *In re Cronyn*. While the Thompson thesis may have been available in the Archives, without cataloguing, it could not serve the "public notice" of patents, allowing "persons interested and ordinarily skilled in the subject matter or art exercising reasonable diligence" to find it. IV's motion for summary judgment that the Thompson thesis is not prior art to the '728 patent is granted.

3. Motion to strike

IV accuses two categories of Canon products of infringing the '728 patent – the “SN-LS products”²² and “SN products”²³ (collectively, “the '728 accused products”). (D.I. 322 at 5-6) Before addressing Canon’s motion for non-infringement, the court turns its attention to the related motion to strike Dr. Horenstein’s supplemental report, wherein Canon alleges that it would be prejudiced by Dr. Horenstein’s “new” infringement theories. (D.I. 334; D.I. 335) Rule 702 of the Federal Rules of Civil Procedure allows a qualified witness to testify in the form of an opinion if the witness’ “scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue” and if his/her testimony is the product of reliable principles and methods which have been reliably applied to the facts of the case.

According to IV, Canon identified new accused SN-LS products on the last day of fact discovery, September 12, 2014. Dr. Carley’s non-infringement rebuttal report (dated May 1, 2015) offered new technical opinions and non-infringement contentions and relied on a translated Japanese document not available to Dr. Horenstein at the time of his opening report. In response, Dr. Horenstein’s prepared a supplemental report (dated May 8, 2015). Dr. Carley then served a second supplemental report on non-infringement of the '728 patent (dated May 18, 2015) responding to Dr. Horenstein’s supplemental report. (D.I. 357) Canon argues that Dr. Carley’s rebuttal report relied on information equally available to both parties’ experts and explained why

²² Canon laser printers containing an SN105239 laser driver chip (“the SN chip”) and an LS502PB laser driver chip (“the LS chip”) connected onto certain circuit boards. (D.I. 322 at 5)

²³ Canon laser printers containing two SN chips connected onto the FM2-6696 circuit board. (D.I. 322 at 5)

Dr. Horenstein was wrong in how he described the functioning of Canon's accused products. (D.I. 335)

If, in fact, Dr. Carley's opinions were new and relied on a document not available to Dr. Horenstein, IV should have been given the opportunity to respond. If, in fact, Canon was relying on information equally available to both parties and has been afforded the opportunity to respond to Dr. Horenstein's supplemental report,²⁴ Canon has not shown prejudice. The court denies Canon's motion to strike.

4. Infringement

Canon argues that the '728 accused products do not detect the laser and bypass currents, as required by the limitation "monitoring a flow of current in said laser and in said bypass to provide a measure of current." (D.I. 322 at 6) The court construed the limitation "monitoring a flow of current in said laser and in said bypass" as "detecting a flow of current in said laser and a flow of current in said bypass" and stated that the act of "monitoring" is distinct from "provid[ing] a measure of current." (D.I. 264 at 1-2) Dr. Horenstein opines that "[n]othing requires the detected currents to be the complete current to laser LD-A, or any particular component of it. Thus detecting the I_{SW1} that flows to both the laser (when the laser is ON) and that flows to the bypass (when the laser is OFF) meets the claim language." (D.I. 366, ex. 4 at ¶¶ 30-31) Dr. Horenstein also opines that the limitation is met by mathematically inferring the flow of current in the laser and bypass. (*Id.* at ¶ 31) Canon disagrees with this opinion and argues that under the "correct" interpretation of the limitation, "the '728 accused products do not detect the laser current." (D.I. 322 at 7)

²⁴ And has deposed Dr. Horenstein regarding such opinions.

The experts agree that the current has three components and each expert provides a technical explanation thereof, with Dr. Horenstein concluding that the disputed limitation is met and Dr. Carley concluding that it is not. (D.I. 366, ex. 3A at ¶¶ 118-20, 177-80; D.I. 323, ex. D at ¶¶ 113-17, 150-53) The parties' counsel offer lengthy explanations²⁵ with references to both parties' expert declarations about the meaning of the experts' testimony; however, the experts reach opposite conclusions regarding whether the disputed limitation is met. The court's construction did not specifically require that the "full" current in the laser and the bypass be "independently" detected. While the experts may agree on a certain technical aspect, the experts disagree on the ultimate issue, whether the limitation is met. These disagreements are proper fodder for a jury and will not be resolved on summary judgment.²⁶

B. The '761 Patent

Th[e] invention relates to an image scanning method for a scanner. More particularly, this invention relates to an image scanning method that can improve the image scanning rate by determining the period of the driving signal and the number of rotating steps of the driving motor, and calculating the period of triggering signal for the light-sensitive devices according to a predetermined resolution.

(1:11-18) The asserted claims require determining three specific parameters: the period of the triggering signal (T_G), the period of the driving signal (T_M), and the number of

²⁵ Which the court declines to summarize.

²⁶ Canon argues that Dr. Horenstein's opinion that such limitation is met under the doctrine of equivalents is insufficient as he compared the products to figure 1 of the '728 patent rather than the claim limitation. (D.I. 322 at 13) Dr. Horenstein's report incorporates his direct infringement analysis (broken up by claim limitation) into an application of the doctrine of equivalents. (D.I. 366, ex. 3A at ¶¶ 126-30) The court concludes that there is sufficient explanation for the theory to proceed to trial.

rotation steps of a motor (N) within the period T_G . (3:64-4:2) The specification explains that

[t]he frequency of the triggering signal T_G , the frequency of the driving signal T_M , and the number of rotation steps of the motor within one triggering period N have a following relationship.

$$T_G = T_M \cdot N, \text{ or}$$
$$T_M = T_G / N.$$

Hence, the lower the resolution, the larger the number of rotation steps of the motor within one triggering period, and the faster the scanning rate.

(4:14-23) Claim 1 recites:

An image scanning method for a scanner, the method comprising the steps of:

determining a driving signal, a triggering signal, and a number of rotation steps according to a predetermined resolution, wherein a period T_G of the triggering signal equals a period T_M of the driving signal multiplied by the number of rotation steps N within the period T_G ;

driving a motor by the driving signal;

outputting an image signal by the triggering signal; and

storing the image signal within the period of the triggering signal.

(7:39-50)

1. Anticipation

The court construed the limitation “determining a driving signal, a triggering signal, and a number of rotation steps according to a predetermined resolution, wherein a period T_G of the triggering signal equals a period T_M of the driving signal multiplied by the number of rotation steps N within the period T_G ” as “determining a period (T_M) of a driving signal, a period (T_G) of a triggering signal wherein T_G is not less than T_M , and a number of rotation steps (N) within the period T_G , according to a predetermined

resolution, and wherein the relationship between the parameters follows $T_G = T_M * N$.”

(D.I. 264 at 8) Canon argues that claims 1, 2, 3 and 5 are invalid in light of the prior art disclosed in the specification of the ‘761 patent.²⁷ Specifically, Dr. Carley opines that the background describes a scanning method in which the three parameters – T_G , T_M and N – meet the court’s construction, with $N = 1$. (D.I. 301, ex. A at ¶¶ 508-53) Analyzing the claims in the context of the specification as required by the anticipation analysis, the claimed invention is that N may equal a large number of integers, not just $N = 1$, as is the case in the prior art. (D.I. 327, ex. 2B at ¶ 144) The court denies Canon’s motion for summary judgment in this regard.

2. 35 U.S.C. § 101

Section 101 provides that patentable subject matter extends to four broad categories, including: “new and useful process[es], machine[s], manufacture, or composition[s] of matter.” 35 U.S.C. § 101; see also *Bilski v. Kappos*, 561 U.S. 593, 601 (2010) (“*Bilski II*”); *Diamond v. Chakrabarty*, 447 U.S. 303, 308 (1980). A “process” is statutorily defined as a “process, art or method, and includes a new use of a known process, machine manufacture, composition of matter, or material.” 35 U.S.C. § 100(b).

The Supreme Court has explained:

A process is a mode of treatment of certain materials to produce a given result. It is an act, or a series of acts, performed upon the subject-matter to be transformed and reduced to a different state or thing. If new and useful, it is just as patentable as is a piece of machinery. In the language of the patent law, it is an art. The machinery pointed out as suitable to perform the process may or may not be new or patentable; whilst the process itself may be altogether new, and produce an entirely new result. The process requires that certain things should be done with certain substances, and in a certain order; but the tools to be used in doing this may be of secondary consequence.

²⁷ Which prior art was considered by the PTO in issuing the patent.

Diamond v. Diehr, 450 U.S. 175, 182-83 (1981) (internal quotations omitted).

The Supreme Court recognizes three “fundamental principle” exceptions to the Patent Act’s subject matter eligibility requirements: “laws of nature, physical phenomena, and abstract ideas.” *Bilski II*, 561 U.S. at 601. In this regard, the Court has held that “[t]he concepts covered by these exceptions are ‘part of the storehouse of knowledge of all men ... free to all men and reserved exclusively to none.’” *Bilski II*, 561 U.S. at 602 (quoting *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948)). “[T]he concern that drives this exclusionary principle is one of pre-emption,” that is, “that patent law not inhibit further discovery by improperly tying up the future use of these building blocks of human ingenuity.” *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, — U.S. —, 134 S.Ct. 2347, 2354 (2014) (citing *Bilski II*, 561 U.S. at 611-12 and *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. —, 132 S.Ct. 1289, 1301 (2012)).

Although a fundamental principle cannot be patented, the Supreme Court has held that “an application of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection,” so long as that application would not preempt substantially all uses of the fundamental principle. *Bilski II*, 561 U.S. at 611 (quoting *Diehr*, 450 U.S. at 187) (internal quotations omitted); *In re Bilski*, 545 F.3d 943, 954 (Fed. Cir. 2008) (“*Bilski I*”). The Court has described the

framework for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts. First, we determine whether the claims at issue are directed to one of those patent-ineligible concepts. If so, we then ask, “[w]hat else is there in the claims before us?” To answer that question, we consider the elements of each claim both individually and “as an ordered combination” to determine whether the additional elements

“transform the nature of the claim” into a patent-eligible application. We have described step two of this analysis as a search for an “inventive concept”—i.e., an element or combination of elements that is “sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself.”

Alice, 134 S.Ct. at 2355 (citing *Mayo*, 132 S.Ct. at 1294, 1296-98).²⁸

“[T]o transform an unpatentable law of nature into a patent-eligible application of such a law, one must do more than simply state the law of nature while adding the words ‘apply it.’” *Mayo*, 132 S.Ct. at 1294 (citing *Gottschalk v. Benson*, 409 U.S. 63, 71-72 (1972)) (emphasis omitted). It is insufficient to add steps which “consist of well-understood, routine, conventional activity,” if such steps, “when viewed as a whole, add nothing significant beyond the sum of their parts taken separately.” *Mayo*, 132 S. Ct. at 1298. “Purely ‘conventional or obvious’ ‘[pre]-solution activity’ is normally not sufficient to transform an unpatentable law of nature into a patent-eligible application of such a law.” *Id.* (citations omitted). Also, the “prohibition against patenting abstract ideas ‘cannot be circumvented by attempting to limit the use of the formula to a particular technological environment’ or adding ‘insignificant post-solution activity.’” *Bilski II*, 561 U.S. at 610-11 (citation omitted). For instance, the “mere recitation of a generic computer cannot transform a patent-ineligible abstract idea into a patent-eligible invention.” *Alice*, 134 S.Ct. at 2358. “Given the ubiquity of computers, wholly generic computer implementation is not generally the sort of ‘additional featur[e]’ that provides

²⁸ The machine-or-transformation test still may provide a “useful clue” in the second step of the *Alice* framework. *Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 716 (Fed. Cir. 2014) (citing *Bilski II*, 561 U.S. at 604 and *Bancorp Servs., L.L.C. v. Sun Life Assurance Co. of Can.*, 687 F.3d 1266, 1278 (Fed. Cir. 2012)). A claimed process can be patent-eligible under § 101 if: “(1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing.” *Bilski I*, 545 F.3d at 954, *aff’d on other grounds*, *Bilski II*, 561 U.S. 593.

any ‘practical assurance that the process is more than a drafting effort designed to monopolize the [abstract idea] itself.’” *Id.* (citations omitted).

Because computer software comprises a set of instructions,²⁹ the first step of *Alice* is, for the most part, a given; i.e., computer-implemented patents generally involve abstract ideas. The more difficult part of the analysis is subsumed in the second step of the *Alice* analysis, that is, determining whether the claims “merely recite the performance of some business practice known from the pre-Internet world along with the requirement to perform it on the Internet,” or whether the claims are directed to “a problem specifically arising in the realm of computer technology” and the claimed solution specifies how computer technology should be manipulated to overcome the problem. *DDR Holdings, LLC v. Hotels.Com, L.P.*, 773 F.3d 1245, 1257 (Fed. Cir. 2014).

Since providing that explanation in *DDR*, the Federal Circuit has not preserved the validity of any other computer-implemented invention under § 101.³⁰ Indeed, in reviewing post-*Alice* cases such as *DDR* and *Intellectual Ventures*, the court is struck by the evolution of the § 101 jurisprudence, from the complete rejection of patentability for

²⁹ Or, to put it another way, software generally comprises a method “of organizing human activity.” *Intellectual Ventures I LLC v. Capital One Bank (USA)*, 792 F.3d 1363, 1367-68 (Fed. Cir. 2015) (citing *Alice*, 134 S.Ct. 2351-52, and *Bilski II*, 561 U.S. at 599).

³⁰ See, e.g., *Content Extraction and Transmission LLC v. Wells Fargo Bank, Nat’l Ass’n*, 776 F.3d 1343 (Fed. Cir. 2014); *Allvoice Devs. US, LLC v. Microsoft Corp.*, Civ. No. 2014-1258, 612 Fed. Appx. 1009 (Fed. Cir. 2015); *OIP Techs., Inc. v. Amazon.com, Inc.*, 788 F.3d 1359 (Fed. Cir. 2015); *Internet Patents Corp. v. Active Network, Inc.*, 790 F.3d 1343 (Fed. Cir. 2015); *Intellectual Ventures*, 792 F.3d 1363; *Versata Dev. Grp., Inc. v. SAP America, Inc.*, 793 F.3d 1306 (Fed. Cir. 2015).

computer programs³¹ to the almost complete acceptance of such,³² to the current (apparent) requirements that the patent claims in suit (1) disclose a problem “necessarily rooted in computer technology,” and (2) claim a solution that (a) not only departs from the “routine and conventional” use of the technology, but (b) is sufficiently specific so as to negate the risk of pre-emption. See *DDR*, 773 F.3d at 1257; *Intellectual Ventures*, 792 F.3d at 1371. In other words, even though most of the patent claims now being challenged under § 101 would have survived such challenges if mounted at the time of issuance, these claims are now in jeopardy under the heightened specificity required by the Federal Circuit post-*Alice*. Moreover, it is less than clear how a § 101 inquiry that is focused through the lens of specificity can be harmonized with the roles given to other aspects of the patent law (such as enablement under § 112 and non-obviousness under § 103),³³ especially in light of the Federal

³¹ See, e.g., 33 Fed. Reg. 15581, 15609-10 (1968), and Justice Steven’s dissent in *Diehr*, whose solution was to declare all computer-based programming unpatentable, 450 U.S. at 219.

³² *State Street Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998), *abrogated by Bilski I*, in which “a computer-implemented invention was considered patent-eligible so long as it produced a ‘useful, concrete and tangible result.’” *DDR*, 773 F.3d at 1255 (citing *State Street Bank*, 149 F.3d at 1373).

³³ Indeed, Judge Plager, in his dissent in *Dealertrack*, suggested that,

as a matter of efficient judicial process I object to and dissent from that part of the opinion regarding the ‘427 patent and its validity under § 101, the section of the Patent Act that describes what is patentable subject matter. I believe that this court should exercise its inherent power to control the processes of litigation . . . , and insist that litigants, and trial courts, initially address patent invalidity issues in infringement suits in terms of the defenses provided in the statute: “conditions of patentability,” specifically §§ 102 and 103, and in addition §§ 112 and 251, and not foray into the jurisprudential morass of § 101 unless absolutely necessary.

Circuit's past characterization of § 101 eligibility as a "coarse" gauge of the suitability of broad subject matter categories for patent protection. *Research Corp. Techs., Inc. v. Microsoft Corp.*, 627 F.3d 859, 869 (Fed. Cir. 2010). Given the evolving state of the law, the § 101 analysis should be, and is, a difficult exercise.³⁴ At their broadest, the various decisions of the Federal Circuit³⁵ would likely ring the death-knell for patent protection of computer-implemented inventions,³⁶ a result not clearly mandated (at least not yet). On the other hand, to recognize and articulate the requisite degree of specificity - either in the equipment used³⁷ or the steps claimed³⁸ - that transforms an abstract idea into patent-eligible subject matter is a challenging task. In trying to sort through the various iterations of the § 101 standard, the court looks to *DDR* as a

Dealertrack, Inc. v. Huber, 674 F.3d 1315, 1335 (Fed. Cir. 2012). *But see CLS Bank Int'l v. Alice Corp. Pty.*, 717 F.3d 1269, 1277 (Fed. Cir. 2013), *aff'd*, 134 S. Ct. 2347 (2014).

³⁴ And, therefore, not an exercise that lends itself to, e.g., shifting fees pursuant to 35 U.S.C. § 285.

³⁵ *See, e.g., Dealertrack*, where the claim was about as specific as that examined in *DDR*, yet the Federal Circuit found the patent deficient because it did "not specify how the computer hardware and database [were] **specially programmed** to perform the steps claimed in the patent," 674 F.3d at 1333-34 (emphasis added). The disclosure of such programming details would likely nullify the ability of a patentee to enforce the patent, given the ease with which software can be tweaked and still perform the desired function.

³⁶ Ironically so, given the national concerns about piracy of American intellectual property.

³⁷ *See, e.g., SiRF Tech., Inc. v. Int'l Trade Comm'n*, 601 F.3d 1319 (Fed. Cir. 2010), a case where the Federal Circuit found that a GPS receiver was "integral" to the claims at issue. The Court emphasized that a machine will only "impose a meaningful limit on the scope of a claim [when it plays] a significant part in permitting the claimed method to be performed, rather than function solely as an obvious mechanism for permitting a solution to be achieved more quickly, i.e., through the utilization of a computer for performing calculations." *Id.* at 1333.

³⁸ *See, e.g., DDR*, 773 F.3d at 1257-58; *TQP Dev., LLC v. Intuit Inc.*, Civ. No. 12-180, 2014 WL 651935 (E.D. Tex. Feb. 19, 2014); *Paone v. Broadcom Corp.*, Civ. No. 15-0596, 2015 WL 4988279 (E.D.N.Y. Aug. 19, 2015).

benchmark; i.e., the claims (informed by the specification) must describe a problem and solution rooted in computer technology, and the solution must be (1) specific enough to preclude the risk of pre-emption, and (2) innovative enough to “override the routine and conventional” use of the computer. *DDR*, 773 F.3d at 1258-59.

Applying the analytical framework of *Alice*, the court first “determine[s] whether the claims at issue are directed to one of those patent-ineligible concepts,” namely, laws of nature, natural phenomena, and abstract ideas. 134 S.Ct. at 2354-55. Canon argues that “the ‘761 patent is drawn to the idea of extracting digital data at a purportedly improved scan rate by implementing a mathematical relationship on a conventional scanner.” (D.I. 299 at 17) IV responds that the asserted claims are directed to the internal operation of a particular physical device (a scanner), with particular physical components (image sensors and motors), using signals having a particular timing relationship that differs from the prior art. (D.I. 321 at 16) The asserted claims describe steps including determining the parameters (which meet a certain mathematical formula) and applying parameters to operate a scanner. The court concludes that such claims do not claim the mathematical formula nor do they seek to simply “implement” such a formula, therefore, the claims are not directed to an abstract idea.

For completeness, the court turns to step two of the *Alice* framework. Canon argues that the remainder of the claim limitations describe the well-known operations of a conventional scanner, the three parameters were known in the prior art, and the “outputting,” “storing” and “converting” limitations, or obtaining values from a table during a scanning operation, are also within the prior art. (D.I. 299 at 17-18) Moreover, Canon contends that the claims and specification do not describe technical

modifications to the generic scanner needed to accomplish the claimed method or why the signal relationship could not be performed on conventional scanners. (*Id.*) IV responds that the asserted claims are applied to “a new and useful end,” and explains that

even if the claimed relationship among T_G , T_M , and N were known (it was not— . . . the claimed relationship freed the T_M from the prior art limitation of being less than or equal to T_G), the claim requiring the imposition of the claimed relationship on those parameters, in combination with the other elements of the claim[,] improved the scanning rate over the conventional industry scanning methods.

(D.I. 321 at 18) Focusing on the language of the claim, the first step involves determining the three parameters (which satisfy a mathematical equation) and then using such parameters to “drive a motor,” “output an image signal,” and “store the image signal.” Such limitations are of sufficient specificity and describe a particular method for a scanner, thereby disclosing an “inventive concept.”

The pre-emption inquiry focuses on whether the patent “would risk disproportionately tying up the use of the underlying ideas.” *Alice*, 134 S.Ct. at 2354; *Mayo*, 132 S.Ct. at 1294. Canon argues that the claimed method “effectively preempts the use of the claimed mathematical relationship in all devices capable of performing a scanning operation, and would even foreclose methods described as prior art by the ‘761 patent itself (i.e., where $N = 1$).” (D.I. 299 at 19) IV responds that “there are many possible relationships among T_G , N , and T_M beyond the claimed relationship, and so the asserted claims pose no threat of pre-empting.” (D.I. 321 at 17) The court concludes that the claimed solution is described with enough specificity to place meaningful boundaries on the inventive concept.

3. Prior Art

The court understands the parties' evidentiary dispute³⁹ to center on the human-readable Seagull II source code⁴⁰ (analyzed by Dr. Carley) and its relationship to the Apple 600 scanner ("Apple 600"). IV requests that Canon be prohibited from relying on the human-readable Seagull II source code to show invalidity in view of the Apple 600 scanner.⁴¹ (D.I. 384 at 13) Canon asserts that "the Apple 600 itself," an actual device, is prior art and that "[t]he Seagull source code—which Canon's expert Dr. Carley analyzed in detail—confirms that the Apple 600 performed each and every step of the asserted claims." (D.I. 359 at 35) The "Seagull source code" (analyzed by Dr. Carley) is the human-readable Seagull II source code to which IV objects. (See, e.g., D.I. 360, ex. F at ¶¶ 888-91) IV contends that, to rely on the human-readable Seagull II source code, Canon must demonstrate that it is the human-readable version of the firmware installed on Apple 600 scanners sold in the United States. (D.I. 384 at 13-14) Canon provided IV the following evidence: a Japanese product composition sheet titled "Rio"⁴² with the word "Seagull II" at the bottom of the document (D.I. 325, ex. 28); a parts configuration sheet titled F91-0382⁴³ with the words "Seagull2 (APL)" in a table underneath the heading (*id.*, ex. 26); Dr. Carley's expert opinion that "the [human-readable] source code made available by Canon's counsel is the same source code

³⁹ On which the briefing is less than clear, with inconsistent terminology for the "source code" being used.

⁴⁰ Human-readable source code is compiled into firmware that is shipped with a scanner. The human-readable source code itself is not shipped with the scanner.

⁴¹ The court relies on Canon's representation that it "has not alleged that the Seagull II source code [i.e., firmware] used in the Apple 600 is a prior art reference" to resolve IV's request that Canon be prohibited from relying upon the human-readable Seagull II code (by itself) in any obviousness argument. (D.I. 359 at 35; D.I. 384 at 13)

⁴² Both parties agree that "Rio" is the code name given by Apple to the Apple 600.

⁴³ F91-0382 is the code used to identify the Apple 600 scanner.

used in the Apple 600” (*id.*, ex. 14 at ¶ 477; ex. 2 at 160:20-161:4 (testifying that the information about the software installed on the scanner was obtained from Canon’s counsel)); Dr. Carley’s testing of the Apple 600 and his conclusion that “the Apple 600 appears to operate in the manner set forth in the [human-readable] Seagull II source code” (*id.*, ex. 14 at ¶ 477); deposition testimony of fact witness Kunihiro Yamazaki (who cannot read or understand code and obtained the information from the scanner group) that the code for the Apple 600 is “the same” as the Seagull II code (*id.*, ex. 18 at 77:19-78:1, 81:4-82:11; *see also* 25:3-19); Dr. Carley’s comparison of the hardware features of the Apple 600 and Canon’s own branded version of the scanner, CanoScan 300, which allegedly did contain the Seagull II source code (*id.*, ex. 2 at 158:10-15), concluding that the hardware on the two devices was identical, but conceding that “different firmware could be made to operate on any general kind of computer [hardware]” (*id.*, ex. 2 at 158:17-159:2). Having reviewed the record, the court concludes that Canon has not provided sufficient evidence to show a nexus between “the human-readable source code” analyzed by Dr. Carley and the “firmware” on the Apple 600 scanner. Canon will not be allowed to rely on the human-readable source code for showing invalidity in view of the Apple 600 scanner.

4. Infringement

Canon moves for non-infringement, arguing that there is no dispute of fact that the ‘762 accused products do not “determine” the parameter N, or “output” image signals “by the triggering signal,” as required by the claim limitations. (D.I. 322 at 13) The court concluded that “N is an integer.” (D.I. 264 at 10) As to the “determining” step, Dr. Carley opines that the “motorMovesPerLine” values in the Canon source code come

from “motor Scan tables” and are used to calculate “No. of Pulse/Line” values. The value “motorMovesPerLine is used to determine how many motor pulses are required to shift the image scanner unit (in flatbed mode) or the document (in ADF and DADF modes) from its home position, to the scan start position and the scan end position.” In other words, “motorMovesPerLine is a distance ratio” and is not always an integer. (D.I. 323, ex. D at ¶¶ 231-38) Dr. Carley concludes that,

[w]hile there may be certain modes where the distance ratio has the same value as the number of rotation steps within the SP period, this does not mean that motorMovesPerLine variable is the parameter “number of rotation steps within [the SP period].” Rather, those modes simply represent instances where the scanline distance and the accumulation period correspond such that the number of rotation steps required to move the image sensor (or document) over one scanline occurs with the same frequency of motor pulses in each accumulation period.

(D.I. 301, ex. B at ¶ 283)

Dr. Horenstein disagrees and opines:

Th[e motorMovesPerLine] value indicates the “number of motor moves per scanline.” . . . Thus, a scan line is an instance in which image data is collected by the scanner. Thus, the “motorMovesPerLine” is the number of times the motor moves between successive acquisitions of image data as collected from the CIS and sent to the AFE as output.

(D.I. 366, ex. 3B at ¶ 89) Dr. Horenstein explains the calculation of motorMovesPerLine as “dividing the desired line length by the length of a motor step to determine the number of steps in a line, or, in other words, the number of motor steps between the SP pulses” (*Id.* at ¶ 77) The parties’ experts disagree on the proper way to calculate “N” and whether motorMovesPerLine truly embodies “N.”

As to “output,” the experts agree that the accused image sensors receive two separate signals: a synchronization (“SP”) signal and a pixel clock (“CLK”) signal. (D.I. 366, ex. 3B at ¶¶ 60-61; D.I. 323, ex. D at ¶¶ 210, 339-42) Dr. Carley opines that a

person of ordinary skill would understand that claim 1 “requires that the triggering signal be the signal that is directly responsible for outputting the image signal from the image sensor.” (D.I. 323, ex. D at ¶ 335) Dr. Carley explains that “[t]he pixel clock signal CLK is separate and distinct from the SP signal, and while the SP signal and CLK may be synchronized, it does not follow that the image signal is outputted from the CIS image sensor ‘by’ the SP signal;” he concludes that “the analog image data is outputted by the CLK signal, not the SP signal.” (D.I. 323, ex. D at ¶¶ 340-42) Dr. Horenstein opines that “the SP signal controls the output of the image signal,” by initiating “the counting of the pixel clock to determine when data are output.” (D.I. 366, ex. 3B at ¶ 60) He further explains that “the SP signal is directly responsible for outputting the image signal . . . because nothing happens until the CIS receives the SP pulse.” Dr. Horenstein concludes that a person of ordinary skill “would not understand the claim to require that the triggering signal ‘directly’ output the image signal, as opposed to causing the output of the image signal, which the SP signal indisputably does, even if it does so through an intermediate signal” (*Id.*, ex. 4 at ¶ 43) The court concludes that there exist material issues of fact as to whether direct output is required (as opposed to mere initiation of the outputting process) and as to which signal outputs the image (CLK or SP). Summary judgment of non-infringement is denied.

C. The ‘432 Patent

The ‘432 patent’s asserted claims are directed to methods of performing a two-pass scan operation on an original document. (Abstract) In the claimed methods, a scanner performs a first (so-called “primitive”) scan of the original document. A scanner driver then performs image processing routines on the scanned image to obtain “image

qualities” of the original document and, “based on the image qualities of the original document, specif[ies] a set of suited image processing settings for optimal scan of the original document.” The scanner then performs a second (so-called “final”) scan of the original document “based on the suited image processing settings.” (2:19-35) Claim 1 recites:

A method implemented on a user interface incorporated in a computer system coupled with a scanner for performing an automatic scan operation on an original document, the computer system running a scanner driver and an application program; the method comprising the steps of:

reading a set of default image processing settings into the user interface;

activating the scanner to perform a primitive scan operation on the original document based on the default image processing settings to thereby obtain a primitive scanned image which is then transferred to the scanner driver;

activating the scanner driver to perform a set of image processing routines on the primitive scanned image to thereby obtain the image qualities of the original document, wherein the set of image processing routines include automatic cutting; and based on the image qualities of the original document, specifying a set of suited image processing settings for optimal scan of the original document; and

activating the scanner to perform a final scan operation on the original document based on the suited image processing settings to thereby obtain a final scanned image which is transferred to the application program for use by the application program.

(5:10-34)

1. Enablement and written description

The statutory basis for the enablement and written description requirements, § 112 ¶1, provides in relevant part:

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

“The enablement requirement is met where one skilled in the art, having read the specification, could practice the invention without ‘undue experimentation.’” *Streck, Inc. v. Research & Diagnostic Systems, Inc.*, 665 F.3d 1269, 1288 (Fed. Cir. 2012) (citation omitted). “While every aspect of a generic claim certainly need not have been carried out by the inventor, or exemplified in the specification, reasonable detail must be provided in order to enable members of the public to understand and carry out the invention.” *Genentech, Inc. v. Novo Nordisk A/S*, 108 F.3d 1361, 1366 (Fed. Cir. 1997). The specification need not teach what is well known in the art. *Id.* (citing *Hybritech v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1384 (Fed. Cir. 1986)). A reasonable amount of experimentation may be required, so long as such experimentation is not “undue.” *ALZA Corp. v. Andrx Pharmaceuticals, Inc.*, 603 F.3d 935, 940 (Fed. Cir. 2010).

“Whether undue experimentation is needed is not a single, simple factual determination, but rather is a conclusion reached by weighing many factual considerations.” *Martek Biosciences Corp. v. Nutrinova, Inc.*, 579 F.3d 1363, 1378 (Fed. Cir. 2009) (citing *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988)). The Federal Circuit has provided several factors that may be utilized in determining whether a disclosure would require undue experimentation: (1) the quantity of experimentation necessary; (2) the amount of direction or guidance disclosed in the patent; (3) the presence or absence of working examples in the patent; (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

of the art; and (8) the breadth of the claims. *In re Wands*, 858 F.2d at 737. These factors are sometimes referred to as the “Wands factors.” A court need not consider every one of the Wands factors in its analysis, rather, a court is only required to consider those factors relevant to the facts of the case. See *Streck, Inc.*, 655 F.3d at 1288 (citing *Amgen, Inc. v. Chugai Pharm. Co., Ltd.*, 927 F.2d 1200, 1213 (Fed. Cir. 1991)).

The enablement requirement is a question of law based on underlying factual inquiries. See *Green Edge Enterprises, LLC v. Rubber Mulch Etc., LLC*, 620 F.3d 1287, 1298-99 (Fed. Cir. 2010) (citation omitted); *Wands*, 858 F.2d at 737. Enablement is determined as of the filing date of the patent application. *In re ‘318 Patent Infringement Litigation*, 583 F.3d 1317, 1323 (Fed. Cir. 2009) (citation omitted). The burden is on one challenging validity to show, by clear and convincing evidence, that the specification is not enabling. See *Streck, Inc.*, 665 F.3d at 1288 (citation omitted).

A patent must also contain a written description of the invention. 35 U.S.C. § 112, ¶ 1. The written description requirement is separate and distinct from the enablement requirement. See *Ariad Pharmaceuticals, Inc. v. Eli Lilly and Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2011). It ensures that “the patentee had possession of the claimed invention at the time of the application, i.e., that the patentee invented what is claimed.” *LizardTech, Inc. v. Earth Resource Mapping, Inc.*, 424 F.3d 1336, 1344-45 (Fed. Cir. 2005). The Federal Circuit has stated that the relevant inquiry – “possession as shown in the disclosure” – is an “objective inquiry into the four corners of the specification from the perspective of a person of ordinary skill in the art. Based on that inquiry, the specification must describe an invention understandable to that skilled

artisan and show that the inventor actually invented the invention claimed.” *Ariad*, 598 F.3d at 1351.

This inquiry is a question of fact; “the level of detail required to satisfy the written description requirement varies depending on the nature and scope of the claims and on the complexity and predictability of the relevant technology.” *Id.* (citation omitted). In this regard, defendant must provide clear and convincing evidence that persons skilled in the art would not recognize in the disclosure a description of the claimed invention. *See PowerOasis, Inc. v. T-Mobile USA, Inc.*, 522 F.3d 1299, 1306-17 (Fed. Cir. 2008) (citation omitted). While compliance with the written description requirement is a question of fact, the issue is “amenable to summary judgment in cases where no reasonable fact finder could return a verdict for the non-moving party.” *Id.* at 1307 (citing *Invitrogen Corp. v. Clontech Labs., Inc.*, 429 F.3d 1052, 1072-73 (Fed. Cir. 2005)).

The court previously invalidated claims 5-8, because the means-plus-function limitations were indefinite under 35 U.S.C. § 112, ¶ 6 for failing to disclose a corresponding structure. (D.I. 272 at 9-18) Canon argues that, because there is no corresponding algorithm or structure for the “means for” performing steps, the specification does not provide sufficient detail for the corresponding method steps of asserted claims 1-4 to indicate that the inventors were in possession of the invention.⁴⁴

⁴⁴ For example, claim 1 recites in part “activating the scanner driver to perform a set of image processing routines on the primitive scanned image to thereby obtain the image qualities of the original document.” Claims 5-8 recite in part “means for activating the scanner driver to perform a set of image processing routines on the primitive scanned image to thereby obtain the image qualities of the original document,” which limitation is indefinite under 35 U.S.C. § 112, ¶ 6 for failing to disclose a corresponding structure.

(D.I. 299 at 22-23) Canon's expert, Dr. Stevenson, opines that the specification does not describe how to "obtain the image qualities of the original document" or "what image processing routines are performed in order to obtain such 'image qualities.'" (D.I. 300, ex. A at ¶¶ 561-62) Dr. Stevenson explains that the single example provided describes "the scanning of a 'low-resolution B/W (black-an-white) document,'" but "does not describe what image processing routines were used in order to recognize the 'image qualities,' what those 'image qualities' are, or how 'scanner driver 30' determined that the 'suited settings' were 'B/W, 300 dpi.'" (*Id.* at ¶ 564) For largely the same reasons, Canon argues that a person of ordinary skill in the art could not practice the invention without "undue experimentation." (D.I. 299 at 23; D.I. 300, ex. A at ¶¶ 566-72)

Dr. Kaliski, IV's expert, disagrees and concludes that the '432 patent has sufficient written description and is enabled. Specifically, Dr. Kaliski opines that the claims themselves provide examples of "image processing routines" and the specification discloses the same examples. Therefore, "[o]ne of ordinary skill at the time of the invention would have understood the claimed image processing routines to operate" as in the disclosed examples. (D.I. 328, ex. 2B at ¶¶ 170-72) As to enablement, Dr. Kaliski concludes that "one of ordinary skill would have understood how the disclosed examples 'obtain the image qualities of the original document' and 'based on the image qualities of the original document' specify 'a set of suited image processing settings for optimal scan of the original document.'" (*Id.* at ¶¶ 173-77) The disagreement between the experts on whether one of ordinary skill could practice the invention without undue experimentation and whether the inventors had possession of

the invention present genuine disputes of material fact better left to the province of the jury.

2. Anticipation

Canon argues that the Umax Astra 610 product⁴⁵ (“the Umax product”) anticipates claims 1-3. (D.I. 299 at 24; D.I. 300, ex. C at 1-68) As to the limitation “activating the scanner to perform a final scan operation on the original document based on the suited image processing settings to thereby obtain a final scanned image which is transferred to the application program for use by the application program” (“the activating limitation”), the parties agreed (during the claim construction exercise) that “transfer of the final scanned image happens after the final scanned image is obtained.” (D.I. 272 at 9, citing D.I. 242 at 12; D.I. 250 at 12) The court stated that dividing the limitation into two steps as proposed by Canon does not provide further clarity, especially where the claims and the specification both depict the limitation as a single step. (*Id.*, citing claims 1-4; 2:31-35) The court construed the limitation “application program, as “post-scan application,” explaining that although the word “post-scan” does not appear in the claims or the specification, the specification states that “the final scanned image is transferred to an application program for use by the application program.” (*Id.* at 18, citing 1:58-60) The specification provides examples of an application program such as “an image editing program or a word processor that can accept the quality-enhanced image as an image file.” (*Id.*, citing 4:45-47)

⁴⁵ Although Canon states that this product “was the commercial embodiment of the invention,” the cited deposition testimony does not support such a decisive statement. (D.I. 302, ex. 29 at 60:1-22)

Dr. Kaliski disagrees with Dr. Stevenson's opinion that the Umax product discloses the activating limitation and opines that "after scanning, a thumbnail of the image—not the final image as required by the claim—is transferred into Presto! PageManager." Also, the Umax product "does not directly transfer to a post-scan application," as it requires dragging and dropping. Dr. Kaliski concludes that the "dragging and dropping" splits the step into two, which the court declined to do during claim construction. (D.I. 328, ex. 2B at ¶¶ 100-03) Dr. Stevenson opines that "Presto! PageManager is an image editing program, and when a scanning process is initiated from Presto! PageManager, the entire final scanned image (not just a thumbnail of it) is transferred to Presto! PageManager." (D.I. 300 at ¶ 21) Moreover, he disagrees with Dr. Kaliski's characterization of the "application program" limitation, as the court's construction does "not preclude launching the application program before scanning." (*Id.* at ¶ 22)

The issue of when the application is launched, if such application could be used pre-scan, and how launching the application pre-scan affects the function of the application post-scan were not questions presented during the claim construction exercise. On the record before it, the court is left without sufficient information to determine whether the limitation at issue is found in the prior art. *Schumer v. Laboratory Computer Systems, Inc.*, 308 F.3d 1304, 1315 (Fed. Cir. 2002) ("It is not our task, nor is it the task of the district court, to attempt to interpret confusing or general testimony to determine whether a case of invalidity has been made out, particularly at the summary judgment stage."). The motion for summary judgment is denied.

3. Infringement

IV accuses three categories of products of infringing the '432 patent: PIXMA printers, CanoScan flatbed scanners, and imageCLASS multifunction printers. (D.I. 322 at 23-24) The products are sold with certain software packages Cano IJ Scan Utility/ScanGear and MF Toolbox/ScanGear MF ("ScanGear").⁴⁶ (D.I. 362 at 21-22) Canon moves for non-infringement of claim 4. (D.I. 322 at 24) Claim 4 requires, in part, "activating the scanner driver to perform a set of image processing routines on the primitive scanned image . . . wherein the set of image processing routines include automatic character recognition" and then "activating the scanner to perform a final scan operation on the original document based on the suited image processing settings to thereby obtain a final scanned image" (6:32-44)

Dr. Stevenson opines that the accused products perform "automatic character recognition" on the "final scanned image," not on the "primitive scanned image." (D.I. 326, ex. B at ¶¶ 388-89) Dr. Stevenson explains that "the functionality for generating a text-searchable PDF after the 'final scan operation' . . . is provided by [the] My Image Garden [software], not by [the] ScanGear" software and "because the option to create text-searchable PDFs appears in the interface for MF Toolbox, . . . such PDFs are created by MF Toolbox, not by ScanGear MF." He concludes that the PDF's are not created by the scanner driver, i.e., the ScanGear software. (*Id.* at ¶¶ 390-94)

Dr. Kaliski disagrees and states that there is "no evidence that My Image Garden is launched and separately performs OCR processing" and "that [alternatively] My

⁴⁶ Canon's arguments regarding which products were tested and whether sufficient expert opinion exists for IV's infringement arguments to go forward at trial are an evidentiary dispute and will be resolved consistently with the court's position presented above regarding the '870 patent. (*See supra*, IV.A.3.d. Products in dispute)

Image Garden provides a module that ScanGear uses itself to perform OCR” (D.I. 365, ex. 4 at ¶ 64) Dr. Kaliski opines that,

clicking the Preview button in ScanGear or ScanGear MF, with the ‘Create Searchable PDF’ option enabled, results in a final scanned image that has searchable text. This process necessarily involves determining if there is such text in the scanned image of the original document and then specifying that those text characters are to be converted, as opposed to the image data in the final scan.

(*Id.*, ex. 3B at ¶ 238) Dr. Kaliski further opines that “the resulting PDF has recognized text,” which “establishes that OCR has been performed between the ‘primitive scan operation’ and ‘final scan operation’ steps.”⁴⁷ (*Id.*, ex. 4 at ¶ 62, citing ex. 3B at ¶¶ 242-47)

Dr. Stevenson disagrees, stating that “Dr. Kaliski has not pointed to any evidence that a searchable PDF is created between the ‘primitive scan operation’ and the ‘final scan operation.’ Moreover, Dr. Kaliski has not pointed to any evidence that such a ‘determining’ happens, much less that it happens between the [operations].” (D.I. 326, ex. B at ¶ 389) The court concludes that Dr. Kaliski has not shown that the accused products satisfy the temporal aspect of the claim – that “automatic character recognition” is performed between the primitive scan operation and the final scan operation – required for literal infringement.

In discussing the doctrine of equivalents, Dr. Kaliski explains:

The result of the operation of IJ Scan Utility/ScanGear (ScanGear Scan) and MF Toolbox/ScanGear MF (Color Scan, B&W Scan, Custom 1&2) with a Canon scanner is the same result as the [disputed limitation] of the claim, because the ScanGear and ScanGear MF scanner drivers, with the

⁴⁷ IV argues (without expert support) that the claim language “requires ‘automatic character recognition’ (recognition that characters are present), not necessarily a text-searchable PDF where the characters have been interpreted,” i.e. OCR. (D.I. 362 at 26)

“Create Searchable PDF” option enabled, first displays an image that reflects what the final scan will look like along with the text that will be searchable if applicable.

(D.I. 365, ex. 3B at ¶ 245) He further states “[t]o the extent that OCR is not performed on the ‘primitive scanned image,’ I have provided an infringement analysis under the doctrine of equivalents.” (*Id.*, ex. 4 at ¶ 62, citing ex. 3B at ¶¶ 242-47) Allowing Dr. Kaliski’s opinion regarding the doctrine of equivalents (that the accused products infringe because they produce the same result, but conceding that OCR is not performed on the primitive scanned image) vitiates claim 4’s requirement that the “set of image processing routines” (including the “automatic character recognition”) be performed on the “primitive scanned image,” not the “final scanned image.” *Tronzo v. Biomet, Inc.*, 156 F.3d 1154, 1160 (Fed. Cir. 1998) (“If a theory of equivalence would vitiate a claim limitation, however, then there can be no infringement under the doctrine of equivalents as a matter of law.”). The court grants summary judgment of non-infringement.

D. The ‘086 Patent

The ‘086 patent is directed to a one-pass scan operation. (Abstract; 2:35-40) Specifically, the scanner performs a scan of the original document to “obtain a primitive scanned image,” and the software then performs “an image-enhancement process” to “obtain a quality-enhanced image.” (2:62-3:3) Claim 2 recites:

A method implemented on a user interface incorporated in a computer system coupled with a scanner for performing a scan operation on an original document, the computer system running a scanner driver and an application program, the method comprising the steps of:

determining a set of image processing settings required for the original document by a scanner driving program;

obtaining a primitive scanned image in a manner that the scanner uses the image processing settings through the scanner driving program;

performing an image-enhancement process on the primitive scanned image, wherein the image-enhancement process includes a distortion correction routine; and

obtaining a final image by the image-enhancement process, wherein the final image is transferred to the application program.

(5:33-49) Claim 9⁴⁸ recites:

A method, comprising:

obtaining an image processing setting for a target of a scan;

obtaining a primitive scanned image of the scan target using the obtained image processing setting through a scanner driving program;

performing an image-enhancement process on the primitive scanned image, wherein the image-enhancement process includes at least one of an automatic cutting routine, a distortion correction routine, a color calibration routine, or an automatic character recognition routine; and

obtaining a final image by the image-enhancement process, wherein the final image is transferred to an application program.

(7:53-67)

1. Enablement and written description

Canon argues that claims 11, 13, 17 and 19 lack written description, because the “identical limitations” of claims 23 and 25 were found to be indefinite under 35 U.S.C. § 112, ¶ 6 for failing to disclose a corresponding structure.⁴⁹ (D.I. 272 at 24-25) Dr. Stevenson opines that a person of skill “would have understood the term ‘image

⁴⁸ On which claims 11 and 13 depend.

⁴⁹ For example, claim 9 (on which claims 11 and 13 depend) recites “performing an image-enhancement process on the primitive scanned image.” Claim 21 (on which claims 23 and 25 depend) recites “means for performing an image-enhancement process on the primitive scanned image,” which limitation is indefinite under 35 U.S.C. § 112, ¶ 6 for failing to disclose a corresponding structure. (D.I. 272 at 24)

processing routines' to broadly refer to an entire field of potential image processing techniques." However, the specification "only lists four types of image processing routines" and "does not describe what other image processing routines could be performed or in what combination(s) such image processing routines may be performed in order to obtain a quality-enhanced image."⁵⁰ Dr. Stevenson concludes that the patent is invalid for failure to satisfy the written description requirement and (for largely the same reasons) is not enabled. (D.I. 300, ex. A at ¶¶ 672-80) Dr. Kilaski disagrees and opines that both requirements are satisfied, because "the claims themselves provide examples of 'image processing routines' . . . [and t]he specification discloses these same examples." Dr. Kilaski concludes that the patent is valid. (D.I. 328, ex. 2B at ¶¶ 261-69) As the experts disagree on whether or not the specification sufficiently describes the patent and whether "undue experimentation" would be required to practice the patent, summary judgment is denied in this regard.

2. Determining step

Canon argues that the parties' experts disagree as to whether "the scanner driving program" (Dr. Kaliski's opinion) or the user (Dr. Stevenson's opinion) must perform the "determining" step of claims 2 and 4. (D.I. 299 at 27) IV points to Dr. Stevenson's testimony that he "agree[s] the scanner driver should determine it" (D.I. 321 at 30, citing D.I. 325, ex. 7 at 78:8-15) Dr. Kaliski opines that "operation of [software] with a Canon scanner performs" the determining step. (D.I. 328, ex. 1B at ¶¶

⁵⁰ Although the claims do not use the term "image processing routines," the specification explains that "the image-enhancement process includes a comprehensive set of image processing routines, such as automatic cutting, distortion correction, color calibration, and automatic character recognition." (3:4-7)

253-60) The specification describes “incorporation of the user interface of the invention” in figure 2 and explains that “[t]he user can specify a set of proper image processing settings into the user interface 50.” (3:58-63) In figure 3, the patent provides

a flow diagram showing the procedural steps involved in the method of the invention . . . used with the computer system 20 and the scanner 10 . . . and is performed by the user interface 50.

In the first step S100, a set of image processing settings that are suited for optimal scan of the original document is determined by a scanner driving program, and then stores [sic] these settings into the user interface 50.

(4:15-19) The specification describes both the user and the scanner driver program performing the “determining” step.

3. Anticipation

Canon moves for summary judgment that asserted claims 11, 13, 17, and 19 are anticipated by the Visioneer Strobe Pro product (“Strobe Pro product”). In support, Canon provides Dr. Stevenson’s report⁵¹ and offers attorney argument to show “how the Strobe Pro anticipates [the asserted claims] through either the PaperPort interface or the ScanDirect interface.” (D.I. 299 at 29; D.I. 359 at 19) Dr. Kaliski opines that the limitation “obtaining a final image by the image-enhancement process, wherein the final image is transferred to the application program” is not met, explaining that “the PaperPort software requires the user to drag the thumbnail scan to the WordPad icon to cause the transfer of the scanned image to the post-scan application.” (D.I. 328, ex. 2B at ¶¶ 244-47)

Canon also moves for summary judgment that Xerox Paxis Pro 2.0 software (“Paxis Pro software”) anticipates claims 2 and 4. To achieve this result, Canon

⁵¹ Setting forth a limitation-by-limitation analysis in 33 pages. (D.I. 300, ex. D at 136-69)

requests that the court agree that: (1) the “determining” step of claims 2 and 4 does not require the “scanner driving program” to perform the “determining” step (discussed above); and (2) the “performing an image-enhancement process” step of claims 2 and 4 is not limited to the “scanner driving program” performing the “image-enhancement process.” (D.I. 299 at 30) Canon admits that the experts dispute whether Pagis Pro performs the limitation “obtaining a final image by the image-enhancement process, wherein the final image is transferred to the application program.” (D.I. 299 at 31) Dr. Kaliski disagrees that such limitation is satisfied because the user needs to perform the additional step of pressing “Done” to indicate that scanning is done. (D.I. 328, ex. 2B at ¶¶ 197-99)

On the record before it, the court concludes that Canon has not met its burden of persuasion that the prior art references discussed above anticipate the asserted claims. Accordingly, the motion for summary judgment is denied.

4. Infringement

a. Claims 2 and 4

The method claims require, in part, “determining a set of image processing settings required for the original document by a scanner driving program” (“the determining step”), then “obtaining a primitive scanned image in a manner that the scanner uses the image processing settings through the scanner driving program” (“the obtaining step”). (5:38-42; 6:4-8) Canon argues that claims 2 and 4 are not infringed by the accused products⁵² because the features of the accused products do not perform

⁵² Canon’s arguments regarding which products were tested and whether sufficient expert opinion exists for IV’s infringement arguments to go forward at trial are an

the “determining” step before the “obtaining” step (which step uses the image processing settings that result from the “determining” step). (D.I. 322 at 29)

As to the IJ Scan Utility/ScanGear (Auto, Custom Scans) software, Dr. Kaliski opines that “[c]licking either the Auto or Custom button shows a dialog window that informs the user that ScanGear will ‘Scan by automatically selecting the settings and data format associated with the document type.’” He concludes that “the operation of IJ Scan Utility/ScanGear (Auto, Custom Scans) and CaptureOnTouch (Select Scan Job) with a Canon scanner performs” the determining step, “because for Auto and Custom Scans, ScanGear automatically detects and selects the settings (such as the Resolution and Data Format) associated with the original document, which will be used by the scanner in generating the final scanned image.” (D.I. 365, ex. 3B at ¶¶ 253-60)

For the CaptureOnTouch software, Dr. Kaliski opines that “the scanner driver detects whether the document is in color, grayscale, or black and white” and “the scanner driver automatically detects the resolution from the content printed in the document.” Dr. Kaliski concludes that “the scanner driver for CaptureOnTouch automatically detects and selects the color and resolution of the scanned document, which will be used by the scanner in generating the final scanned image.” (*Id.* at ¶¶ 261-65) Dr. Kaliski testified that CaptureOnTouch would have “to work on the scanned document so it can process it before sending it to the application.” He then changed his opinion and testified that certain parameters (“like the dots per inch or . . . paper size”) may be “set before . . . scanning,” and “are determined by knowing the document type.”

evidentiary dispute and will be resolved consistently with the court’s position presented above regarding the ‘870 patent. (See *supra*, IV.A.3.d. Products in dispute)

(D.I. 324, ex. 45 at 238:21-241:7) Dr. Stevenson responds that in the accused software modes, “there is no option for the user to specify the type of document to be scanned.”

(D.I. 326 at ¶ 9) Dr. Stevenson concludes that “because . . . that determination is made based upon the content of the scanned image, it is made after the scanned image is obtained.” (*Id.*, ex. B at ¶ 458)

Comparing Dr. Kaliski’s opinions to the temporal requirement of the claims, the court concludes that IV has not shown that the accused products perform the determining step before the obtaining step. Canon’s motion for non-infringement is granted in this regard.

b. Claims 11, 13, 17 and 19

Claims 11 and 13 (dependent on claim 9) require “obtaining an image processing setting for a target of a scan” (“the obtaining an image processing setting step”) and “obtaining a primitive scanned image of the scan target using the obtained image processing setting through a scanner driving program” (“the obtaining a primitive scanned image step”). (7:54-58) Canon argues that claims 11 and 13 are not infringed by certain software products (IJ Scan Utility/ScanGear (Auto, Custom, ScanGear Scans) and CaptureOnTouch (Select Scan Job)) because they do not perform the obtaining an image processing setting step before the obtaining a primitive scanned image step. (D.I. 322 at 30; D.I. 385 at 16)

As to IJ Scan Utility/ScanGear (Auto, Custom, ScanGear Scans) and CaptureOnTouch (Select Scan Job), Dr. Kaliski relies on his reasoning discussed above regarding the determining step and similarly concludes that “for the Auto and Custom Scans, ScanGear automatically detects and selects the settings and data format

associated with the original document.” (D.I. 365, ex. 3B at ¶¶ 344-46, 352-55) Canon offers the same reasoning to conclude that “the ‘Auto Scan’ and ‘Custom Scan’ modes in the PIXMA MG6320 and the options in the CaptureOnTouch software for the imageFORMULAP-208 do not ‘determin[e]’ (or ‘obtain[]’) any image processing settings before the document is scanned.” (D.I. 322 at 30)

Comparing Dr. Kaliski’s opinions to the temporal requirement of the claims, the court concludes that IV has not shown that the accused products perform the obtaining an image processing setting step before the obtaining a primitive scanned image step. Canon’s motion for non-infringement is granted in this regard.

Canon also argues that claims 11, 13, 17 and 19 are not infringed by ScanGear or ScanGear MF products, because when Dr. Stevenson “performed . . . such a one-pass scan process using ScanGear (with a PIXMA MG6320, i.e., the same accused product referenced by Dr. Kaliski), the final scanned image was not deskewed.”⁵³ (D.I. 326, ex. B at ¶¶ 507-12) Dr. Kaliski opines that the deskewing function is satisfied by ScanGear in conjunction with CaptureOnTouch. (D.I. 365, ex. 3B at ¶¶ 278-87, 375, 435) Which expert employed the most credible testing method is a question of fact for a jury. The court denies Canon’s motion for non-infringement in this regard.

E. The ‘914 Patent⁵⁴

⁵³ Deskewing or skew correction is the process of straightening an image that has been scanned crookedly.

⁵⁴ As recognized by the Supreme Court of the United States, “the power to stay proceedings is incidental to the power inherent in every court to control the disposition of the causes on its docket with economy of time and effort for itself, for counsel, and for litigants.” *Landis v. North American Co.*, 299 U.S. 248, 252 (1936). Put another way, the decision of whether to grant a stay rests within the sound discretion of the court through the exercise of judgment, “weigh[ing] competing interests and maintain[ing] an even balance.” *Id.* See also *Cost Bros. Inc. v. Travelers Indemnity Co.*, 760 F.2d 58, 60

The '914 patent is directed to methods for automatically operating an image capture device for capturing an image according to instructions entered by the user. (3:15-24) The specification describes various “automatic image trigger conditions” that could cue image capture as well as “selectable events” such as “noise above a certain threshold” or “changes in color, brightness, or other image characteristics.” (7:39-8:18) After selecting the trigger condition, the user assigns a threshold level corresponding to the automatic image trigger condition. (9:11-19) Claim 1 recites:

A method of automatically capturing an image with an image capture device comprising:

selecting an automatic image trigger condition;

entering a threshold level corresponding to the automatic image trigger condition, wherein reaching the threshold level of the automatic trigger condition indicates that a suitable image can be captured;

(3d Cir. 1985); *Ethicon, Inc. v. Quigg*, 849 F.2d 1422, 1426-27 (Fed. Cir. 1988). Since the enunciation of the standard by the Supreme Court in 1936, courts have identified the ubiquitous “factors” which should be used as guidance in determining whether a stay is appropriate, for instance:

“(i) whether a stay would unduly prejudice or present a clear tactical disadvantage to the non-moving party; (ii) whether a stay will simplify the issues in question and trial of the case; and (iii) whether discovery is complete and whether a trial date has been set.” *Xerox Corp. v. 3Com Corp.*, 69 F. Supp. 2d 494, 406 (W.D.N.Y. 1999); *see also United Sweetener USA, Inc. v. Nutrasweet Co.*, 766 F. Supp. 212, 217 (D. Del. 1992).

Nokia Corp. v. Apple, Inc., Civ. No. 09-791-GMS, 2011 WL 2160904 at *1 (D. Del. June 1, 2011). The PTAB issued a decision finding all claims of the '914 patent unpatentable. IV has appealed such decision to the Federal Circuit. (D.I. 421 at 1) In the present litigation, the court has construed “entering a threshold level” in a contrary manner to the construction assigned by the PTAB. With expert discovery and the summary judgment motion practice complete, as well as an approaching trial date of November 30, 2015, the court concludes that a stay is not warranted and will unduly prejudice IV, the patent holder at bar. Canon’s motion to sever and stay the '914 patent (D.I. 415) is denied.

monitoring of a signal for detecting the automatic image trigger condition; and

automatically operating the image capture device to capture at least one digital image upon the automatic detection of the automatic image trigger condition meeting the threshold level.

(14:9-21)

1. Anticipation

The court construed “automatically operating the image capture device to capture at least one digital image upon the automatic detection of the automatic image trigger condition meeting the threshold level” as “upon the automatic detection of the automatic trigger condition meeting the threshold level, the image capture device captures, without further intervention by a user, at least one digital image.” (D.I. 264 at 8) The court stated, however, that such construction does not preclude incidental involvement by the user in operating the device between the “entering a threshold level” and the “automatically operating” steps, so long as the device itself operates automatically to capture an image when the threshold level is met. The specification discloses an embodiment, where “video taken for a predetermined period of time preceding the still image capture can be included in an image capture set.” (6:63-65)

The video is continuously stored in temporary buffer 17 when the device is ready to capture, such as when the digital capture device 10 is placed in a mode in which image capture sets are enabled when the digital capture device 10 is picked up by the user, or when the user contacts the image capture button.

(7:7-12)

The Halpern reference⁵⁵ describes in part, “[a]fter choosing the attributes of the picture the user aims the camera 200 at the subject of the photograph 210 and activates automatic timing mechanism by pressing the shutter release button half way down.”

(D.I. 302, ex. 7 at 9)

By continuously pressing the shutter release button half-way down the user enables the automatic timing mechanism to decide when the exact time for activating the image capturing mechanism is. Alternatively the user can override the automatic timing mechanism and activate the image capturing mechanism manually simply by pressing the shutter release button 220 all the way down. It is important to note that the user can override the automatic timing mechanism and activate the image capturing mechanism manually at any point in time even if bars 310 don’t exceed the level marked by the threshold indicator 320.

(*Id.* at 10) Halpern further states that “the picture is automatically taken when the total image grade indicated by the bars indicator 310 exceeds the minimum match grade defined by the user which is indicated by the threshold indicator 320.” (*Id.* at 11)

Dr. Stevenson opines that Halpern meets the limitation as construed by the court. (D.I. 300, ex. B at 72-73; D.I. 363, ex. A at ¶ 81) IV’s expert, Dr. Bovik, disagrees, explaining that Halpern requires “pressing the shutter button . . . subsequent to making the criterion selection in order to initiate the process of analyzing the image characteristics” and, therefore, does not meet the “automatically operating” limitation. (D.I. 329, ex. 1 at ¶¶ 85, 133-38, 206)

As in the claim construction exercise, the parties (through their respective experts) remain focused on what is meant by “incidental contact.” Nothing in the court’s claim construction limits the “contact” with the shutter button. Pressing the shutter

⁵⁵ PCT App. Pub. No. WO2006/040761 to Halpern.

button half-way down in Halpern does not interfere with capturing the image once the threshold is met. The court grants Canon's motion for anticipation.^{56, 57, 58}

2. Infringement

IV accuses various Canon products of infringing claims 1-6 and 8-10 of the '914 patent. Canon moves for non-infringement because the '914 accused products do not perform the step of "selecting an automatic image trigger condition." (D.I. 322 at 33) The court construed this limitation as "a user of the image capture device selects the automatic image trigger condition."⁵⁹ (D.I. 264 at 7) As discussed in the anticipation section above, the limitation "automatically operating the image capture device . . ."

⁵⁶ Dr. Bovik's analysis of additional limitations center on the "automatically operating" limitation and does not change the court's analysis.

⁵⁷ Canon has not moved for summary judgment of obviousness with respect to the non-WiFi patents, but argues that "IV has failed to establish any secondary considerations of non-obviousness with respect to the patents-in-suit." (D.I. 299 at 36) Whether IV's experts have offered sufficient evidence of secondary considerations of non-obviousness, specifically as to commercial success and long felt need, is an evidentiary dispute which may be addressed before trial. Canon's motion for summary judgment in this regard is denied.

⁵⁸ IV moves for summary judgment that the Expo reference (use of an early prototype at the Canon EXPO 2005) does not anticipate claim 1. The parties' experts disagree on whether the Expo reference discloses the limitation discussed above. Pointing to the specification, Dr. Stevenson opines that "the automatic image capture . . . includes, for example, capturing a still image and a few seconds of video image preceding the detection of the automatic image trigger condition and includes images captured from the preview stream provided to the camera's display." (D.I. 363, ex. A at ¶ 80) Dr. Bovik, disagrees, opining that "it is not possible to tell whether the camera captures an image after" the threshold has been met. (D.I. 329, ex. 1 at ¶ 284) Given this dispute, IV's motion is denied, although the issue is moot given the above finding of invalidity.

⁵⁹ Explaining that the architecture of independent method claim 1 separates "selecting an automatic image trigger condition" from "entering a threshold level corresponding to the automatic image trigger conditions." (Claim 1) The court also construed "entering a threshold level" as "a threshold level entered by user." The specification provides examples of how image capture is initiated when "some measured variable exceeds a given threshold value" (9:47-48) or when a "sensed signal exceeds a given threshold value" (9:38-40). (D.I. 264 at 7)

means “upon the automatic detection of the automatic trigger condition meeting the threshold level” Applying these constructions in the context of the claims, Dr. Kaliski opines that “the user of the Canon camera using the Smart Shutter (Smile) feature selects an automatic trigger condition.” (D.I. 365, ex. 3A at ¶ 65) The “selecting” limitation is met by a user “select[ing] the Smart Shutter . . . icon as a step in the process of using the Smart Shutter (Smile) feature. In selecting ‘Smart Shutter,’ the user is selecting an image condition to be detected from an image sensor.” (*Id.* at ¶ 66) Dr. Kaliski further states that “[s]electing ‘Smart Shutter’ is selecting an image condition (as opposed to, e.g., a sound or environmental condition) because the subsequent[] options available to the user from selecting this condition relate to the image content received from the image sensor: Smart Shutter (Smile) and Smart Shutter (Wink).”⁶⁰ (*Id.* at ¶ 67) Dr. Stevenson disagrees and opines that Dr. Kaliski’s interpretation of the limitation “would encompass a menu in a graphical user interface which contains options for image capture triggers or a mode of camera operation which is not associated with a particular condition that triggers image capture.” (D.I. 326, ex. B at ¶ 64) Further, Dr. Stevenson points out that Dr. Kaliski “refers to ‘Smart Shutter’ as being an ‘image condition’ instead of an ‘image trigger condition.’” (*Id.* at ¶ 66) There is no dispute that selecting “Smart Shutter” brings up a menu with a list of options, including “Smile” (the accused feature) and “Wink” (a non-accused feature). The court cannot reconcile such a list of options with the construction of the limitation in the context of the

⁶⁰ As to the “entering a threshold level,” Dr. Kaliski opines that “after the user has selected ‘Smart Shutter,’ a condition that will trigger automatic image capture, the user chooses ‘Smile’ as the corresponding threshold of that condition that must be satisfied to trigger image capture.” (D.I. 365, ex. 3A at ¶ 70)

specification; i.e., as explained by Dr. Stevenson, it is nonsensical that a menu list could be an automatic trigger condition. Canon's motion for non-infringement is granted.⁶¹

V. CONCLUSION

For the foregoing reasons, the court denies Canon's motion for summary judgment of non-infringement of the '944 and '870 patents (D.I. 290); denies Canon's motion for summary judgment of invalidity of the '944 and '870 patents (D.I. 291); denies in part and grants in part Canon's motion for summary judgment of non-infringement of the '728, '761, '432, '086, and '914 patents (D.I. 297); denies in part and grants in part Canon's motion for summary judgment of invalidity of the '728, '761, '432, '086, '914, '285, '406, and '528 patents and for summary judgment of no secondary considerations (D.I. 298); denies in part and grants in part IV's cross motion for summary judgment of no invalidity of the '728, '761, and '914 patents (D.I. 304); denies Canon's motion to strike portions of Mark N. Horenstein's supplemental expert (D.I. 334); and denies Canon's motion to sever and stay U.S. Patent No. 7,817,914 (D.I. 415). An appropriate order shall issue.

⁶¹ Moreover, the claims are invalid as anticipated by the Halpern reference and, therefore, not infringed. *Exergen Corp. v. Wal-Mart Stores, Inc.*, 575 F.3d 1312, 1320 (Fed. Cir. 2009) ("invalid claim[s] cannot give rise to liability for infringement") (citation omitted); *Wahpeton Canvas Co. v. Frontier, Inc.*, 870 F.2d 1546, 1553 (Fed. Cir. 1989) (if an independent claim is not infringed, any claim depending thereon is not infringed).