

APPENDICES

APPENDIX A

UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

2020-2222, 2021-1527

CALIFORNIA INSTITUTE OF TECHNOLOGY,
Plaintiff-Appellee,

v.

BROADCOM LIMITED, NKA BROADCOM INC., BROADCOM
CORPORATION, AVAGO TECHNOLOGIES LIMITED, NKA
AVAGO TECHNOLOGIES INTERNATIONAL SALES PTE.
LIMITED, APPLE INC.,
Defendants-Appellants.

Appeals from the United States District Court for
the Central District of California in No. 2:16-cv-03714-
GWAGR, Judge George H. Wu.

Decided: February 4, 2022

Before LOURIE, LINN, and DYK, *Circuit Judges.*

Opinion for the Court filed by *Circuit Judge* LINN.

Opinion concurring-in-part and dissenting-in-part filed
by *Circuit Judge* DYK.

LINN, *Circuit Judge.*

Broadcom Limited, Broadcom Corporation, and
Avago Technologies Ltd. (collectively “Broadcom”) and
Apple Inc. (“Apple”) appeal from the adverse decision of

the District Court for the Central District of California in an infringement suit filed by the California Institute of Technology (“Caltech”) for infringement of its U.S. Patents No. 7,116,710 (“the ’710 patent”), No. 7,421,032 (“the ’032 patent”), and No. 7,916,781 (“the ’781 patent”).

Because the district court did not err in its construction of the claim limitation “repeat” and because substantial evidence supports the jury’s verdict of infringement of the asserted claims of the ’710 and ’032 patents, we affirm the district court’s denial of JMOL on infringement thereof. We also affirm the district court’s conclusion that claim 13 of the ’781 patent is patent-eligible but vacate the jury’s verdict of infringement thereof because of the district court’s failure to instruct the jury on the construction of the claim term “variable number of subsets.” We thus remand for a new trial on infringement of claim 13 of the ’781 patent. We further affirm the district court’s summary judgment findings of no invalidity based on IPR estoppel and its determination of no inequitable conduct. We affirm the district court’s decision with respect to its jury instructions on extraterritoriality. But because Caltech’s two-tier damages theory cannot be supported on this record, we vacate the jury’s damages award and remand for a new trial on damages.

BACKGROUND

I. The Caltech Patents

Caltech’s ’710 and ’032 patents disclose circuits that generate and receive irregular repeat and accumulate (“IRA”) codes, a type of error correction code designed to improve the speed and reliability of data transmissions. Wireless data transmissions are ordinarily susceptible to corruption arising from noise or other forms

of interference. IRA codes help to identify and correct corruption after it occurs.

The encoding process begins with the processing of data before it is transmitted. The data consists of information bits in the form of 1's and 0's. The information bits are input into an encoder, a device that generates codewords comprised of parity bits and the original information bits. Parity bits are appended at the end of a codeword. Codewords are created in part by repeating information bits in order to increase the transmission's reliability. When noise or other forms of interference introduce errors into the codewords during transmission, the decoder identifies these errors and relies on the codeword's redundant incorporation of the original string of information bits to correct and eliminate the errors.

Before Caltech's patents, error correction codes had already incorporated repetition and irregular repetition. These codes, however, were less than optimally efficient because they were either encoded or decoded in quadratic time, which meant that the number of computations required to correct a given number of bits far exceeded the number of bits ultimately corrected.

In the '710 and '032 patents, the IRA codes are linear-time encodable and decodable, rather than quadratic. '710 patent, col. 2, ll. 6-7 ("The encoded data output from the inner coder may be transmitted on a channel and decoded in linear time."); *id.* col. 2, l. 59 ("The inner coder 206 may be a linear rate-1 coder."); *id.* col. 3, ll. 25-26 ("An IRA code is a linear code."). Using a linear code means that the relationship between the bits corrected and the computations required is directly proportional. Minimizing the number of calculations that an

encoder or decoder must perform permits smaller, more efficient chips with lower power requirements.

The claimed improvement involves encoding the information bits through a process of irregular repetition, scrambling, summing, and accumulation. Repeating inputted information bits is necessary to increase the reliability of data transmissions, and irregular repetition minimizes the number of times that information bits are repeated. Minimizing the number of times that an information bit is repeated is crucial to the efficiency of the claimed inventions because the repetitions impact the device's coding rate or speed, as well as the code's complexity. The fewer repeated bits there are, the fewer number of computations that an encoder must perform, which in turn permits smaller circuits, decreased power requirements, and decreased operating temperatures in devices incorporating the circuits.

The claims and accompanying specifications of the Caltech patents make clear that each inputted information bit must be repeated. The parties agree that every claim at issue requires irregular repetition of information bits either explicitly or via the court's construction. This is so even where the irregular repetition is not expressly required by the claims. For example, the agreed-upon construction of a Tanner graph in the '032 patent requires that "every message bit is repeated" J. App'x 33. Furthermore, the claims and accompanying specifications make clear that each bit must be repeated irregularly, stating, for example in the '710 patent, "a fraction of the bits in the block may be repeated two times, a fraction of bits may be repeated three times, and the remainder of bits may be repeated four times." '710 patent, col. 2, ll. 53-58.

The ‘781 patent discloses and claims a method for creating codewords in which “information bits appear in a variable number of subsets.” Before trial, Apple and Broadcom sought summary judgment that claim 13 was unpatentable under 35 U.S.C. § 101. After finding that the claims were directed to a patent-eligible subject matter (step 1 of *Alice*¹)—a method of performing error correction and detection encoding with the requirement of irregular repetition—the court declined to reach whether they contained an inventive concept (step 2 of *Alice*). To support patentability, Caltech argued that the “variable number of subsets” language required irregular information bit repetition. The district court agreed and adopted and relied on Caltech’s interpretation to deny summary judgment of unpatentability. No party on appeal challenges this claim interpretation.

II. The Accused Products

Caltech alleged infringement by certain Broadcom Wi-Fi chips and Apple products incorporating those chips, including smartphones, tablets, and computers. The accused Broadcom chips were developed and supplied to Apple pursuant to Master Development and Supply Agreements negotiated and entered into in the United States. Caltech specifically identified as infringing products two encoders contained in the Broadcom chips—a Richardson-Urbanke (“RU”) encoder and a low-area (“LA”) encoder. In the accused encoders, incoming information bits are provided to AND gates in the RU encoder or multiplexers in the LA encoder.

Throughout the trial and on appeal, the parties treated AND gates and multiplexers as functionally identical for all relevant issues. It thus suffices to

¹ *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 573 U.S. 208 (2014).

describe in detail the RU encoder only. In the RU encoder, each information bit is simultaneously fed as one input to 972 separate AND gates. Each AND gate receives a second input—a “parity-check” or “enable” bit of 0 or 1—derived from a low-density parity check matrix. This matrix is an array of 1’s and 0’s. A low-density parity check matrix is one in which the number of 1’s in the matrix is significantly fewer than the number of 0’s.

In its brief, Broadcom presents the following table, using the example of the functioning of a single AND gate, to show how outputs are determined by the two inputs:

Input 1 (Information Bit)	Input 2 (Parity-Check Bit)	AND Gate Output
0	0	0
0	1	0
1	0	0
1	1	1

For each AND gate, the output of the gate is 1 if both inputs (the information bit *and* the parity-check bit) are 1; otherwise, the output is 0. One consequence of this logic is that if the parity-check bit is 1 (as shown in rows two and four), then the output *is identical to* the information-bit input. If the parity-check bit is 0, the output is 0, regardless of the value of the input (rows one and three). Throughout trial, the parties referred to parity-check bits and enable bits interchangeably. Parity-check bits determine the action of the AND gates, which are open/on when the parity-check bit is 1 and closed/off when the parity-check bit is 0.

Caltech sued Broadcom and Apple on May 26, 2016, alleging infringement under 35 U.S.C. § 271 by

Broadcom wireless chips and Apple products incorporating those chips. Both defendants denied that any of the accused devices infringed Caltech's patents, and in turn asserted counterclaims for declaratory judgment of non-infringement, invalidity under 35 U.S.C. §§ 101, 102, 103, and/or 112, and unenforceability due to inequitable conduct.

III. Pre-Trial Proceedings

Before trial, Apple filed multiple IPR petitions challenging the validity of the claims at issue, relying on various prior art references. The Patent Trial and Appeal Board ("PTAB" or "Board") issued a number of written decisions, which concluded that Apple failed to show the challenged claims were unpatentable as obvious. Before the district court, Apple and Broadcom argued that the asserted claims would have been obvious over new combinations of prior art not asserted in the IPR proceedings.

The district court granted summary judgment of no invalidity, interpreting 35 U.S.C. § 315(e)(2) as precluding parties from raising invalidity arguments at trial that they reasonably could have raised in their IPR petitions. It also denied the motion filed by Apple and Broadcom for summary judgment of invalidity under 35 U.S.C. § 101 for the '781 patent. The district court granted Caltech's summary judgment motion as to inequitable conduct, finding no inequitable conduct with respect to Caltech's failure to disclose Richardson99 during prosecution. The district court reasoned that this prior art reference was not but-for material to the PTO's grant of Caltech's patents.

The district court also conducted a *Markman* hearing and initially construed the claim limitation "repeat." That construction is germane to all of the asserted

claims. At the conclusion of the *Markman* hearing, the district court construed “repeat” to have its plain and ordinary meaning. The district court noted that the repeated bits “are a construct distinct from the original bits from which they are created,” but that they need not be generated by storing new copied bits in memory.

IV TRIAL PROCEEDINGS

A. Infringement of the '710 and '032 Patents

At trial, Caltech argued that the accused chips infringed claims 20 and 22 of the '710 patent and claims 11 and 18 of the '032 patent. Both groups of claims explicitly require irregular repetition; i.e., repetition of groups of information bits an irregular number of times. Claims 20 and 22 of the '710 patent depend from claim 15, which claims:

15. A coder comprising: a first coder having an input configured to receive a stream of bits, said first coder operative to repeat said stream of bits irregularly and scramble the repeated bits; and a second coder operative to further encode bits output from the first coder at a rate within 10% of one.

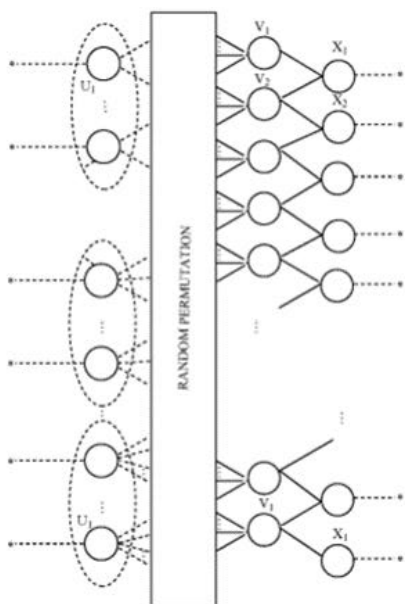
'710 patent, col. 8, ll. 1–6. Claims 11 and 18 of the '032 patent cover devices for encoding and decoding pursuant to a Tanner graph:²

11. A device comprising: an encoder configured to receive a collection of message bits and encode the message bits to generate a collection of

² During claim construction, the parties agreed that a Tanner graph is a visual representation of the “constraints that determine the parity bits” created by an IRA code. J. App’x 33.

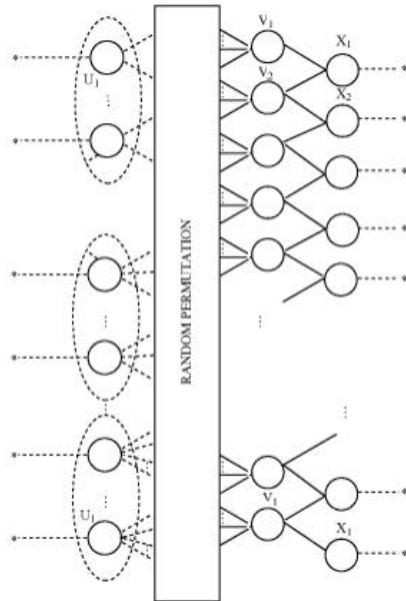
9a

parity bits in accordance with the following Tanner graph:



18. A device comprising: a message passing decoder configured to decode a received data stream that includes a collection of parity bits, the message passing decoder comprising two or more check/variable nodes operating in parallel to receive messages from neighboring check/variable nodes and send updated messages to the neighboring variable/check nodes, wherein the message passing decoder is configured to decode the received data stream that has been encoded in accordance with the following Tanner graph:

10a



'032 patent, col. 8, l. 63–col. 9, l. 34; col. 9, l. 57–col. 10, l. 42. The district court’s claim construction ruling required that the Tanner graphs in claims 11 and 18 also perform repetition. J. App’x 33 (defining Tanner graph as a depiction of “an IRA code as a set of parity checks where every message bit is repeated, at least two different subsets of message bits are repeated a different number of times”). No party challenges this construction on appeal.

During trial, the district court revisited and clarified its earlier claim construction ruling of the term “repeat” and instructed the jury that repeat means “generation of additional bits, where generation can include, for example, duplication or reuse of bits.” Apple and Broadcom then argued that the chips did not infringe the ’710 and ’032 patents because they did not repeat information bits at all, much less irregularly. The jury ultimately found infringement of all the asserted claims. Broadcom

and Apple filed post-trial motions for JMOL and a new trial, challenging the jury's infringement verdict. The district court denied JMOL, finding no error in its claim construction ruling and concluding that the verdict was supported by substantial evidence.

B. Infringement of the '781 Patent

At trial, Caltech also argued that the accused chips infringed claim 13 of the '781 patent. That patent discloses and claims a method for creating codewords in which "information bits appear in a variable number of subsets." Claim 13 recites:

A method of encoding a signal, comprising:

receiving a block of data in the signal to be encoded, the block of data including information bits; and

performing an encoding operation using the information bits as an input, the encoding operation including an accumulation of mod-2 or exclusive-OR sums of bits in subsets of the information bits, the encoding operation generating at least a portion of a codeword,

wherein the information bits appear in a variable number of subsets.

'781 patent, col. 8, ll. 7–16.

Despite its construction at the summary judgment stage that the claim term "variable number of subsets" requires irregular information bit repetition, the district court declined to provide the jury with an instruction of that claim construction determination and the jury determined that Apple and Broadcom infringed claim 13 of the '781 patent. Broadcom and Apple filed JMOL and new trial motions arguing that the district court erred in

refusing their requested instruction and that JMOL of noninfringement was appropriate because the irregular repetition requirement was not satisfied. In denying these post-trial motions, the district court concluded that it was “within its discretion” not to issue this instruction so as not to “confuse the record on this issue.”

C. Damages

To compensate for Broadcom and Apple’s infringement, Caltech proposed a two-tier damages theory, which sought different royalty rates from each of the infringers despite the fact that liability arose from the same accused technology in the same chips. Even though the district court voiced its discomfort with the two-tier theory, it allowed Caltech to present the theory to the jury, which relied on it to award Caltech \$270,241,171 for Broadcom’s infringement and \$837,801,178 for Apple’s infringement. The jury’s damages award was based on Caltech’s experts’ testimony, admitted over Broadcom and Apple’s objection. Appellants challenged the damages award in their post-trial motions, which the district court denied. The district court entered judgment against Broadcom totaling \$288,246,156, and against Apple totaling \$885,441,828. These awards included pre-judgment interest, as well as post-judgment interest and an ongoing royalty at the rate set by the jury’s verdict.

Broadcom and Apple appeal. We have jurisdiction pursuant to 28 U.S.C. §1295(a)(1).

DISCUSSION

I. Standard of Review

Claim construction is reviewed de novo when relying on intrinsic evidence. *Teva Pharms. USA, Inc. v. Sandoz, Inc.*, 574 U.S. 318, 333 (2015). Infringement and

damages are reviewed for substantial evidence. *Lucent Techs., Inc. v. Gateway, Inc.*, 580 F.3d 1301, 1309, 1324 (Fed. Cir. 2009). Statutory interpretation is reviewed de novo. *Power Integrations v. Semiconductor Components Indus., LLC*, 926 F.3d 1306, 1313 (Fed. Cir. 2019). Patent-eligibility under 35 U.S.C. § 101 is reviewed de novo. *Recognicorp, LLC v. Nintendo Co.*, 855 F.3d 1322, 1326 (Fed. Cir. 2017). We review patent jury instructions on patent law issues de novo, asking if the instructions were legally erroneous and prejudicial. *Bettcher Indus., Inc. v. Bunzl USA, Inc.*, 661 F.3d 629, 638-39 (Fed. Cir. 2011).

We review a district court’s order denying JMOL under the standard applied by the regional circuit. *Apple, Inc. v. Samsung Electronics Co., Ltd.*, 839 F.3d 1034, 1040 (Fed. Cir. 2016). In the Ninth Circuit, JMOL “is proper when the evidence permits only one reasonable conclusion and the conclusion is contrary to that of the jury.” See *Monroe v. City of Phoenix*, 248 F.3d 851, 861 (9th Cir. 2001). The Ninth Circuit explains that “[t]he evidence must be viewed in the light most favorable to the nonmoving party, and all reasonable inferences must be drawn in favor of that party.” *Id.* The Ninth Circuit reviews a district court’s decision to deny JMOL de novo. *Id.*

II. Infringement

A. The ’710 and ’032 Patents

Broadcom and Apple argue that the district court erroneously construed “repeat,” contending that the accused AND gates and multiplexers do not “repeat” information bits in the manner claimed, but instead *combine* the information bits with bits from a parity-check matrix to output *new* bits reflecting that combination. Broadcom and Apple further argue that the AND gates and multiplexers also do not generate bits “irregularly,”

asserting that they output the *same* number of bits for every information bit. Caltech argues in response that expert testimony throughout the record establishes that every information bit is repeated an irregular number of times. According to Caltech, the jury heard testimony explaining that in the RU devices *every* bit in the stream of information bits is fed by wire simultaneously to the information inputs of *all* 972 AND gates and that at any time, at least 3 and up to 12 of those AND gates *will be* enabled *to repeat that bit* at the output of the AND gates. We find no error in the district court’s construction of the term “repeat” and agree with Caltech that substantial evidence in the record supports the jury’s verdict on infringement.

1. Claim Construction of “repeat”

The district court construed “repeat” to mean “generation of additional bits, where generation can include, for example, duplication *or reuse of bits*” (emphasis added). J. App’x 171. Broadcom and Apple argue that that construction is inconsistent with the claim language, the specification and the construction given by another judge in a different case.³ Caltech argues in response that the plain claim language requiring repeating information bits does not require generating new, distinct bits and that the district court was correct in construing the term to not exclude the reuse of bits. We agree with Caltech.

The district court correctly observed that the claims require repeating but do not specify how the repeating is to occur: “The claims simply require bits to be

³ Broadcom and Apple misplace reliance on the construction of the term “repeat” made on an undeveloped record in the context of a summary judgment motion. *See California Institute of Technology v. Hughes Communications Inc.*, 35 F. Supp. 3d 1176 (C.D. Cal. 2014).

repeated, without limiting how specifically the duplicate bits are created or stored in the memory.” J. App’x 10. The specifications confirm that construction and describe two embodiments, neither of which require duplication of bits. The district court carefully and fully considered both the language of the claims and that of the written description and faithfully applied our precedent to reach the construction made during the trial and presented to the jury. We are not persuaded that the district court erred in construing the term “repeat” and, therefore, affirm the same.

2. JMOL on Infringement

Broadcom and Apple argue that the evidence before the jury on infringement permitted only one verdict, namely no infringement, and that the district court erred in denying JMOL. Broadcom and Apple put forth two rationales for noninfringement of the “irregular repeat” requirement, Appellant’s Br. 27–31. First, looking at each gate alone and commenting on the “repeat” requirement, they argue that the AND gate does not “repeat” the inputted information bit “because the AND gate’s output depends on not only the information bit but *also* the parity-check-matrix bit.” Appellant’s Br. 29. Second, focusing on the “irregular” half of “irregular repeat,” they argue that “even if the outputted bits could be deemed ‘repeats’ of the information bits,” “any repetition is not ‘irregular’ because each information bit leads to the *same number* of outputted bits.” Appellant’s Br. 30.

Caltech argues in response that the jury was provided with substantial evidence to support the verdict of infringement and that the district court correctly denied JMOL. Caltech asserts that the fact that an AND gate doesn’t have an information-bit/output match for *every* information bit hardly means that it isn’t repeating *any*

information bit. Appellee's Br. 21–22 (citing J. App'x 3036–38). All that matters, according to Caltech, is that *sometimes* there is such a match that qualifies as a “repeat,” so long as each and every bit is repeated at least once. Caltech argues that Broadcom ignores ample expert testimony, which the jury could credit, that sometimes an AND gate repeats an information bit and that, taking the 972 AND gates together, the carefully designed parity-bit table/matrix meant that “the products output and store information bits between two and twelve times.” Appellee's Br. 22. Caltech asserts that, considering the system *as a whole*, each information bit is in fact repeated, and they are not all repeated the same number of times. We agree with Caltech.

Caltech's expert, Dr. Matthew Shoemake began his testimony with reference to the exemplary table reproduced above. *See* J. App'x 3036–38. He explained that in the parity-check-bit-equals-1 situation (second and fourth rows of the table), the output bit is a “repeat” of the information-bit input. Where the parity-check bit is 1, the gate affirmatively enables the information bit to be duplicated as the output bit. That is a “repeat.” That is so, he explained, because the information bit in that situation “flows through” to appear again in the output. He also addressed the one other situation where the output bit is identical to the information bit, namely, in the first row of the above table, where both the information bit and the parity-check bit are 0, and so is the output. Despite the identity of the information bit and the output bit, he explained, that situation does *not* involve a “repeat.” A 0 parity-check bit turns *every* information bit (0 or 1) into a 0 output, so the output bit in that situation *tells one nothing about* the information bit. Since the whole point of this encoding scheme is to use outputs that *give information about* the information bits, a 0

parity-check bit does not produce a “repeat” even when the information-bit input and the output are the same. Broadcom’s expert, Dr. Wayne Stark, expressly recognized that this was exactly what Dr. Shoemake said in his testimony. J. App’x 3956 (“He said it’s a repeat only if the enable [parity-check] signal is a one and it’s not a repeat if an enable [parity-check] symbol is a zero.”).

Dr. Shoemake also explained to the jury that “flow through” means that the information bit is repeated at the output gate. *See, e.g.*, J. App’x 2810, 2812, 3017–19. When the information bit “flows through” to the output gate because the parity-check bit is 1, that’s a repeat, both according to the expert’s usage and a plain understanding of the word “repeat.” *See, e.g.*, J. App’x 3038. When the information bit is not allowed to flow through (because the parity-check bit is 0), that’s not a repeat (even though both the information bit and the output bit are 0).⁴

In explaining the operation of the RU encoder itself, Dr. Shoemake testified that it contains “972 mac_reg modules [AND gates], and the information bits are connected to every single one of them.” J. App’x 2831. He further testified that: “[D]epending on which information bit it is, 3 to 12 of these gates are enabled which then allows 3 to 12 ... [information bits] to flow through 3 to 12 times and since that number varies, there’s irregular repetition,” J. App’x 3034-35; “[W]hat really happens in the accused products, the tables tell you how many times should information bit number one be

⁴ Caltech’s Red Brief incorrectly cited this example as representing a repeat. Red. Br. 21. This was evidently error, given that it directly contradicted the directly cited pages of Dr. Shoemake’s testimony. This error does not, however, change the fact that Caltech correctly identified the substantial trial testimony on which the jury could base its decision.

repeated. And the tables I've mentioned several times that they allow information bits, and I should force information bits to be repeated between 3 and 12 times," J. App'x 3080; and "[T]he information bit starts off in one location in the chip, and then it's connected to 972 distinct locations so it can be irregularly repeated in this architecture." J. App'x 3018.

Dr. Shoemake's position was consistent throughout his testimony: the physical connection of the first inputs of all 972 AND gates for simultaneous receipt of the information bit stream *and* the connection of the parity-bit system to the other inputs of the AND gates to selectively enable 3 to 12 of those gates at any time *together* implement irregular repetition. Dr. Shoemake explained that this is exactly what one sees when one looks at the "overall architecture" ("whole architecture"), *not* each gate alone. J. App'x 3031, 3035, 3038. As he specifically testified:

Q: Your position, your opinion ... is that that branch wire creates 972 repeat bits within the meaning of the claims in the Caltech patents; correct?

A: So based on my analysis, this wire going to the Mac rag modules and the AND gates under control of the tables that are stored in the RU encoder actually allows the information bits to flow through [a] different number of times. *It's always 3 to 12 times for a particular information bit.* And so [i]n my analysis, this is exactly how the RU encoder is implementing irregular repetition of information bits.

J. App'x 3019 (emphasis added).

For the foregoing reasons, substantial evidence supports the jury’s verdict of infringement of the ’710 and ’032 patents. We are not persuaded that the record before the jury permits only a verdict of no infringement. We therefore affirm the district court’s denial of JMOL.

B. The ’781 Patent

1. Patent Eligibility

Broadcom and Apple contend that claim 13 is not patent eligible under 35 U.S.C. § 101. Broadcom and Apple’s briefing on this issue was cursory and relied solely on an argument that claim 13 is ineligible because it depends on mathematical operations. Caltech contends that the ’781 patent is directed to a patent-eligible method of performing error correction and detection encoding with the requirement of irregular repetition. It asserts that the claim limitation “variable number of subsets” requires irregular information bit repetition.

The mere fact that Caltech’s claim employs a mathematical formula does not demonstrate that it is patent ineligible. *See Diamond v. Diehr*, 450 U.S. 175, 187 (1981) (“[A] claim drawn to subject matter otherwise statutory does not become nonstatutory simply because it uses a mathematical formula, computer program, or digital computer.”). Claim 13 does not claim a mathematical formula as such. It claims more than a mathematical formula because it is directed to an efficient, improved method of encoding data that relies in part on irregular repetition. This alleged improvement is not patent ineligible simply because it employs a mathematical formula.

2. Infringement

Broadcom and Apple argue that even if claim 13 is directed to patent eligible subject matter, the

infringement verdict as to claim 13 cannot stand. As discussed above, the parties agree that claim 13 requires irregular repetition, but dispute whether the district court erred in refusing to instruct the jury that the '781 patent's "variable number of subsets" limitation requires irregular repetition. The district court's sole ground for refusing to instruct the jury of the interpretation the parties and the court reached during summary judgment was to avoid "confus[ing] the record on this issue." J. App'x 207. This was error and requires remand for a new trial on infringement. *Sulzer Textil A.G. v. Picanol N.V.*, 358 F.3d 1356, 1366 (Fed. Cir. 2004) ("[I]t is the duty of trial courts in patent cases in which claim construction rulings on disputed claim terms are made ... to inform jurors both of the court's claim construction rulings on all disputed claim terms and of the jury's obligation to adopt and apply the court's determined meanings[.]"). On remand, the district court must instruct the jury as to the proper construction of the claim limitation "variable number of subsets."

III. Validity and IPR Estoppel

Apple and Broadcom contend that the district court erred in granting summary judgment of no invalidity, barring them from presenting an invalidity case at trial on the ground of statutory estoppel. In the district court proceedings, the parties challenged the patents' invalidity, relying on grounds the PTAB did not address in its earlier instituted IPR decisions. The district court nonetheless held that these challenges were barred by estoppel because Apple and Broadcom were aware of the prior art references at the time they filed their IPR petitions and reasonably could have raised them in those petitions even if they could not have been raised in the proceedings post-institution.

Before the district court, Broadcom and Apple brought counterclaims seeking declaratory judgment of invalidity under § 103. The district court’s summary judgment orders disposed of the parties’ affirmative defenses as well as their counterclaims. We therefore consider whether this ruling was erroneous and review the grant of summary judgment de novo. *Synopsys, Inc. v. Mentor Graphics Corp.*, 839 F.3d 1138, 1146 (Fed. Cir. 2016).

When IPR proceedings result in a final written decision, 35 U.S.C. § 315(e)(2) precludes petitioners from raising invalidity grounds in a civil action that they “raised or reasonably could have raised *during* that inter partes review.” *Shaw Industries Group, Inc. v. Automated Creel Systems, Inc.*, 817 F.3d 1293, 1300 (Fed. Cir. 2016) (emphasis added). In *Shaw*, this court held that IPR “does not begin until it is instituted.” *Id.* If IPR “does not begin until it is instituted,” grounds raised in a petition (or that reasonably could have been raised in a petition) were necessarily not raised “*during* the IPR.” *Id.* Only the grounds actually at issue in the IPR were raised, or reasonably could have been raised in the IPR. Thus, estoppel did not bar the petitioner in *Shaw* from presenting a petitioned-for, non-instituted ground in future proceedings because the petitioner could not reasonably have raised the ground during IPR. *Id.* *Shaw* was followed in *HP Inc. v. MPHJ Technology Investments, LLC*, 817 F.3d 1339, 1347–48 (Fed. Cir. 2016). At the time *Shaw* was decided, the PTAB often instituted review on less than all the grounds raised in a petition, which left some grounds adjudicated on the merits. Before *Shaw*, we had held in *Synopsys, Inc. v. Mentor Graphics Corp.*, 814 F.3d 1309, 1314–15 (Fed. Cir. 2016), that the PTAB’s final decision need not address every claim raised in a petition. Under such circumstances, we

concluded that Congress could not have intended to bar later litigation of the issues that the PTAB declined to consider.

After *Shaw*, several district courts concluded that *Shaw* does not allow a petitioner to avoid estoppel as to all arguments that could have been raised in the petition. See, e.g., *SiOnyx, LLC v. Hamamatsu Photonics K.K.*, 330 F. Supp. 3d 574, 602 (D. Mass. 2018) (determining that estoppel applies to grounds not included in a petition that the petitioner reasonably could have raised); *Cobalt Boats, LLC v. Sea Ray Boats, Inc.*, Case No. 15-cv-21, 2017 WL 2605977, at *3 (E.D. Va. June 5, 2017) (same); *Biscotti Inc. v. Microsoft Corp.*, Case No. 13-cv-1015, 2017 WL 2526231, at *7 (E.D. Tex. May 11, 2017) (same); *Douglas Dynamics, LLC v. Meyer Prods. LLC*, Case No. 14-cv-886, 2017 WL 1382556, at *5 (W.D. Wis. Apr. 18, 2017) (same); *Parallel Networks Licensing, LLC v. IBM Corp.*, Case No. 13-cv-2072, 2017 WL 1045912, at *12 (D. Del. Feb. 22, 2017) (same); *Oil-Dri Corp. of Am. v. Nestle Purina Petcare Co.*, Case No. 15-cv-1067, 2017 WL 3278915, at *8 (N.D. Ill. Aug. 2, 2017) (“[W]hile it makes sense that noninstituted grounds do not give rise to estoppel because a petitioner cannot—to no fault of its own—raise those grounds after the institution decision, when a petitioner simply does not raise invalidity grounds it reasonably could have raised in an IPR petition, the situation is different.”).

Other district courts read *Shaw* differently, focusing on *Shaw*’s discussion of the “during the IPR” language in § 315(e)(2). See, e.g., *Koninklijke Philips N.V. v. Wangs All. Corp.*, Case No. 14-cv-12298, 2018 WL 283893, at *4 (D. Mass. Jan. 2, 2018) (“It would seem, then, that the phrase “inter partes review” ... refers only to the period of time after review is instituted, and, therefore, the estoppel provision does not apply to

arguments that the petitioner only ‘raised or reasonably could have raised’ in its petition rather than after institution of review.”); *Verinata Health, Inc. v. Ariosa Diagnostics, Inc.*, Case No. 12-cv-5501, 2017 WL 235048, at *3 (N.D. Cal. Jan 19, 2017) (“The [*Shaw*] court chose instead to interpret the IPR estoppel language literally, plainly stating that only arguments raised or that reasonably could have been raised during IPR are subject to estoppel.”); *Intellectual Ventures I LLC v. Toshiba Corp.*, 221 F. Supp. 3d 534, 553–54 (D. Del. 2016) (holding that although exempting nonpetitioned grounds from estoppel “confounds the very purpose of this parallel administrative proceeding, the court cannot divine a reasoned way around the Federal Circuit’s interpretation in *Shaw*”).

After *Shaw*, in *SAS Institute, Inc. v. Iancu*, 138 S. Ct. 1348 (2018), the Supreme Court made clear both that there is no partial institution authority conferred on the Board by the America Invents Act and that it is the petition, not the institution decision, that defines the scope of the IPR. *See id.* at 1357–58 (“[T]he statute tells us that the petitioner’s contentions, not the Director’s discretion, define the scope of the litigation There is no room in this scheme for a wholly unmentioned ‘partial institution’ power that lets the Director select only some challenged claims for decision.”). Given the statutory interpretation in *SAS*, any ground that could have been raised in a petition is a ground that could have been reasonably raised “during inter partes review.” Thus, the Supreme Court’s later decision in *SAS* makes clear that *Shaw*, while perhaps correct at the time in light of our pre-*SAS* interpretation of the statute cannot be sustained under the Supreme Court’s interpretation of related statutory provisions in *SAS*.

The panel here has the authority to overrule *Shaw* in light of *SAS*, without en banc action. To be sure, *SAS* did not explicitly overrule *Shaw* or address the scope of statutory estoppel under § 315(e)(2). But the reasoning of *Shaw* rests on the assumption that the Board need not institute on all grounds, an assumption that *SAS* rejected. Even in the Ninth Circuit, which has one of the stricter approaches to panel overruling, see Henry J. Dickman, *Conflicts of Precedent*, 106 Va. L. Rev. 1345, 1350–51 (2020), “the issues decided by the higher court need not be identical in order to be controlling. Rather, the relevant court of last resort must have undercut the theory or reasoning underlying the prior circuit precedent in such a way that the cases are clearly irreconcilable,” *Miller v. Gammie*, 335 F.3d 889, 900 (9th Cir. 2003) (en banc). We approved that higher standard in *Troy v. Samson Manufacturing Corp.*, 758 F.3d 1322, 1326 (Fed. Cir. 2014), and conclude that that standard is satisfied in this case.

Accordingly, we take this opportunity to overrule *Shaw* and clarify that estoppel applies not just to claims and grounds asserted in the petition and instituted for consideration by the Board, but to all grounds not stated in the petition but which reasonably could have been asserted against the claims included in the petition.⁵ In a regime in which the Board must institute on all challenged claims and the petition defines the IPR litigation, this interpretation is the only plausible reading of “reasonably could have been raised” and “in the IPR” that gives any meaning to those words.

⁵ In this case, *SAS* was decided while IPR proceedings remained pending before the Board. Accordingly, we need not decide the scope of preclusion in cases in which the Board declined to institute on all grounds and issued its final written decision pre-*SAS*.

It is undisputed that Apple and Broadcom were aware of the prior art references that they sought to raise in the district court when Apple filed its IPR petitions. Despite not being included in any of Apple's IPR petitions, the contested grounds reasonably could have been included in the petitions, and thus in the IPR. We affirm the district court's decision barring Apple and Broadcom from raising invalidity challenges based on these prior art references.

IV. Inequitable Conduct

We turn next to the district court's grant of Caltech's summary judgment motion of no inequitable conduct. Generally, inequitable conduct requires a showing that undisclosed prior art was but-for material to the PTO's decision of patentability. *Therasense, Inc. v. Becton, Dickinson and Co.*, 649 F.3d 1276, 1291 (Fed. Cir. 2011). Prior art is but-for material if the PTO would have denied a claim had it known of the undisclosed prior art. *Id.* Prior art is not but-for material if it is merely cumulative. *Regeneron Pharms., Inc. v. Merus N.V.*, 864 F.3d 1343, 1350 (Fed. Cir. 2017) (citing *Dig. Control Inc. v. Charles Mach. Works*, 437 F.3d 1309, 1319 (Fed. Cir. 2006)).

Broadcom and Apple on appeal have limited their argument to the district court's conclusion that Richardson99 was not shown to be but-for material to patentability. The district court found that Richardson99 was merely cumulative of Luby97 and Luby98—references the PTAB considered in IPR proceedings upholding the patents' validity—noting Apple and Broadcom's pleadings, interrogatory responses, and briefs failed to distinguish Luby's disclosed irregular repetition from Richardson99's. Apple and Broadcom did not argue at the summary judgment stage that Richardson99 was

different from Luby such that it was not merely cumulative. The district court rejected the arguments as to Richardson99 because the Appellants failed to put Caltech on notice of an independent inequitable conduct theory based on alleged differences between Richardson99 and Luby.

The district court’s decision was not an abuse of discretion. We therefore affirm the grant of summary judgment of no inequitable conduct.

V. Damages

Caltech presented to the jury a two-tier reasonable royalty model based on simultaneous hypothetical negotiations with Broadcom and Apple in December 2009. Broadcom and Apple generally argue that the damages judgement cannot be sustained because Caltech’s damages model impermissibly applied two separate hypothetical negotiations for Broadcom and Apple for sales of the same chips; because Caltech’s royalty rates were derived from non-comparable settlements—without apportionment and based on improperly excluded expert opinions and unrelated “black box” calculations; and because Caltech’s damage model improperly included extraterritorial sales.

Caltech argues in response that the damages judgement properly rests on separate running-royalty rates for each defendant, that the district court’s rulings on admissibility and exclusion of evidence were not an abuse of discretion and that the damages were based entirely on United States sales.

We find no error in the district court’s jury instructions relating to extraterritoriality. But because Caltech’s two-tier damages theory is legally unsupportable

on this record, the damages award is vacated and the case is remanded for a new trial on damages.

A. Extraterritoriality

Apple and Broadcom argue that the damages verdict improperly included extraterritorial sales from Broadcom’s international affiliates. They argue that the district court erroneously instructed the jury on extraterritoriality for two reasons. First, they argue that the district court erroneously declined to instruct the jury of a presumption against extraterritorial application of United States laws. We see no error. The relevant presumption is whether a law applies extraterritorially. *See WesternGeco LLC v. ION Geophysical Corp.*, 138 S.Ct. 2129, 2134, 2136 (2018). But the dispute here is not whether infringement laws apply domestically or extraterritorially—there is no dispute that the laws apply only domestically. Rather, the dispute between the parties is whether the relevant transactions here were domestic or extraterritorial in nature. The presumption against extraterritorial application is thus inapplicable. As Caltech correctly argues, the district court expressly instructed the jury that Caltech had the burden of proving that infringement occurred in the United States. J. App’x 184–85 (instructing the jury that “An alleged infringer is liable for direct infringement of a claim if the patent holder proves by a preponderance of the evidence that the infringer, without the patent holder’s authorization, imports, offers to sell, sells, or uses [the accused products] *within the United States*,” and explaining the factors for determining whether a sale occurs in the United States). This was a proper and sufficient jury instruction with respect to the applicable burdens on the territoriality of the sales at issue.

Second, Apple and Broadcom argue that the district court erroneously instructed the jury that the “sales cycle leading to design wins” could trigger a United States sale. Apple and Broadcom argue that *Halo* recognized a categorical prohibition against treating such a sales cycle as a domestic sale. *See Halo Elecs., Inc. v. Pulse Elecs., Inc.*, 831 F.3d 1369, 1378 (Fed. Cir. 2016), *on remand from* 579 U.S. 93 (2016). *Halo* held that “pricing and contracting negotiations in the United States alone do not constitute or transform those extraterritorial activities into a sale within the United States for purposes of § 271(a).” *Id.* It held that this was so “when substantial activities of a sales transaction, including the final formation of a contract for sales encompassing all essential terms as well as the delivery and performance under that contract, occur entirely outside the United States.” *Id.* This is not a blanket holding that design wins arising out of a sales cycle can never be domestic transactions. Indeed, the district court noted that a design win meeting these criteria, such that “substantial activities of a sales transaction ... occurs entirely outside the United States” would *not* constitute a sale within the United States. J. App’x 185. The district court’s jury instruction emphasized the key question of whether there were such substantial activities in the United States, an instruction that Apple and Broadcom do not contest. *See also Carnegie Mellon U. v. Marvell Tech. Grp., Ltd.*, 807 F.3d 1283, 1308 (Fed. Cir. 2015). There is no error in the district court’s permissive instruction.

B. Caltech’s Two-Tier Damage Model

Caltech presented its damage theory to the jury through two experts, Dr. Catherine Lawton and Dr. David Teece. They opined that Caltech would have engaged in two simultaneous hypothetical negotiations, one with Broadcom at the “chip level” and one with

Apple at the “device level.” Those negotiations would have excluded from Broadcom’s hypothetical chip license any Broadcom chips incorporated into Apple products sold in the United States and treated those identical chips as being subject to Apple’s separate hypothetical device license at a vastly different royalty rate. Both of Caltech’s experts testified that separate chip-level and device-level negotiations would have been proper, rather than a single hypothetical negotiation for all of the accused chips, because both defendants were separate infringers and there would be no “cross-talk” between them as they each engaged in their own hypothetical negotiation.

The district court considered the opinions of Caltech’s experts and, over Broadcom and Apple’s objection, permitted Caltech to present that theory to the jury. In doing so, the district court observed that “[p]atent owners will sometimes seek damages from accused infringers at different levels in the supply chain, and so long as they do not attempt to obtain a double recovery to violate other legal principles like patent exhaustion, they are free to do so.” J. App’x 225. In ruling in Caltech’s favor, the district court saw no concern over double recovery because Broadcom and Apple were different companies and because the experts’ opinions carved out of the Broadcom hypothetical negotiation chips sold to Apple. But in the absence of some evidence that companies in the positions of Broadcom and Apple would engage in such separate negotiations and in the absence of additional facts that might justify separate and different treatment of the same chips at different levels of the supply chain, the mere fact that Broadcom and Apple are separate infringers alone does not support treating the same chips differently at different stages in the supply chain and does not justify submitting such a

two-tier damage theory to the jury. It is generally recognized that in the usual case, “a direct infringer or someone who induced infringement should pay the same reasonable royalty based on a single hypothetical negotiation analysis.” *LaserDynamics, Inc. v. Quanta Comput., Inc.*, 694 F.3d 51, 76 (Fed. Cir. 2012).

Caltech argued that separate royalty rates at different levels of the supply chain are proper because the reasonable royalty inquiry focuses on the amount of value that the patent technology adds to a product, citing *Ericsson, Inc. v. D-Link Sys.*, 773 F.3d 1201, 1226 (Fed. Cir. 2014). The district court concluded that Broadcom and Apple’s products were different and therefore possessed different values simply because Broadcom and Apple were “different companies at different levels in the supply chain.” J. App’x 226. But to reach that conclusion without more ignores established precedent to the effect that, in the absence of a compelling showing otherwise, a higher royalty is not available for the same device at a different point in the supply chain. As we previously held, “a reasonable royalty is not to be separately calculated against each successive infringer. Once full recovery is obtained from one infringer with respect to a particular infringing device, at most nominal additional damages may be awarded against another with respect to the same device.” *Stickle v. Heublein, Inc.*, 716 F.2d 1550, 1562 (Fed. Cir. 1983). Moreover, “[a] party is precluded from suing to collect damages from direct infringement by a buyer and user of a product when actual damages covering that very use have already been collected from the maker and seller of that product.” *Glenayre Elecs., Inc. v. Jackson*, 443 F.3d 851, 864 (Fed. Cir. 2006).

The district court cited but distinguished those cases as only applying to damages calculations against

two defendants involving overlapping royalty bases, a situation not existing here based on Caltech's expert's exclusion of chips sold to Apple from the royalty base considered for Broadcom. But that exclusion in this case is wholly contrived, lacks any basis of fact and is contrary to the customary way patent infringement disputes are ordinarily resolved. It is well settled that a reasonable royalty is what a willing licensor and a willing licensee would have agreed to at a hypothetical negotiation just before infringement began. See *Carnegie Mellon Univ. v. Marvell Tech. Grp.*, 807 F.3d 1283, 1303-1304 (Fed. Cir. 2015). Here, there is nothing in the record to suggest that Broadcom and Apple would have been willing to negotiate in this artificial way rather than to more conventionally negotiate a single license at a single rate for the same chips. Neither of Caltech's experts offered any factual basis to conclude that Broadcom and Apple would have been willing to engage in separate negotiations leading to vastly different royalty rates for the same chips. The district court's views to the contrary and its limiting of the *Stickle* and *Glenayre* cases to situations involving double recovery were misplaced and erroneous. Caltech's two-tier damages theory is legally unsupportable on this record.

* * *

We need not and do not address Broadcom and Apple's indemnification argument, or their argument that the hypothetical negotiations would have been held not with Caltech but by its exclusive licensee, Inforon. Nor do we address Broadcom and Apple's argument based on smallest-saleable-patent-practicing-unit, or the sufficiency of the evidence as to the domestic or extraterritorial character of Broadcom's sales.

CONCLUSION

For the foregoing reasons, we affirm the district court's construction of the claim limitation "repeat." We affirm the district court's denial of JMOL on infringement of the asserted claims of the '710 and '032 patents. We affirm the district court's conclusion that claim 13 of the '781 patent is patent-eligible but vacate the jury's verdict of infringement thereof and remand for a new trial. We affirm the district court's summary judgment findings of no invalidity based on IPR estoppel and no inequitable conduct. We affirm the district court's jury instructions relating to extraterritoriality, but vacate the jury's damage award and remand for a new trial on damages.

**AFFIRMED IN PART, VACATED IN PART, AND
REMANDED.**

COSTS

Each party shall bear its own costs.

UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

2020-2222, 2021-1527

CALIFORNIA INSTITUTE OF TECHNOLOGY,
Plaintiff-Appellee,

v.

BROADCOM LIMITED, NKA BROADCOM INC., BROADCOM
CORPORATION, AVAGO TECHNOLOGIES LIMITED, NKA
AVAGO TECHNOLOGIES INTERNATIONAL SALES PTE.
LIMITED, APPLE INC.,
Defendants-Appellants.

Appeals from the United States District Court for
the Central District of California in No. 2:16-cv-03714-
GWAGR, Judge George H. Wu.

DYK, *Circuit Judge*, concurring-in-part and dissenting-
in-part.

While I join Discussion sections II.B.1, III, and IV
of the majority opinion, I respectfully disagree with the
majority's holding that substantial evidence supports
the jury's verdict of infringement of the asserted claims
of the '710 and '032 patents and would reverse the dis-
trict court's denial of JMOL of no literal infringement. I
would similarly reverse the denial of JMOL rather than
remand for a new trial with respect to the infringement
of the '781 patent.

I

No matter how novel an invention is, it is the pa-
tent's claims that "determine what the invention is," as

well as the bounds of the patent owner’s rights to that invention’s “exclusive use.” *Motion Picture Patents Co. v. Universal Film Mfg. Co.*, 243 U.S. 502, 510 (1917). Patent owners are limited by the language in the claims, and “can claim nothing beyond them.” *Id.* (quoting *Keystone Bridge Co. v. Phoenix Iron Co.*, 95 U.S. 274, 278 (1877)). It is the patent owner’s burden to show that “the properly construed claim reads on the accused device exactly.” *CommScope Techs. LLC v. Dali Wireless Inc.*, 10 F.4th 1289, 1295 (Fed. Cir. 2021) (quoting *Engel Indus., Inc. v. Lockformer Co.*, 96 F.3d 1398, 1405 (Fed. Cir. 1996)). Denial of JMOL of no literal infringement must be reversed when plaintiffs “fail[] to present evidence proving that the [accused device] meets the district court’s construction of [a] claim term.” *CommScope*, 10 F.4th at 1295. Such a failure occurs when expert testimony “points to the result ... rather than the specific mechanism claimed to achieve that result,” *id.* at 1297, or when expert testimony is merely “cursory,” *Alexsam, Inc. v. IDT Corp.*, 715 F.3d 1336, 1341–42 (Fed. Cir. 2013). Here, no showing of literal infringement has been made that can support the jury’s infringement verdict under the district court’s claim construction, which is not challenged by Caltech.

II

Before trial, the district court held a *Markman* hearing to construe the term “repeat,” an essential limitation in all of the asserted claims of the three patents. Caltech advocated for the term’s plain and ordinary meaning. Apple and Broadcom proposed a narrower construction, contending that “repeat” should be construed as “creating a new bit that corresponds to the value of an original bit (i.e., a new copy) by storing the new copied bit in memory. A reuse of a bit is not a repeat of a bit.” J.A. 9. The district court rejected this

construction because reusing bits by “selecting the bits for use without necessarily storing them at a specific location in computer memory” could satisfy the claim limitation. J.A. 10. The district court nonetheless noted that the “claim language ... makes clear that ‘repeated bits’ are a construct distinct from the original bits from which they are created.” *Id.* Ultimately, the district court adopted the term’s plain and ordinary meaning, concluding that no further construction was required.

Following the *Markman* hearing, the parties continued to dispute what exactly the plain and ordinary meaning of “repeat” entailed. As a result, at trial, as permitted by precedent,¹ the district court revisited and clarified its earlier claim construction ruling, instructing the jury that the ’710 and ’032 patents’ claimed repetition requires the “generation of additional bits, where generation can include, for example, duplication or reuse of bits.” J.A. 171. The critical question, therefore, is whether there is substantial evidence that the accused devices cause “generation of additional bits.” Unfortunately, in denying the appellants’ post-trial JMOL motion, the district court provided no analysis of how Caltech established infringement, relegating this question to a footnote which said only that “Defendants’ arguments that the verdict was not supported by substantial evidence also remain unpersuasive.” J.A. 206.

¹ It is within the district court’s discretion to “engage in a rolling claim construction, in which the court revisits and alters its interpretation of the claim terms as its understanding of the technology evolves.” *See, e.g., Jack Guttman, Inc. v. Kopykake Enters.*, 302 F.3d 1352, 1361 (Fed. Cir. 2002) (citing *Sofamor Danek Grp., Inc. v. DePuy–Motech, Inc.*, 74 F.3d 1216, 1221 (Fed. Cir. 1996)); *CollegeNet, Inc v. ApplyYourself, Inc.*, 418 F.3d 1225, 1233–34 (Fed. Cir. 2005).

The panel majority does not identify or rely on a reuse theory to uphold the jury's verdict. Rather, the majority concludes that infringement of the repeat limitation was supported by expert testimony that "the [AND] gate affirmatively enables the information bit to be duplicated as the output bit. That is a 'repeat' ... because the information bit in that situation 'flows through' to appear again in the output." Maj. Op. at 16 (emphasis added). But there is in fact no such expert testimony. To the contrary—consistent with its claim construction position, Caltech's expert testified that the claims do not "require that the repeat has to be done by duplicating information bits," J.A. 2858, and Caltech argued to this court on appeal that "repetition does not require duplication," Appellee's Br. 18.

To be sure, Caltech is correct that duplication is not required to satisfy the repeat limitation. But the problem for Caltech (and for the majority) is that Caltech never established that the accused devices generate "additional bits," as required by the district court's claim construction. The infringement theory presented at trial explained that the accused devices work as follows: information bits are input into the accused devices, those bits travel down branched wires to the inputs of 972 AND gates, and three to twelve of those AND gates will be open for each information bit, thus outputting the bits a different number of times. For this theory to satisfy Caltech's burden, Caltech was required to establish where, when, and how additional bits were generated.

One possibility—presented by Caltech's counsel—was that additional bits were generated by branching at the inputs. During closing arguments, Caltech told the jury "That's how you repeat bits, with a voltage along wires ... how else would you repeat bits? How else would you do it?" 1/28 Tr. 90:20–91:9. But the record

does not support a theory that the branched wires generate additional bits. Caltech's experts testified merely that the bits are "connected to" the AND gates by branched wires, without explaining whether or how that connection generated additional bits. J.A. 2831. Apple and Broadcom presented unrefuted expert testimony that the branched wire connection involves simultaneously sending the same bit—not an additional bit—to the inputs of AND gates. Caltech's expert did not testify to the contrary, and in fact declined to testify that branching generates additional bits.

Q. Branch wire creates repeat bits?

...

THE COURT: I'll allow him to answer the question if he understands it.

THE WITNESS: That question I did not understand. I didn't think it was well formed.

BY MR. MUELLER: Q. The branch wire in the Broadcom chips in your view creates repeat bits within the meaning of the claims; correct?

...

THE WITNESS: In my analysis the branch wire is being used in conjunction with the tables and these and gates to implement irregular repetition.

J.A. 3019–20. There is no substantial evidence supporting an infringement verdict based on branching.

Caltech's separate theory to establish that the accused devices generate additional bits was the "flow through" theory, supported, according to the majority, by expert testimony that "the information bit 'flows through' to the output gate [when] the parity-check bit

is 1,” and that the flow through bit constitutes “a repeat, both according to the expert’s usage and a plain understanding of the word.” Maj. Op. at 16–17. The majority identifies record evidence where Caltech’s expert summarily testified that the AND gates repeated information bits when the gates are enabled, J.A. 2842; J.A. 3080, and where the expert concluded that the AND gates were “generating additional bits at their output,” J.A. 4162. This cursory and conclusory testimony cannot satisfy Caltech’s burden.

Caltech’s own expert testimony as to how an AND gate functions forecloses concluding that the AND gates generate additional bits. Throughout trial, Caltech’s expert consistently testified that an AND gate “act[s] like a switch ... allowing the information bits to flow through ... or not.” J.A. 3016–17; *see also* J.A. 3031 (“[E]nable one allows the AND gate to act like a switch. So enable would close the switch and allow the one to come out.”); J.A. 3030 (“[T]he AND gate has two inputs. One of them is the enable that allows the switch to open or close.”); J.A. 3031 (“Enable zero is like the switch not allowing the information bit to flow through.”). If an enabled AND gate merely allows the same information bit that already exists at the input of an AND gate “to come out,” J.A. 3031, or to “flow through,” this does not remotely establish how the AND gate output generates additional information bits. Under the explanation that Caltech repeatedly presented, one information bit comes in and one information bit comes out—no additional bit appears anywhere. Flow through, with a 1:1 ratio of input bits to output bits as described by Caltech’s experts, cannot satisfy the generation of additional bits limitation required by the district court’s claim construction.

Caltech’s remaining theory submits that the accused devices generate additional bits when the branched

wires are combined with the AND gates. The majority believes that “the physical connection of the first inputs of all 972 AND gates ... *and* the connection of the parity-bit system to the other inputs of the AND gates to selectively enable 3 to 12 of those gates ... *together* implement irregular repetition.” Maj. Op. at 17. Neither the majority’s opinion, Caltech’s briefs, and most importantly, Caltech’s experts, explain why the combination of these two non-infringing components results in infringement. The district court therefore erred in denying JMOL of no literal infringement.

III

At trial, Caltech also presented a doctrine of equivalents case to the jury. In a footnote to its JMOL decision, the district court found that it was “not necessary” to analyze Apple and Broadcom’s challenge to the doctrine of equivalents arguments, J.A. 206, and the majority here similarly does not address such a theory. There is no basis to sustain the verdict on a doctrine of equivalents theory.

To prevail, Caltech had the burden of proving equivalence “between the elements of the accused product or process and the claimed elements of the patented invention,” *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 21 (1997), by showing that “the accused device contains an element that is not ‘substantially different’ from any claim element that is literally lacking,” *Kraft Foods, Inc. v. Int’l Trading Co.*, 203 F.3d 1362, 1371 (Fed. Cir. 2000) (citing *Warner-Jenkinson*, 520 U.S. at 40).

Caltech’s appellate brief devoted only one and a half pages to this issue, citing to eight pages of trial testimony in which its expert asserted that the differences between the accused chips and the claim limitations

were insubstantial. At trial, Dr. Shoemake testified that because the claims do not “require repeating with any type of specific circuitry,” any differences in the method Broadcom’s chips used to accomplish the “overall goal” of the claims were insubstantial. J.A. 2856–58.

But even if no specific circuitry is required, Dr. Shoemake never explained why a bit flowing through to the output of an AND gate is substantially similar to the claimed device that generates additional bits. This is reminiscent of the insufficient, “[g]eneralized testimony” proscribed by *Texas Instruments Inc. v. Cypress Semiconductor Corp.*, 90 F.3d 1558, 1567 (Fed. Cir. 1996), and it cannot satisfy Caltech’s burden to provide “particularized testimony and linking argument as to the ‘insubstantiality of the differences’ between the claimed invention and the accused device or process ... on a limitation-by-limitation basis,” *id.* There was no basis for the jury to find infringement under the doctrine of equivalents.

I would reverse the district court’s denial of JMOL and enter judgment of non-infringement for Broadcom and Apple.

APPENDIX B

UNITED STATES DISTRICT COURT
CENTRAL DISTRICT OF CALIFORNIA

CIVIL MINUTES – GENERAL

Case No. CV 16-3714 GW (AGRx)

Date: December 28, 2018

Title *The California Institute of Technology v. Broadcom Limited, et al.*

Present: The Honorable: GEORGE H. WU, UNITED STATES DISTRICT JUDGE

<u>Javier Gonzalez</u>	<u>None Present</u>
Deputy Clerk	Court Reporter/Recorder

Attorneys Present for Plaintiffs: None Present

Attorneys Present for Defendants: None Present

Proceedings: IN CHAMBERS – FINAL RULING ON:

**PLAINTIFF’S MOTION FOR
PARTIAL SUMMARY JUDGMENT [740]**

The California Institute of Technology v. Broadcom Limited et al.; Case No. 2:16-cv-03714-GW-(AGRx)
Final Ruling on Plaintiff’s Motion for Partial Summary Judgment of Validity under 35 U.S.C. § 103 Based on IPR Estoppel under 35 U.S.C. § 315(e)(2)

I. Introduction

Plaintiff The California Institute of Technology currently alleges patent infringement against Defendants Broadcom Limited, Broadcom Corporation, Avago

Technologies Limited, and Apple Inc.¹ *See* First Amended Complaint (“FAC”), Docket No. 36; *see also* Docket No. 1. Plaintiff asserts that Defendants infringe fifteen claims from three of its patents: (1) U.S. Patent No. 7,116,710 (“the ’710 Patent”); (2) U.S. Patent No. 7,421,032 (“the ’032 Patent”); and (3) U.S. Patent No. 7,916,781 (“the ’781 Patent”) (collectively, the “Asserted Patents”).² *See* Docket No. 409 (Plaintiff’s Amended Notice of Withdrawal of Certain Asserted Claims of Asserted Patents).

Pending before the Court is Plaintiff’s Motion for Summary Judgment as to Validity under 35 U.S.C. § 103 Based on IPR Estoppel under 35 U.S.C. § 315(e)(2). Docket No. 740-1. The Motion is fully briefed. *See* Docket No. 767 (public); Docket No. 772 (sealed) (Defendants’ Opposition to Motion for Partial Summary Judgment); Docket No. 798 (Plaintiff’s Reply in Support of Motion for Partial Summary Judgment). A hearing was held on the Motion on December 6, 2018 and the

¹ Cypress Semiconductor Corporation was also previously named as a defendant in this case, but the parties filed a Joint Stipulation for Dismissal of all claims between them on September 7, 2018. Docket No. 665.

² The fifteen remaining claims in this case are: Claims 20, 22, and 23 of the ’710 Patent; Claims 3, 11, 13, 17, and 18 of the ’032 Patent; and Claims 5, 6, 9, 10, 13, 19, and 22 of the ’781 Patent. Docket No. 409. Of those claims, eleven were selected as representative claims for purposes of adjudication in this lawsuit: Claims 20, 22, and 23 of the ’710 Patent; Claims 3, 11, 17, and 18 of the ’032 Patent; and Claims 6, 9, 13, and 22 of the ’781 Patent. *See id.*; *see also* Docket No. 487, 488. On October 1, 2018, Plaintiff filed a Notice of Withdrawal of Claim 6 of the ’781 Patent. Docket No. 705. However, Plaintiff’s notice is vague as to whether it solely seeks to withdraw Claim 6 of the ’781 Patent as one of the eleven claims selected for purposes of adjudication or whether it seeks to withdraw Claim 6 from the lawsuit entirely.

matter was taken under submission. *See* Docket Nos. 824, 828.

For the reasons stated in this Order, the Court **GRANTS** Plaintiff’s Motion for Summary Judgment (Docket No. 740) except as to Defendants’ invalidity ground against Claims 13 and 22 of the ’781 Patent based on Divsalar, Frey/Frey Slides, and Ping.

II. Legal Standard

Under Federal Rule of Civil Procedure (“Rule”) 56, a party may move for summary judgment, identifying each claim or defense – or the part of each claim or defense – on which summary judgment is sought, and the court shall grant it when the pleadings, the discovery and disclosure materials on file, and any affidavits show that “there is no genuine issue as to any material fact and that the movant is entitled to judgment as a matter of law.” Fed. R. Civ. P. 56(a); *see also Miranda v. City of Cornelius*, 429 F.3d 858, 860 n.1 (9th Cir. 2005). As to materiality, “[o]nly disputes over facts that might affect the outcome of the suit under the governing law will properly preclude the entry of summary judgment.” *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 248 (1986). A dispute as to a material fact is “genuine” if there is sufficient evidence for a reasonable jury to return a verdict for the nonmoving party. *Id.*

To satisfy its burden at summary judgment, a moving party with the burden of persuasion must establish “beyond controversy every essential element of its [claim or defense].” *S. Cal. Gas Co. v. City of Santa Ana*, 336 F.3d 885, 888 (9th Cir. 2003); O’Connell & Stevenson, *Rutter Group Prac. Guide: Fed. Civ. Proc. Before Trial* (“*Federal Practice Guide*”) § 14:126 (2016). By contrast, a moving party without the burden of persuasion “must either produce evidence negating an essential element of

the nonmoving party's claim or defense or show that the nonmoving party does not have enough evidence of an essential element to carry its ultimate burden of persuasion at trial." *Nissan Fire & Marine Ins. Co., Ltd. v. Fritz Cos., Inc.*, 210 F.3d 1099, 1102 (9th Cir. 2000); see also *Devereaux v. Abbey*, 263 F.3d 1070, 1076 (9th Cir. 2001) (en banc) ("When the nonmoving party has the burden of proof at trial, the moving party need only point out 'that there is an absence of evidence to support the nonmoving party's case.'") (quoting *Celotex Corp. v. Catrett*, 477 U.S. 317, 325 (1986), and citing *Fairbank v. Wunderman Cato Johnson*, 212 F.3d 528, 532 (9th Cir. 2000) (holding that the *Celotex* "showing" can be made by "pointing out through argument ... the absence of evidence to support plaintiff's claim"))).

If the party moving for summary judgment meets its initial burden of identifying for the court the portions of the materials on file that it believes demonstrate the absence of any genuine issue of material fact, the nonmoving party may not rely on the mere allegations in the pleadings in order to preclude summary judgment[, but instead] must set forth, by affidavit or as otherwise provided in Rule 56, specific facts showing that there is a genuine issue for trial.

T.W. Elec. Serv., Inc., v. Pac. Elec. Contractors Ass'n, 809 F.2d 626, 630 (9th Cir. 1987) (internal citations and quotation marks omitted) (citing, among other cases, *Celotex*, 477 U.S. at 323). "A non-movant's bald assertions or a mere scintilla of evidence in his favor are both insufficient to withstand summary judgment." See *FTC v. Stefanichik*, 559 F.3d 924, 929 (9th Cir. 2009). In addition, the evidence presented by the parties must be admissible. See Fed. R. Civ. P. 56(e). Conclusory, speculative

testimony in affidavits and moving papers is insufficient to raise genuine issues of fact and defeat summary judgment. See *Thornhill Publ'g Co., Inc. v. GTE Corp.*, 594 F.2d 730, 738 (9th Cir. 1979). Relatedly, “[a]ny objections to declarations or other evidence must be made at or (preferably) before the hearing, and should be ruled upon by the court before ruling on the motion itself.” *Federal Practice Guide* § 14:333 (citing *Hollingsworth Solderless Terminal Co. v. Turley*, 622 F.2d 1324, 1335 n.9 (9th Cir. 1980); *Sigler v. American Honda Motor Co.*, 532 F.3d 469, 480 (6th Cir. 2008)). In judging evidence at the summary judgment stage, however, courts do not make credibility determinations or weigh conflicting evidence at the summary judgment stage, and must view all evidence and draw all inferences in the light most favorable to the non-moving party. See *T.W. Elec.*, 809 F.2d at 630-31 (citing *Matsushita Elec. Indus. Co., Ltd. v. Zenith Radio Corp.*, 475 U.S. 574 (1986)); *Anderson*, 477 U.S. at 255 (“The evidence of the non-movant is to be believed and all justifiable inferences are to be drawn in [the non-movant’s] favor.”).

“If the court does not grant all the relief requested by the motion, it may enter an order stating any material fact – including an item of damages or other relief – that is not genuinely in dispute and treating the fact as established in the case.” Fed. R. Civ. P. 56(g); see also *Federal Practice Guide* § 14:352 (“A partial summary judgment may be granted on motion of either party for adjudication of particular claims or defenses.”) (citing *id.* § 14:33).

III. Factual Background

While this litigation has been proceeding, the Patent Trial and Appeal Board (“PTAB”), a branch of the U.S. Patent Office, has considered the validity of the Asserted Patents as part of certain *Inter Partes* Review

(“IPR”) Proceedings. Defendants³ filed ten IPR petitions across the patents asserted in this case.⁴ The PTAB declined to institute IPR proceedings as to some of the petitioned patent claims, instituted IPR proceedings as to the other petitioned patent claims, and has issued Final Written Decisions as to four of the claims that are still being adjudicated in this case.⁵

In particular, the PTAB has issued Final Written Decisions finding that Defendants failed to demonstrate that Claims 13 and 22 of the '781 Patent and Claims 11 and 18 of the '032 Patent are invalid. Defendants had specifically raised (and the PTAB considered) three prior art “grounds” during IPR proceedings:

- Ping & MacKay ('781 Patent, Claims 13 and 22);
- Ping, MacKay & Divsalar ('032 Patent, Claim 11); and
- Ping, MacKay, Divsalar & Luby97 ('032 Patent, Claim 18).

In litigation before this Court, the following table summarizes the invalidity grounds Defendants now rely on to assert invalidity of Claims 13 and 22 of the '781 Patent and Claims 11 and 18 of the '032 Patent:

³ Plaintiff explains: “Apple Inc. (‘Apple’) is identified as the petitioner in all of the IPRs at issue, and Broadcom Corp. (‘Broadcom’) is identified as a real party-in-interest. Broadcom Corp. and Avago Technologies Ltd. are each subsidiaries of Broadcom Ltd., which is now known as Broadcom Inc.” Docket No. 740-1 at 1.

⁴ The ten IPR petitions included petitions against a patent that has since been withdrawn from this case.

⁵ Instituted IPR remains pending as to two of the claims for adjudication in this case, Claims 20 and 22 of the '710 Patent. Plaintiff notes that it will also seek summary judgment of no invalidity as to those claims on the basis of IPR estoppel after the PTAB issues its Final Written Decision in the IPR proceedings on those claims.

Patent	Claim	References Asserted in IPR	References Asserted in District Court
'032 Patent	11, 18	Claim 11: Ping, MacKay & Divsalar	Ping, Luby98, Divsalar* & Luby97
		Claim 18: Ping, MacKay Divsalar & Luby97	Ping, Richardson99*, Divsalar* & Luby97
			Ping, MacKay & Pfister/Pfister Slides*
			Divsalar*, MacKay & Luby97
			Ping, MacKay, Divsalar* & Luby97
			Ping, Luby98 & Divsalar*
			Ping, Luby98 & Pfister/Pfister Slides*
'781 Patent	13, 22	Ping & MacKay	Divsalar*, Ping & Richardson99*
			Divsalar*, Luby97, Luby98
			Divsalar*, Ping & Frey/Frey Slides*
			Ping & Luby98
			Pfister/Pfister Slides*, Luby97 & Luby98
			Divsalar*, Ping & Luby98

			Divsalar*, Luby97 & Luby98
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For purposes of their opposition to Plaintiff's summary judgment motion, Defendants assert that the "references" marked with asterisks are being brought under the "known or used" prong of pre-AIA 35 U.S.C. § 102(a).

Plaintiff now moves for partial summary judgment of no invalidity as to Claims 13 and 22 of the '781 Patent and Claims 11 and 18 of the '032 Patent, arguing that IPR estoppel precludes Defendants from raising each invalidity ground that was identified in Defendants' invalidity contentions as to each of those claims. Docket No. 740-1.

IV. Analysis

A. Scope of IPR Estoppel under 35 U.S.C. § 315(e)(2)

Section 315(e)(2) of the Patent Act states:

The petitioner in an inter partes review of a claim in a patent under this chapter that results in a final written decision under section 318(a), or the real party in interest or privy of the petitioner, may not assert ... that the claim is invalid on any ground that the petitioner raised or reasonably could have raised during that inter partes review.

35 U.S.C. § 315(e)(2). Courts have clarified that an invalidity "ground" before the PTAB is "the basis or bases on which a petitioner challenges a claim." *iLife Techs, Inc. v. Nintendo of Am., Inc.*, No. 13-cv-4987-M, 2017 U.S. Dist. LEXIS 87769, at *9 (N.D. Tex. May 30, 2017).

The Federal Circuit had reason to consider the meaning of the statutory IPR estoppel provision in a 2016 decision. *See Shaw Indus. Grp., Inc. v. Automated*

Creel Sys., Inc., 817 F.3d 1293, 1300 (Fed. Cir. 2016), *cert. denied*, 137 S. Ct. 374 (2016). *Shaw* involved an appeal from the PTAB’s decision to only partially institute an IPR. The PTAB had partially denied institution of IPR on the basis that certain prior art grounds in the IPR petition were “redundant.” *Id.* at 1297.

The Federal Circuit first concluded that the PTAB’s decision to deny IPR institution on certain grounds was unappealable. *Id.* at 1299 (“We have no authority ... to review the Board’s decision to institute IPR on some but not all grounds.”). The Federal Circuit then commented that, as to the “redundant” invalidity grounds where the PTAB denied IPR institution (*i.e.*, the unappealable portion of the decision with no resulting Final Written Decision), IPR estoppel would not attach. Relying on an interpretation of the plain words of the statutory IPR estoppel provision, the Federal Circuit reasoned that the non-instituted ground was not a ground raised or that reasonably could have been raised “**during** that inter partes review” because “[t]he IPR does not begin until it is instituted.” *Id.* at 1300; *see also HP Inc. v. MPHJ Tech. Inv., LLC*, 817 F.3d 1339, 1347 (Fed. Cir. 2016) (interpreting the analogous estoppel provision that applies to Patent Office proceedings, Section 315(e)(1), and concluding that “noninstituted [redundant] grounds do not become a part of the IPR”).

District courts since *Shaw* have grappled with the implications of this holding. In particular, courts have considered whether the statutory IPR estoppel provision reaches to invalidity grounds that a petitioner was aware of at the time it filed its IPR petition, but chose not to bring in the IPR proceeding. Some district courts relying on *Shaw* have concluded that, under the logic provided by *Shaw*, those non-petitioned grounds could

not reasonably have been raised **during** IPR because **during** IPR, the PTAB has already selected the specific invalidity grounds for consideration through its grant of the IPR petition. Under this logic, a petitioner would have no reasonable opportunity to raise new invalidity grounds in the midst of the actual “IPR stage” of IPR proceedings. Other district courts have questioned this approach and declined to follow it. Those courts observe that only allowing estoppel to attach to the invalidity grounds actually considered and ultimately addressed in the PTAB’s Final Written Decision would render the phrase “reasonably could have raised” in Section 315(e)(2) largely superfluous. *Milwaukee Elec. Tool Corp. v. Snap-On Inc.*, 271 F. Supp. 3d 990, 1028 (E.D. Wis. 2017) *appeal pending*, No. 18-1516 (Fed. Cir. Feb. 5, 2018) (comparing two approaches). The Eastern District of Wisconsin’s decision in *Milwaukee Electric* provided a thoughtful summary and analysis of the competing views at the time it was decided:

Plaintiffs assert that the exception to IPR estoppel explained in *Shaw* – noninstitution of a ground for IPR – has two limitations. First, it only applies to non-instituted grounds when such ground was rejected for purely procedural reasons, such as redundancy, and not when the ground was refused as insufficient on its merits to warrant IPR. (Docket # 188 at 11). Second, in Plaintiffs’ view, estoppel operates to bar any non-petitioned ground that the petitioner had reasonably available to it, and therefore could have included in its petition, but chose not to. *Id.*

Several district courts have accepted Plaintiffs’ position, finding that while these exceptions to the exception are not totally congruent with the

Federal Circuit’s quite literal reading of the statute in *Shaw*, they are important in order to further the efficiency-promoting purposes of IPR and deter selective presentation of grounds to the PTAB. See *Biscotti Inc. v. Microsoft Corp.*, Case No. 2:13-CV-01015-JRG-RSP, 2017 WL 2526231, at *7 (E.D. Tex. May 11, 2017); *Clearlamp, LLC v. LKQ Corp.*, No. 12-cv-2533, 2016 WL 4734389, at *8 (N.D. Ill. Mar. 18, 2016). Other courts have hewed to *Shaw* and *HP*’s literal approach, finding that only grounds that were or could reasonably have been raised during IPR proceedings – that is, after the PTAB has instituted IPR as to certain grounds – implicate IPR estoppel. See, e.g., *Verinata Health, Inc. v. Ariosa Diagnostics, Inc.*, No. 12-cv-5501, 2017 WL 235048, at *3 (N.D. Cal. Jan. 19, 2017) (collecting cases).

The Court finds that, in the absence of greater clarity provided by the Federal Circuit on these issues, the better view is that recently espoused by Judge Amy St. Eve in *Oil-Dri Corp. of America v. Nestle Purina Petcare Co.*, No. 15-cv-1067, 2017 WL 3278915 (N.D. Ill. Aug. 2, 2017). First, she found that a plain reading of *Shaw* compels the conclusion that a non-instituted ground is not subject to estoppel, whatever the reason for its rejection. *Id.* at *4; *Douglas Dynamics, LLC v. Meyer Prods. LLC*, 14-cv-886-jdp, 2017 WL 1382556, at *5 (W.D. Wis. Apr. 18, 2017) (*Shaw* “makes the Federal Circuit’s view of whether § 315(e) estoppel applies to non-instituted grounds crystal clear”). As she explained, the Federal Circuit has had opportunities to revisit *Shaw*’s reasoning and has declined to do so. *Oil-*

Dri, 2017 WL 3278915, at *4; *Credit Acceptance Corp. v. Westlake Servs.*, 859 F.3d 1044, 1053 (Fed. Cir. 2017); *HP Inc.*, 817 F.3d at 1347. Further, while it is possible to draw distinctions between declining to institute IPR for procedural reasons or for merits-related failings, the fact remains that denial of an IPR petition is simply not an adjudication of an invalidity contention. *Oil-Dri*, 2017 WL 3278915, at *4. Holding otherwise would deny the petitioner a full and fair opportunity to litigate the petitioned but non-instituted ground. *See id.*; *Verinata*, 2017 WL 235048, at *3 (“[L]imiting IPR estoppel to grounds actually instituted ensures that estoppel applies only to those arguments, or potential arguments, that received (or reasonably could have received) proper judicial attention.”). Thus, a petitioned ground for which IPR was not instituted, for whatever reason, does not give rise to IPR estoppel.

However, the Court is persuaded by Plaintiffs’ other proposed limitation on the *Shaw* IPR estoppel exception relating to non-petitioned grounds. Judge St. Eve also persuasively reasoned in *Oil-Dri* that “[i]f a party does not include an invalidity ground in its petition that it reasonably could have included, it necessarily has not raised a ground that it ‘reasonably could have raised during ... IPR.’” *Oil-Dri*, 2017 WL 3278915, at *8 (quoting 35 U.S.C. § 315(e)(2)). The Federal Circuit has not expressly considered this particular question, and so *Shaw* and the cases that follow it, which touch on noninstituted grounds only, do not foreclose such an approach. *Id.* at *7. Moreover, this approach is

consistent with the purposes of the AIA, because it incentivizes petitioners to bring all of their invalidity claims before the expert judges of the PTAB in the most efficient manner possible. *Id.*

Indeed, though *Shaw's* plain language prevents IPR estoppel being applied to non-instituted grounds, the Court can preserve some measure of the policy goals animating the creation of IPR by holding that a petitioner is estopped from asserting invalidity contentions based on prior art that it could reasonably have included in its IPR petition but did not. *See Douglas Dynamics*, 2017 WL 1382556, at *4; *Biscotti*, 2017 WL 2526231, at *7. As Judge St. Eve observed, “while it makes sense that noninstituted grounds do not give rise to estoppel because a petitioner cannot – to no fault of its own – raise those grounds after the institution decision, when a petitioner simply does not raise invalidity grounds it reasonably could have raised in an IPR petition, the situation is different.” *Oil-Dri*, 2017 WL 3278915, at *8. The PTAB itself takes this view, too. *Great W. Cas. Co. v. Intellectual Ventures II LLC*, IPR No. 2016–01534, Paper No. 13, at 11-14 (PTAB Feb. 15, 2017) (“[A] petitioner makes an affirmative choice to avail itself of *inter partes* review only on certain grounds. That choice, however, comes with consequences, most prominently, that grounds petitioner elects not to raise in its petition for *inter partes* review may be subject to the consequences of Section 315(e)(1).”). In order for IPR to fulfill its mission of streamlining patent litigation in the district courts and promoting efficient dispute resolution, a petitioner cannot be left

with the option to institute a few grounds for IPR while holding some others in reserve for a second bite at the invalidity apple once in the district court. See *Cobalt Boats, LLC v. Sea Ray Boats, Inc.*, No. 15cv21, 2017 WL 2605977, at *2-3 (E.D. Va. June 5, 2017) (“[T]he broad reading of *Shaw* renders the IPR estoppel provisions essentially meaningless because parties may pursue two rounds of invalidity arguments as long as they carefully craft their IPR petition.”); *Douglas*, 2017 WL 1382556, at *4 (“A patent infringement defendant does not have to take the IPR option; it can get a full hearing of its validity challenge in district court. If the defendant pursues the IPR option, it cannot expect to hold a second-string invalidity case in reserve in case the IPR does not go defendant’s way.”). “Estopping a party in such a situation is both fair – as the party could only blame itself – as well as common.” *Oil-Dri*, 2017 WL 3278915, at *9. Therefore, the Court finds that a petitioner is subject to IPR estoppel when it fails to raise those grounds that it “reasonably could have raised” in its IPR petition, which includes prior art that a “skilled searcher conducting a diligent search reasonably could have been expected to discover.” *Id.* (quoting *Clearlamp*, 2016 WL 4734389, at *7-8); *Douglas*, 2017 WL 1382556, at *5.

Id. at 1028-30.

At the hearing, Defendants argued that the district court’s interpretation in *Milwaukee Electric* leads to an inconsistent treatment of the “during IPR” language in § 315(e)(2) depending on the circumstances and is thus contrary to the Federal Circuit’s determination in *Shaw*. As Defendants see it, if a prior art reference is included

in an IPR petition and IPR is not instituted as to that prior art reference, *Milwaukee Electric* ascribes to *Shaw's* view that the reference could not have been reasonably raised *during* IPR. If a prior art reference is not included in an IPR petition, *Milwaukee Electric* would find that IPR estoppel applies so long as the prior art reference could have been found by a skilled searcher conducting a diligent search. In other words, at first glance, it would appear that the “during IPR” language of § 315(e)(2) has taken on a different meaning in the second scenario and specifically a different meaning from the one set out in *Shaw*.

Shaw, however, involved very particular circumstances. *Shaw's* estoppel determination was intertwined with: 1) a determination that the Federal Circuit could not hear appeals from PTAB decisions denying institution of IPR and 2) circumstances where the PTAB was permitted to institute (or deny institution) of IPR on less than the full grounds and claims requested by a petitioner. An alternative discussion in *Shaw* could have created a circumstance suggesting estoppel could attach based on an unreviewable non-final determination from the PTAB.⁶ The same due process issues are not at play

⁶ In *Shaw*, the defendant had petitioned for a writ of mandamus instructing the PTAB to institute IPR on the supposedly redundant invalidity ground on which IPR had not been instituted. *Shaw*, 817 F.3d at 1299. The defendant argued that relief was necessary for various reasons, including that it could be otherwise estopped from raising the invalidity ground in district court and thus had no other adequate means to attain the desired relief. *Id.* The Federal Circuit addressed the defendant's concern with its analysis of § 315(e)(2) and its conclusion that statutory estoppel would not apply to the invalidity ground rejected by the PTAB. *Id.* In other words, the Federal Circuit found that because defendant would still be able to bring the prior art ground in district court, mandamus was not warranted. Thus, *Shaw* is not a decision directly determining the scope

when non-petitioned prior art grounds are being considered, and *Shaw* does not directly address this second scenario in its determination.

The “during IPR” language also should not be read in a vacuum. The full phrase of § 315(e)(2) is whether the ground is one “that the petitioner raised or reasonably could have raised during that inter partes review.” There is no reasonable basis by which a petitioner could raise a ground that has been explicitly rejected by the PTAB in making an IPR institution determination. But in the context of non-petitioned grounds, the issue goes back to the choices made by the petitioner itself. In other words, prior art references that a petitioner reasonably could have raised, but chose not to raise, in an IPR petition are also prior art references that reasonably could have been raised during actual IPR had the PTAB been given the opportunity (based on the petitioner’s raising them) to consider those references.

The Court acknowledges that at the time *Milwaukee Electric* and *Oil-Dri* were decided, this logic may have held less water. But after those opinions had already issued, the Supreme Court in *SAS* found that the language of the Patent Act does not permit the PTAB to only institute IPR on some, but not all, of the petitioned claims. See *SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 200 L. Ed. 2d 695 (2018). The Federal Circuit has since interpreted *SAS* as also requiring the PTAB to take an all-or-nothing approach to the actual invalidity grounds raised in an IPR petition. See *Adidas AG v. Nike, Inc.*, 894 F.3d 1256, 1257 (Fed. Cir. 2018). In other words, the

of estoppel, but instead is one where estoppel is considered in the context of a different dispute. Although the Court does not consider *Shaw*’s interpretation of § 315(e)(2) to be *dicta*, it does find this distinction notable and significant.

factual circumstances encountered by *Shaw* (partial denial of institution of IPR as to a particular ground, with that denial unappealable) are unlikely to arise again. The result is that the choices of the petitioner – and the petitioner alone – in its initial decision regarding what grounds to bring before the PTAB dictate what grounds are raised (or reasonably could have been raised) “during IPR” and thus could result in estoppel if IPR results in a final written decision. *See* 35 U.S.C. § 315(e)(2).

Indeed, in the only published district court decision since *SAS*, one district court has stated,

[p]rior to *SAS*, a minority of district courts had held that only grounds actually raised in the petition could count as grounds that “reasonably could have been raised”; under that view, a petitioner could hold back certain grounds from its petition and be free to raise them later before a district court. *E.g.*, *Koninklijke Philips N.V. v. Wangs Alliance Corp.*, 2018 WL 283893, at *3-4 (D. Mass. Jan. 2, 2018) (citing cases that held otherwise); *Finjan, Inc. v. Blue Coat Sys., LLC*, 283 F.Supp.3d 839, 855-57 (N.D. Cal. 2017). *But see Oil-Dri Corp. of Am. v. Nestlé Purina Petcare Co.*, 2017 WL 3278915, at *6-8 (N.D. Ill. Aug. 2, 2017) (“[W]hile it makes sense that non-instituted grounds do not give rise to estoppel because a petitioner cannot – to no fault of its own – raise those grounds after the institution decision, when a petitioner simply does not raise invalidity grounds it reasonably could have raised in an IPR petition, the situation is different.”); *Parallel Networks Licensing, LLC v. Int’l Bus. Machs. Corp.*, 2017 WL 1045912, *11-12 (D. Del. Feb. 22, 2017). After *SAS*, that cannot be correct. Because the PTAB must now

institute review (if at all) on all claims and grounds, there will be no such thing as a ground raised in the petition as to which review was not instituted. Accordingly, for the words “reasonably could have raised” to have any meaning at all, they must refer to grounds that were not actually in the IPR petition, but reasonably could have been included.

SiOnyx, LLC v. Hamamatsu Photonics K.K., 330 F. Supp. 3d 574, 602 (D. Mass. 2018). This reasoning is persuasive and supports the conclusion that IPR estoppel should extend to non-petitioned invalidity grounds.⁷

⁷ At the hearing, Defendants argued that the “reasonably could have raised” language is not rendered entirely superfluous by a narrower reading § 315(e)(2). Specifically, Defendants observed that if the PTAB instituted IPR on a ground involving prior art references A, B, and C, some courts have found it appropriate for IPR estoppel to attach to grounds involving sub-combinations of those three prior art references, such as, for instance, a ground involving the combination of only prior art references A and B. See *Verinata Health, Inc. v. Ariosa Diagnostics, Inc.*, No. 12-CV-05501-SI, 2017 WL 235048, at *4 (N.D. Cal. Jan. 19, 2017) (“The Court finds that defendants raised, or could have raised, these grounds in the IPR proceedings, as the combination of Dhallan and Binladen is simply a subset of the instituted grounds.”). In the Court’s view, in most instances, this would be a distinction without a difference. Presumably, a petitioner would believe the full combination of prior art references that it brought as a ground before the PTAB is necessary to make its invalidity argument before the PTAB. Perhaps in limited circumstances a petitioner would have some incentive to throw in more prior art references than it actually needs to support an invalidity argument before the PTAB. For instance, a petitioner might rely on prior art combination A, B, and C before the PTAB even if it personally thinks A and B are sufficient but has concerns that the smaller A/B combination is open to greater challenge. The more logical choice, however, would seem to be to streamline/simplify a submitted invalidity ground, particularly given the petitioner’s burden to show it would have been obvious to combine the prior art

SiOnyx also addressed the issue of the scope of what constitutes a non-petitioned invalidity ground that reasonably could have been raised during IPR:

In congressional debates, one of the key architects of the America Invents Act explained that “reasonably could have raised” is meant to include any patent or printed publication that a petitioner actually knew about or that “a skilled searcher conducting a diligent search reasonably could have been expected to discover.” 157 Cong. Rec. S1375 (daily ed. Mar. 8, 2011) (statement of Sen. Kyl). Several district courts have adopted this as the standard. *E.g.*, *Parallel Networks Licensing*, 2017 WL 1045912, *11-12; *Clearlamp, LLC v. LKQ Corp.*, 2016 WL 4734389, at *7-8 (N.D. Ill. Mar. 18, 2016).

references (a task that, at least conceptually, would likely become increasingly difficult as the number of prior art references increases). The Court also observes that a narrower interpretation of § 315(e)(2) could create an additional incentive for petitioners to limit the number of prior art references used in invalidity grounds in their IPR petitions. For instance, under the narrower view of IPR estoppel urged by Defendants, a petitioner could take a chance and raise prior art references A and B in a ground before the PTAB, but then bring prior art references A, B, and C in an obviousness ground before district court without fear of estoppel. This would allow the petitioner to first try its luck with the smaller prior art reference combination before the PTAB and then, with the benefit of the PTAB’s analysis, take a second bite at the apple by simply adding an additional reference to the mix (even if, for instance, the majority of the invalidity analysis remains the same). This thought exercise also colors the Court’s thinking regarding the appropriate scope of IPR estoppel.

SiOnyx, 330 F. Supp. 3d at 602. The Court finds it appropriate to adopt the same standard here.⁸

Finally, *SiOnyx* departed from *Milwaukee Electric's* conclusion regarding how estoppel should be applied to petitioned but noninstituted invalidity grounds where there has been partial IPR institution and a final written decision:

[h]appily, the issue is easily resolved in this case. At the time the Supreme Court handed down *SAS*, [the IPR petitioner's] time to appeal the PTAB's decision had not yet run. Where relevant, the Federal Circuit has remanded cases to the PTAB to allow it to consider noninstituted claims and grounds following that decision, and has not held that petitioners have waived their right to PTAB adjudication of all claims and grounds by failing to raise the issue before the PTAB prior to *SAS*. [*BioDelivery Scis. Int'l, Inc. v. Aquestive Therapeutics, Inc.*, 898 F.3d

⁸ This legislative history also supports the view that § 315(e)(2) was intended to provide broad estoppel coverage. Statements made by then-Director Kappos during the enactment of the America Invents Act provide the same:

[i]f I can say that in my own words also, that I believe there are significant advantages for patentees who successfully go through the post-grant system ... because of those estoppel provisions. Those estoppel provisions mean that your patent is largely unchallengeable by the same party.

America Invents Act: Hearing on H.R. 1249 Before the House Comm. on the Judiciary, 112th Cong. 52–53 (2011) (statement of Director David Kappos); see also *Tinnus Enterprises, LLC v. Telebrands Corp.*, No. 6:17-CV-00170-RWS, 2018 WL 3993468, at *3 (E.D. Tex. Aug. 21, 2018) (considering Kappos' statements in the context of estoppel due to Post-Grant Review proceedings).

1205, 1207-10 (Fed. Cir. 2018)] (citing cases). [The petitioner in this case] could have appealed and sought such a remand in order to allow the PTAB [to] evaluate the claims and grounds that it raised in its petition on which the PTAB did not institute review. It therefore “reasonably could have raised” those grounds before the PTAB against *any* claim in the [asserted patent], and is estopped from raising them again before this Court.

SiOnyx, 330 F. Supp. 3d at 601. Similar circumstances are applicable to certain aspects of this case, and the Court finds the same logic similarly appropriate.

Given the current state of the law, including the dearth of guidance from the Federal Circuit on the issues (particularly in a post-SAS IPR landscape) and the Court’s consideration of the statutory language, the Court finds that statutory IPR estoppel applies to invalidity grounds that a petitioner “reasonably could have raised” in its IPR petition, which includes prior art that a “skilled searcher conducting a diligent search reasonably could have been expected to discover.” *Id.*; *see also Clearlamp*, 2016 WL 4734389, at *7-8; *Douglas*, 2017 WL 1382556, at *5.

B. Application

Defendants do not dispute that: (1) if IPR estoppel applies to them, it applies to all of them (even if, for instance, Apple filed the petitions) and (2) at the time Defendants were filing IPR petitions, they were aware of all the prior art that they now use to support their invalidity arguments for Claims 13 and 22 of the ’781 Patent and Claims 11 and 18 of the ’032 Patent. *See generally*, Docket No. 772. Aside from their arguments regarding the scope of § 315(e)(2) estoppel, Defendants argue that

they are now bringing certain prior art (Divsalar, Frey/Frey Slides, Pfister/Pfister Slides, and Richardson99) under pre-AIA § 102(a), *i.e.*, not as “patents or printed publications,” but as information that was “known or used by others” before the patented invention. As Defendants note, in IPR proceedings, the PTAB will only consider patents or printed publications as grounds for invalidity due to anticipation or obviousness. 35 U.S.C. § 311(b); *Synopsis, Inc. v. Mentor Graphics Corp.*, 814 F.3d 1309, 1316 (Fed. Cir. 2016). Because, Defendants argue, they are relying on the “known or used” prong of pre-AIA § 102(a) for all but one⁹ of their prior art grounds (*i.e.*, not on prior art patents or printed publications), the prior art could not have been raised during IPR proceedings and IPR estoppel does not apply.

The “pre-AIA” versions of Sections 102 and 103 of the Patent Act apply in this case because each of the Asserted Patents has a priority date that is before the relevant date of enactment of the America Invents Act. Pre-AIA § 102(a) states that a person shall be entitled to a patent unless “the invention was known or used *by others* in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent.” 35 U.S.C. § 102(a) (emphasis added). Pre-AIA § 102(b), meanwhile, states that a person shall be entitled to a patent unless “the invention was patented or described in a printed publication ... more than one year prior to the date of the

⁹ Defendants raise Ping and Luby98 against Claims 13 and 22 of the '781 Patent. Defendants do not dispute that Ping and Luby98 are printed publications. Under the Court's interpretation of § 315(e)(2), Defendants have provided no independent basis as to why estoppel should not apply to this prior art ground. The Court finds that estoppel precludes Defendants from bringing this prior art ground, irrespective of the analysis in this section.

application for patent.” 35 U.S.C. § 102(b). In other words, the two sections complement one another. While pre-AIA § 102(a) referred to information known or used by “others,” *i.e.* prior art originating from others besides the patent applicant before the “invention ... by the applicant,” pre-AIA § 102(b) referred to anyone (including the patent applicant and any of the patent applicant’s patents or printed publications that were publicly available more than a year before the relevant patent application was filed). Thus, the juxtaposition between § 102(a) and § 102(b) effectively created a one-year grace period for a patent applicant to file a patent application even after s/he/it disclosed information about an invention to the public. Notably, the language of pre-AIA § 102(a) and § 102(b) existed in the context of the pre-AIA first-to-invent system; the America Invents Act has since changed the requirements for obtaining a patent to a first-to-file system.

The “known or used” prong of § 102(a) can come into play in the instance where a scientist gives a public presentation and shows slides, but does not distribute his/her slides or immediately publish a copy of them. The presentation itself (as, for instance, recollected through the scientist’s testimony) could still be considered prior art even if the presentation slides were not made “publicly available” at the same time as the presentation. *See Ecolochem, Inc. v. S. California Edison Co.*, 227 F.3d 1361, 1369 (Fed. Cir. 2000) (“A presentation indicative of the state of knowledge and use in this country ... qualifies as prior art for anticipation purposes under § 102.”); *cf. In re Klopfenstein*, 380 F.3d 1345, 1350 (Fed. Cir. 2004) (“The more transient the display, the less likely it is to be considered a ‘printed publication.’”).

In comparison, in this case, the prior art that Defendants now assert under the “known or used” prong of § 102(a) includes prior art references that Defendants had included in IPR petitions. Specifically, Defendants represented to the PTAB in various petitions that Divsalar, Frey/Frey Slides, and Pfister Slides were printed prior art publications. Defendants have not withdrawn this assertion, and indeed at the hearing reiterated their belief (particularly with respect to Divsalar) that these prior art documents were publicly available before the time of the invention. This suggests that Defendants would (problematically) seek to avoid estoppel so that they can rely on this prior art as *both* printed publications *and* under the “known and used” prong, depending on what position is ultimately more successful.

Some unique circumstances surround each of the four “references” that Defendants now submit under the “known or used” prong of pre-AIA § 102(a). Thus, they will be individually addressed in turn.

1. *Richardson99*

Unlike Divsalar, Frey/Frey Slides, and Pfister/Pfister Slides, Defendants never raised Richardson99 in an IPR petition. The issue, however, remains that Defendants have maintained that Richardson99 “was published in April of 1999, which is before the filing of the provisional application to which the patents-in-suit claim priority and the alleged conception date.” Original Frey Report ¶ 255; Amended Expert Report of Dr. Brenden Frey, Vol. 1 (“Amended Frey Report”), Docket No. 740-25 ¶ 255 (same).

At the hearing, Defendants argued that there has “long been a dispute” about whether authors emailing members of a relevant community with a website link to

a paper is sufficient to make the paper a printed publication. Docket No. 826 (Transcript of Hearing on December 6, 2018 (“Dec. Hearing Tr.”)) at 21:16-17; *see also* 27:21-28:14. Defendants stated that “what Dr. Frey did in his report was treat [Richardson99] as either a printed publication *or* evidence of what was known or used in the art based on Richardson99.” *Id.* at 21:17-20 (emphasis added). Defendants arguments, however, for bringing Richardson99 under the “known or used prong” ring like an argument as to whether Richardson99 was publicly available (*i.e.*, qualified as a printed publication). *See id.* at 22:22-25 (“[Frey] is looking at what would a person of ordinary skill in the 1999 period have known, and he is saying ***Richardson99 is one of the references that would have been known.***” (emphasis added)). Importantly, as Plaintiff notes, “the standard for establishing a reference as a ‘printed publication’ is substantively the same as meeting the ‘known or used’ standard of 35 U.S.C. § 102(a), at least when the only prior art at issue is a written document.” Docket No. 798 at 5. Specifically, under the “known or used” prong, the relevant material must still be “publicly accessible.” *Minnesota Min. & Mfg. Co. v. Chemque, Inc.*, 303 F.3d 1294, 1306 (Fed. Cir. 2002) (“For prior art to anticipate because it is ‘known,’ the knowledge must be publicly accessible.”); *Bruckelmyer v. Ground Heaters, Inc.*, 445 F.3d 1374, 1378 (Fed. Cir. 2006) (“Whether a given reference is a ‘printed publication’ depends on whether it was ‘publicly accessible’ during the prior period.”). In other words, to the extent Defendants would assert that Richardson99 is not a printed publication because it was not publicly accessible, an argument that Richardson99 is prior art “known or used” before the invention would also fail. Although Defendants generally addressed their goal to demonstrate what was “known” at the time of the

invention, Defendants did not directly address the issue of the applicability of the same “public availability” standard to both printed publications and “known or used” prior art at the hearing.

Defendants also suggested at the hearing that rather than being used as a printed publication, they are using Richardson99 as a “contemporaneous writing from 1999 that would corroborate what was [known or] used” at the time. *Id.* at 29:4-9. This position, however, is not supported by the Frey Reports, which evaluate Richardson99 like a printed publication rather than relying on it to corroborate the testimony of the authors or others. *See, e.g.*, Original Frey Report ¶ 443 (explaining what Richardson99 “states” and “teaches,” including by citing to portions of the Richardson99 document); *see also* Amended Frey Report ¶ 443 (same); *but see* Dec. Hearing Tr. 22:15-25 (referring to paragraph 443 of the Frey Report as supporting Frey performing a “known or used” analysis of Richardson99). Defendants’ invalidity analysis relies on Richardson99 as disclosing certain limitations in the relevant asserted claims, not on Richardson99 as confirming the testimony of a person regarding knowledge during the relevant timeframe. Defendants’ position is not persuasive.

Particularly because Defendants have maintained their argument that Richardson99 is a printed publication, they have not provided a sufficient basis to show that IPR estoppel should not apply to this reference or grounds that include this reference in this case.

2. *Divsalar*

Divsalar was fully considered by the PTAB in a Final Written Decision for an IPR proceeding. Defendants note, however, that the Final Written Decision never resolved Plaintiff’s challenge to whether Divsalar was

publicly available at the time of the invention. The PTAB found Plaintiff's challenge was "ultimately mooted" because even considering Defendants' prior art obviousness combination, including Divsalar, on the merits, Defendants failed to show the relevant claims were unpatentable. Docket No. 767-6 (IPR2017-00701, Paper 67) at 29; *see also* Docket No. 772 at 6-7. In other words, the PTAB fully considered the Divsalar prior art reference on the merits as part of the IPR proceeding.

The parties did not spend much time addressing the Divsalar reference at the hearing,¹⁰ although the Court's tentative order expressed concerns regarding the PTAB's full consideration of that reference. The Court acknowledges the unique record created by the PTAB's decision. However, as with Richardson99, Defendants still maintain their argument that Divsalar is a printed publication in addition to making their argument under the "known or used" prong. Original Frey Report ¶ 309 ("RA codes are described in detail in references such as Divsalar, published more than a year before the alleged

¹⁰ Defendants identify emails from Frey to Divsalar to support their position that certain invalidity arguments are being raised under the "known or used" prong of pre-AIA § 102(a). *See* Dec. Hearing Tr. 30:4-31:6. These emails will be discussed in a separate section regarding the specific prior art ground involving both Frey/Frey Slides and Divsalar. *See, e.g.*, Original Frey Report ¶ 310 ("I remember thinking that Divsalar's work would benefit from the work that David MacKay and I had completed on irregular turbo-codes."); Amended Frey Report ¶ 310; Dec. Hearing Tr. 29:10-16 (stating, "[r]elatedly, just to give ... a flavor of the evidence ... the combination that is asserted is the Frey Slides and the Divsalar paper" and proceeding to consider the emails from Frey to Divsalar). Neither the Frey Reports nor Defendants' statements at the hearing provided a basis as to how/why the emails and testimony as between Frey and Divsalar would be relevant to any of the other prior art grounds raised by Defendants. Thus, they are only addressed in the context of that single ground.

conception date of the patents-in-suit.”); Amended Frey Report ¶ 309. And again, it appears that Defendants’ main basis for now arguing that Divsalar may not qualify as a printed publication relates to public accessibility, which would still remain a problem under the “known or used” prong.¹¹ Finally, again as with Richardson99, Frey’s analysis does not rely on the Divsalar reference as if it is corroborative of some other testimony or knowledge; the Divsalar reference itself forms the basis for the invalidity opinions. These facts again tip the scale to the conclusion that estoppel should generally apply as to this reference and many of the grounds that include this reference in this case.

3. *Frey/Frey Slides [in combination with Divsalar, & Ping]*

At the hearing, Defendants referred to some specific testimony and evidence to support their argument that they are relying on the “known or used” prong of pre-AIA § 102(a) for some of their prior art. Specifically, Defendants identified emails between Frey and Divsalar showing that the two had considered combining the ideas expressed in each of their work. Defendants also submitted deposition testimony from Frey/Divsalar discussing these emails. At the hearing, Plaintiff did not meaningfully respond to Defendants’ presentation of this evidence or explain why estoppel should be applied specifically to this invalidity ground.

¹¹ Defendants’ arguments regarding Divsalar are particularly unpersuasive as to Defendants’ prior art ground of Ping in view of MacKay, Divsalar, and Luby97. This is the exact ground considered by the PTAB in its final written decision. Defendants argue that its ground in this case is meaningfully different because Divsalar is being presented under the “known or used” prong. Defendants do not present any evidence to support this assertion.

Although Defendants referred to this example as providing a “flavor” of the evidence they intend to present under the known or used prong, the evidence relating to this prior art ground appears to be an outlier. Frey discusses the emails in his reports. *See* Original Frey Report ¶¶ 310, 481; Amended Frey Report ¶¶ 310, 481. This is unique from the evidence Frey identifies when discussing other prior art, which almost all¹² relates to establishing the publication date of that particular prior art. *See, e.g.*, Original Frey Report ¶¶ 230 (listing evidence to support that the Frey Paper was published and available by a certain date); 245 (same as to Pfister); ¶ 255 (same as to Richardson99); *see also* Amended Frey Report ¶¶ 230, 245, 255.

The Court has some lingering questions regarding the emails and testimony submitted by Defendants with regard to this prior art ground. Namely, this evidence appears to more closely relate to establishing a reason to combine two prior art printed publications than to showing that certain elements of the claims were “known or used” at the time of the invention apart from via printed publications. Problems with the “public accessibility” of the knowledge implicated by the emails and testimony also abound. However, because this issue has not been squarely addressed by Plaintiff, and given the nature of

¹² The only other listed evidence in the Frey Reports is used to establish that, for instance, slides were presented at conferences. Under other circumstances, the Frey Slides and Pfister Slides, particularly if they had been submitted alone rather than in combination with papers that Defendants continue to insist were published before the date of the invention, could have presented unique issues warranting further consideration under the “known or used” prong. However, as discussed in the following section, Defendants have particularly offered up the Pfister Slides as printed publications before the PTAB in IPR petitions.

the additional evidence submitted by Defendants, the Court will not extend estoppel to this particular prior art ground at this time.

The Frey/Frey Slides only appear in this prior art ground. The parties presented additional arguments regarding the Frey/Frey Slides in their briefing and at the hearing. For instance, although Defendants did not include the Frey/Frey Slides in their IPR petitions as to the '781 and '032 Patent, the opposition acknowledges that they included "Frey" (the Frey Paper) in IPR petitions for the '710 Patent. Docket No. 772 at 8. In other words, Defendants represented to the PTAB that they believe Frey is a prior art printed publication.¹³ They have not withdrawn arguments regarding the Frey/Frey Slides from consideration in the IPR proceedings. This is also consistent with how Defendants previously treated Frey/Frey Slides in this case. *See, e.g.*, Docket No. 673 at 9 (Order re Motion to Strike-In-Part Frey's Invalidity Opinions, quoting from Original Frey Report as maintaining the initial opinion that the Frey Paper is prior art, where the Frey Report stated, "[i]n the event that the Court finds that the patents-in-suit are entitled to a date of invention that predates the publication of Frey, and the Frey paper is deemed not to be prior art to the patents-in-suit, then the Frey Slides may be substituted for the Frey paper.").¹⁴ Defendants

¹³ At the hearing, Plaintiff submitted that Defendants included both the Frey Paper and Frey Slides in IPR petitions, but only Frey was "instituted as [a] printed publication."

¹⁴ Notably, Frey's Amended Expert Report does not include this same statement regarding substituting the Frey Slides for the Frey Paper. *Compare* Original Frey Report ¶ 242, *with* Amended Frey Report ¶¶ 225-241. The rest of the Amended Frey Report's introductory discussion of Frey/Frey Slides is almost word-for-word the same compared to the Original Frey Report. *Compare*

note, however, that because a final written decision has not been received in an IPR as to the '710 Patent, it is possible the PTAB will find Frey is not a printed publication, making estoppel inappropriate. Although notable, these additional comments are ultimately irrelevant. Because of the additional emails and testimony submitted by Defendants for this particular prior art ground, estoppel will not be applied to preclude Defendants from relying on this prior art ground at this time.

4. *Pfister/Pfister Slides*

Defendants relied on the Pfister Slides in IPR petitions brought against the '781 and '032 Patents. In its initial institution decision, prior to *SAS*, the PTAB partially instituted IPR, but denied institution on the basis of the Pfister Slides. Defendants characterize the record as showing that the PTAB “found” that the Pfister Slides did not qualify as a prior art printed publication. Docket No. 772 at 6. In reality, the PTAB simply found that Defendants had failed to meet their *burden* of making a threshold showing that the Pfister Slides qualified as a printed publication. *See, e.g.*, Docket No. 740-12 at 23-24 (IPR2017-00700, Paper 14) (“With respect to the Pfister Slides, Petitioner fails to meet the burden imposed under § 314(a) to establish in its Petition a reasonable likelihood of success, which includes, among other things, making a threshold showing that the Pfister Slides qualify as a prior art printed publication.”). More importantly, Plaintiff observes that after *SAS*, “the PTAB modified its order to include all of the claims Defendants had attempted to raise, including the one based on Pfister Slides Defendants chose not to pursue

Original Frey Report ¶¶ 225-241 *with* Amended Frey Report ¶¶ 225-241.

them, instead proposing a stipulation that limited the claims the PTAB would consider.” Docket No. 798 at 8.

At the hearing, Defendants argued that the PTAB’s preliminary decision not to institute IPR as to the Pfister Slides supports the conclusion that Defendants should not be estopped from raising prior art grounds that include the Pfister Slides. But what this record shows is that Defendants had the opportunity to have their arguments regarding the Pfister Slides fully heard by the PTAB (including a second opportunity to meet their burden of showing that the Pfister Slides qualified as a prior art printed publication), yet chose not to take it. For the same reasons the district court found persuasive in *SiOnyx*, it is inappropriate to allow Defendants to have a second bite at the apple here, particularly when they opted not to exhaust all of their available administrative remedies on the issue.

In their opposition, Defendants referred to the Pfister/Pfister Slides as their primary example of how they intended to employ “known or used” prior art:

The Pfister Paper and Pfister Slides, as well as Dr. Siegel and Dr. Pfister’s testimony, will illustrate that RAA codes disclosed many elements of the asserted claims that, in combination with other references, render the patents-in-suit invalid. By presenting the slides at the Allerton Conference, Dr. Pfister and Dr. Siegel made RAA codes known to persons of ordinary skill in the art in the United States, and Dr. Pfister and Dr. Siegel used RAA codes in the United States, while working on the Pfister paper. Thus, regardless of whether the Pfister Paper and Pfister Slides were published prior to the invention of the patents-in-suit (which Caltech

disputes), Defendants have ample evidence to show that the invention described in the Pfister Paper and Pfister Slides (*i.e.* RAA codes) was known and used in the United States prior to the invention of the patents-in-suit.

Docket No. 772 at 21-22. At the hearing, Defendants similarly suggested that the Pfister Slides had been presented under circumstances like the hypothetical presented in the Court's tentative order: Pfister had shown these slides to the "who's who" in error correction coding at a conference in 1999, even if Defendants cannot prove publication. But Defendants have not withdrawn the position they advanced before the PTAB that the slides were publicly available prior art printed publications. As with the other "references," the Frey Reports also do not consider the slides as if they are simply corroborating evidence. The Frey Reports again treat the documents themselves as the core evidentiary basis supporting the invalidity theory. This is apparent even from the language in Defendants' opposition, which again focus in on the disclosure provided in the Pfister Paper and Pfister Slide documents themselves.¹⁵ On such a record, estoppel is appropriate.

¹⁵ In reply, Plaintiff also notes that:

none of this purported testimony has been previously disclosed or identified. If Defendants wished to rely on testimony concerning these or other papers to support Dr. Frey's invalidity opinions, they should have disclosed such testimony in fact discovery and in the Frey Report Although they attempt to rely on the expert report of Dr. Paul Siegel, in the cited portions of his report, Dr. Siegel merely explains the contents of his slide presentation, and the circumstances of its presentation; Defendants do not identify anything that could not reasonably have been raised during the IPR.

The Court notes that only the Pfister Slides and not the Pfister Paper were included in IPR petitions submitted by Defendants to the PTAB. This does not change the outcome regarding estoppel, particularly because Defendants have put even heavier emphasis on characterizing the Pfister Paper as a printed publication compared to the Pfister Slides. *See* Original Frey Report ¶ 245; Amended Frey Report ¶ 245.

Defendants argue that their bundling of Pfister and the Pfister Slides supports the conclusion that they are relying on the “known or used” prong of pre-AIA § 102(a) rather than relying on this prior art as a printed publication. Docket No. 772 at 24. Defendants’ decision to bundle these two documents has received ongoing objection from Plaintiff and has been touched on but never fully resolved by the Court.¹⁶ *See, e.g.*, Docket No. 673 at 9 (Court’s Tentative Order regarding Motion to Strike-In-Part Invalidity Contentions, modified as stated in minutes and on the record). Notably, in evaluating the Original Frey Report and its references to the Frey/Frey Slides, including that the Frey Slides could be *substituted for* the Frey Paper in the invalidity

Docket No. 798 at 19-20.

¹⁶ Defendants assert that “the Court has already authorized Defendants’ presentation of the Pfister and Pfister Slides and Frey and Frey Slides as evidence of inventions ‘known or used in the United States’ under 35 U.S.C. § 102(a).” Docket No. 772 at 13. Although Defendants asserted that their bundling was appropriate at the hearing on the motion to strike and were given the opportunity to submit a supplemental expert report consistent with that position, a final determination as to Defendants’ bundling could not be made at that time because the Original Frey Report did not actually consider, for instance, the Frey Paper and Frey Slides together in a meaningful way. Defendants’ “notice” on the docket (*see* Docket No. 682) does not change this conclusion.

analysis (*see* Original Frey Report ¶ 242), the Court previously commented:

This is not the language of an expert purporting to use the Frey Paper/Frey Slides as a single reference. Instead, Defendants/Frey appear to be hedging their bets and trying to maintain two alternative prior art references until a priority date dispute is resolved. Indeed, if it is true as Defendants assert that the “disclosures in the papers and slides are materially the same for purposes of invalidity,” (Docket No. 616 at 25), Defendants need to just make their selection[.]

Id. Although the Court ultimately allowed Defendants a second attempt to submit an amended Frey report relying on these two references in a bundle, particularly Defendants’ assertions – that they were bundling because they were waiting for a priority date issue to be resolved (*see id.*) and that the “disclosures in the papers and slides are materially the same for purposes of invalidity” – remain relevant and support the Court’s conclusion that estoppel is appropriate.

5. *Further Thoughts on the Four References*

As Plaintiff notes, one of Defendants’ arguments in its opposition for relying on the “known or used” prong of pre-AIA § 102(a) relates to the fact that *Plaintiff, after* Defendants filed their IPR petitions, challenged whether certain prior art references in the IPR petitions were entitled to a publication date earlier than the effective filing date of the Asserted Patents. The Court agrees with Plaintiff that the relevant focus in evaluating estoppel should be on Defendants’ actions, not Plaintiff’s actions, particularly where Defendants continue to argue that Divsalar, Richardson99, Frey/Frey Slides, and Pfister/Pfister Slides are printed publications.

At the hearing, Defendants also emphasized an analogy to a circumstance where a petitioner submits a product manual as printed publication prior art before the PTAB, but is not estopped from submitting a prior art product itself in district court litigation. Even in these circumstances, district courts have sometimes looked skeptically on “dressing up a ground based on publicly available datasheets as a ground based on a product.” *SiOnyx*, 330 F. Supp. 3d at 603 (citing *Milwaukee Electric*, 271 F. Supp. 3d at 1032; *Clearlamp*, 2016 WL 4734389, at *9). The district court in *SiOnyx* found that estoppel would not apply to a prior art obviousness invalidity ground involving a product, noting that the defendants had consistently relied on a certain aspect of the product, as reflected in a potentially non-public manufacturing specification, as “the only citation for certain claim limitations.” *Id.* at 603-04; *see also Star Envirotech, Inc. v. Redline Detection, LLC*, No. SACV 12-01861 JGB (DFMx), 2015 WL 4744394, at *4 (C.D. Cal. Jan. 29, 2015) (“the physical machine itself discloses features claimed in the ’808 Patent that are not included in the instruction manual, and it is therefore a superior and separate reference.”). *Milwaukee Electric* similarly expressed concerns that the defendant should not be allowed to “skirt” estoppel “by purporting to rely on a device without actually relying on the device itself,” but otherwise found that estoppel would not extend to prior art grounds including products. *Milwaukee Electric*, 271 F. Supp. 3d at 1032. In *Clearlamp*, the district court found that defendant was attempting to “cloak” its prior art ground based on a datasheet by characterizing it as related to a product itself. *Clearlamp*, 2016 WL 4734389, at *9. Although the district court found this was not appropriate, estoppel did not attach because the plaintiff failed to meet its burden of showing that the product

datasheet could have been found by a searcher performing a reasonable search at the time the IPR petition was prepared. *Id.* at *9-10.

The Court notes that each of these cases ultimately declined to extend estoppel to prior art grounds involving a product. The current case offers unique circumstances compared to those surrounding a product versus a product manual. In this case, whether brought as a “printed publication” or under the “known or used” prong, the core element that forms the basis of Defendants’ prior art includes the same document(s). There is not even a separate and distinct product or document that could be used as the “cloak” to shield Defendants. Moreover, although Defendants assert that there will be a “meaningful difference” in the invalidity presentation under the “known or used” prong, Defendants have not presented sufficient evidence to back that assertion. The Frey Reports show that Defendants still rely on the teachings of the documents themselves to demonstrate that particular claim limitations were taught by the prior art. *See, e.g.*, Amended Frey Report ¶ 245 (“Pfister/Pfister Slides **explicitly builds on** the disclosure of Divsalar ...”), ¶ 246 (“On page 8, Pfister **illustrates** ...”), ¶ 248 (“Likewise, Pfister Slides **illustrate** ...”), ¶ 250 (“A person of ordinary skill in the art would have understood that Pfister/Pfister Slides **discloses** a regular code.”); Original Frey Report ¶¶ 367-69 (stating “Pfister/Pfister Slides **discloses** this limitation” and citing to specific portions of the Pfister Paper and Pfister Slides), ¶ 468 (“incorporating the second accumulator would have been obvious because second accumulators were a known technique **as disclosed in** Pfister/Pfister Slides ...”); (*see also* Docket No. 767-15 at 5 (Defendants’ Final Invalidity Contentions, stating, “[t]he disclosures and inventions **of these [prior art] references** were

known or used in the United States prior to the invention of the patents-in-suit.”). Notably, Defendants do not assert that some evidence beyond the documents supplies missing disclosure related to a particular claim limitation. Defendants have not identified, for instance, circumstances where the only citation for a limitation relies on testimony of a contemporary in the field at the time of the invention. As Plaintiff put it at the hearing, all of Defendants’ actual arguments to show that certain limitations were disclosed in the prior art “emanate” from the documents.

The issue may also have been a closer call were Defendants willing to concede that this prior art was not publicly available at the time of the invention. Having refused to withdraw that position, it would be inappropriate to allow Defendants to bypass statutory estoppel as to these references.

After considering the unique facts of this case, including the specific prior art grounds Defendants seek to characterize, in general the Court is not persuaded by Defendants’ argument that it is shielded from statutory IPR estoppel by its references to the “known or used” prong of § 102(a). Accordingly, the Court finds that statutory IPR estoppel applies to each of the obviousness combinations Defendants has raised in district court litigation against Claims 13 and 22 of the ’781 Patent and Claims 11 and 18 of the ’032 Patent except for their invalidity ground against Claims 13 and 22 of the ’781 Patent based on Divsalar, Frey/Frey Slides, and Ping.

V. Conclusion

For the reasons stated in this Order, the Court **GRANTS** Plaintiff’s Motion for Summary Judgment (Docket No. 740) except as to Defendants’ invalidity

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ground against Claims 13 and 22 of the '781 Patent based on Divsalar, Frey/Frey Slides, and Ping.¹⁷

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¹⁷ At the hearing, Defendants suggested that if the Court were to maintain its tentative views on Plaintiff's summary judgment motion, Defendants would request that the issue be certified for interlocutory appeal. Plaintiff did not respond to Defendants' position at the hearing. Although the Court indicated that Defendants remain free to proceed with the application, to the extent Defendants maintain their intent to seek certification for interlocutory appeal, they will need to confer with Plaintiff on the issue and formally raise any related requests with the Court through the proper procedures.

APPENDIX C

UNITED STATES DISTRICT COURT
CENTRAL DISTRICT OF CALIFORNIA
CIVIL MINUTES—GENERAL

Case No. **CV 16-3714 GW (AGR_x)**
Date August 9, 2019
Title ***The California Institute of Technology
v. Broadcom Limited, et al.***
Page 1 of 1
Present: The Honorable **GEORGE H. WU, UNITED
STATES DISTRICT JUDGE**

Javier Gonzalez
Deputy Clerk

None Present
Court Reporter

Attorneys Present
for Plaintiff(s)
None Present

Attorneys Present
for Defendant(s)
None Present

Proceedings: IN CHAMBERS—FINAL RULINGS ON:

**CALTECH'S MOTION FOR PARTIAL SUMMARY
JUDGMENT OF VALIDITY ON CLAIMS 20 AND 22
OF THE '710 PATENT UNDER 35 U.S.C. § 103
BASED ON IPR ESTOPPEL UNDER 35 U.S.C.
§ 315(e)(2) [844];**

**PLAINTIFF'S RENEWED MOTION FOR PARTIAL
SUMMARY JUDGMENT OF VALIDITY UNDER 35
U.S.C. § 103 BASED ON IPR ESTOPPEL UNDER 35
U.S.C. § 315(e)(2) FOR U.S. PATENT NO. 7,916,781
[845];**

DEFENDANT'S MOTION FOR CERTIFICATION UNDER 28 U.S.C. § 1292(b) [887];

DEFENDANTS' MOTION SEEKING PARTIAL RECONSIDERATION OF THE COURT'S DECEMBER 28, 2018 ORDER REGARDING IPR ESTOPPEL OF CERTAIN CLAIMS OF U.S. PATENT NOS. 7,916,781 AND 7,421,032 [888];

CALTECH'S MOTION TO EXCLUDE DEFENDANTS' LATE-PRODUCED DOCUMENTS AND DR. HENRY PFISTER'S UNTIMELY EXPERT DEPOSITION TESTIMONY [1024]

Attached hereto is the Court's Final Rulings on the Motions above.

The California Institute of Technology v. Broadcom Limited et al.; Case No. 2:16-cv-03714-GW-(AGR_x) Final Rulings on: (1) Plaintiff's Motion for Partial Summary Judgment of Validity of Claims 20 and 22 of the '710 Patent Under 35 U.S.C. § 103 Based on IPR Estoppel under 35 U.S.C. § 315(e)(2); (2) Plaintiff's Renewed Motion for Partial Summary Judgment of Validity Under 35 U.S.C. § 103 Based on IPR Estoppel under 35 U.S.C. § 315(e)(2) for U.S. Patent No. 7,916,781; (3) Defendants' Motion for Reconsideration of the Estoppel Order; (4) Defendants' Motion for Certification Under 28 U.S.C. § 1292(b); and (5) Plaintiff's Motion to Exclude Defendants' Late Produced Documents and Dr. Henry Pfister's Untimely Expert Deposition Testimony.

[Portions of the parties' briefing related to the pending motions addressed by this Tentative Order were filed under seal. The parties will be expected to state their positions as to whether any material should remain under seal during the hearing on the motions, including the basis for any continued request to seal.]

I. Introduction

Plaintiff The California Institute of Technology currently alleges patent infringement against Defendants Broadcom Limited, Broadcom Corporation, Avago Technologies Limited, and Apple Inc. *See* First Amended Complaint (“FAC”), Docket No. 36; *see also* Docket No. 1. Plaintiff asserts that Defendants infringe fifteen claims from three of its patents: (1) U.S. Patent No. 7,116,710 (“the ’710 Patent”); (2) U.S. Patent No. 7,421,032 (“the ’032 Patent”); and (3) U.S. Patent No. 7,916,781 (“the ’781 Patent”) (collectively, the “Asserted Patents”).¹ *See* Docket No. 409 (Plaintiff’s Amended Notice of Withdrawal of Certain Asserted Claims of Asserted Patents); *see also* Docket No. 953 (Joint Report Regarding Pending Disputed Issues).

On December 28, 2018, the Court issued a Final Ruling resolving Plaintiffs’ summary judgment motion

¹ The fifteen remaining claims in this case are: Claims 20, 22, and 23 of the ’710 Patent; Claims 3, 11, 13, 17, and 18 of the ’032 Patent; and Claims 5, 6, 9, 10, 13, 19, and 22 of the ’781 Patent. Docket No. 409. Of those claims, eleven were selected as representative claims for purposes of adjudication in this lawsuit: Claims 20, 22, and 23 of the ’710 Patent; Claims 3, 11, 17, and 18 of the ’032 Patent; and Claims 6, 9, 13, and 22 of the ’781 Patent. *See id.*; *see also* Docket No. 487, 488. On March 22, 2019, in a joint report filed by the parties, Plaintiff stated that it intended to file a “formal notice of withdrawal” on the basis that it has “withdrawn its infringement allegations with respect to claims 5, 6, 9, and 10 of the ’781 patent and claim 13 of the ’032 patent.” Docket No. 953 at 2; *see also* Docket No. 998 at 2 (Plaintiff’s memorandum in support of motion to exclude improper claim construction opinions, stating that it alleges that Defendants infringe Claims 20, 22, and 23 of the ’710 Patent, Claims 3, 11, 17, and 18 of the ’032 Patent, and Claims 9, 13 and 22 of the ’781 Patent). Plaintiff has not yet filed such a notice, which, once filed, will be understood to remove those five claims from the case entirely given that Plaintiff does not represent that any of the claims “[s]elected for adjudication” are representative of any of the withdrawn claims.

regarding *inter partes* review (“IPR”) estoppel under 35 U.S.C. § 315(e)(2) as to certain obviousness invalidity grounds raised by Defendants against the ’032 and ’781 Patents. “Estoppel Order,” Docket No. 830. The Court held Defendants were estopped from raising all but one obviousness invalidity ground (against the ’781 Patent involving Divsalar, Ping, and Frey/Frey Slides). The Estoppel Order is incorporated by reference in its entirety, and should hereinafter be understood and interpreted based on the applicable clarifications and statements made in this Order.

One day before the Estoppel Order issued, the Patent Trial and Appeal Board (“PTAB”) issued Final Written Decisions finding that Defendants had failed to demonstrate that Claims 20 and 22 of the ’710 Patent were invalid as obvious over various prior art combinations. Based on these additional PTAB decisions, Plaintiff filed a Motion for Summary Judgment of Validity of Claims 20 and 22 of the ’710 Patent under 35 U.S.C. § 103 Based on IPR Estoppel under 35 U.S.C. § 315(e)(2). *See* Docket No. 844. Plaintiff also filed a Renewed Motion for Partial Summary Judgment of Validity under 35 U.S.C. § 103 Based on IPR Estoppel under 35 U.S.C. § 315(e)(2) for U.S. Patent No. 7,916,781. Docket No. 845-1 (public); Docket No. 852 (sealed). Those Motions were fully briefed² and a

² *See* Docket No. 854 (public); Docket No. 871 (sealed) (Defendants’ Opposition to ’710 Patent Motion for Partial Summary Judgment); Docket No. 864 (public); Docket No. 876 (sealed) (Plaintiff’s Reply in Support of ’710 Patent Motion for Partial Summary Judgment); Docket No. 857 (public); Docket No. 872 (sealed) (Defendants’ Opposition to Renewed ’781 Patent Motion for Partial Summary Judgment); Docket No. 863 (public); Docket No. 877 (sealed) (Plaintiff’s Reply in Support of Renewed ’781 Patent Motion for Partial Summary Judgment).

hearing was held on them on February 7, 2019.³ Docket No. 884. At the hearing, the parties were permitted leave to submit additional briefing related to some overlapping issues.⁴ Defendants filed a motion for reconsideration of portions of the Estoppel Order. Docket No. 888. They also asked the Court to certify the Estoppel Order for interlocutory appeal under 28 U.S.C. § 1292(b) as it relates to one question: “whether IPR estoppel applies to non-petitioned, IPR-eligible invalidity grounds of which the petitioner was aware at the time it filed its IPR petition.” Docket No. 887-1 at 1.

Another hearing was held on these issues, including the fully-briefed motions for reconsideration⁵ and certification,⁶ on March 11, 2019.⁷ At the March 11, 2019 hearing, after further discussion, Defendants were directed to file and serve a “listing of particularized evidence for

³ At the February 7, 2019 hearing, a tentative ruling was issued providing the Court’s tentative views on the issues raised by the parties. *See* Docket No. 884. The tentative order has not been adopted as a final ruling of the Court and is not a final determination in this matter.

⁴ After the February 2019 hearing, Plaintiff and Defendants each filed a short supplemental brief regarding their proposals for when a patent challenger should be permitted to present an invalidity theory under the “known or used” prong of 35 U.S.C. § 102(a), despite statutory estoppel as to related prior art publication invalidity theories. Docket Nos. 891, 903.

⁵ *See* Docket No. 905 (Plaintiff’s Opposition); Docket No. 909 (public), Docket No. 919 (sealed) (Defendants’ Reply).

⁶ *See* Docket No. 904 (Plaintiff’s Opposition); Docket No. 917 (Defendants’ Reply).

⁷ At the March 2019 hearing, a tentative ruling was issued providing the Court’s initial views on the issues then raised by the parties. The tentative ruling has not been adopted as a final ruling of the Court and is not a final determination in this matter. Docket No. 936.

their ‘known or used’ prior art (Pfister/Pfister Slides and Frey/Frey Slides) in support of their obviousness invalidity theories.” Docket No. 936. The parties agreed the listing would not be due until after depositions of certain individuals—Pfister and Siegel—had been taken.

After Pfister’s deposition, the parties became embroiled in yet another dispute. Plaintiff filed an *ex parte* application to exclude documents that were produced on the morning of Pfister’s deposition and to strike expert testimony during Pfister’s deposition. Docket No. 1018. Multiple hearings were held in quick succession on this dispute. *See* Docket Nos. 1042 (Minutes of Hearing April 16, 2019); 1048 (Minutes of Hearing April 18, 2019), 1100 (Minutes of Hearing April 25, 2019). The parties have submitted supplemental briefs and reports as directed by the Court at those hearings on various issues related to Pfister’s and Siegel’s depositions. *See, e.g.* Docket Nos 1083, 1084, 1105, 1191.

After these supplemental briefs were filed, the parties returned again for two more hearings on June 6, 2019 and June 17, 2019.⁸ The parties’ “known or used” dispute was discussed at both of these hearings as well before the matters were again taken under submission.

For the reasons stated in this Order, the Court would rule as follows:

- The Court would **GRANT** Defendants’ Motion for Reconsideration of the Estoppel Order (Docket No. 888) and accordingly reconsider its determinations in the Estoppel Order with

⁸ At the June 6, 2019 hearing, tentative rulings were issued providing the Court’s tentative views on the issues raised by the parties. The tentative order has not been adopted as a final ruling of the Court and is not a final determination in this matter.

respect to invalidity grounds involving Pfister/Pfister Slides.

- The Court would **CLARIFY** the Estoppel Order as provided herein.
- The Court would **GRANT** Plaintiff's Motion to Exclude (Docket No. 1024) and **EXCLUDE** the documents produced at the depositions of Pfister and Siegel and **STRIKE** certain testimony provided at Pfister's deposition as improperly relating to matters of expert opinion.
- The Court would **GRANT** Plaintiff's Motion for Summary Judgment of Validity as to Claims 20 and 22 of the '710 Patent (Docket No. 844) as it relates to each of Defendants' proffered 35 U.S.C. § 103 prior art grounds.
- The Court would **GRANT** Plaintiff's Renewed Motion for Partial Summary Judgment of Validity Under 35 U.S.C. § 103 Based on IPR Estoppel under 35 U.S.C. § 315(e)(2) for U.S. Patent No. 7,916,781 and in doing so **MODIFY** the Estoppel Order as it pertains to that patent such that Defendants are estopped from presenting each of their 35 U.S.C. § 103 obviousness invalidity grounds for Claims 13 and 22 of the '781 Patent and Claims 11 and 22 of the '032 Patent;
- The Court would **DENY** Defendants' Motion for Certification Under 28 U.S.C. § 1292(b).

II. Legal Standard

A. IPR Statutory Estoppel

The Court specifically incorporates by reference the Legal Standard Section of the Estoppel Order. Docket No. 830 at 2-4. The Court also incorporates by reference the

legal analysis and determination in the Estoppel Order regarding the scope of IPR estoppel under 35 U.S.C. § 315(e)(2). *Id.* at 6-15. Specifically, the Court reiterates its conclusion that “statutory IPR estoppel applies to invalidity grounds that a petitioner ‘reasonably could have raised’ in its IPR petition, which includes prior art that a ‘skilled searcher conducting a diligent search reasonably could have been expected to discover.’” *Id.* at 15 (citing *SiOnyx, LLC v. Hamamatsu Photonics K.K.*, 330 F. Supp. 3d 574, 601 (D. Mass. 2018)). For the sake of additional clarity, the Court acknowledges and recognizes that such grounds include only grounds “that could be raised under section 102 or 103 and [that] only ... consist[] of patents or printed publications.” 35 U.S.C. § 311(b).

B. Rule 37(c)(1)

Under Rule 37(c)(1), “[i]f a party fails to provide information or identify a witness as required by Rule 26(a) or (e), the party is not allowed to use that information or witness to supply evidence on a motion, at a hearing, or at a trial, unless the failure was substantially justified or is harmless.” Fed. R. Civ. P. 37(c)(1). The burden is on the party facing the sanction to show that the failure to disclose is substantially justified or harmless. *Yeti by Molly, Ltd. v. Deckers Outdoor Corp.*, 259 F.3d 1101, 1107 (9th Cir. 2001). “Among the factors that may properly guide a district court in determining whether a violation of a discovery deadline is justified or harmless are: (1) prejudice or surprise to the party against whom the evidence is offered; (2) the ability of that party to cure the prejudice; (3) the likelihood of disruption of the trial; and (4) bad faith or willfulness involved in not timely disclosing the evidence.” *Lanard Toys Ltd. v. Novelty, Inc.*, 375 Fed. App’x. 705, 713 (9th Cir. 2010) (citing *David v. Caterpillar, Inc.*, 324 F.3d 851, 857 (7th Cir. 2003)).

Generally, “the district court's discretion to issue sanctions under Rule 37(c)(1)” is given “particularly wide latitude.” *Yeti by Molly*, 259 F.3d at 1107. However, the discretion is somewhat limited when the sanction amounts to dismissal of a claim. *R & R Sails, Inc. v. Ins. Co. of Pa.*, 673 F.3d 1240, 1247 (9th Cir. 2012). In such a case, the district court is “required to consider whether the claimed noncompliance involved willfulness, fault, or bad faith, and also to consider the availability of lesser sanctions.” *Id.*

III. Factual Background Related to IPR Proceedings

The relevant factual background related to the '781 and '032 Patents has already been described in the Estoppel Order, and the Court specifically incorporates that portion of the Estoppel Order by reference. *See* Docket No. 830 at 4-6.

As mentioned, the PTAB issued two Final Written Decisions finding that Defendants⁹ had failed to demonstrate that Claims 20 and 22 of the '710 Patent are invalid. The PTAB specifically considered prior art “grounds” during this round of '710 Patent IPR proceedings that involved the Frey Paper, Divsalar, and Luby97. *See* Docket No. 844-10 (IPR2017-00210, Paper 77 (Final Written Decision) at 8). In litigation before this Court, the following table summarizes the invalidity grounds Defendants now rely on to assert invalidity of Claims 20 and 22 of the '710 Patent:

⁹ Plaintiff previously explained: “Apple Inc. (‘Apple’) is identified as the petitioner in all of the IPRs at issue, and Broadcom Corp. (‘Broadcom’) is identified as a real party-in-interest. Broadcom Corp. and Avago Technologies Ltd. are each subsidiaries of Broadcom Ltd., which is now known as Broadcom Inc.” Docket No. 740-1 at 1.

Patent	Claim	References Asserted in District Court
'710 Patent	20, 22	Divsalar*, Frey/Frey Slides*, and Luby97
		Pfister/Pfister Slides*, Frey/Frey Slides*, and Luby97
		Pfister/Pfister Slides*, Luby97, and Luby98
		Divsalar*, MacKay, and Luby97
		Divsalar*, Richardson99*, and Luby97
		Divsalar*, MacKay, Luby97, and Pfister/Pfister Slides
		Divsalar*, Luby98, and Luby97

Defendants have asserted that the “references” marked with asterisks are being brought under the “known or used” prong of pre-America Invents Act, 35 U.S.C. § 102(a).

IV. Analysis

As observed in the Estoppel Order (Docket No. 830 at 15), Defendants again do not dispute that, if IPR estoppel applies to them, it applies to all of them (even though, for instance, Apple filed the petitions).

In addition, Defendants state: “[a]lthough [they] maintain that they should be permitted to present the inventions disclosed in Richardson99 and Divsalar, Defendants understand that the Court’s estoppel findings as to these two grounds in its December [28], 2018 ruling are unlikely to be changed.” Docket No. 871 at 10 n.2; *see also id.* at 15 n.4, Docket No. 830 at 17-20. In their summary judgment briefing, Defendants do not attempt to present any additional evidence or argument regarding these pieces of prior art, although both of them appear in prior art combinations raised by Defendants as

to the '710 Patent, which was not previously the subject of a summary judgment motion. Notably, however, in their first “known or used” prior art listing filed May 3, 2019, Defendants devoted an entire section of their proffer to re-asserting a prior art theory based on Richardson99 as “known or used” prior art. *See, e.g.*, Docket No. 1118 at 46-57. Defendants argue that they did so because “Caltech has recently alleged that Richardson99 is not a printed publication that could have been raised in an IPR.” Docket No. 1118 at 54-55. Defendants’ assertion does not support revisiting the parties’ dispute relating to Richardson99, which was addressed in the Estoppel Order. *See* Docket No. 830 at 17-19. There, the Court observed that “to the extent Defendants would assert that Richardson99 is not a printed publication because it was not publicly accessible, an argument that Richardson99 is prior art ‘known or used’ before the invention would also fail.” *Id.* at 18. Defendants do not explain why the Court’s determination would no longer apply, nor do they explain their earlier failure to present arguments regarding Richardson99 in their opposition to Plaintiff’s IPR estoppel summary judgment motion for the '710 Patent. Defendants also did not re-raise their arguments regarding Richardson99 in the context of the IPR estoppel dispute at the June hearings. Defendants have failed to submit evidence that would preclude summary judgment of no invalidity based on estoppel as to their invalidity grounds involving Divsalar and Richardson99 as to Claims 20 and 22 of the '710 Patent. Plaintiff’s summary judgment motion (Docket No. 844) would be **GRANTED-IN-PART** on these bases.

The parties focus their arguments in the briefing for the pending estoppel-related motions on: 1) Pfister/Pfister Slides and 2) Frey/Frey Slides. Defendants specifically identify “the following invalidity grounds

based on inventions that were ‘known or used’ in the United States before Caltech’s alleged conception:”

Claims	Obviousness Combinations in this Case
Claims 20 and 22 of the '710 Patent	Pfister/Pfister Slides*, Frey/Frey Slides*, and Luby97
	Pfister/Pfister Slides*, Luby97, and Luby98
	Divsalar, MacKay, Luby97, and Pfister/Pfister Slides*
	Divsalar, Frey/Frey Slides*, and Luby97
Claims 11 and 18 of the '032 Patent	Ping, MacKay, and Pfister/Pfister Slides*
	Ping, Luby98, and Pfister/Pfister Slides*
Claims 13 and 22 of the '781 Patent	Divsalar, Ping, and Frey/Frey Slides*
	Pfister/Pfister Slides*, Luby97, and Luby98

Docket No. 871 at 10 (“known or used” prong references identified with asterisks).

A. Requests for Reconsideration as to the '781 and '032 Patents

In the round of briefing leading up to the February 2019 hearing, the parties’ arguments included explicit or implicit requests for reconsideration of aspects of the Estoppel Order. *See, e.g.*, Docket No. 871 at 2 (Title of Defendants’ opposition as “Defendants’ Opposition ...

and Request for Reconsideration as to Pfister” and stating, “[t]o the extent that the Court concluded that the Pfister Slides are a printed publication subject to estoppel ... Defendants respectfully request reconsideration”); Docket No. 852 (Title of Plaintiff’s motion as “Renewed Motion” and referring to “questions and issue[s] raised by the Court in its December 28th Order”). Neither party referenced the legal standard that applies to a motion for reconsideration.¹⁰ Nor did either party, through its briefing, otherwise demonstrate that the requirements for bringing a motion for reconsideration had been met. At the hearing, after Defendants renewed their request that portions of the Estoppel Order be modified based on the analysis in the Court’s February 2019 tentative ruling, the Court directed Defendants to bring any requests for reconsideration of the Estoppel Order in the form of a proper motion for reconsideration.

Apparently, however, the parties agree that the Court has now been presented with a more complete factual record and “the Court should consistently apply the

¹⁰ 10 Local Rule 7-18 states in part:

A motion for reconsideration of the decision on any motion may be made only on the grounds of (a) a material difference in fact or law from that presented to the Court before such decision that in the exercise of reasonable diligence could not have been known to the party moving for reconsideration at the time of such decision, or (b) the emergence of new material facts or a change of law occurring after the time of such decision, or (c) a manifest showing of a failure to consider material facts presented to the Court before such decision.

C.D. Cal. L.R. 7-18; *see also Orange St. Partners v. Arnold*, 179 F.3d 656, 665 (9th Cir. 1999) (“[A] motion for reconsideration should not be granted, absent highly unusual circumstances, unless the district court is presented with newly discovered evidence, committed clear error, or if there is an intervening change in the controlling law.”).

legal standard it determines to be appropriate to the facts for each of the claims and prior art combinations at issue on all asserted patents.” Docket No. 905 at 11-12; *see also* Docket No. 911-1 at 1. In light of this agreement and the particular procedural circumstances in this case, the Court thus **GRANTS** Defendants’ request for reconsideration of the Estoppel Order with respect to obviousness combinations asserted against the ’781 and ’032 Patents involving the Pfister/Pfister Slides.

As Defendants note, Plaintiff takes its opposition to Defendants’ reconsideration motion as an opportunity to expound on its arguments regarding when a patent challenger should be permitted to present an invalidity theory under the known or used prong of 35 U.S.C. § 102(a), despite statutory estoppel as to related prior art publication invalidity theories. *See generally* Docket No. 905. Defendants respond in kind in their Reply.¹¹ Docket No. 911-1. Although the Court has concerns with *both parties* circumventing the page limits that the Court set on supplemental briefing related to this issue (Docket No. 884), the Court will also consider the parties’ arguments on this issue.

B. Legal Standard for Distinguishing a Non-Estopped Invalidity Ground from an Estopped Invalidity Ground Involving a Prior Art Patent or Printed Publication

The parties disagree about what is required to take an invalidity ground out of the realm of a prior art patent

¹¹ Defendants also argue that Plaintiff is again raising reconsideration arguments without meeting the procedural requirements for reconsideration. Docket No. 911-1. Although the Court tends to agree with Defendants’ contention, given both parties’ emphasis and request for consistent determinations across the three asserted patents, the Court will consider all arguments presented to the extent they are deemed relevant.

or printed publication theory of invalidity (where such patent or printed publication has been presented to and reviewed by PTAB) and into the realm of some other related invalidity theory not subject to IPR statutory estoppel (*e.g.* a speech at an industry conference or a physical product). To the Court and the parties' knowledge, this dispute has never been addressed by the Federal Circuit. A handful of district court cases have considered whether IPR statutory estoppel can preclude a patent challenger from relying on a prior art product or system, where that product or system is related to a prior art printed publication that could have been asserted in an IPR. Notably, of those district court decisions, none have extended estoppel to prior art grounds involving the product or system. No cases have dealt with the specific issue presented here: when/if statutory IPR estoppel can preclude a patent challenger from relying on a "known or used" invalidity theory that is related to a prior art printed publication that could have been asserted in an IPR.

In *Star Envirotech*, the court declined to extend statutory estoppel to preclude an invalidity argument based on a machine, finding that "the physical machine itself discloses features claimed in the '808 Patent that are not included in the instruction manual, and it is therefore a superior and separate reference." *Star Envirotech, Inc. v. Redline Detection, LLC*, No. SACV 12-01861 JGB (DFMx), 2015 WL 4744394, at *4 (C.D. Cal. Jan. 29, 2015). The *SRAM* case, cited by Plaintiff, followed *Star Envirotech's* "superior and separate reference" standard in declining to apply statutory estoppel. *SRAM, LLC v. RFE Holding (Can.) Corp.*, No. 15-cv-11362, Docket No. 102 at 11-12 (N.D. Ill. Jan. 25, 2019).

Similarly in *SiOnyx*, the court found that estoppel would not apply to a prior art obviousness invalidity

ground involving a product, noting that the defendants had consistently relied on a certain aspect of the product, as reflected in a potentially non-public manufacturing specification, as “the only citation for certain claim limitations.” *SiOnyx, LLC v. Hamamatsu Photonics K.K.*, 330 F. Supp. 3d 574, 602, 603-04 (D. Mass. 2018). Although at first blush *SiOnyx*’s conclusion thus appears to similarly adopt the *Star Envirotech* standard, elsewhere, the court more generally stated that the plaintiff had not “carried its burden to show that publicly available materials are the ‘real’ references that defendants are now trying to pass off as the product itself.” *Id.*

The court in *Clearlamp* also mentioned *Star Envirotech*’s “superior and separate” standard, but observed, “[s]ince *Star Envirotech* found that the product was not cumulative of other prior art, the court did not reach the issue of when cumulative prior art would not be allowed in district court proceedings.” *Clearlamp, LLC v. LKQ Corp.*, No. 12 C 2533, 2016 WL 4734389, at *8 (N.D. Ill. Mar. 18, 2016). After considering a PTAB decision where the PTAB found estoppel did not attach to a prior art reference found “redundant” in a previous IPR proceeding, the court found, “[t]he relevant inquiry ... is not whether the ground is redundant of a ground that was asserted but, rather, whether the ground reasonably could have been raised.” *Id.* In considering the dispute at hand, the district court found that the defendant was attempting to “cloak” its prior art ground based on a datasheet by characterizing it as a prior art ground based on a product itself. *Id.* at *9 (“While LKQ seeks to cloak its reliance upon UVHC3000 as a product, so as to avoid § 315(e)(2) estoppel, such an argument is disingenuous as it is the UVHC3000 datasheet upon which LKQ relies to invalidate the asserted claims”). Ultimately, estoppel did not attach because the plaintiff failed to meet its burden of

showing that the product datasheet could have been found by a searcher performing a reasonable search at the time the IPR petition was prepared. *Id.* at *9-10.

Milwaukee Elec. Tool Corp. v. Snap-On Inc., 271 F. Supp. 3d 990, 1032 (E.D. Wis. 2017), *appeal pending*, No. 18-1516 (Fed. Cir. Feb. 5, 2018), is consistent with *Clearlamp* and *SiOnyx*. In that case, the court similarly expressed concerns that the defendant should not be allowed to “skirt” estoppel “by purporting to rely on a device without actually relying on the device itself,” but otherwise found that estoppel would not extend to prior art grounds including products. Indeed, considering an argument that a party should be estopped from relying on a prior art product because a diligent searcher could be expected locate the underlying printed publications, the court in *Milwaukee Electric* stated it was “not convinced that the principle of excluding non-petitioned grounds should be extended so far, given the clear limitation of Section 311(b) to written materials.” *Id.*

The same is true for *Biscotti*. In that case, the plaintiff characterized the defendant’s system prior art “as printed subject matter in disguise.” *Biscotti Inc. v. Microsoft Corp.*, No. 2:13 CV 01015 JRG-RSP, 2017 WL 2526231, at *8 (E.D. Tex. May 11, 2017). The court noted that the defendant “could not have raised a prior art ‘system’ during IPR proceedings. If, however, [defendant’s] purported system prior art relies on or is based on patents or printed publications that [defendant] would otherwise be estopped from pursuing at trial ... then [defendant] should be estopped from presenting those patents and printed publications at trial.” *Id.* The court did not make an ultimate determination on the issue beyond that observation.

After considering the two apparent schools of thought on the issue, the Court declines to adopt a “superior and separate reference” standard or any other higher standard that would require, for instance, that certain claim limitations be independently satisfied by prior art in a way that is different from an associated prior art patent or printed publication. The statute does not include such requirements, and they would likely extend the reach of statutory IPR estoppel beyond its intended scope. As Defendants noted at the hearing, “redundant” prior art grounds appear commonly in patent litigation. For instance, a primary reference may be used to argue that the majority of claim limitations are disclosed, and a patent challenger may then simply swap out secondary references to show that one final limitation is also disclosed in the prior art. Finding that a patent challenger should be estopped from relying on a piece of prior art because that piece of prior art is used to meet the same claim limitations as a related prior art printed publication would be contrary to this practice and ignore the importance of the difference in the underlying evidence used to support the prior art theory. Instead, the Court agrees with *Clearlamp, Milwaukee Electric* and other decisions that attempt to discern if a patent challenge is simply swapping labels for what is otherwise a patent or printed publication invalidity ground in order to “cloak” its prior art ground and “skirt” estoppel.¹²

¹² That being said, in certain circumstances the Court recognizes that if a piece of prior art is indeed “superior and separate,” this may be a helpful benchmark to a court considering whether a patent or printed publication has merely been “cloaked.” *Clearlamp*, for instance, suggests that might have been the case in *Star Envirotech*. See *Clearlamp*, 2016 WL 4734389, at *8.

There can be, of course, a unique connection between prior art invalidity theories that requires closer scrutiny. For instance, in a classic example of a “known or used” prior art invalidity theory, a scientist presents their research at a scientific conference to others in the field. What if the scientist simply read his or her slide presentation—and those slides were publicly available the same day—verbatim out loud to the conference attendees? In such circumstances, a “known or used” invalidity theory based on the presenter’s oral statements would seem to be an exact duplicate of the invalidity theory based on the printed document itself. Although the Court does not believe that a “known or used” invalidity theory need be “superior” to a printed publication invalidity theory to survive estoppel (or similarly, that it needs to provide some disclosure of an independent claim limitation that was not provided by the printed publication), there must be *some substantive* difference between the two theories that is germane to the invalidity dispute at hand.¹³

The analysis in the Estoppel Order was somewhat ambiguous on this issue and thus the Court specifically **CLARIFIES** the Estoppel Order, and specifically its analysis of the same cases and issue, to reflect this conclusion. Docket No. 830 at 26-27.

* * *

V. Conclusion

For the reasons stated in this Order, the Court would rule as follows:

¹³ At the hearing, the parties should be prepared to present their positions on this issue, and particularly their positions on the example of the scientist reading his or her slides verbatim out loud at a conference.

- The Court would **GRANT** Defendants' Motion for Reconsideration of the Estoppel Order (Docket No. 888) and accordingly reconsider its determinations in the Estoppel Order with respect to invalidity grounds involving Pfister/Pfister Slides.
- The Court would **CLARIFY** the Estoppel Order as provided herein.
- The Court would **GRANT** Plaintiff's Motion to Exclude (Docket No. 1024) and **EXCLUDE** the documents produced at the depositions of Pfister and Siegel and **STRIKE** certain testimony provided at Pfister's deposition as improperly relating to matters of expert opinion.
- The Court would **GRANT** Plaintiff's Motion for Summary Judgment of Validity as to Claims 20 and 22 of the '710 Patent (Docket No. 844) as it relates to each of Defendants' proffered 35 U.S.C. § 103 prior art grounds.
- The Court would **GRANT** Plaintiff's Renewed Motion for Partial Summary Judgment of Validity Under 35 U.S.C. § 103 Based on IPR Estoppel under 35 U.S.C. § 315(e)(2) for U.S. Patent No. 7,916,781 and in doing so **MODIFY** the Estoppel Order as it pertains to that patent such that Defendants are estopped from presenting each of their 35 U.S.C. § 103 obviousness invalidity grounds for Claims 13 and 22 of the '781 Patent and Claims 11 and 22 of the '781 Patent;
- The Court would **DENY** Defendants' Motion for Certification Under 28 U.S.C. § 1292(b).

101a

APPENDIX D

NOTE: This order is nonprecedential.

UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

2020-2222, 2021-1527

CALIFORNIA INSTITUTE OF TECHNOLOGY,
Plaintiff-Appellee,

v.

BROADCOM LIMITED, NKA BROADCOM INC.,
BROADCOM CORPORATION, AVAGO
TECHNOLOGIES LIMITED, NKA AVAGO
TECHNOLOGIES INTERNATIONAL SALES PTE.
LIMITED, APPLE INC.,
Defendants-Appellants.

Appeals from the United States District Court
for the Central District of California in
No. 2:16-cv-03714-GW-AGR, Judge George H. Wu.

**ON PETITION FOR PANEL REHEARING
AND REHEARING EN BANC**

Before MOORE, *Chief Judge*, NEWMAN, LOURIE, LINN¹,
DYK, PROST, REYNA, TARANTO, CHEN, HUGHES,
STOLL, CUNNINGHAM, and STARK, *Circuit Judges*.

¹ Circuit Judge Linn participated only in the decision on the petition for panel rehearing.

PER CURIAM.

ORDER

Broadcom Limited, Broadcom Corporation, Avago Technologies Limited and Apple Inc. filed a combined petition for panel rehearing and rehearing en banc. The petition was referred to the panel that heard the appeal, and thereafter the petition for rehearing en banc was referred to the circuit judges who are in regular active service.

Upon consideration thereof,

IT IS ORDERED THAT:

The petition for panel rehearing is denied.

The petition for rehearing en banc is denied.

The mandate of the court will issue May 16, 2022.

FOR THE COURT

May 9, 2022
Date

/s/ Peter R. Marksteiner
Peter R. Marksteiner
Clerk of Court

APPENDIX E

PERTINENT STATUTORY PROVISIONS

35 U.S.C. § 311

§311. Inter partes review

(a) **IN GENERAL.**—Subject to the provisions of this chapter, a person who is not the owner of a patent may file with the Office a petition to institute an inter partes review of the patent. The Director shall establish, by regulation, fees to be paid by the person requesting the review, in such amounts as the Director determines to be reasonable, considering the aggregate costs of the review.

(b) **SCOPE.**—A petitioner in an inter partes review may request to cancel as unpatentable 1 or more claims of a patent only on a ground that could be raised under section 102 or 103 and only on the basis of prior art consisting of patents or printed publications.

(c) **FILING DEADLINE.**—A petition for inter review shall be filed after the later of either—

(1) the date that is 9 months after the grant of a patent; or

(2) if a post-grant review is instituted under chapter 32, the date of the termination of such post-grant review.

35 U.S.C. § 312

§312. Petitions

(a) REQUIREMENTS OF PETITION.—A petition filed under section 311 may be considered only if—

(1) the petition is accompanied by payment of the fee established by the Director under section 311;

(2) the petition identifies all real parties in interest;

(3) the petition identifies, in writing and with particularity, each claim challenged, the grounds on which the challenge to each claim is based, and the evidence that supports the grounds for the challenge to each claim, including—

(A) copies of patents and printed publications that the petitioner relies upon in support of the petition; and

(B) affidavits or declarations of supporting evidence and opinions, if the petitioner relies on expert opinions;

(4) the petition provides such other information as the Director may require by regulation; and

(5) the petitioner provides copies of any of the documents required under paragraphs (2), (3), and (4) to the patent owner or, if applicable, the designated representative of the patent owner.

(b) PUBLIC AVAILABILITY.—As soon as practicable after the receipt of a petition under section 311, the Director shall make the petition available to the public.

35 U.S.C. § 313

§313. Preliminary response to petition

If an inter partes review petition is filed under section 311, the patent owner shall have the right to file a preliminary response to the petition, within a time period set by the Director, that sets forth reasons why no inter partes review should be instituted based upon the failure of the petition to meet any requirement of this chapter.

35 U.S.C. § 314**§314. Institution of inter partes review**

(a) **THRESHOLD.**—The Director may not authorize an inter partes review to be instituted unless the Director determines that the information presented in the petition filed under section 311 and any response filed under section 313 shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.

(b) **TIMING.**—The Director shall determine whether to institute an inter partes review under this chapter pursuant to a petition filed under section 311 within 3 months after—

(1) receiving a preliminary response to the petition under section 313; or

(2) if no such preliminary response is filed, the last date on which such response may be filed.

(c) **NOTICE.**—The Director shall notify the petitioner and patent owner, in writing, of the Director's determination under subsection (a), and shall make such notice available to the public as soon as is practicable. Such notice shall include the date on which the review shall commence.

(d) **NO APPEAL.**—The determination by the Director whether to institute an inter partes review under this section shall be final and nonappealable.

35 U.S.C. § 315**§315. Relation to other proceedings or actions****(a) INFRINGER'S CIVIL ACTION.—**

(1) INTER PARTES REVIEW BARRED BY CIVIL ACTION.—An inter partes review may not be instituted if, before the date on which the petition for such a review is filed, the petitioner or real party in interest filed a civil action challenging the validity of a claim of the patent.

(2) STAY OF CIVIL ACTION.—If the petitioner or real party in interest files a civil action challenging the validity of a claim of the patent on or after the date on which the petitioner files a petition for inter partes review of the patent, that civil action shall be automatically stayed until either—

(A) the patent owner moves the court to lift the stay;

(B) the patent owner files a civil action or counterclaim alleging that the petitioner or real party in interest has infringed the patent; or

(C) the petitioner or real party in interest moves the court to dismiss the civil action.

(3) TREATMENT OF COUNTERCLAIM.—A counterclaim challenging the validity of a claim of a patent does not constitute a civil action challenging the validity of a claim of a patent for purposes of this subsection.

(b) PATENT OWNER'S ACTION.—An inter partes review may not be instituted if the petition requesting the proceeding is filed more than 1 year after the date on which the petitioner, real party in interest, or privy of

the petitioner is served with a complaint alleging infringement of the patent. The time limitation set forth in the preceding sentence shall not apply to a request for joinder under subsection (c).

(c) JOINDER.—If the Director institutes an inter partes review, the Director, in his or her discretion, may join as a party to that inter partes review any person who properly files a petition under section 311 that the Director, after receiving a preliminary response under section 313 or the expiration of the time for filing such a response, determines warrants the institution of an inter partes review under section 314.

(d) MULTIPLE PROCEEDINGS.—Notwithstanding sections 135(a), 251, and 252, and chapter 30, during the pendency of an inter partes review, if another proceeding or matter involving the patent is before the Office, the Director may determine the manner in which the inter partes review or other proceeding or matter may proceed, including providing for stay, transfer, consolidation, or termination of any such matter or proceeding.

(e) ESTOPPEL.—

(1) PROCEEDINGS BEFORE THE OFFICE.—The petitioner in an inter partes review of a claim in a patent under this chapter that results in a final written decision under section 318(a), or the real party in interest or privy of the petitioner, may not request or maintain a proceeding before the Office with respect to that claim on any ground that the petitioner raised or reasonably could have raised during that inter partes review.

(2) CIVIL ACTIONS AND OTHER PROCEEDINGS.—The petitioner in an inter partes review of a claim in a patent under this chapter that results in a final

written decision under section 318(a), or the real party in interest or privy of the petitioner, may not assert either in a civil action arising in whole or in part under section 1338 of title 28 or in a proceeding before the International Trade Commission under section 337 of the Tariff Act of 1930 that the claim is invalid on any ground that the petitioner raised or reasonably could have raised during that inter partes review.

35 U.S.C. § 316

§316. Conduct of inter partes review

(a) REGULATIONS.—The Director shall prescribe regulations—

(1) providing that the file of any proceeding under this chapter shall be made available to the public, except that any petition or document filed with the intent that it be sealed shall, if accompanied by a motion to seal, be treated as sealed pending the outcome of the ruling on the motion;

(2) setting forth the standards for the showing of sufficient grounds to institute a review under section 314(a);

(3) establishing procedures for the submission of supplemental information after the petition is filed;

(4) establishing and governing inter partes review under this chapter and the relationship of such review to other proceedings under this title;

(5) setting forth standards and procedures for discovery of relevant evidence, including that such discovery shall be limited to—

(A) the deposition of witnesses submitting affidavits or declarations; and

(B) what is otherwise necessary in the interest of justice;

(6) prescribing sanctions for abuse of discovery, abuse of process, or any other improper use of the proceeding, such as to harass or to cause unnecessary delay or an unnecessary increase in the cost of the proceeding;

(7) providing for protective orders governing the exchange and submission of confidential information;

(8) providing for the filing by the patent owner of a response to the petition under section 313 after an inter partes review has been instituted, and requiring that the patent owner file with such response, through affidavits or declarations, any additional factual evidence and expert opinions on which the patent owner relies in support of the response;

(9) setting forth standards and procedures for allowing the patent owner to move to amend the patent under subsection (d) to cancel a challenged claim or propose a reasonable number of substitute claims, and ensuring that any information submitted by the patent owner in support of any amendment entered under subsection (d) is made available to the public as part of the prosecution history of the patent;

(10) providing either party with the right to an oral hearing as part of the proceeding;

(11) requiring that the final determination in an inter partes review be issued not later than 1 year after the date on which the Director notices the institution of a review under this chapter, except that the Director may, for good cause shown, extend the 1-year period by not more than 6 months, and may adjust the time periods in this paragraph in the case of joinder under section 315(c);

(12) setting a time period for requesting joinder under section 315(c); and

(13) providing the petitioner with at least 1 opportunity to file written comments within a time period established by the Director.

(b) CONSIDERATIONS.—In prescribing regulations under this section, the Director shall consider the effect of any such regulation on the economy, the integrity of the patent system, the efficient administration of the Office, and the ability of the Office to timely complete proceedings instituted under this chapter.

(c) PATENT TRIAL AND APPEAL BOARD.—The Patent Trial and Appeal Board shall, in accordance with section 6, conduct each inter partes review instituted under this chapter.

(d) Amendment of the Patent.—

(1) IN GENERAL.—During an inter partes review instituted under this chapter, the patent owner may file 1 motion to amend the patent in 1 or more of the following ways:

(A) Cancel any challenged patent claim.

(B) For each challenged claim, propose a reasonable number of substitute claims.

(2) ADDITIONAL MOTIONS.—Additional motions to amend may be permitted upon the joint request of the petitioner and the patent owner to materially advance the settlement of a proceeding under section 317, or as permitted by regulations prescribed by the Director.

(3) SCOPE OF CLAIMS.—An amendment under this subsection may not enlarge the scope of the claims of the patent or introduce new matter.

(e) EVIDENTIARY STANDARDS.—In an inter partes review instituted under this chapter, the petitioner shall have the burden of proving a proposition of unpatentability by a preponderance of the evidence.

35 U.S.C. § 317**§317. Settlement**

(a) **IN GENERAL.**—An inter partes review instituted under this chapter shall be terminated with respect to any petitioner upon the joint request of the petitioner and the patent owner, unless the Office has decided the merits of the proceeding before the request for termination is filed. If the inter partes review is terminated with respect to a petitioner under this section, no estoppel under section 315(e) shall attach to the petitioner, or to the real party in interest or privy of the petitioner, on the basis of that petitioner's institution of that inter partes review. If no petitioner remains in the inter partes review, the Office may terminate the review or proceed to a final written decision under section 318(a).

(b) **AGREEMENTS IN WRITING.**—Any agreement or understanding between the patent owner and a petitioner, including any collateral agreements referred to in such agreement or understanding, made in connection with, or in contemplation of, the termination of an inter partes review under this section shall be in writing and a true copy of such agreement or understanding shall be filed in the Office before the termination of the inter partes review as between the parties. At the request of a party to the proceeding, the agreement or understanding shall be treated as business confidential information, shall be kept separate from the file of the involved patents, and shall be made available only to Federal Government agencies on written request, or to any person on a showing of good cause.

35 U.S.C. § 318**§318. Decision of the Board**

(a) FINAL WRITTEN DECISION.—If an inter partes review is instituted and not dismissed under this chapter, the Patent Trial and Appeal Board shall issue a final written decision with respect to the patentability of any patent claim challenged by the petitioner and any new claim added under section 316(d).

(b) CERTIFICATE.—If the Patent Trial and Appeal Board issues a final written decision under subsection (a) and the time for appeal has expired or any appeal has terminated, the Director shall issue and publish a certificate canceling any claim of the patent finally determined to be unpatentable, confirming any claim of the patent determined to be patentable, and incorporating in the patent by operation of the certificate any new or amended claim determined to be patentable.

(c) INTERVENING RIGHTS.—Any proposed amended or new claim determined to be patentable and incorporated into a patent following an inter partes review under this chapter shall have the same effect as that specified in section 252 for reissued patents on the right of any person who made, purchased, or used within the United States, or imported into the United States, anything patented by such proposed amended or new claim, or who made substantial preparation therefor, before the issuance of a certificate under subsection (b).

(d) DATA ON LENGTH OF REVIEW.—The Office shall make available to the public data describing the length of time between the institution of, and the issuance of a final written decision under subsection (a) for, each inter partes review.

35 U.S.C. § 319

§319. Appeal

A party dissatisfied with the final written decision of the Patent Trial and Appeal Board under section 318(a) may appeal the decision pursuant to sections 141 through 144. Any party to the inter partes review shall have the right to be a party to the appeal.