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UNITED STATES DISTRICT COURT

CENTRAL DISTRICT OF CALIFORNIA

WESTERN DIVISION

The CALIFORNIA INSTITUTE OF TECHNOLOGY,

Plaintiff,

v.

HUGHES COMMUNICATIONS INC., HUGHES NETWORK SYSTEMS LLC, DISH NETWORK CORPORATION, DISH NETWORK L.L.C., and DISHNET SATELLITE BROADBAND L.L.C.,

Defendants.

Case No. 2:13-cv-07245-MRP-JEM

ORDER GRANTING IN PART AND DENYING IN PART DEFENDANTS' MOTION FOR SUMMARY JUDGMENT

I. Introduction

Plaintiff California Institute of Technology ("Caltech") has asserted U.S. Patent Nos. 7,116,710 ("the '710 patent"), 7,421,032 ("the '032 patent"), 7,916,781 ("the '781 patent"), and 8,284,833 ("the '833 patent,") against Defendants Hughes Communications, Inc., Hughes Network Systems, LLC, DISH Network Corporation, DISH Network L.L.C., and dishNET Satellite Broadband L.L.C. (collectively, "Hughes"). The Court issued a claim construction order on August 6, 2014. *See Cal. Inst. of Tech. v. Hughes Commc'ns Inc.*, 35 F. Supp. 3d 1176 (C.D. Cal. 2014). The Court denied Hughes' motion for summary judgment for ineligibility under 35 U.S.C. § 101 on November 3, 2014. *See Cal. Inst. of Tech. v. Hughes Commc'ns Inc.*, No. 2:13-cv-07245, 2014 WL 5661290 (C.D. Cal. Nov. 3, 2014). Hughes now moves for summary judgment of: invalidity of the patents-in-suit on a variety of theories; non-infringement by DISH and dishNET products; and invalidity of Caltech's damages theory.[1] The Court grants Hughes' motion as to damages and DISH; the Court denies Hughes' motion as to the other issues.

II. Background

The asserted claims are method and apparatus claims relating to error correction.[2] In modern electronic systems, data are stored in the form of bits having the value "1" or "0." During data transmission, a random or irregular fluctuation (known as noise) can occur in the signal and corrupt data. For example, a transmitter may send a bit with the value "1," but noise may corrupt this bit and cause the receiver to read the value as "0." To mitigate this problem, electronic systems use error correction. Error correction depends on redundancy,

[1] Additionally, Hughes also addresses Caltech's doctrine of equivalents argument. This Court has already barred the introduction of this argument. Therefore, this Order will not discuss Hughes' objections on this matter.

[2] All four patents share a common specification and claim priority to the same patent application U.S. Serial Application No. 09/861,102.

which refers to "extra" bits that may be duplicates of original information bits[3] and are transmitted along with the original bits. These extra bits are not necessary, in the sense that the original information exists without them, but they serve an important purpose. Using these extra bits, the receiver can ensure that the original information bits were not corrupted during transmission.

Caltech's patents are directed to a form of error correction code called an irregular repeat and accumulate ("IRA") code. An IRA code operates as follows: the code can introduce redundancy by repeating (i.e., duplicating) different original bits irregularly (i.e., a different number of times). These information bits may then be randomly permuted and combined to form intermediate bits, which are accumulated to form parity bits. Parity bits reflect the values of a selection of original information bits. These parity bits are transmitted along with the original information bits. The receiver ensures that the received original information bits were not corrupted during transmission. It can do this by modulo-2 adding the original information bits and parity bits.[4] The receiver knows whether this sum is supposed to be odd or even. If the sum is supposed to be odd but is instead even, the receiver will know that an error occurred and can perhaps correct the error using other information it has received.

The benefit of an IRA code is that not all bits are repeated the same number of times. The repetition of certain bits provides redundancy. Although greater repetition of every bit would allow for better error correction, it would also force

[3] The '032 patent uses the term "message bits" rather than "information bits." This Court will generally use the term "information bits" when discussing error correction.

[4] For an explanation of mod-2 arithmetic, see *Modular Arithmetic – An Introduction*, Rutgers University, http://www.math.rutgers.edu/~erowland/modulararithmetic.html.

the transmitter to send more bits, decreasing the coding rate and increasing data transfer time.[5] IRA codes balance competing goals: data accuracy and efficiency. The asserted claims recite generally encoding and decoding bits in accordance with an IRA code.

III. Standard for Summary Judgment

The Court shall grant summary judgment if there is no genuine dispute as to any material fact, as supported by facts on the record that would be admissible in evidence, and if the moving party is entitled to judgment as a matter of law. Fed. R. Civ. P. 56; *Celotex Corp. v. Catrett*, 477 U.S. 317, 322 (1986); *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 250 (1986). In order to grant summary judgment, the Court must identify material facts by reference to the governing substantive law, while disregarding irrelevant or unnecessary factual disputes. *Anderson*, 477 U.S. at 248. If there is any genuine dispute about a material fact such that a reasonable jury could return a verdict for the nonmoving party, summary judgment cannot be granted. *Id.* The Court must view facts and draw reasonable inferences in favor of the nonmoving party. *Scott v. Harris*, 550 U.S. 372, 378 (2007). If the party moving for summary judgment does not bear the burden of proof as to a particular material fact, the moving party need only give notice of the absence of a genuine issue of material fact so that the nonmoving party may come forward with all of its evidence. *See Celotex*, 477 U.S. at 325.

IV. Discussion

A. Invalidity of '781 patent in View of Divsalar Reference

Hughes argues that the '781 patent is invalid in view of a conference proceeding, "Coding Theorems for 'Turbo-Like' Codes" ("Divsalar"). Specifically, Hughes argues that independent claim 19 is anticipated by Divsalar

[5] Coding rate is calculated through the following equation: Coding Rate = (Original information bits) / (Original information bits + Extra bits). The closer the coding rate is to 1, the more efficient it is.

and dependent claim 16 is anticipated by and obvious in light of Divsalar. This Court finds Hughes' argument unpersuasive as to claim 16 and undeveloped as to claim 19.

Divsalar concerns RA codes. It describes an encoder that receives a block of data, including information bits, and performs an encoding operation using these information bits in its input. The information bits are repeated and reordered, then encoded by a rate 1 accumulator. Finally, the encoding operation generates a codeword.

Hughes argues that Divsalar discloses each and every element of claim 19 of the '781 patent. Claim 19 reads:

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 at least two of the information bits appear in three subsets of the information bits.

Further Hughes argues that Divsalar renders obvious claim 16, which ultimately depends on independent claim 13:

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.

Caltech's primary argument against Hughes' position is that Divsalar does not disclose irregular degree profiles as required by the '781 patent. Hughes counters that the '781 patent does not recite such a requirement, primarily because the claim does not use the word "repetition." This Court finds that irregular degree profiles are a requirement of claim 16 of 'the 781 patent and that Divsalar does not disclose this limitation. This Court is less certain that irregular degree profiles are a requirement of claim 19.

The claim language of the '781 patent does not explicitly mention irregular degree profiles. However, Caltech points out that the claim language does describe encoding operations that require irregular degree profiles of information.

The relevant limitations of the claims at issue provide for "an accumulation of mod-2 or exclusive-OR sums of bits in subsets of the information bits" wherein "the information bits appear in a variable number of subsets" (claim 16) and "at least two of the information bits appear in three subsets of the information bits" (claim 19).[6] The term "subsets" refers to the information bits to be combined at a given parity check node. Caltech contends that a person of ordinary skill in the art would understand that the presence of information bits in different numbers of subsets, in light of check nodes that combine subsets of information bits, requires the use of irregular degree profiles. The expert testimony of Dr. Stephen B. Wicker comports with this argument. *See* Wicker Decl. Sec. IX. The presence of information bits in a variable number of subsets necessitates irregularity (meaning information bits will be repeated a different number of times) as those bits are transmitted and checked.

The specification of the '781 patent appears to further support Caltech's argument, as the encoding operation described therein requires the use of irregular

[6] These terms regarding subsets and information bit appearance in subsets were not presented to this Court for construction. As a result, this Court will give those terms their ordinary meaning. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc).

degree profiles. Put most simply, the operation describes input information bits, which are repeated, i.e. duplicated, to check nodes and then summed. Input bits are connected to multiple check nodes, though the number of check nodes connected to any particular information bit is variable. Accordingly, some information bits appear in more subsets than others.[7] This reinforces this Court's finding of irregularity as a limitation of claim 16.

The ordinary meaning of "variable" in connection with the appearance of information bits as used in claim 13 (upon which claim 16 depends) requires an irregular degree profile. Hughes' various arguments to the contrary are unpersuasive. Divsalar discloses no such limitation. Accordingly, Divsalar does not invalidate or otherwise render obvious claim 16.

Claim 19, however, does not use "variable" in connection with the appearance of information bits in subsets. Instead, claim 19 describes an invention "wherein at least two of the information bits appear in three subsets of the information bits." The Court is troubled by Caltech's treatment of this language as essentially identical to "variable number." The ordinary meaning of "at least two" is simply two or more. Hughes rightly points out that this limitation would be met by a code in which all the information bits appear in exactly three subsets. In such a scenario, information bits would appear in the same number of subsets, conceivably removing irregularity from the code. Frustratingly, Hughes barely

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[7] Hughes argues that this Court would commit one of the cardinal sins of patent law if this Court were to read a limitation from the specification. *See Phillips*, 415 F.3d at 1319-20 (quoting *SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys.*, Inc., 242 F.3d 1337, 1340 (Fed. Cir. 2001)). However, this limitation follows from the claim's use of "variable" in connection to subsets. Caltech correctly shows that this understanding is further demonstrated in the specification, but this Court does not rely on the specification to supply this limitation. *See id.* at 1313 (noting that skilled person in art "is deemed to read the claim term not in only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification").

touches on this argument, spending only two sentences in its reply brief on the subject of irregularity as it relates to information bits appearance in subsets in claim 19. The paucity of briefing on this issue provides little clarity. The Court declines to grant summary judgment on the basis of a skeletal, though promising, theory.

This Court denies Hughes' motion for summary judgment for invalidity of the '781 patent in light of Divsalar.

B. Improper Inventorship of '781 Patent

Hughes claims that Dr. Dariush Divsalar contributed to the development the '781 patent and was improperly omitted as an inventor of that patent. Thus, Hughes concludes, the asserted claims are invalid. The Court finds unpersuasive this conspicuously unsupported argument.

It is well established that the named inventors of a patent are presumed correct and that a nonjoinder challenge based on inventorship must be sustained by clear and convincing evidence. *Hess v. Advanced Cardiovascular Sys., Inc.*, 106 F.3d 976, 979–80 (Fed. Cir. 1997). Hughes does not come close to meeting this burden. Instead, Hughes presents a conspiracy, bereft of evidence, wherein Dr. Divsalar gleans from a colleague the idea to "make his RA codes irregular," shares this idea with the named inventors of the patent, inventors who in turn omit Dr. Divsalar from the patent in order to keep the whole episode secret. The emails that Hughes has offered up to buttress this elaborate scenario are neither clear nor convincing.

This Court denies Hughes' motion for summary judgment for invalidity of the '781 patent for improper inventorship.

C. Invalidity of '833 Patent with Regard to "Memory Locations"

Hughes contends that the claims of the '833 patent are invalid under Section 112 for lack of written description concerning "memory locations." Caltech counters that the use of separate memory locations is a well-known concept in the art. Moreover, Caltech argues that an ordinarily-skilled person would understand

that the '833 patent implicitly discloses the use of memory locations. This Court finds a dispute of fact as to whether a person of ordinary skill in the art would understand that the inventors were in possession of the invention using memory locations to store information and parity bits.

The asserted '833 patent claims contain numerous limitations concerning "memory locations." *See, e.g.*, '833 patent, 7:21–36 (limitations of claim 1 including "a first set of memory locations to store information bits; a second set of memory locations to store parity bits"). However, the patent's specification does not describe "memory locations." Hughes argues that this omission dooms the '833 patent under Section 112, which requires a written description sufficient to "convey[] to those skilled in the art that the inventor ha[d] possession of the claimed subject matter as of the filing date." *Ariad Pharm., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc).

A specification does not require the recitation of well-known structures. *Falko-Gunter Falkner v. Inglis*, 448 F.3d 1357, 1367 (Fed. Cir. 2006). Similarly, "[a] patentee may rely on information that is 'well-known in the art' for purposes of meeting the written description requirement." *Boston Scientific Corp. v. Johnson & Johnson*, 647 F.3d 1353, 1366 (Fed. Cir. 2011). Caltech has offered expert testimony in support of the argument that memory locations and indices were well known to skilled persons. *See* Wicker Decl. Sec. X. Hughes contends otherwise and has presented expert testimony from Dr. Brendan Frey to support this contention. *See* Frey Decl. ¶ 33–34. As there exists a question of material fact as to whether the use of memory locations was well known at the time of the invention, this Court denies Hughes motion for summary judgment for invalidity of the '833 patent.

D. Caltech's Damages Theory

Of more consequence is Hughes' argument regarding Caltech's allegedly improper royalty apportionment in its damages theory. Hughes protests that Caltech's theory is invalid under the entire market value rule. This Court agrees.

Caltech does not itself make or use the instant invention. Accordingly, Caltech's damages claim is limited to a reasonable royalty. Such a damages figure may be calculated from the royalty base and the royalty rate. *See, e.g., Virnetx, Inc. v. Cisco Sys., Inc.*, 767 F.3d 1308, 1325–26 (Fed. Cir. 2014). Caltech's damages theory posits a royalty base of all of the revenue Hughes received for the sale of accused products, as well as revenue from goods and services that are sold with the accused products. Caltech seeks a 4% royal rate.

Hughes contends that Caltech has not sufficiently tailored the royalty base to conform to the nature of the allegedly infringing products. These products have multiple components, but the invention at issue concerns only one component. Hughes argues that Caltech must therefore apportion both the royalty rate and the royalty base. This dual tailoring is necessary to prevent possible juror confusion and to reflect the fact that only a portion of sales of the infringing products may be attributable to the allegedly infringing component. *Ericsson, Inc. v. D-Link Systems*, 773 F.3d 1201, 1226–27 (Fed. Cir. 2014); *Virnetx*, 767 F.3d at 1326 –27.

Caltech admits that that it did not apportion the revenue base for the allegedly infringing products. However, Caltech argues that this is unnecessary because the royalty rate has been adjusted downward to account for the multicomponent nature of the accused products. In essence, Caltech argues that when considering apportionment in light of royalty base and royalty rate, a party may focus entirely on royalty rate.

Caltech's argument hinges on an incorrect reading of *Ericsson, Inc. v. D-Link Systems*, 773 F.3d 1201 (Fed. Cir. 2014). There, the Federal Circuit made clear that a royalty-rate-only apportionment approach is typically barred with respect to

multi-component products unless the entire value of the accused products is attributable to the patented feature. Caltech argues that *Ericsson* stands for the legal rule that "an economist could [achieve apportionment] in various ways—by careful selection of the royalty base to reflect the value added by the patented feature, where that differentiation is possible; by adjustment of the royalty rate so as to discount the value of a product's non-patented features; or by a combination thereof." *Id.* at 1226. However, the opinion carefully explains that this legal rule is limited by "an important evidentiary principle."

> "The principle, applicable specifically to the choice of a royalty base, is that, where a multi-component product is at issue and the patented feature is not the item which imbues the combination of the other features with value, care must be taken to avoid misleading the jury by placing undue emphasis on the value of the entire product. It is not that an appropriately apportioned royalty award could never be fashioned by starting with the entire market value of a multi-component product—by, for instance, dramatically reducing the royalty rate to be applied in those cases—it is that reliance on the entire market value might mislead the jury, who may be less equipped to understand the extent to which the royalty rate would need to do the work in such instances. Thus, where the entire value of a machine as a marketable article is properly and legally attributable to the patented feature, the damages owed to the patentee may be calculated by reference to that value. Where it is not, however, courts must insist on a more realistic starting point for the royalty calculations by juries—often, the smallest salable unit and, at times, even less."

Id. at 1226–27 (citations omitted) (internal quotation marks omitted).

Alternatively, Caltech argues that even if this Court finds that rate-only apportionment is typically improper for multiple component products, no such bar would apply in this case because the patented invention is the basis for consumer demand. *See id.* However, both of Caltech's damages experts have admitted that the features associated with the patents-in-suit are not the sole basis of demand for the accused products. One expert noted that this was the very reason he performed

apportionment. Further, the other expert noted that consumers would not be "aware of what coding or modulation is being used to provide [satellite Internet] services." While the patented invention may concern capacity and speed, there are other drivers in the satellite broadband industry.

As the entire value of the accused products is not dependent on the invention at issue, Caltech must apportion the royalty base in its damages theory. It has failed to do so here.

E. Dismissal of DISH Products

Hughes seeks dismissal with prejudice of claims Caltech laid out in its complaint against DISH products and services, namely the Hopper. Caltech, no doubt wary of the possible impact of a broad dismissal on its later filed suit against DISH, seeks a tailored dismissal with conditions. This Court grants Hughes' motion for summary judgment with respect to the Dish products and services mentioned in Caltech's complaint.

V. Conclusion

The Court grants Hughes' motion for summary judgment as to Caltech's damages theory and the dismissal of DISH products and services named in Caltech's complaint. The Court denies Hughes' motion for summary judgment as to all other issues.

IT IS SO ORDERED.

DATED: May 5, 2015

Mariana R. Pfaelzer

Hon. Mariana R. Pfaelzer
United States District Judge