PUBLIC VERSION

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

In the Matter of	
CERTAIN WIRELESS COMMUNICATION DEVICES, PORTABLE MUSIC AND DATA PROCESSING DEVICES, COMPUTERS AND COMPONENTS THEREOF	Inv. No. 337-TA-745

INITIAL DETERMINATION ON VIOLATION OF SECTION 337 AND RECOMMENDED DETERMINATION ON REMEDY AND BOND

Administrative Law Judge Thomas B. Pender

(April 24, 2012)

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List of Abbreviations

CDX	Complainant's Demonstrative Exhibit
CIB	Complainant's Initial Post-Hearing Brief
CRB	Complainant's Reply Post-Hearing Brief
CX	Complainant's Exhibit
Depo.	Deposition
JX	Joint Exhibit
RDX	Respondent's Demonstrative Exhibit
RIB	Respondent's Initial Post-Hearing Brief
RRB	Respondent's Reply Post-Hearing Brief
RX	Respondent's Exhibit
Tr.	Transcript
DWS	Direct Witness Statement (Including Revised Direct Witness Statements)
RWS	Rebuttal Witness Statement

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CERTAIN WIRELESS COMMUNICATION DEVICES, PORTABLE MUSIC AND DATA PROCESSING DEVICES, COMPUTERS AND COMPONENTS THEREOF	**Inv. No. 337-TA-745**

INITIAL DETERMINATION ON VIOLATION OF SECTION 337

Administrative Law Judge Thomas B. Pender

(April 24, 2012)

Pursuant to the Notice of Investigation and Rule 210.42(a) of the Rules of Practice and Procedure of the United States International Trade Commission, this is my Initial Determination in the matter of Certain Wireless Communication Devices, Portable Music and Data Processing Devices, Computers and Components Thereof, Investigation No. 337-TA-745.

The Administrative Law Judge hereby determines that a violation of Section 337 of the Tariff Act of 1930, as amended, has been found in the importation into the United States, the sale for importation, or the sale within the United States after importation of certain wireless communication devices, portable music and data processing devices, computers and components thereof, in connection with claims 1-4 of U.S. Patent No. 6,246,697. The Administrative Law Judge determines that there is no violation of Section 337 of the Tariff Act of 1930, as amended, in connection with claim 1 of U.S. Patent No. 5,636,223, claim 1 of U.S. Patent No. 6,246,862, and claim 12 of U.S. Patent No. 6,272,333. Furthermore, the Administrative Law Judge hereby determines that a domestic industry in the United States does exist that practices or exploits U.S. Patent Nos. 5,636,223, and 6,246,697, but that a domestic industry in the United States does not exist that practices or exploits U.S. Patent Nos. 6,246,862, and 6,272,333.

I. Introduction

A. Procedural History

By publication of the Notice of Investigation in the Federal Register, this investigation was instituted on November 8, 2010, pursuant to section 337 of the Tariff Act of 1930, as amended to determine whether there is a violation of subsection (a)(1)(B) of section 337 in the importation into the United States, the sale for importation into the United States, or the sale within the United States after importation of certain wireless communication devices, portable music and data processing devices, computers and components thereof that infringe one or more of claim 12 of U.S. Patent No. 6,272,333 ("the '333 patent"), claim 1 of U.S. Patent No. 6,246,862 ("the '862 patent"), claims 1-4 of U.S. Patent No. 6,246,697 ("the '697 patent"), claims 1 and 17 of U.S. Patent No. 5,359,317 ("the '317 patent"), claim 1 of U.S. Patent No. 5,636,223 ("the '223 patent"), and claim 1 of U.S. No. 7,751,826 ("the '826 patent") and whether an industry in the United States exists as required by subsection (a)(2) of section 337. *See* 75 Fed. Reg. 68619 (November 8, 2010).

On December 14, 2010, Order No. 4 issued setting the target date for this investigation as March 8, 2012. (*See* Order No. 2 (December 14, 2010).)

On June 2, 2011, Order No. 14 issued, terminating the investigation as to claim 1 of the '317 patent. (*See* Order No. 14 (June 2, 2011); Commission Decision Not to Review Initial Determination (June 28, 2011).)

On June 22, 2011, Order No 19 issued as an Initial Determination finding Complainant's licensing activities satisfy the domestic industry requirement of the 19 U.S.C. § 1337(a)(3)(C). (*See* Order No. 19 (June, 22, 2011).) On July 22, 2011, the Commission issued a Notice and Order vacating the Initial determination and remanding the issue of whether Motorola Mobility has satisfied the domestic industry requirement "in keeping with the Commission's recent

decision in *Certain Multimedia Display and Navigation Devices and Systems, Components Thereof, and Products Containing Same*, Inv. No. 337-TA-694, Comm'n Op. (July 1, 2011)." (*See* Comm'n Order (July 22, 2011).)

On August 4, 2011, Chief Judge Bullock issued a Notice suspending this investigation until such time that the investigation was permanently reassigned. (*See* Notice (August 4, 2011).)

On October 24, 2011, Chief Judge Bullock issued a Notice assigning me this investigation. (*See* Notice (October 24, 2011).)

On November 1, 2011, Order No. 25 issued as an Initial Determination extending the target date to August 23, 2012. (*See* Order No. 25 (November 1, 2011).)

On November 29, 2011, Order No. 29 issued as an Initial Determination terminating this investigation as to the '317 patent. (*See* Order No. 29 (November 29, 2011); Commission Decision Not to Review Initial Determination (December 15, 2011).)

From December 8, 2011 to December 16, 2011, an evidentiary hearing was held in this investigation.

On January 9, 2012, Order No. 33 issued as an Initial Determination terminating this investigation as to the '826 patent. (*See* Order No. 33 (January 9, 2012); Commission Decision Not to Review Initial Determination (January 27, 2012).)

B. Parties

1. Complainant

The Complainant named in this investigation is Motorola Mobility, Inc. ("Motorola"). (*See* NOI.) Motorola is a corporation organized under the laws of Delaware with its principle place of business in Libertyville, Illinois. Motorola was created on July 31, 2010 as a subsidiary of Motorola, Inc. Motorola consists of two of Motorola, Inc.'s former business segments: (1)

Mobile Devices, which sells mobile devices and related products and services designed to deliver mobile communications and mobile internet access and content; and (2) Home, which provides products and services to cable operators and wireline telecommunications service providers that enable the delivery of video, voice and data services to customers. In January 2011, Motorola was spun off from Motorola, Inc., and Motorola, Inc. changed its name to Motorola Solutions, Inc. As part of the spin off, Motorola, Inc. assigned all of its rights, tittle and interest in a number of patents and other assets to Motorola, including the asserted '223, '333, '697, and '862 patents. (CX-37, Contribution Agreement.)

2. Respondent

The Respondent named in this investigation is Apple Inc. ("Apple"), which is a corporation organized under the laws of California with its principle place of business in Cupertino, California. Apple is a designer and manufacturer of personal computers and tablets, portable digital media players, mobile communications devices, and other media devices.

B. Patents at Issue

Motorola alleges in the Complaint that Apple's accused products infringe the '333, '862, '697, '317, '223, and '826 patents. (*See* Complaint at ¶ 2.) Subsequent to the institution of this investigation, Motorola moved to terminate with regard to the '317 and '826 patents. Having granted Motorola's motions to terminate, there remain at issue in this investigation the '223, '333, '697, and '862 patents.

C. Products at Issue

At issue in this investigation are certain wireless communication devices, portable music and data processing devices, computers and components thereof. 75 Fed. Reg. 68619. In

particular, Motorola contends that the following Apple products infringe at least one claim of the asserted patents. (CIB at 18.)

U.S. Patent No.	Asserted Claims	Accused Apple Products
5,636,223	1	iPhone 4, iPad, iPad 3G, iPad 2, iPad 2 with 3G, iPod Touch 4th Generation, AppleTV, MacBook, MacBook Pro, MacBook Air, iMac, Mac mini, Mac Pro,
6,246,697	1-4	iPhone 3GS, iPhone 4 (UMTS), iPad 3G, iPad 2 with 3G (UMTS)
6,272,333	12	iPad 3G, iPad 2 3G, iPhone 3GS, iPhone 4

II. Importation or Sale

Apple admits that it has imported or sold for importation the accused products in this investigation. (RIB at 6; CX-068 at ¶¶ 2, 3, 5, 7, 17, 18, 20, 22, 32, 33, 35, 37, 47, 48, 50, 90, 91, 93, 95.) Apple also admits that the importation requirement has been satisfied. (*Id.*)

On December 2, 2011, the Commission issued its opinion in *Certain Electronic Devices with Image Processing Systems, Components Thereof, and Associated Software*, Inv. No. 337-TA-724. ("*Electronic Devices with Image Processing Systems*"). The Commission stated in its opinion that "the ALJ's importation analysis must include an evaluation of whether the type of infringement alleged will support a finding that there has been an importation of an article that infringes in violation of section 337. *Electronic Devices with Image Processing Systems*, Inv. 337-TA-724, Comm'n Op. at 13, n. 8 (December 2, 2011). In particular, the Commission held that:

> [S]ection 337(a)(1)(B)(i) covers imported articles that directly or indirectly infringe when it refers to "articles that – infringe." We also interpret the phrase "articles that – infringe" to reference the status of the articles at the time of importation. Thus, infringement, direct or indirect, must be based on the articles as imported to satisfy the requirements of section 337.

Id. at 13-14. The Commission further held that "[w]e analyze a violation of section 337(a)(1)(B)(i) based on method claim[s] [] under the statutory rubrics of indirect infringement." *Id.* at 18. In that investigation, the Commission held that the complainant failed to show importation, sale for importation, or sale after importation of articles that infringe a method claim directly or indirectly. *Id.* at 18-19.

As set forth, *supra*, the accused products in this investigation include mobile phones, tablets, personal computing devices, and other consumer electronics. Motorola has accused these products of both directly and indirectly infringing the asserted claims of the asserted patents. The asserted claims include both apparatus and method claims. However, only the method claims of the '223 and '697 patents have been found herein to be infringed by Apple. In both instances, as discussed in detail, *infra*, I have found that Apple induces infringement of the asserted claims. Thus, I find that the importation requirement has been satisfied.

III. Jurisdiction

In order to have the power to decide a case, a court or agency must have both subject matter jurisdiction and jurisdiction over either the parties or the property involved. 19 U.S.C. § 1337; *Certain Steel Rod Treating Apparatus and Components Thereof*, Inv. No. 337-TA-97, Commission Memorandum Opinion, 215 U.S.P.Q. 229, 231 (1981).

For the reasons discussed below, I find the Commission has jurisdiction over this investigation.[1]

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[1] I note that the Court of Appeals for the Federal Circuit has held:

As is very common in situation where a tribunal's subject matter jurisdiction is based on the same statute which gives rise to the federal right, the jurisdictional requirements of section 1337 mesh with the factual requirements necessary to prevail on the merits. In such a situation, the Supreme Court has held that the tribunal should assume jurisdiction and treat (and dismiss on, if necessary) the merits of the case.

A. Subject Matter Jurisdiction

Section 337 confers subject matter jurisdiction on the International Trade Commission to investigate, and if appropriate, to provide a remedy for, unfair acts and unfair methods of competition in the importation, the sale for importation, or the sale after importation of articles into the United States. (*See* 19 U.S.C. §§ 1337(a)(1)(B) and (a)(2).) Motorola alleges in the Complaint that Apple has violated Subsection 337(a)(1)(B) in the importation and sale of products that infringe the asserted patents. (*See* Complaint.) Apple does not contest this point and in fact admits importation. (*See* RIB at 6.) Thus, I find Apple imports, sells for importation, or sells after importation into the United States the accused products. Accordingly, I find the Commission has jurisdiction over this investigation under Section 337 of the Tariff Act of 1930. *Amgen, Inc. v. U.S. Int'l Trade Comm'n*, 902 F.2d 1532, 1536 (Fed. Cir. 1990).

B. Personal Jurisdiction

Apple does not dispute that the Commission has personal jurisdiction over them. (*See* RIB at 6.) Apple has fully participated in the investigation by, among other things, participating in discovery, participating in the hearing, and filing pre-hearing and post-hearing briefs. Accordingly, I find that Apple has submitted to the jurisdiction of the Commission. *See Certain Miniature Hacksaws*, Inv. No. 337-TA-237, Pub. No. 1948, Initial Determination at 4, 1986 WL 379287 (U.S.I.T.C., October 15, 1986) (unreviewed by Commission in relevant part).

Amgen, Inc. v. United States Int'l Trade Comm'n, 902 F.2d 1532, 1536 (Fed. Cir. 1990).

C. In Rem Jurisdiction

The Commission has in rem jurisdiction over the products at issue by virtue of the above finding that the accused products have been imported into the United States. *See Sealed Air Corp. v. United States Int'l Trade Comm'n*, 645 F.2d 976, 985 (C.C.P.A. 1981).

IV. Standards of Law

A. Claim Construction

"An infringement analysis entails two steps. The first step is determining the meaning and scope of the patent claims asserted to be infringed. The second step is comparing the properly construed claims to the device accused of infringing." *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 976 (Fed. Cir. 1995) (*en banc*) (internal citations omitted), *aff'd*, 517 U.S. 370 (1996). Claim construction is a "matter of law exclusively for the court." *Id.* at 970-71. "The construction of claims is simply a way of elaborating the normally terse claim language in order to understand and explain, but not to change, the scope of the claims." *Embrex, Inc. v. Serv. Eng'g Corp.*, 216 F.3d 1343, 1347 (Fed. Cir. 2000).

Claim construction focuses on the intrinsic evidence, which consists of the claims themselves, the specification, and the prosecution history. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005) (*en banc*); *see also Markman*, 52 F.3d at 979. As the Federal Circuit in *Phillips* explained, courts must analyze each of these components to determine the "ordinary and customary meaning of a claim term" as understood by a person of ordinary skill in art at the time of the invention. 415 F.3d at 1313. "Such intrinsic evidence is the most significant source of the legally operative meaning of disputed claim language." *Bell Atl. Network Servs., Inc. v. Covad Commc'ns Grp., Inc.*, 262 F.3d 1258, 1267 (Fed. Cir. 2001).

"It is a 'bedrock principle' of patent law that 'the claims of a patent define the invention to which the patentee is entitled the right to exclude.'" *Phillips*, 415 F.3d at 1312 (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). "Quite apart from the written description and the prosecution history, the claims themselves provide substantial guidance as to the meaning of particular claims terms." *Id.* at 1314; *see also Interactive Gift Express, Inc. v. Compuserve Inc.*, 256 F.3d 1323, 1331 (Fed. Cir. 2001) ("In construing claims, the analytical focus must begin and remain centered on the language of the claims themselves, for it is that language that the patentee chose to use to 'particularly point [ ] out and distinctly claim [ ] the subject matter which the patentee regards as his invention."). The context in which a term is used in an asserted claim can be ""highly instructive." *Phillips*, 415 F.3d at 1314. Additionally, other claims in the same patent, asserted or unasserted, may also provide guidance as to the meaning of a claim term. *Id.*

The specification "is always highly relevant to the claim construction analysis. Usually it is dispositive; it is the single best guide to the meaning of a disputed term." *Id.* at 1315 (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). "[T]he specification may reveal a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess. In such cases, the inventor's lexicography governs." *Id.* at 1316. "In other cases, the specification may reveal an intentional disclaimer, or disavowal, of claim scope by the inventor." *Id.* As a general rule, however, the particular examples or embodiments discussed in the specification are not to be read into the claims as limitations. *Id.* at 1323. In the end, "[t]he construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be ... the correct construction." *Id.* at

1316 (quoting *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998)).

In addition to the claims and the specification, the prosecution history should be examined, if in evidence. *Id.* at 1317; *see also Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 913 (Fed. Cir. 2004). The prosecution history can "often inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be." *Phillips*, 415 F.3d at 1317; *see also Chimie v. PPG Indus. Inc.*, 402 F.3d 1371, 1384 (Fed. Cir. 2005) ("The purpose of consulting the prosecution history in construing a claim is to exclude any interpretation that was disclaimed during prosecution.").

When the intrinsic evidence does not establish the meaning of a claim, then extrinsic evidence (*i.e.*, all evidence external to the patent and the prosecution history, including dictionaries, inventor testimony, expert testimony, and learned treatises) may be considered. *Phillips*, 415 F.3d at 1317. Extrinsic evidence is generally viewed as less reliable than the patent itself and its prosecution history in determining how to define claim terms. *Id.* at 1317. "The court may receive extrinsic evidence to educate itself about the invention and the relevant technology, but the court may not use extrinsic evidence to arrive at a claim construction that is clearly at odds with the construction mandated by the intrinsic evidence." *Elkay Mfg. Co. v. Ebco Mfg. Co.*, 192 F.3d 973, 977 (Fed. Cir. 1999).

If, after a review of the intrinsic and extrinsic evidence, a claim term remains ambiguous, the claim should be construed so as to maintain its validity. *Phillips*, 415 F.3d at 1327. Claims, however, cannot be judicially rewritten in order to fulfill the axiom of preserving their validity. *See Rhine v. Casio, Inc.*, 183 F.3d 1342, 1345 (Fed. Cir. 1999). Thus, "if the only claim

construction that is consistent with the claim's language and the written description renders the claim invalid, then the axiom does not apply and the claim is simply invalid." *Id.*

B. Infringement

1. Direct Infringement

A complainant must prove either literal infringement or infringement under the doctrine of equivalents. Infringement must be proven by a preponderance of the evidence. *SmithKline Diagnostics, Inc. v. Helena Labs. Corp.*, 859 F.2d 878, 889 (Fed. Cir. 1988). A preponderance of the evidence standard "requires proving that infringement was more likely than not to have occurred." *Warner-Lambert Co. v. Teva Pharm. USA, Inc.*, 418 F.3d 1326, 1341 n.15 (Fed. Cir. 2005).

a. Literal Infringement

Literal infringement is a question of fact. *Finisar Corp. v. DirecTV Group, Inc.*, 523 F.3d 1323, 1332 (Fed. Cir. 2008). Literal infringement requires the patentee to prove that the accused device contains each and every limitation of the asserted claim(s). *Frank's Casing Crew & Rental Tools, Inc. v. Weatherford Int'l, Inc.*, 389 F.3d 1370, 1378 (Fed. Cir. 2004). If any claim limitation is absent, there is no literal infringement of that claim as a matter of law. *Bayer AG v. Elan Pharm. Research Corp.*, 212 F.3d 1241, 1247 (Fed. Cir. 2000.)

b. Doctrine of Equivalents

Where literal infringement is not found, infringement nevertheless can be found under the doctrine of equivalents. Determining infringement under the doctrine of equivalents "requires an intensely factual inquiry." *Vehicular Techs. Corp. v. Titan Wheel Int'l, Inc.*, 212 F.3d 1377, 1381 (Fed. Cir. 2000). According to the Federal Circuit:

> Infringement under the doctrine of equivalents may be found when the accused device contains an "insubstantial" change from the claimed invention. Whether equivalency exists may be determined based on the "insubstantial differences"

> test or based on the "triple identity" test, namely, whether the element of the accused device "performs substantially the same function in substantially the same way to obtain the same result." The essential inquiry is whether "the accused product or process contain elements identical or equivalent to each claimed element of the patented invention[.]"

TIP Sys., LLC v. Phillips & Brooks/Gladwin, Inc., 529 F.3d 1364, 1376-77 (Fed. Cir. 2008) (citations omitted). Thus, if an element is missing or not satisfied, infringement cannot be found under the doctrine of equivalents as a matter of law. *London v. Carson Pirie Scott & Co.*, 946 F.2d 1534, 1538-39 (Fed. Cir. 1991).

2. Indirect Infringement – Inducement

Section 271(b) of the Patent Act prohibits inducement: "[w]hoever actively induces infringement of a patent shall be liable as an infringer." 35 U.S.C. § 271(b). As the Federal Circuit stated:

> To establish liability under section 271(b), a patent holder must prove that once the defendants knew of the patent, they "actively and knowingly aid[ed] and abett[ed] another's direct infringement." However, "knowledge of the acts alleged to constitute infringement" is not enough. The "mere knowledge of possible infringement by others does not amount to inducement; specific intent and action to induce infringement must be proven."

DSU Med. Corp. v. JMS Co., 471 F.3d 1293, 1305 (Fed. Cir. 2006) (en banc) (citations omitted); *See also Cross Medical Products, Inc. v. Medtronic Sofamor Danek, Inc.*, 424 F.3d 1293, 1312 (Fed. Cir. 2005) ("In order to succeed on a claim inducement, the patentee must show, first that there has been direct infringement, and second, that the alleged infringer knowingly induced infringement and possessed specific intent to encourage another's infringement."). Mere knowledge of possible infringement by others does not amount to inducement. Specific intent and action to induce infringement must be proven. *Warner-Lambert Co. v. Apotex Corp.*, 316 F.3d 1348, 1363 (Fed. Cir. 2003). In DSU, the Federal Circuit clarified the intent requirement necessary to prove inducement. As the court recently explained:

> In *DSU Med. Corp. v. JMS Co.*, this court clarified en banc that the specific intent necessary to induce infringement "requires more than just intent to cause the acts that produce direct infringement. Beyond that threshold knowledge, the inducer must have an affirmative intent to cause direct infringement."

Kyocera Wireless Corp. v. Int'l Trade Comm'n, 545 F.3d 1340, 1354, (Fed. Cir. 2008) (citation omitted). "Proof of inducing infringement requires the establishment of a high level of specific intent." *Lucent Techs. Inc. v. Gateway, Inc.*, 2007 WL 925510, at *2-3 (S.D. Cal. 2007).

C. Validity

It is Respondents' burden to prove invalidity, and the burden of proof never shifts to the patentee to prove validity. *Scanner Techs. Corp. v. ICOS Vision Sys. Corp. N.V.*, 528 F.3d 1365, 1380 (Fed. Cir. 2008). "Under the patent statutes, a patent enjoys a presumption of validity, see 35 U.S.C. § 282, which can be overcome only through facts supported by clear and convincing evidence[.]" *SRAM Corp. v. AD-II Eng'g, Inc.*, 465 F.3d 1351, 1357 (Fed. Cir. 2006).

The clear and convincing evidence standard placed on the party asserting the invalidity defense requires a level of proof beyond the preponderance of the evidence. Although not susceptible to precise definition, "clear and convincing" evidence has been described as evidence which produces in the mind of the trier of fact "an abiding conviction that the truth of a factual contention is 'highly probable.'" *Price v. Symsek*, 988 F.2d 1187, 1191 (Fed. Cir. 1993) (citing *Buildex, Inc. v. Kason Indus., Inc.*, 849 F.2d 1461, 1463 (Fed. Cir. 1988).)

"When no prior art other than that which was considered by the PTO examiner is relied on by the attacker, he has the added burden of overcoming the deference that is due to a qualified government agency presumed to have properly done its job[.]" *Am. Hoist & Derrick Co. v. Sowa & Sons, Inc.*, 725 F.2d 1350, 1359 (Fed. Cir. 1984). Therefore, the challenger's "burden is especially difficult when the prior art was before the PTO examiner during prosecution of the

application." *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1467 (Fed. Cir. 1990).

1. Anticipation

"A patent is invalid for anticipation if a single prior art reference discloses each and every limitation of the claimed invention. Moreover, a prior art reference may anticipate without disclosing a feature of the claimed invention if that missing characteristic is necessarily present, or inherent, in the single anticipating reference." *Schering Corp. v. Geneva Pharm., Inc.*, 339 F.3d 1373, 1377 (Fed. Cir. 2003) (citations omitted). "Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." *Continental Can Company USA v. Monsanto Company,* 948 F.2d 1264, 1269 (Fed.Cir.1991). To be considered anticipatory, a prior art reference must describe the applicant's "claimed invention sufficiently to have placed it in possession of a person of ordinary skill in the field of the invention." *Helifix Ltd. v. Blok-Lok, Ltd.*, 208 F.3d 1339, 1346 (Fed. Cir. 2000) (quoting *In re Paulsen,* 30 F.3d 1475, 1479 (Fed. Cir. 1994)). Anticipation is a question of fact. *Texas Instruments, Inc. v. U.S. Int'l Trade Comm'n*, 988 F.2d 1165, 1177 (Fed. Cir. 1993).

2. Obviousness

Under 35 U.S.C. § 103(a), a patent is valid unless "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." 35 U.S.C. § 103(a). The ultimate question of obviousness is a question of law, but "it is well understood that there are factual issues underlying the ultimate obviousness decision." *Richardson-Vicks Inc. v. Upjohn Co.*, 122 F.3d 1476, 1479 (Fed. Cir. 1997); *Wang Lab., Inc. v. Toshiba Corp.*, 993 F.2d 858, 863 (Fed. Cir.

1993). The underlying factual determinations include: (1) the scope and content of the prior art, (2) the level of ordinary skill in the art, (3) the differences between the claimed invention and the prior art, and (4) objective indicia of non-obviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966).

Although the Federal Circuit has historically required that, in order to prove obviousness, the patent challenger must demonstrate, by clear and convincing evidence, that there is a "teaching, suggestion, or motivation to combine," the Supreme Court has rejected this "rigid approach." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417-418 (2007). In KSR, the Supreme Court described a more flexible analysis:

> Often, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue... As our precedents make clear, however, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.

Id. Since KSR was decided, the Federal Circuit has announced that, where a patent challenger contends that a patent is invalid for obviousness based on a combination of prior art references, "the burden falls on the patent challenger to show by clear and convincing evidence that a person of ordinary skill in the art would have had reason to attempt to make the composition or device, . . . and would have had a reasonable expectation of success in doing so." *PharmaStem Therapeutics, Inc. v. Viacell, Inc.*, 491 F.3d 1342, 1360 (Fed. Cir. 2007).

3. Written Description (35 U.S.C. §112)

The hallmark of the written description requirement is the disclosure of the invention. *Ariad Pharm., Inc. v. Eli Lilly and Co.,* 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc). The test for determining the sufficiency of the written description in a patent requires "an objective

inquiry into the four comers of the specification from the perspective of a person of ordinary skill in the art. Based on that inquiry, the specification must describe an invention understandable to that skilled artisan and show that the inventor actually invented the invention claimed." *Id.* Compliance with the written description requirement is a question of fact and "the level of detail required to satisfy the written description requirement varies depending on the nature and scope of the claims and on the complexity and predictability of the relevant technology." *Id.*

4. Best Mode (35 U.S.C. §112)

Section 112, ¶ 1 of Title 35 of the United States Code sets out the best mode requirement, stating in relevant part that "[t]he specification shall contain . . . and shall set forth the best mode contemplated by the inventor of carrying out the invention." 35 U.S.C. § 112 ¶ 1. The Court of Appeals for the Federal Circuit has held that "[t]he purpose of the best mode requirement is to ensure that the public, in exchange for the rights given the inventor under the patent laws, obtains from the inventor a full disclosure of the preferred embodiment of the invention." *Dana Corp. v. IPC Ltd. Partnership*, 860 F.2d 415, 418 (Fed. Cir. 1988), cert. denied, 490 U.S. 1067 (1989). The determination of whether the best mode requirement is satisfied is a question of fact, which must be proven by clear and convincing evidence. *Transco Products Inc. v. Performance Contracting, Inc.*, 38 F.3d 551, 559-60 (Fed. Cir. 1994).

In determining compliance with the best mode requirement, two inquiries are undertaken. The first inquiry is whether, at the time of filing the patent application, the inventor possessed a best mode of practicing the invention. *Eli Lilly and Co. v. Barr Laboratories, Inc.*, 251 F.3d 955, 963 (Fed. Cir. 2001); *see also Liquid Dynamics Corp. v. Vaughan Co., Inc.*, 449 F.3d 1209, 1223 (Fed. Cir. 2006); *Spectra-Physics, Inc. v. Coherent, Inc.*, 827 F.2d 1524, 1535 (Fed. Cir. 1987) (The specificity of disclosure necessary to meet the best mode requirement is determined "by the knowledge of facts within the possession of the inventor at the time of filing of the

application."). This first inquiry is subjective and focuses on the inventor's state of mind at the time the patent application was filed. *Eli Lilly*, 251 F.3d at 963. The second inquiry is, if the inventor did possess the best mode, whether the inventor's disclosure is adequate to enable one of ordinary skill in the art to practice the best mode of the invention. *Id.* This second inquiry is objective and depends on the scope of the claimed invention and the level of skill in the relevant art. *Id.*

The "contours of the best mode requirement are defined by the scope of the "claimed invention" and thus, the first task in any best mode analysis is to define the invention. *Northern Telecom Ltd. v. Samsung Electronics Co., Ltd.*, 215 F.3d 1281, 1286-87 (Fed. Cir. 2000). "The definition of the invention, like the interpretation of the patent claims, is a legal exercise, wherein the ordinary principles of claim construction apply." *Id.* Once the invention is defined, the best mode inquiry moves to determining whether a best mode of carrying out that invention was held by the inventor. If so, that best mode must be disclosed. I*n Pfizer, Inc. v. Teva Pharmaceuticals USA, Inc.*, 518 F.3d 1353 (Fed. Cir. 2008), the Federal Circuit summarized its best mode jurisprudence as follows:

> We held that the best mode requirement does demand disclosure of an inventor's preferred embodiment of the claimed invention. However, it is not limited to that. We have recognized that best mode requires inventors to disclose aspects of making or using the claimed invention [when] the undisclosed matter materially affects the properties of the claimed invention.

Pfizer, 518 F.3d at 1364 (internal quotations and citations omitted).

D. Domestic Industry

In a patent-based complaint, a violation of section 337 can be found "only if an industry in the United States, relating to the articles protected by the patent ... concerned, exists or is in the process of being established." 19 U.S.C. § 1337(a)(2). Under Commission precedent, this "domestic industry requirement" of section 337 consists of an economic prong and a technical

prong. *Certain Stringed Musical Instruments and Components Thereof*, Inv. No. 337-TA-586, Comm'n Op. at 12-14, 2009 WL 5134139 (U.S.I.T.C. Dec. 2009). The complainant bears the burden of establishing that the domestic industry requirement is satisfied. *See Certain Set-Top Boxes and Components Thereof*, Inv. No. 337-TA-454, Final Initial Determination at 294, 2002 WL 31556392 (U.S.I.T.C. June 21, 2002) (unreviewed by Commission in relevant part).

1. Economic Prong

The economic prong of the domestic industry requirement is defined in subsection 337(a)(3) as follows:

> (3) For purposes of paragraph (2), an industry in the United States shall be considered to exist if there is in the United States, with respect to the articles protected by the patent, copyright, trademark or mask work concerned --
>
> (A) Significant investment in plant and equipment;
>
> (B) Significant employment of labor or capital; or
>
> (C) Substantial investment in its exploitation, including engineering, research and development, or licensing.

19 U.S.C. § 1337(a)(3). The economic prong of the domestic industry requirement is satisfied by meeting the criteria of any one of the three factors listed above.

Section 337(a)(3)(C) provides for domestic industry based on "substantial investment" in the enumerated activities, including licensing of a patent. *See Certain Digital Processors and Digital Processing Systems, Components Thereof, and Products Containing Same*, Inv. No. 337-TA-559, Initial Determination at 88 (May 11, 2007) ("Certain Digital Processors"). Mere ownership of the patent is insufficient to satisfy the domestic industry requirement. *Certain Digital Processors* at 93 (citing the Senate and House Reports on the Omnibus Trade and Competitiveness Act of 1988, S.Rep. No. 71). However, entities that are actively engaged in licensing their patents in the United States can meet the domestic industry requirement. *Certain*

Digital Processors at 93. In establishing a domestic industry under Section 337(a)(3)(C), the complainant does not need to show that it or one of its licensees is practicing a patent-in-suit. *See Certain Semiconductor Chips with Minimized Chip Package Size and Products Containing Same*, Inv. No. 337-TA-432, Order No. 13, at 11, (January 24, 2001) ("Certain Semiconductor Chips").

In *Certain Multimedia Display & Navigation Devices & Systems, Components Thereof, & Products Containing Same*, Inv. No. 337-TA-694, Comm'n Op. (Aug. 8, 2011) (*"Multimedia Display"*), the Commission stated that a complainant seeking to rely on licensing activities must satisfy three requirements: (1) the investment must be "an investment in the exploitation of the asserted patent;" (2) the investment must relate to licensing; and (3) the investment "must be domestic, *i.e.*, it must occur in the United States." *Id.* at 7-8. The Commission stated that "[o]nly after determining the extent to which the complainant's investments fall within these statutory parameters can we evaluate whether complainant's qualifying investments are 'substantial,' as required by the statute." *Id.* at 8.

Under the first of the three requirements, the complainant must show a nexus between the licensing activity and the asserted patent. *Id.* at 9. When the asserted patent is part of a patent portfolio, and the licensing activities relate to the portfolio as a whole, the Commission requires that the facts be examined to determine the strength of the nexus between the asserted patent and the licensing activities. *Id.* The Commission provided a non-exhaustive list of factors to consider, such as (1) whether the licensee's efforts relate to "an article protected by" the asserted patent under Section 337 (a)(2)-(3); (2) the number of patents in the portfolio; (3) the relative value contributed by the asserted patent to the portfolio; (4) the prominence of the asserted patent in licensing discussions, negotiations, and any resulting licensing agreement; and (5) the scope of

technology covered by the portfolio compared to the scope of the asserted patent. *Id.* at 9-10. The Commission explained that the asserted patent may be shown to be particularly important or valuable within the portfolio where there is evidence that: (1) it was discussed during licensing negotiations; (2) it has been successfully litigated before by the complainant; (3) it is related to a technology industry standard; (4) it is a base patent or pioneering patent; (5) it is infringed or practiced in the United States; or (6) the market recognizes the patent's value in some other way. *Id.* at 10-11.

Once a complainant's investment in licensing the asserted patent in the United States has been assessed in the manner described above, the next inquiry is whether the investment is "substantial." 19 U.S.C. § 1337(a)(3)(C). The Commission takes "a flexible approach whereby a complainant whose showing on one or more of the three section 337(a)(3)(C) requirements is relatively weak may nevertheless establish that its investment is 'substantial' by demonstrating that its activities and/or expenses are of a large magnitude." *Multimedia Display and Navigation Devices*, Comm'n Op. at 15. The Commission has indicated that whether an investment is "substantial" may depend on:

> (1) the nature of the industry and the resources of the complainant;
>
> (2) the existence of other types of "exploitation" activities;
>
> (3) the existence of license-related "ancillary" activities;
>
> (4) whether complainant's licensing activities are continuing; and
>
> (5) whether complainant's licensing activities are the type of activities that are referenced favorably in the legislative history of section 337(a)(3)(C).

Id. at 15-16. The complainant's return on its licensing investment (or lack thereof) may also be circumstantial evidence of substantiality. *Id.* at 16. In addition, litigation expenses may be evidence of the complainant's investment, but "should not automatically be considered a

'substantial investment in . . . licensing,' even if the lawsuit happens to culminate in a license." *See John Mezzalingua Associates, Inc. v. U.S. Int'l Trade Comm'n*, --- F.3d ---, 2011 U.S. App. LEXIS 20128 at *13 (Fed. Cir. Oct. 4, 2011).

2. Technical Prong

The technical prong of the domestic industry requirement is satisfied when the complainant in a patent-based section 337 investigation establishes that it is practicing or exploiting the patents at issue. *See* 19 U.S.C. §1337 (a)(2) and (3); *Certain Microsphere Adhesives, Process for Making Same and Prods. Containing Same, Including Self-Stick Repositionable Notes*, Inv. No. 337-TA-366, Comm'n Op. at 8, 1996 WL 1056095 (U.S.I.T.C. Jan. 16, 1996). "In order to satisfy the technical prong of the domestic industry requirement, it is sufficient to show that the domestic industry practices any claim of that patent, not necessarily an asserted claim of that patent." *Certain Ammonium Octamolybdate Isomers*, Inv. No. 337-TA-477, Comm'n Op. at 55 (U.S.I.T.C., Jan. 2004).

The test for claim coverage for the purposes of the technical prong of the domestic industry requirement is the same as that for infringement. *Certain Doxorubicin and Preparations Containing Same*, Inv. No. 337-TA-300, Initial Determination at 109, 1990 WL 710463 (U.S.I.T.C., May 21, 1990), *aff'd*, Views of the Commission at 22 (October 31, 1990); *Alloc, Inc. v. Int'l Trade Comm'n*, 342 F.3d 1361, 1375 (Fed. Cir. 2003). "First, the claims of the patent are construed. Second, the complainant's article or process is examined to determine whether it falls within the scope of the claims." *Certain Doxorubicin and Preparations Containing Same*, Initial Determination at 109. To prevail, the patentee must establish by a preponderance of the evidence that the domestic product practices one or more claims of the patent. The technical prong of the domestic industry can be satisfied either literally or under the doctrine of equivalents. *Certain Dynamic Sequential Gradient Devices and Component Parts*

Thereof, Inv. No. 337-TA-335, Initial Determination at 44, Pub. No. 2575 (U.S.I.T.C., November 1992).

E. Unenforceability – Unclean Hands

"To succeed in an unclean hands claim, a plaintiff is required to show that the defendant has 'engaged in particularly egregious conduct which would change the equities significantly in plaintiff's favor.'" *Serdarevic v. Adv. Med. Optics, Inc.*, 532 F.3d 1352, 1361 (Fed. Cir. 2008) (quoting *Aukerman Co. v. R.L. Chaides Constr. Co.*, 960 F.2d 1020, 1033 (Fed. Cir. 1992) (en banc)). "But it is not enough merely to show misconduct." *Id.* Rather, the party asserting unclean hands must show prejudice resulting therefrom. *Id.*

V. U.S. Patent No. 5,636,223

The '223 patent, titled "Methods of Adaptive Channel Access Attempts," was originally filed on June 27, 1995, and issued on June 3, 1997. (JX-005, cover page.) The '223 patent issued to inventors Karl A. Reardon and Bud Fraser and names Motorola, Inc. as the assignee. (*Id.*)

The '223 patent describes methods of adaptable channel access, or more specifically methods of adaptively facilitating channel acquisition, in a data communication system that includes infrastructure, such as base stations, network controllers and the like, that is arranged and constructed to communicate with a number of terminals, the terminals competing with each other to gain access to limited communication resources, such as a communication channel. (JX-005 at 3:45-56; RX-79 at 136.)

A. Asserted Claim

The '223 patent has twelve claims. Only claim 1 of the '223 patent is asserted in this investigation. Claim 1 is an independent claim. The asserted claim reads as follows:

1. In a data communication system including infrastructure arranged to communicate with a plurality of terminals over a channel, a method of adaptable channel access practiced at a terminal comprising the steps of:

determining an access priority value;

ascertaining a random time, responsive to said access priority value;

testing whether said channel is available;

if said channel is not available, waiting for said random time to expire and repeating said step of testing; and

executing responsive to said step of testing, a channel access attempt when said channel is available.

B. Level of Ordinary Skill in the Art

Motorola does not address the level of ordinary skill in the art with regard to the '233 patent in its post-hearing briefs. Apple argues based on the testimony of its expert, Mr. Lanning, that a person of ordinary skill in the art pertinent to the '223 patent at the time of the invention would have at least a Bachelor's or Master's degree in electrical engineering, computer science or equivalent and have at least two years of experience in the field of telecommunications, including at least two years of experience in the design and configuration of cellular networks and/or wireless LANs. (RIB at 157 (citing RX-1286C (Lanning, DWS) at Q&A 34).) Dr. Lanning testified that there was no real substantive dispute regarding the level of ordinary skill in the art applicable to the '223 patent between himself and Motorola's expert, Dr. Almeroth. (*See* RX-1286C (Lanning, DWS) at Q&A 38.)

Because Apple was the only party to address the level of ordinary skill in the art relevant to the '223 patent in its post-hearing briefs, I adopt the testimony of Apple's expert, Mr. Lanning, on this point and find that a person of ordinary skill in the art relevant to the '223 patent at the time of the invention would have at least a Bachelor's degree in electrical engineering,

computer science or equivalent and have at least two years of experience in the field of telecommunications, including at least two years of experience in the design and configuration of cellular networks and/or wireless LANs.

C. Claim Construction

Independent claim 1 describes a method of adaptable channel access practiced at the terminal. The parties dispute the proper construction of the term "access priority value." The parties also dispute whether the testing step must be practiced in the order in which it is presented in the claim (*i.e.*, after the determining and ascertaining steps). Only claim terms in controversy need to be construed, and only to the extent necessary to resolve the controversy. *Vanderlande Indus. Nederland BV v. Int'l Trade Comm'n.*, 366 F.3d 1311, 1323 (Fed. Cir. 2004); *Vivid Tech., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

1. "access priority value"

The parties construe the term "access priority value" as follows:

Motorola	Apple
a value based on importance-related information generated at the terminal	a value based on terminal identity used to determine relative priority among multiple terminals for access to a data communications system

Motorola argues that properly construed the term "access priority value" means "a value based on importance-related information generated at the terminal." (CIB at 21.) Motorola contends that there is no dispute that an access priority value is a "value." (*Id.*) Motorola argues that the plain meaning of "priority" in the claim language in the context of the patent relates to relative importance among different entities. (*Id.*) According to Motorola, that means a high priority value has a higher level of relative importance than a low priority value. (*Id.*)

Motorola also argues that the specification supports its construction. (*Id.* at 21-22.) Particularly, Motorola points to several passages and embodiments in the specification that it argues describes the access priority level as being based on importance-based information. (*Id.*) Motorola also points to the specification in support of its argument that the access priority value is generated at the terminal. (*Id.* at 22-23.) In particular, Motorola argues that the abstract of the invention states that the access priority value may be determined from information received from the infrastructure or information available to the terminal and that the specification reiterates the point that the access priority value may be a function of information available to the terminal alone. (*Id.* at 23.)

Apple argues that the term "access priority value" is properly construed to mean "a value based on terminal identity used to determine relative priority among multiple terminals for access to a data communications system." (RIB at 157.) Apple asserts that the parties' dispute regarding this claim term boils down to whether the value must be "based on terminal identity," as Apple advocates, or "based on importance-related information," as Motorola advocates. (*Id.* at 158.) Apple argues that the '223 patent specification consistently and repeatedly speaks of the access priority value as determined based on terminal identity. (*Id.*) Apple argues that while other factors may be considered, at least the terminal identity must be used to determine the access priority value. (*Id.*) In support, Apple cites to several examples in the specification that Apple argues discuss priority in terms of terminal identity by comparing the experience of high priority terminal/users and low priority terminal/users. (*Id.* at 158-59.) Apple also relies on Figures 3 and 4 of the '223 patent in support of its proposed claim construction. (*Id.* at 160-61.)

In addition to the specification, Apple argues that during the re-examination proceeding, the patent examiner expressly relied on Motorola's repeated arguments that the access priority

value is based on terminal identity. (*Id.* at 161.) Particularly, Apple argues that to overcome a rejection of claim 1 in view of Courtois, Motorola argued that the access priority value was based on an "inherent or predefined value" "specific to the terminal." (*Id.* at 161-62.) Apple also argues that in a subsequent interview with the patent examiner Motorola reiterated that the access priority value was a value specific to a terminal. (*Id.* at 162-63.) Apple further argues that the original prosecution history supports its claim construction. (*Id.* at 164.) Specifically, Apple argues that Motorola's proposed construction is inconsistent with statements Motorola made during prosecution to overcome the patent examiner's rejection of claim 1in light of Kuddes et al. (*Id.* at 164-65.)

Analysis

I begin my claim construction analysis with the language of the claims. The method of claim 1 requires the steps of "determining an access priority value" and then "ascertaining a random time, responsive to said access priority value." The term "access priority value" is not defined in the art. However, the patentee's choice of words does provide some incite regarding the meaning of the term. In the context of claim 1, the plain meaning of the words of the term "access priority value" suggests that the term refers to a value that indicates or determines the priority a terminal has in accessing the channel.

Looking outside of independent claim 1, I find there are a number of dependent claims that depend directly from claim 1 that further elucidate the proper construction of the term "access priority value." Dependent claims 2, 7, 8, 9, and 10 each provide additional limitations on how the access priority value in claim 1 is determined. In particular, claim 2 requires that the access priority value be derived from access information provided in a message received by the terminal; claim 7 requires that the access priority value be derived from the number of channel

access attempts; claim 8 requires that the access priority value be derived from the terminal priority; claim 9 requires that the access priority value be derived from a change in the priority threshold; and claim 10 requires that the access priority value be derived from a user selected priority access level. (*See* JX-005 at 8:56-61, 9:8-1:6.) Because each of dependent claims 2, 7, 8, 9, and 10 necessarily are more limited in scope than independent claim 1, the presumption is that the step of determining an access priority value in claim 1 must be broader than the additional limitations imposed by the dependent claims. *See* 35 U.S.C. § 112, ¶ 4 (2000) ("[A] claim in dependent form shall contain a reference to a claim previously set forth and then specify a further limitation of the subject matter claimed. A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers."); *Dow Chem. Co. v. United States*, 226 F.3d 1334, 1341-42 (Fed. Cir. 2000) (concluding that an independent claim should be given broader scope than a dependent claim to avoid rendering the dependent claim redundant); *see also AK Steel Corp. v. Sollac and Ugine*, 344 F.3d 1234, 1242 (Fed. Cir. 2003) ("If the dependent claims expressly recite 'up to about 10%' silicon, then the independent claims, which must be at least as broad as the claims that depend from them, must include aluminum coatings with 'up to about 10%' silicon."). Thus, absent something in the written description or prosecution history that would compel a different result, the language of the claims suggests the "access priority value" of claim 1 can be derived based on a number of factors, including, but not limited to, access information provided in a message received by the terminal; the number of channel access attempts; the terminal priority; a change in the priority threshold; or a user selected priority access level. Accordingly, the language of the claims suggests that the term "access priority value" is broad in scope.

Apple argues that "access priority value" is properly construed as "a value based on terminal identity…" (RIB at 158.) As set forth above, however, the language of the claims establishes that the "access priority value" can be based on any number of factors. Certainly, there is nothing in the claims to suggest that access priority value must, at a minimum, be based on terminal identity. In fact, the term "terminal identity" is not used anywhere in the claims. Thus, the language of the claims cuts against Apple's proposed construction.

Having examined the language of the claims, I now turn to the specification, as "the specification is the single best guide to the meaning of a claim term." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1315 (Fed.Cir.2005) (en banc). The specification supports what is suggested by the language of the claims, that the term "access priority value" is broad in scope. The specification begins with the statement that the access priority value is "determined with information received by the terminal *or* information available to the terminal." (JX-005, Abstract (emphasis added).) The specification then goes on to disclose a number of embodiments of the invention in which: only information received by the terminal is used to derive the access priority value (*see e.g.*, *id.* at 3:62-4:1, 5:22-27); only information available to the terminal is used to derive the access priority value (*see e.g.*, *id.* at 4:1-4, 5:52-55); and a combination of information received by the terminal and available to the terminal is used to derive the access priority value (*see e.g.*, *id.* at. 6:65-7:4).

With regard to information received by the terminal, the specification discloses that such information may include either singularly, or in combination: the number of terminals registered for service; a channel loading factor; a system management parameter; a channel priority level or change thereto; or the like. (*Id.* at 3:62-4:1.) With regard to information available to the terminal, the specification discloses that such information may include: the number of channel

access attempts; a terminal priority; a change in priority; or the like. (*Id.* at 4:1-4.) Additionally, the specification discloses that the information received by the terminal may comprise a vector of priority values that a user of a terminal can select to correspond to the urgency or importance of a message. Thus, a user "regardless of or in addition to being constrained by the priority of his particular terminal can have a message with a user determined urgency or importance delivered." (*Id.* at 5:47-55.)

Apple argues that the specification "repeatedly and consistently" describes a priority scheme based on terminal identity (RIB at 158), yet I note that that the term "terminal identity" is not used anywhere in the specification. In particular, Apples argues that the "223 patent repeatedly discusses priority in terms of terminal identity, most often by comparing the user experience of a high priority terminal/user user [sic] and a low priority terminal/user." (CIB at 158.) In so arguing, Apple attempts to tie the concept of "terminal priority" to the concept of "terminal identity." While in some instances a terminal's priority may be based on terminal identity (*see* CX-2699C Almeroth Rebuttal Wit Stat at Q&A 26), even Apple's expert, Dr. Lanning, testified at the hearing that the two concepts were different.

> Judge Pender: Counsel, thanks for going back to that. Let me ask, is terminal identity different from terminal priority to you?
>
> The Witness: Yes, it is. You have a unique identity for each terminal in the system, or the infrastructure wouldn't know which terminal is sending the information.
>
> Judge Pender: That doesn't necessarily correspond to terminal priority?
>
> The Witness: And the priority is a separate issue. The access priority value is how that terminal with its unique identity, gains priority in relation to the other terminals in the system.

(Tr. at 1275:6-20.) Moreover, the examples from the specification that Apple cites where terminal identity is allegedly used to derive the access priority value are preferred embodiments

of the invention and as such are not limiting. *Liebel–Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 906 (Fed.Cir.2004) ("claims should not be limited to preferred embodiments."). Thus, I find Apple's argument unavailing. There is nothing in the specification that convinces me that the access priority value must be based, at a minimum, on terminal identity.

I next turn to the original prosecution history and prosecution history of the reexamination proceeding. *Phillips*, 415 F.3d at 1317 ("[T]he prosecution history provides evidence of how the PTO and the inventor understood the patent. ... Yet because the prosecution history represents an ongoing negotiation between the PTO and the applicant, rather than the final product of that negotiation, it often lacks the clarity of the specification and thus is less useful for claim construction purposes.") During the original prosecution, the patent examiner rejected claim 1 as anticipated by Kuddes et al. (JX-011 at 41-42.) The patent examiner stated in the rejection that "Kuddes et al vary their backoff time for channel access depending on station priority as in claims 1 and 8. The time can vary depending on the number of tries as in claim 7." (*Id.* at 42.)

Apple argues that Motorola's proposed claim construction, which Apple asserts is broad enough to encompass an access priority value based on the message or data the terminal is sending, is inconsistent with statements the patent applicant made in its response to the examiner's rejection. In particular, Apple argues that the patent applicant, in trying to overcome the patent examiner's rejection of claim 1, "repeatedly emphasized that the access priority value of the claimed invention was specific to a user or terminal, rather than the priority of the discrete message sent by the terminal." (RIB at 164.) I disagree.

In response to the examiner's rejection, the patent applicant stated, *inter alia*:

> The Kuddes reference teaches away from the invention claimed in the present application as seen in column 3 lines 43-51:

> [The system described in Kuddes has a) control unit 10 which differentiates between high, intermediate, and low priority messages. A control unit 10 with a high priority message to send on bus 12, ignores any incoming carrier sense signal and sends the message regardless of whether a prior transmission from another control unit 10 is on the bus 12. Thus, the high priority message receives immediate bus access; it need not wait for a prior message to finish transmission.

As shown in column 7 lines 36-41:

> Step 334 is entering a CS-ignore mode, in which the CS signal to controller 15 is disabled, ignored, or otherwise made ineffective. This provides the high priority message with immediate bus access, regardless of whether a message from another network station is currently being transmitted.

Further in column 7 lines 49-54:

> Step 336 is sending the high priority message. This transmission is "'blind" in the sense that, because the CS signal is disabled, control unit 10 does not know if another station is transmitting. If a message is already being transmitted from another station, the result is a forced collision.

If a collision occurs between messages, all control units involved enter a backoff process (see column 6 lines 62-64). "After a certain amount of time, which includes a backoff period, each control unit 10 attempts a re-transmission." column 3 lines 54-56. As noted by the Examiner, the system described in Kuddes varies its backoff time for channel access depending on station priority. "The duration of the backoff period is greater for low priority messages, so that the high priority message gains faster access to bus 12." column 3 lines 56-58. Thus, "the backoff periods for high and low priority messages are calculated in a manner that permits the high priority message to regain bus 12 first." column 7 lines 57-60.

Further, as noted by the Examiner, the time can vary depending on the number of tries. See column 8 lines 19-21,

> Counter 25 counts the number of times, if any, that a high priority message is transmitted while the CS signal is being ignored. column 6 lines 11-13. Thus, after its CS-ignore limit is reached, a high priority message no longer ignores the CS signal, and is thus a "CS-sensitive" message.

In the invention claimed in the present application, each user is given an access priority value.

> ... step 305 ascertains a random time, responsive to the access priority value, and tests whether the channel is available when the random time has expired at step 323. This is tested by checking the channel status or busy/idle bit 215. If the channel is busy then step 325 waits for a random time corresponding to the access priority value or specifically the range of the random timer from step 321.
>
> After expiration of this random time the method again checks or rechecks for a channel busy at step 323. Eventually the channel will be idle or available and then step 307 executes a channel access attempt after which the method ends or repeats ... Generally, a higher priority terminal practicing this method will have a higher probability of successfully accessing the channel than a lower priority terminal simply because the higher priority terminal looks more often to determine whether the channel is busy and is therefore more likely to find it idle.

As shown, the system described in Kuddes teaches away from the invention claimed in the present application. The system described in Kuddes contemplates a retry mechanism, whereas the invention claimed in the present application relates to an initial channel access.

A further distinction noted above is that the system described in Kuddes allows all high priority messages to gain access to bus 12, regardless if bus 12 is active. The invention claimed in the present application attempts to gain access to the bus equally among messages sent from high priority user and low priority users. The only time the invention claimed in the present application distinguishes between high and low priority users is when the channel is busy. In the situation when the channel is busy, high priority users test the channel more often than low priority user to see if the channel is still busy or has become idle.

Thus, the system described in Kuddes teaches away from the invention claimed in the present application. The system described in Kuddes distinguishes between users based on their priority level at all times, whereas the invention claimed in the present application only distinguishes between users based on their priority level when the channel is busy.

The system described by Kuddes attempts to vary a backoff time to determine how often a user can retry sending its message over bus 12 once a collision has occurred. The invention claimed in the present application varies a time to determine how often a user tests to see if the channel has become idle.

(JX-011 at 135-138.)

As shown above, the patent applicant distinguished the claimed invention over the Kuddes reference based on the fact that: (1) Kuddes contemplates a retry mechanism, while the claimed invention relates to initial channel access; (2) Kuddes allows all high priority messages to gain access to the bus regardless of whether the bus is currently busy, while the claimed invention only distinguishes between high and low priority users when the channel is busy; (3) Kuddes distinguishes between users based on their priority level at all times, while the claimed invention only distinguishes users based on their priority level when the channel is busy; and (4) Kuddes attempts to vary a backoff time to determine how often a user can retry sending its message over the bus, while the claimed invention varies the time to determine how often a user tests to see if the channel has become idle. Contrary to Apple's argument, I find nothing in the applicant's response that suggests to me that the applicant was discussing the claimed access priority value and certainly nothing in the response that would indicate that the applicant was limiting the scope of the term. The applicant's various references to high and low priority users and statement that in the claimed invention, each user is given an access priority value, do not, as Apple contends, indicate that the priority scheme of the claimed invention must be based, at a minimum, on terminal identity. Rather, the statements merely reinforce that the claimed invention is practiced at the terminal and as such each terminal practicing the method of the claimed invention (*i.e.*, each user of the claimed method) determines its own access priority value.

In the reexamination proceeding, the patent examiners rejected claim 1 of the '223 patent as anticipated by Courtois. The patent examiner described in the rejection how Courtois disclosed each element of claim 1 of the '223 patent. (RX-079 at 111.) Specifically, the examiner stated that Courtois disclosed: determining an access priority value related to the load

on the channel (*e.g.*, light traffic conditions are assigned one value and heavy traffic conditions are assigned another value); ascertaining a random time, responsive to the priority value (*e.g.*, a delay time interval TS_n, which corresponds to a random dynamically determined time interval based on the load on the channel); testing whether the channel is available (*e.g.*, "With the non-persistent CSMA protocol a station which has an information packet ready for transmission operates as follows: (1) If the channel is sensed idle, it transmits the packet."); and that if the channel is not available, waiting for the random time to expire and repeating the step of testing (*e.g.*, "(2) If the channel is sensed busy, then the station reschedules the retransmission of the packet to some later time according to the sensing delay distribution. At this point in time, it senses the channel and repeats the algorithm described."). (*Id.*)

Apple argues that Motorola's proposed construction is inconsistent with statements Motorola made during the reexamination proceeding to overcome the anticipation rejection. (RRB at 67.) On the other hand, Apple argues Motorola's statements during the reexamination proceeding support its proposed construction. (*Id.*) In particular, Apple asserts that Motorola repeatedly argued in its response to the patent examiners' rejection of claim 1 as anticipated by Courtois, that the access priority value of the '223 patent must be based on terminal identity. (RIB at 161.)

I disagree with Apple's assertion. As discussed in more detail below, I find nothing in Motorola's responses to the examiner during the reexamination proceeding that could be fairly taken to suggest that Motorola was arguing that the access priority value must be based on terminal identity. However, I do find that Motorola clearly and unequivocally disclaimed access priority values based entirely on information received from the infrastructure.

In response to the patent examiners' rejection of claim 1, Motorola differentiated the claimed invention over Courtois on the basis that the claims of the '223 patent require that a random time be ascertained responsive to an access priority value of a terminal, while in Courtois the alleged priority scheme is responsive to the random time. (RX-079 at 135.) Motorola went on to explain that:

> Courtois determines a time interval (TS) responsive to a network condition (*i.e.*, traffic load). But a network load state is not an *access priority value* of a terminal as claimed in the '223 Patent. This is because a system wide parameter such as a network load state is not an access priority value that is determined at a given terminal.

(*Id.* at 138-139.) In the above passage, Motorola differentiates the claimed invention over Courtois on the basis that a system wide parameter (*e.g.*, network load state) is not an access priority value *determined at a given terminal*. In Courtois the alleged priority value is broadcast by the infrastructure and not determined by the terminal as in the claimed invention. Motorola's explanation is entirely consistent with the language of the claims and specification of the '223 patent that require that the method be practiced at the terminal. Nothing in Motorola's statement supports Apple's assertion that the access priority value must be based on terminal identity.

Motorola also states in its traverse of the patent examiner's anticipation rejection, that "it should be noted that the load G is a system parameter and is not a parameter of the station having to do with access priority value." (*Id.* at 138.) Here, Motorola distinguishes a system parameter from the claimed access priority value on the basis that a system parameter such as load G is not a parameter of the station (*i.e.,* terminal). It is unclear to me from Motorola's statement whether Motorola is insinuating that an access priority value must be based on a parameter of the station (*i.e.*, terminal) or whether Motorola is just inartfully trying to reiterate its previous point that the claimed invention differs from Courtois because the claimed invention is practiced at the

terminal and thus each terminal practicing the claimed invention will determine its own access priority value. Apple argues that Motorola's reference to "a parameter of the station" supports its proposed claim construction requiring that an access priority value be based on terminal identity (*see* RIB at 162), but even if I were to interpret Motorola's statement as requiring the access priority value be based on a parameter of the terminal, that does not necessarily have to be terminal identity as advocated by Apple. The specification explicitly discloses various examples of parameters of a terminal that may be used to determine the access priority value and there is nothing in the claims or specification to suggest the applicant intended the examples to be limiting. (*See e.g.*, JX-005 at 4:1-4 ("[T]he access priority value may be a function of information available to the terminal alone, such as a number of channel access attempts, a terminal priority, a change in channel priority, or the like.")).

To bolster its argument to the examiner distinguishing the claimed invention over the Courtois reference, Motorola included declaration evidence from Dr. Colin D. Frank, who was noted by Motorola to be one of skill in the art pertinent to the '223 patent. Among other things, Dr. Frank stated in his declaration:

> Thus, the subscript u in TS_u denotes the number of stations competing for channel access, and as noted previously, the optimal scheduling interval is a function of the load or the number of terminals with packets to transmit, and not of any inherent or pre-defined priority value of a terminal.

(RX-079 at 147 (Frank Dec. at ¶ 17) (emphasis in original).) Dr. Frank's statement distinguishes the claimed invention over Courtois on the basis that Courtois teaches that the optimal scheduling interval, which is used to determine a new sensing point (*i.e.*, "random time" in the parlance of the '223 patent), is a function of the load or the number of terminals with packets to transmit, while the claimed invention teaches that the "random time" is a function of an inherent or pre-defined priority value of a terminal. It is unclear from Dr. Frank's statement, however,

whether he is simply reinforcing Motorola's main argument that the claimed invention differs from Courtis because in Courtis the "random time" is a function of a system parameter (*i.e.*, load or number of terminal with packets to transmit) and in the claimed invention the "random time" is ascertained from an access priority value determined by each terminal practicing the invention, or whether he is arguing that the claimed access priority value must be based on an inherent or pre-defined value of the terminal. Apple asserts that Dr. Frank's reference to "an inherent or pre-defined priority value of a terminal" supports its argument that the priority value must be based on terminal identity. (*See* RIB at 161-62.) However, even if I were to read Dr. Frank's statement as requiring that the claimed access priority value must be based on an inherent or pre-defined parameter of the terminal, Apple's argument still fails because terminal identity is not the only inherent or pre-defined parameter of a terminal. (*See e.g.*, JX-005 at 4:1-4.)

After Motorola submitted its response traversing the examiner's rejection of the claimed invention, Motorola sought an interview with the examiner. An in-person interview was conducted at the USPTO on November 18, 2010. (RX-079 at 220.) During the interview:

> The examiners questioned whether a broadest reasonable interpretation of the claimed "access priority value" could embrace a system load parameter such as shown by Courtois, based upon col. 3 lines 62-68 of the '223 Patent. In response, Mr. McKeown explained that the aspect of the specification cited by the Examiners referred to a tuning methodology best expressed in Figure 3. Referring to box 317, Mr. McKeown explained that once an initial access priority value (Fig. 4) is determined in steps 311 and/or 313 (e.g., "Hi" or "Low"), additional factors such as a channel loading factor may be used to translate these priorities into a specific network timings [sic].
>
> Yet, it was explained that in no case can an access priority value be considered a channel loading factor alone such as shown by Courtois. This is because such an interpretation of "access priority value" would essentially undermine the entire purpose of the '223 Patent. The '223 patent explains quite clearly that *[t]he infrastructure thus can directly prioritize higher priority users, such as public safety, or terminals ahead of lower priority terminals, such as pizza delivery with this indicator.* '223 Patent 6:20-23

(RX-79 at 221-222 (emphasis in original); *see also*, RX-79 at 229.) As the above passage reveals, at the time of the interview, the patent examiners were not convinced that the claimed invention was patentable over Courtois because the examiners felt that a system load parameter, like that disclosed in Courtois, could meet the access priority value limitation claimed in the '223 patent. In response, Motorola pointed the examiners to the embodiment of the invention shown in Figure 3 and told the examiners that "in no case can an access priority value be considered a channel loading factor alone such as shown by Courtois." (*Id.* at 222 (emphasis in original).) Motorola then further emphasized this point by arguing that an interpretation of access priority value based only on a channel loading factor would undermine "the entire purpose of the '223 Patent," which Motorola asserted was the ability of the claimed invention to directly prioritize a higher priority terminal over a lower priority terminal. (*Id.*)

As discussed, *supra*, the language of the claims and specification suggest that the term access priority value is broad in scope and can be based on information received by the infrastructure or information available to the terminal. (*See e.g.*, JX-005 at 3:62-4:4.) However, during the interview with the examiners, Motorola clearly and unmistakably argued that an access priority value cannot be based only on a system parameter (*i.e.*, information received from the infrastructure). *Andersen Corp. v. Fiber Composites, LLC,* 474 F.3d 1361, 1374 (Fed. Cir. 2007) ("[W]e have made clear ... [that] an applicant's argument that a prior art reference is distinguishable on a particular ground can serve as a disclaimer of claim scope even if the applicant distinguishes the reference on other grounds as well."); *Seachange Int'l, Inc. v. C–COR Inc.,* 413 F.3d 1361, 1374 (Fed. Cir. 2005) ("An applicant's argument made during prosecution may lead to a disavowal of claim scope even if the Examiner did not rely on the argument."). Thus, I find Motorola disavowed access priority values based solely on information received

from the infrastructure, because to find otherwise would in Motorola's own words, "undermine the entire purpose of the '223 Patent" as it would not to allow for the direct prioritization of "higher priority users … or terminals ahead of lower priority terminals." (*See* RX-79 at 222.)

Motorola's proposed construction requiring "importance-related information" would arguably include the same type of system parameters Motorola disclaimed in arguing to the Patent Office that the claimed invention was patentable over Courtois. Therefore, I do not find Motorola's proposed construction proper. I note that even if I had not found Motorola's statements before the patent examiners during the reexamination proceeding to be a disavowal of claim scope, I would still not have adopted Motorola's proposed construction of the term "access priority value." While I understand why Motorola chose the language that it did (*i.e.*, importance-related information) in light of the references in the specification vaguely tying the word "importance" to the access priority value (*see* JX-005 at 5:48-55, 7:55-58) and the difficulty in finding a way to neatly encapsulate all the various parameters described in the specification that the access priority value may be based on (*see e.g.*, 3:61-4:4), I find that the phrase "importance-related information" does not add any clarity to the construction of the term "access priority value." Thus, adopting Motorola's construction would result in trading one term needing construction for another.

The record shows that the in-person interview ended with no agreement between Motorola and the patent examiners. (*See* RX-079 at 229.) Thereafter, with no further action on the part of Motorola, the patent examiners issued a Notice of Intent to Issue Ex Parte Reexamination Certificate, stating therein that the patentability of the claims of the '223 patent were confirmed. (RX-079 at 233.) The patent examiners' Statement of Reasons for Patentability and/or Confirmation parrots most of what Motorola previously argued in its written response

traversing the rejection of the claims in light of Courtois as support for confirming/allowing the claims over Courtois. The examiners add nothing new in the Statement that provides any additional aid in discerning the proper interpretation of the term "access priority value."

As I have reiterated several times now, the language of the claims and specification suggest that the term "access priority value" is broad in scope and may be based on information received from the infrastructure or information available to the terminal. However, in arguing that the claimed invention was patentable over Courtois, Motorola disclaimed access priority values based solely on information received by the infrastructure. Thus, for the reasons discussed hereinabove, I find that properly construed, the term "access priority value" means "a value based on information available to the terminal, or based on information available to the terminal and information received from the infrastructure." I note that there is nothing in the intrinsic evidence to suggest that "information available to the terminal" should be limited in scope and certainly nothing to suggest that it must be terminal identity as Apple argues.

2. order of method steps

Motorola argues that the only required order of steps is explicitly dictated by the language of claim 1. (CIB at 32.) In particular, Motorola argues that the only mandated order to the steps is: (1) the step of "determining an access priority value" must occur before the step of "ascertaining a random time, responsive to said access priority value;" (2) the random time must be ascertained before the channel waits "said random time;" and (3) the first testing step must occur before the "if said channel ..." and "executing ..." steps but can occur either before or after the "determining ..." or "ascertaining ..." steps. (CIB at 33.) Motorola argues that there is nothing implicit or explicit in the claim that requires an order other than that which it specified and thus the "testing" step can occur either before or after the "determining ..." or "ascertaining

..." steps. (*Id.* at 34.) Motorola also argues that Apple's reliance on Figure 3 in the specification is improper as it is a preferred embodiment and thus cannot limit the method steps of claim 1 to a particular order. (*Id.*) Motorola further argues that Apple's argument that it would be technically infeasible to perform the "testing step" before the "determining" or "ascertaining" steps of claim 1in belied by Apple's own reliance on allegedly invalidating prior art that perform the testing step before the determining and ascertaining steps. (*Id.* at 34-35.)

Apple argues the claimed steps must be performed in the order recited. (RIB at 169.) In particular, Apple argues that the steps of "determining an access priority value" and "ascertaining a random time, responsive to said access priority value" must occur before the testing step. (*Id.*) Apple asserts that the specification supports its position arguing that the lone embodiment in the specification describes the steps in the order recited in claim 1. (*Id.*) Apple argues that no other order of the method steps is expressly disclosed in the '223 patent. (*Id.* at 170.) Apple also asserts that the prosecution history supports its position arguing that to overcome an enablement rejection, claim 1 was specifically amended to enforce the order of steps now recited in the claims. (*Id.*at 170-71.) Additionally, Apple argues that the order of steps cannot be changed such that the testing step is before the determining and ascertaining steps because one of ordinary skill in the art would recognize that such a change would change the claimed invention. (*Id.* at 171.) Apple also argues that changing the order of steps could result in a "greedy terminal" problem, which would defeat the purpose of the invention. (*Id.* at 171-72.) Apple further argues that during prosecution the applicant distinguished the claimed invention over Kuddes on the basis that the invention was aimed at initial channel access. (*Id.* at 172.) Apple argues that if the claims were permitted to be re-ordered in the manner suggested by

Motorola, there would be instances where the access priority value does not get set during the initial channel access. (*Id.*)

Analysis

The law is clear that "although a method claim necessarily recites the steps of the method in a particular order, as a general rule the claim is not limited to performance of the steps in the order recited, unless the claim explicitly or implicitly requires a specific order." *Baldwin Graphic Systems, Inc. v. Siebert, Inc.*, 512 F.3d 1338 (Fed. Cir. 2008).

The crux of the dispute between the parties regarding the order of method steps is whether the first testing step must be performed after the determining and ascertaining steps as written in the claims, or whether the first testing step may be performed before the determining and ascertaining steps.

Turning first to the language of the claims, I find nothing to suggest that the first testing step must be performed after the determining and ascertaining steps as the first testing step does not find any antecedent basis in the determining and ascertaining steps. The parties do not argue otherwise.

With regard to the specification, Apple argues that the description of the invention shown in Figure 3 supports its argument that the first testing step must be performed after the determining and ascertaining steps. Apple also argues that it is the only order disclosed in the patent. While it is true that the description of the embodiment of the invention shown in figure 3 describes the method steps as being performed in the order written in the claims, it would be impermissible for me to read a limitation from a preferred embodiment into the claims. *In re American Academy Of Science Tech Center*, 367 F.3d 1359, 1369 (Fed. Cir. 2004) ("We have cautioned against reading limitations into a claim from the preferred embodiment described in

the specification, even if it is the only embodiment described, absent clear disclaimer in the specification."). By the same token, the mere fact that the specification does not describe any other order to the method steps is not a reason to limit the claims. *See id.*; *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 906 (Fed. Cir. 2004) ("Even when the specification describes only a single embodiment, the claims of the patent will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using 'words or expressions of manifest exclusion or restriction.'"). Thus, I do not find that the specification mandates a specific order to the method steps of the claim.

Next I look to the prosecution history, including the reexamination proceeding. As originally written, claim 1 included the following steps: (1) determining an access priority value; (2) ascertaining, responsive to said access priority value, when the channel is available; and (3) executing, responsive to said step of ascertaining, a channel access attempt. (JX-11 at 19.) The patent examiner rejected the claim stating:

> The specification is objected to under 35 U.S.C. § 112, first paragraph, as failing to provide an enabling disclosure. It cannot be seen how lines 6 and 7 of claim 1, "ascertaining, responsive to the access priority value, when the channel is available". Box 323 is a simple yes/no not dependent on priority controlling random timer 325 but the signal from 321 does not even control the time generated by 325 to go to access attempt box 307. The ascertaining is not disclosed as based on priority. See also claim 12. It appears random.

(*Id.* at 41.) In response, the patent applicant amended the specification and claims. (*Id.* at 132-34.) With regard to claim 1, the applicant amended the claim to require the steps of: determining an access priority value; ascertaining a random time, responsive to said access priority value; testing whether said channel is available; and if the channel is not available, waiting for said random time to expire and repeating said step of testing; and executing responsive to said step of testing, a channel access attempt when said channel is available. (*Id.* at 133.)

Apple argues to overcome an enablement rejection the patent applicant specifically amended claim 1 and revised the specification to "enforce the order now recited in the allowed claim 1." (RIB at 170.) Thus, Apple argues that:

> the prosecution history does not allow Motorola to make the determining step, which always came before the testing step, now appear after the testing step, or to make the ascertaining step, which Motorola specifically inserted after determining and before testing, to now come after testing.

(RIB at 171.) To the best I can discern, Apple is arguing that the mere fact that the applicant chose to include the "ascertaining a random time" limitation after the determining step and before the testing step that the applicant somehow disclaimed any other order to the method steps. Contrary to Apple's argument, however, I find nothing clear and unmistakable about the amendments in and of themselves and nothing in the applicant's traverse of the examiner's enablement rejection that would suggest such a conclusion. I also do not find anything implicit or explicit in the amendments that would require the testing step to be performed after the determining and ascertaining steps. As previously discussed, the testing step does not find antecedent basis in the determining or ascertaining steps. (*See also* Almeroth, Tr. at 684:24-685:21 ("Q. All right. So your view is that although determining an access value and seeing if the channel is available were clearly in a particular order in the original claim, and they are in that same order in the final claim, that that order can now be reversed, that's your position? A. I disagree that they are in the same order. Ascertaining doesn't mean testing in the modified claim. And, in fact, if you see in the original claim when the channel is available, it doesn't say when the testing can happen. In fact, it doesn't say anything with respect to the random time in the first claim. I don't think the first claim imparts any ordering requirement on to the amended claim.").)

Apple also argues that the testing step must be after the determining and ascertaining steps, because to permit the re-ordering of the method steps in the manner advocated by

Motorola would change the claimed invention. (RIB at 171.) In particular, Apple argues that if the first testing step was performed before the determining and ascertaining steps, then "every time the terminal would loop back to retest (at Box 323), the terminal would re-determine the access priority value and re-ascertain the random time." (*Id.*) Apple argues this could result in a situation where a terminal could artificially promote itself thereby causing increased collisions (a.k.a., the "greedy terminal" problem) and that this would defeat the objective of the invention, which is to reduce collisions. (*Id.* at 171-72.) I find Apple's argument not persuasive.

Even if permitting the testing step to be performed before the determining and ascertaining steps would result in a "greedy terminal" problem, as Apple argues, that would still not convince me that I should limit the order in which the first testing step may be performed in claim 1. Apple's argument is premised on the notion that a "greedy terminal" would cause more collisions and that this would run contrary to the objective of the invention, which is to reduce collisions. While it is certainly true that an objective of the invention is to reduce collisions, there is no requirement in law or fact that this reduction must be absolute, or even that the reduction be better than that achieved by the prior art methods described in the specification. *Demaco Corp. v. F. Von Langsdorff Licensing Ltd.*, 851 F.2d 1387, 1390 (Fed. Cir. 1988) ("The patent statute does not require that a patentable invention be superior to all prior devices."); *Custom Accessories, Inc. v. Jeffrey-Allan Industries, Inc.*, 807 F.2d 955, 960 n. 12, 1 USPQ2d 1196, 1199 n. 12 (Fed. Cir. 1986) ("Finding that an invention is an 'improvement' is not a prerequisite to patentability"); G. Rich, Principles of Patentability, 28 Geo.Wash.L.Rev. 393, reprinted in 42 J.Pat.Off.Soc'y 75 (1960) (discussing "the unsound notion that to be patentable an invention must be better than the prior art").

Moreover, in direct contradiction to Apple's argument, the specification of the '223 patent discloses an embodiment that specifically accounts for adjustments to the "access priority value" due to heavy traffic by allowing a terminal to consider the number of prior unsuccessful channel access attempts in determining the access priority value. In particular, the '223 specification states, "Step (315) selects the value form the table (400)...and then modifies this value by increasing the value by 25% or decreasing the value by 25% in accordance with which of the factors listed in steps or boxes (317) and (319) ... *Factors resulting in a decrease in the table value, depicted in step (319), include determining whether this channel access attempt follows prior unsuccessful ones* and what service level the user has chosen." JX-005 at 7:15-58 (emphasis added). Thus, the '223 specification specifically accounts for terminals that had unsuccessful transmission attempts by allowing them to shorten their random time window. Therefore, limiting the claims as Apple argues would impermissibly exclude an embodiment of the invention.

As previously discussed with regard to the limitation "access priority value," during the original prosecution of the application that would become the '223 patent, the patent examiner rejected the claims of the '223 patent as anticipated by Kuddes. In response, the patent applicant traversed the rejection, arguing, among other things, that:

> As shown, the system described in Kuddes teaches away from the invention claimed in the present application. The system described in Kuddes contemplates a retry mechanism, whereas the invention claimed in the present application relates to an initial channel access.
>
> ...
>
> The system described by Kuddes attempts to vary a backoff time to determine how often a user can retry sending its message over bus 12 once a collision has occurred. The invention claimed in the present application varies a time to determine how often a user tests to see if the channel has become idle.

(JX-011 at 135-38.)

Apple argues that the patent applicant distinguished the claimed invention of the '223 patent over Kuddes on the basis that the claimed invention related to initial channel access, while Kuddes related to a retry mechanism. (RIB at 172.) Apple argues that if the method steps are permitted to be reordered as Motorola advocates such that the testing step can come before the determining and ascertaining steps then "the terminal could test and if the channel is idle, then attempt to transmit." (*Id.*) In that instance, Apple argues that the access priority value never gets set as part of the initial channel access. (*Id.*)

Apple's argument is based on the premise that once the channel is determined to be idle there must be an immediate attempt to transmit. However, I find nothing in the language of the claims or specification that requires an access attempt immediately after the channel is tested idle. Claim 1 only requires that if the channel is available, executing a channel access attempt. Apple is trying to impermissible read "immediately" into that claim language. *See Seachange Int'l, Inc. v. C-Cor Inc*, 413 F.3d 1361, 1376 (Fed. Cir. 2005) ("[I]t is improper to import a limitation into a claim where the limitation has no basis in the intrinsic record."). Moreover, claim 1 uses "comprising" language, which implies that there can be additional steps between "testing whether said channel is available" and executing an access attempt. *See, e.g., Smith & Nephew, Inc. v. Ethicon, Inc.*, 200 F.3d 795, 811("The signal 'comprising' implements the general rule that absent some special circumstance or estoppel which excludes the additional factor, infringement is not avoided by the presence of elements or steps in addition to those specifically recited in the claim."); *Genentech, Inc. v. Chiron Corp.*, 112 F.3d 495, 501 (Fed. Cir. 1997) (construing "comprising" as a "term of art used in claim language which means that the named elements are essential, but other elements may be added and still form a construct within the scope of the claim"). Thus, I find Apple's argument not persuasive.

Accordingly, for the reasons discussed hereinabove, I find that the method steps of claim 1 are not confined to any particular order other than that which is dictated by the claim language itself. More particularly, I find nothing either implicit or explicit in the intrinsic evidence to suggest that the first testing step must be performed in the order recited in claim 1.

D. Infringement

Motorola argues that Apple's accused iPhone 4, iPad, iPad 3G, iPad 2, iPad 2 with 3G, iPod Touch 4th Generation, and AppleTV products (collectively, "Apple iOS products") and Apple's accused MacBook, MacBook Pro, MacBook Air, iMac, Mac mini and Mac Pro products (collectively, "MAC OS products") infringe claim 1 of the '223 patent.[2] (CIB at 18, 223; CX-2680C (Almeroth, DWS) at Q&A 136-39.) To prove infringement, Motorola relies primarily on the testimony of its expert, Dr. Almeroth, and the exhibits to which he refers. (*See generally*, CX-2680C (Almeroth, DWS) at Q&A 106-85.)

1. Direct Infringement

Motorola argues that the accused products directly infringe because they each are capable of implementing the Quality of Service ("QoS") facility[3] and Enhanced Distributed Channel Access ("EDCA") mechanism[4] of the 802.11n standard and because any device that implements the QoS and EDCA portions of the 802.11n standard must perform the steps of claim 1 of the

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[2] Collectively, the identified Apple iOS products and MAC OS products shall be referred to herein as "the '223 accused products."

[3] The QoS facility is defined as "the set of enhanced functions, channel access rules, frame formats, frame exchange sequences and managed objects used to provide parameterized and prioritized QoS" (CX-2680C (Almeroth, DWS) at Q&A 26; CX-732 at 13.) A QoS station is defined as "a [station] that implements the QoS facility." (*Id.*)

[4] The EDCA mechanism is defined as "the prioritized carrier sense multiple access with collision avoidance (CSMA/CA) access mechanism used by quality of service (QoS) stations (STAs) in a QoS basic service set (BSS)." (CX-2680C (Almeroth, DWS) at Q&A 26; CX-732 at 8.)

'223 patent. (*See* CX-2680C (Almeroth, DWS) at Q&A 106, 107, 141, 150, 157.) Motorola argues that when the '223 accused products are tested and certified to be 802.11n compliant or used by consumers running certain applications[ ] the '223 accused products infringe claim 1 of the '223 patent. (CX-2680C (Almeroth, DWS) at Q&A 142, 157.)

a. Any 802.11n device that implements the QoS facility and EDCA mechanism of the 802.11 standard necessarily performs the steps of claim 1 of the '223 patent

Dr. Almeroth testified in detail that an 802.11n compliant device that implements the QoS facility and EDCA mechanism performs each of the steps of claim 1 of the '223 patent. (CX-2680CC (Almeroth, DWS) at Q&A 106-108, 111-16, 119, 120, 122, 123, 125, 126, 129-32, 134, 135.)

Apple argues, however, that when implemented, the QoS and EDCA features of the 802.11n standard do not perform all the steps of claim 1. In particular, Apple argues that the 802.11n standard does not: (1) use a backoff timer; (2) perform the steps of claim 1 in order; (3) require an access priority value; or (4) execute an access attempt immediately after determining the channel is idle. (RIB at 175-83.)

For the reasons discussed in detail below, I find that Motorola has shown by a preponderance of the evidence that an 802.11n compliant device implementing the QoS facility and EDCA mechanism satisfies the limitations of claim 1 of the '223 patent.

Analysis

(1) "In a data communication system including infrastructure arranged to communicate with a plurality of terminals over a channel, a method of adaptable channel access practiced at a terminal comprising the steps of"

The evidence shows that an 802.11n compliant device performs a method of adaptable channel access in accordance with the preamble of claim 1. (CX-2680C (Almeroth, DWS) at Q&A 108; CX-732 at 25-26, 252, 253.) Apple does not contest that the preamble is satisfied.

Accordingly, I find that Motorola has shown by a preponderance of the evidence that the preamble of claim 1 is satisfied by an 802.11n compliant device implementing the QoS facility and EDCA mechanism.

(2) "determining an access priority value"

The evidence shows that an 802.11n compliant device determines an access priority value. (CX-2680C (Almeroth, DWS) at Q&A 111-16.) More specifically, the evidence establishes that an 802.11n compliant device implementing the QoS facility and EDCA mechanism determines an access priority value by using one of eight priority values, referred to as user priority levels ("UPs"). (*Id.* at Q&A 111.) The UPs are represented by integer values 0 to 7 and are identical to the IEEE 802.1D priority tags. (*Id.*; CX-732 at 51.) The 802.1D priority tags and their associated traffic category are as follows: 1 (Background); 2 (Spare); 3 (Excellent Effort); 4 (Controlled Load); 5 (Video); 6 (Voice); and 7 (Network Controlled). (*See* CX-2680C (Almeroth, DWS) at Q&A 111; 802.1D-2004 Standard at Annex G, *available at* http://standards.ieee.org/getieee802/download/.html.)[5] A data unit with a particular UP is said to

[5] Pursuant to Federal Rule of Evidence 201, I take judicial notice of the traffic categories (and descriptions thereof) that are associated with the IEEE 802.1D priority tags discussed in Dr. Almeroth's testimony and directly referenced in the 802.11 Standards to which he cites. I find

belong to a traffic category with that UP. (CX-2680C (Almeroth, DWS) at Q&A 111; CX-732 at 51.)

The evidence shows that the EDCA mechanism uses the eight priority values to map to four access categories ("ACs") to provide support for the delivery of traffic with a particular UP at the station. (CX-2680C (Almeroth, DWS) at Q&A 111; CX-732 at 252 ("The EDCA mechanism provides differentiated, distributed access to the WM[6] for STAs[7] using eight different UPs. The EDCA mechanism defines four access categories (ACs) that provide support for the delivery of traffic with UPs at the [stations]. The AC is derived from the UPs as shown in Table 9-1.").) The EDCA mechanism requires that one of the four ACs be selected. (CX-2680C (Almeroth, DWS) at Q&A 111.) Table 9-1 from the 802.11 standard, reproduced below, illustrates how the access categories are determined from the user priority levels. (CX-732 at 253.)

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that the IEEE 802.1D-2004 Standard is a source whose accuracy cannot reasonably be questioned and that the information to which I take judicial notice is capable of accurate and ready determination. FRE § 201. The information to which I take judicial notice further elucidates my finding that an 802.11n compliant device implementing the QoS facility and EDCA mechanism performs the step of "determining an access priority value", but is not essential to it.

[6] WM is the abbreviation for wireless medium. (CX-732 at 22.)

[7] STAs is the abbreviation for stations. (CX-732 at 14, 21.) A station is equivalent to a terminal in the parlance of the asserted '223 patent.

Table 9-1—UP-to-AC mappings

Priority	UP (Same as 802.1D user priority)	802.1D designation	AC	Designation (informative)
Lowest ↓ Highest	1	BK	AC_BK	Background
	2	—	AC_BK	Background
	0	BE	AC_BE	Best Effort
	3	EE	AC_BE	Best Effort
	4	CL	AC_VI	Video
	5	VI	AC_VI	Video
	6	VO	AC_VO	Voice
	7	NC	AC_VO	Voice

As shown above, an 802.11n compliant device implementing the QoS facility and EDCA mechanism is required to determine an AC from one of eight UPs. The UPs are based on the type of traffic being sent, which is unquestionably information available to the terminal. Accordingly, I find that Motorola has shown by a preponderance of the evidence that an 802.11n compliant device implementing the QoS facility and EDCA mechanism is required to determine an access priority value (*i.e.*, access category) that is based on information available to the terminal (*i.e.*, user priority level).

Apple argues that an 802.11n compliant device does not determine an access priority value under its construction of the term "access priority value," because neither the user priority nor the access category on which Motorola relies is a value based on terminal identity used to determine relative priority among multiple terminals. (RIB at 179.) Apple also argues that the Federal Circuit in *Fujitsu Ltd. v. Netgear, Inc.* upheld a district court finding that the WMM specification (which Apple alleges includes the 802.11 functionality) requires message priority based on the type of data, not terminal identity. (*Id.* at 180.) Likewise, Apple argues that under Motorola's proposed construction neither the user priority nor the access category is an access

priority value, because user priority levels are not necessarily reflective of the importance of a message. (*Id.* at 181.)

Apple's arguments are based on claim constructions I have not adopted. Similarly, Apple's reliance on *Fujitsu Ltd. v. Netgear, Inc.* is misplaced as it not only relies on a construction of access priority value that I have not adopted, but also differs on the facts. *Compare Fujitsu Ltd. v. Netgear, Inc.*, 620 F.3d 1321 (Fed. Cir. 2010) (claim term at issue "set[ting] a priority level of each of a plurality of mobile terminal.") *with* JX-005, Claim 1 (claim term at issue "determining an access priority level."). Under the proper claim construction adopted herein an access priority value is a value based on information available to the terminal or information available to the terminal in combination with information received from the infrastructure. Under this construction, an access priority value need not be based on terminal identity or based on importance related information as argued by Apple. Accordingly, I find Apple's argument not persuasive.

(3) "ascertaining a random time, responsive to said access priority value"

The evidence shows that an 802.11n compliant device implementing the QoS facility and EDCA mechanism ascertains a random time that is responsive to the access priority value. (*See* CX-2680C (Almeroth, DWS) at Q&A 119-122.) As set forth in the 802.11 standard, the EDCA is the contention-based channel access method used by the hybrid coordination function ("HCF") and is defined as the prioritized carrier sense multiple access with collision avoidance ("CSMA/CA") access mechanism used by quality of service (QoS) stations (STAs) in a QoS basic service set (BSS). (CX-2680C (Almeroth, DWS) at Q&A 26; CX-732 at 8, 252.) The EDCA protocol is derived from the distributed coordination function ("DCF") procedures, which implement the basic CSMA/CA protocol. (*Id.* at 251 ("The fundamental access method of the

IEEE 802.11 MAC is a DCF known as carrier sense multiple access with collision avoidance (CSMA/CA). The DCF shall be implemented in all STAs, for use within both IBSS and infrastructure network configurations."), 286 ("The [EDCA] protocol is derived from the DCF procedures.").) According to the 802.11 standard:

> The CSMA/CA protocol is designed to reduce the collision probability between multiple STAs accessing a medium, at the point where collisions would most likely occur. Just after the medium becomes idle following a busy medium (as indicated by the CS[8] function) is when the highest probability of a collision exists. This is because multiple STAs could have been waiting for the medium to become available again. This is the situation that necessitates a random backoff procedure to resolve medium contention conflicts.

(*Id.* at 256.) In general, the CSMA/CA protocol is implemented as follows:

> For a STA to transmit, it shall sense the medium to determine if another STA is transmitting. If the medium is not determined to be busy (see 9.2.1), the transmission may proceed. The CSMA/CA distributed algorithm mandates that a gap of a minimum specified duration exist between contiguous frame sequences. A transmitting STA shall ensure that the medium is idle for this required duration before attempting to transmit. If the medium is determined to be busy, the STA shall defer until the end of the current transmission. After deferral, or prior to attempting to transmit again immediately after a successful transmission, the STA shall select a random backoff interval and shall decrement the backoff interval counter while the medium is idle. A transmission is successful either when an ACK frame is received from the STA addressed by the RA field of the transmitted frame or when a frame with a group address in the RA field is transmitted completely.

(*Id.* at 251.)

The EDCA mechanism extends the basic CSMA/CA protocol to include a set of QoS enhancements that adjust the contention window and backoff interval based on access category. As discussed, supra, with regard to the limitation "access priority value", the EDCA mechanism requires that each frame of information to be sent over the wireless medium be assigned one of

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[8] CS is the abbreviation for carrier sense. (CX-732 at 17.)

the four ACs based on one of eight access priority values. Based on the assigned AC, the frame is placed in one of four transmit queues, each queue corresponding to a particular AC. (CX-732 at 286, Fig. 9-17.) Each transmit queue is controlled by its own enhanced distributed channel access function ("EDCAF"), which is "[a] logical function in a quality of service (QoS) station (STA) that determines, using enhanced distributed channel access (EDCA), when a frame in the transmit queue with the associated access category (AC) is permitted to be transmitted via the wireless medium (WM)." (*Id.* at 8, 286, Fig. 9-17.)

When a frame with a particular AC is requested to be transmitted and the medium is busy as indicated by either the physical or virtual carrier sense, and the backoff timer has a value of zero for that AC, the evidence shows that the EDCAF for that particular AC invokes the backoff procedure. (*Id.* at 290.) According to the backoff procedure, each EDCAF maintains a state variable CW[AC], which defines the contention window for that particular access category. (*Id.*) The backoff procedure also specifies that "[t]he backoff timer is set to an integer value chosen *randomly* with a uniform distribution taking values in the range [0,CW[AC]] inclusive." (*Id.* at 291 (emphasis added).) The evidence shows that the value for CW[AC] is based on access category and can range from CWmin to CWmax as set forth in the table below. (*Id.* at 130, 131, 253, Table 7-37; CX-2680C (Almeroth, DWS) at Q&A 28, 119.)

Table 7-37—Default EDCA Parameter Set element parameter values

AC	CWmin	CWmax	AIFSN	TXOP limit		
				For PHYs defined in Clause 15 and Clause 18	For PHYs defined in Clause 17 and Clause 19	Other PHYs
AC_BK	aCWmin	aCWmax	7	0	0	0
AC_BE	aCWmin	aCWmax	3	0	0	0
AC_VI	(aCWmin+1)/2 – 1	aCWmin	2	6.016 ms	3.008 ms	0
AC_VO	(aCWmin+1)/4 – 1	(aCWmin+1)/2 – 1	2	3.264 ms	1.504 ms	0

As the evidence above shows, when the backoff procedure is invoked in an 802.11n compliant device implementing the QoS facility and EDCA mechanism, the backoff timer is set to an integer value chosen randomly from the range of [0,CW[AC]] inclusive (*i.e.*, ascertain random time), where the values for CW[AC] are based on the AC of the frame to be transmitted (*i.e.*, responsive to the access priority value). Accordingly, I find Motorola has shown by a preponderance of the evidence that an 802.11n compliant device implementing the QoS facility and EDCA mechanism is required to implement the EDCA backoff procedure, which ascertains a random time, responsive to said access priority value.

Apple contends that the 802.11n standard does not use a backoff timer, arguing that the backoff counters required by the 802.11 standard QoS are substantially different than the backoff timer in the '223 patent. (RIB at 175.) Particularly, Apple argues that an 802.11 counter is not representative of any particular backoff time period. (*Id.* at 176.) This argument is based on a false premise. Contrary to Apple's argument, the claim 1 of the '223 patent does not require a "backoff timer." (*See* JX-005 at 8:43-55.) Rather, the claims only require "ascertaining a random time." (*Id.*) As discussed above, the evidence shows that when the EDCA backoff procedure is invoked, "[t]he backoff *timer* is set to an integer value chosen *randomly* with a uniform distribution taking values in the range [0,CW[AC]] inclusive." (CX-732 at 291 (emphasis added).) Thus, as previously found, an 802.11n compliant device implementing the QoS facility and EDCA mechanism will ascertain a random time when the EDCA backoff procedure is invoked. Accordingly, I find Apple's argument not persuasive.

Apple also argues that the 802.11 counters represent slots rather than units of time that must be idle before transmitting data for a particular access category. (RIB at 176.) Thus, Apple argues that the time period that elapses for each 802.11 counter varies based on channel activity,

while the '223 patent discloses a single timer, which represents an exact amount of time to wait before retesting the channel. (*Id.*) Apple's argument that an 802.11 counter is not representative of any particular backoff time period is again based on the false premise that the claims of the '223 patent require a "backoff timer"-- they do not. To the extent Apple is arguing that the EDCA backoff procedure does not ascertain a "random time" because the backoff procedure does not decrement the random timer value when the channel is busy, I find this argument not persuasive. The periods during which the EDCA backoff timer pauses if and when the channel sense mechanism senses that the channel is busy is time additive to the random time required by the claim. (*See* CX-2680C (Almeroth, DWS) at Q&A 119.) The evidence shows that the "random time" required by claim 1 is ascertained based on access category, and the total time during which the backoff timer functions includes the random time and any extra time that passes during pauses when the carrier sense mechanism sense the channel busy. (*Id.*) Accordingly, I find Apple's argument not persuasive.

(4) "testing whether said channel is available"

The evidence shows that an 802.11n compliant device implementing the QoS facility and EDCA mechanism performs the step of testing whether said channel is available. (*See* CX-2680C (Almeroth, DWS) at Q&A 22, 27, 123.) In particular, the evidence shows that an 802.11n compliant device uses a channel sensing (CS) mechanism to test the channel to determine whether it is busy or idle. (*Id.*; CX-732 at 257.) The CS mechanism includes both a virtual CS function and a physical CS function. (*Id.*) The 802.11 standard states that when either of the virtual or physical CS functions indicates that the channel is busy, the channel is considered busy, else the channel is considered idle. (*Id.*)

Accordingly, I find that Motorola has shown by a preponderance of the evidence that an 802.11n compliant device implementing the QoS facility and EDCA mechanism performs the step of "testing whether said channel is available."

Apple does not contest that an 802.11n compliant device tests whether the channel is available. Rather, Apple argues that a 802.11n compliant device tests the channel before determining the access category (*i.e.*, access priority value) and setting the backoff timer (*i.e.*, ascertaining a random time, responsive to the access priority value), while the '223 patent requires that the testing step to be performed after the determining and ascertaining steps. (RIB at 179.) Apple's argument here is based on its claim construction argument requiring the method steps of claim 1 to be performed in the order recited in the claim. I have rejected this argument, *supra*, finding no implicit or explicit reason to limit the order of the claims beyond that which is explicitly required by the claim language. Under the proper claim construction, I have found that the testing step need not necessarily be performed after the determining and ascertaining steps as Apple argues. Thus, I find Apple's argument not persuasive.

(5) "if said channel is not available, waiting for said random time to expire and repeating said step of testing"

The evidence shows that an 802.11n compliant device implementing the QoS facility and EDCA mechanism satisfies the limitation "if said channel is not available, waiting for said random time to expire and repeating said step of testing." CX-2680C (Almeroth, DWS) at Q&A 125-130.) The evidence shows that when an 802.11n compliant device senses that a channel is busy, it initiates the EDCA backoff procedure. (*Id.*; CX-732 at 290, 291.) The 802.11 standard states that the EDCA backoff procedure "shall be invoked for an EDCAF when any of the following events occurs: A frame with that AC is requested to be transmitted, *the medium is busy as indicated by either physical or virtual CS*, and the backoff timer has a value of zero for

that AC." (CX-732 at 290 (emphasis added.).) Once the backoff procedure is initiated, the standard requires that "[t]he backoff timer is set to an integer value chosen randomly with a uniform distribution taking values in the range [0,CW[AC]] inclusive." (*Id.*) According to the 802.11 standard, the backoff timer has a value measured in backoff slots. (*Id.* at 287.) Thus, during the EDCA backoff procedure, "[a]t each of the above-described slot boundaries, each EDCAF shall decrement the backoff timer if the backoff timer for the EDCAF has a nonzero value." (*Id.* at 289.) Once the backoff timer is decremented to zero, which can only occur when the channel is sensed idle, the evidence [

] In fact, the standard specifies that on specific slot boundaries the EDCAF shall make a determination to perform one and only one of the following functions:

> — Initiate the transmission of a frame exchange sequence for that access function.
>
> — Decrement the backoff timer for that access function.
>
> — Invoke the backoff procedure due to an internal collision.
>
> — Do nothing for that access function.

(CX-732 at 288.) Thus, because the EDCAF can perform only one of the above functions at a slot boundary, it is clear from the above list that the EDCAF cannot both decrement the backoff

timer and initiate the transmission at the same slot boundary. Thus, once the backoff timer is decremented to zero, the EDCAF must wait until the next slot boundary before it can possibly initiate the transmission sequence.

As the evidence above shows, when the channel is sensed busy (*i.e.*, not available) in an 802.11n compliant device implementing the QoS facility and EDCA mechanism, the EDCA backoff procedure is invoked, which sets a backoff timer to a random integer value (*i.e.*, random time) and decrements the backoff timer until it reaches zero (*i.e.*, waits for said random time to expire). After the backoff timer reaches zero, the evidence above shows[

] Accordingly, I find Motorola has shown by a preponderance of the evidence that an 802.11n compliant device implementing the QoS facility and EDCA mechanism performs the step of "if said channel is not available, waiting for said random time to expire and repeating said step of testing."

Apple argues that the backoff timer in the '223 patent is the time the device must wait after which the terminal retests whether the channel is available, while in the 802.11 standard, there is no subsequent step of retesting to determine whether the channel is available after an 802.11 counter is decremented to zero. (*Id.* at 178.) Contrary to Apple's argument, however, the 802.11 standard mandates that once the backoff timer expires, the station is only allowed to transmit after the channel is sensed to be idle for the appropriate interframe spacing duration. (CX-2860C (Almeroth, DWS) at Q&A 130; CX-732 at 251 ("The CSMA/CA distributed algorithm mandates that a gap of a minimum specified duration exist between contiguous frame sequences. A transmitting STA shall ensure that the medium is idle for this required duration before attempting to transmit."), 258 ("A STA shall determine that the medium is idle through

the use of the CS function for the interval specified.").) Therefore, contrary to Apple's argument, the 802.11 standard performs an additional testing step before transmitting. Accordingly, I find this argument not persuasive.

(6) "executing responsive to said step of testing, a channel access attempt when said channel is available"

The evidence shows that an 802.11n compliant device implementing the QoS facility and EDCA mechanism will execute a channel access attempt in response to the channel being tested and found available. (*See* CX-2680C (Almeroth, DWS) at Q&A 132.) As previously found with regard to the step of "testing whether said channel is available," an 802.11n compliant device uses a channel sensing (CS) mechanism to test the channel to determine whether it is busy or idle. (*Id.* at Q&A 27, 132; CX-732 at 257.) The CS mechanism includes both a virtual CS function and a physical CS function. (*Id.*) The 802.11 standard states that when either of the virtual or physical CS functions indicates that the channel is busy, the channel is considered busy, else the channel is considered idle. (*Id.*) The evidence shows that once the channel is sensed idle, before the station can transmit, it must wait to ensure the channel remains idle for the appropriate interframe space duration. If the channel remains idle for the appropriate interframe space duration then the station will transmit the frame. According to the 802.11 standard, the EDCAF shall initiate a transmission sequence if: "[t]here is a frame available for transmission at that EDCAF, and [t]he backoff timer for that EDCAF has a value of zero, and [i]nitiation of a transmission sequence is not allowed to commence at this time for an EDCAF of higher UP. (CX-732 at 288.)

As the evidence above shows, the EDCAF in an 802.11n compliant device implementing the QoS facility and EDCA mechanism will initiate a transmission sequence (*i.e.*, execute a channel access attempt) if the channel sensing mechanism indicates (*i.e.*, responsive to said step

of testing) that a frame is available (*i.e.*, channel is available). Accordingly, I find that Motorola has shown by a preponderance of the evidence that an 802.11n compliant device implementing the QoS facility and EDCA mechanism performs the step of "executing responsive to said step of testing, a channel access attempt when said channel is available."

Apple contends that an 802.11n compliant device does not perform the step of "executing responsive to said step of testing, a channel access attempt when said channel is available" because once an 802.11n compliant device senses the channel idle (*i.e.*, available) it must wait for the appropriate interframe space duration before executing an access attempt. (RIB at 182.) Contrary to Apple's argument, however, there is no requirement in claim 1 that the channel access attempt be performed immediately after the channel is available. Apple does not point to anything in the '223 patent to support its argument, and I find nothing in the intrinsic evidence that would require such a result. *See Seachange Int'l, Inc. v. C-Cor Inc*, 413 F.3d 1361, 1376 (Fed. Cir. 2005) ("[I]t is improper to import a limitation into a claim where the limitation has no basis in the intrinsic record."). Accordingly, I find Apple's argument unpersuasive.

Apple also argues that an 802.11n compliant device does not perform the step of "executing responsive to said step of testing, a channel access attempt when said channel is available" because even when the channel is tested to be idle for the interframe space duration an 802.11n compliant device may not transmit for a number of reasons. (RIB at 183.) This argument is a red herring. The fact that there may be instances when after the channel is available the device does not execute a channel access attempt does not preclude a finding of infringement. There is no requirement in law that an accused device must always practice the claimed invention to find infringement. "[A]n accused product that sometimes, but not always, embodies a claimed method nonetheless infringes." *Bell Communications Research, Inc. v.*

Vitalink Communications Corp., 55 F.3d 615, 622-623 (Fed. Cir. 1995). As previously discussed, the 802.11 standard states that the EDCAF shall initiate a transmission sequence if: "[t]here is a frame available for transmission at that EDCAF, and [t]he backoff timer for that EDCAF has a value of zero, and [i]nitiation of a transmission sequence is not allowed to commence at this time for an EDCAF of higher UP." (CX-732 at 288.) Therefore, when these conditions are met, a channel access attempt will be made thereby satisfying the claim limitation. Thus, any 802.11n compliant device that successfully transmits a frame undoubtedly must have performed this method step.

Apple further argues that the 802.11 standard requires the terminal continually test the channel and not transmit until after the expiration of the backoff timer, while the '223 patent requires that the terminal only tests before it executes an access attempt. (RIB at 176-77.) Apple argues that there is no disclosure in the '223 patent that a terminal tests the channel while it is waiting for the expiration of the random time. (*Id.*) I find this argument without merit. For purposes of infringement, the question is not whether claim 1 of the '223 patent practices the 802.11 standard, but whether the 802.11 standard meets the limitations of claim 1. Thus, properly framed, the infringement question is whether 802.11 standard executes responsive to said step of testing, a channel access attempt when said channel is available, not whether the claimed invention continually tests the channel while it is waiting for the expiration of the random time. Moreover, contrary to Apple's argument, there is nothing in the language of the claims or specification that requires that the terminal must execute an access attempt immediately after testing. In fact, the use of "comprising" in claim 1 implies that there can be additional steps between testing whether said channel is available" and executing an access attempt. (*See* CX-2680C (Almeroth, DWS) at Q&A 129.) *See, e.g., Smith & Nephew, Inc. v.*

Ethicon, Inc., 200 F.3d 795, 811("The signal 'comprising' implements the general rule that absent some special circumstance or estoppel which excludes the additional factor, infringement is not avoided by the presence of elements or steps in addition to those specifically recited in the claim."); *Genentech, Inc. v. Chiron Corp.*, 112 F.3d 495, 501 (Fed. Cir. 1997) (construing "comprising" as a "term of art used in claim language which means that the named elements are essential, but other elements may be added and still form a construct within the "scope of the claim").

b. Each of the '223 accused products is specified to be capable of implementing the QoS and EDCA features of the 802.11n standard

Apple admits that the '223 accused products are [

] (CX-2680C (Almeroth, DWS) at Q&A 150; CX-68 at 134-148.) Dr. Almeroth testified that in 2005, the 802.11 working group developed a standard called 802.11e-2005 (a.k.a. "802.11e"). Dr. Almeroth testified that this standard introduced a set of QoS enhancements to the 802.11 standard. (*Id.* at Q&A 23.) According to Dr. Almeroth, the 802.11e standard was later incorporated into the main 802.11 standard. (*Id.*) Dr. Almeroth also testified that the QoS enhancements were included in the 802.11n standard. (*Id.*) Dr. Almeroth testified that the main 802.11 standard and the 802.11n standard both similarly deal with QoS, data transmission and collisions. (*Id.*) For example, Dr. Almeroth testified that both standards use the EDCA mechanism for data transmission. (*Id.*)

For these reasons, I find that the '223 accused products are [

]

c. The QoS facility and EDCA mechanism are implemented during the 802.11n compliance testing and certification of the '223 accused products and/or consumers of the '223 accused products run applications that implement the QoS facility and EDCA mechanism (*i.e.*, the accused products have been used in a manner that practices the method steps of claim 1)

Claim 1 of the '223 patent is a method claim. To prove direct infringement of a method claim it must also be shown that someone performed the method. As discussed in more detail below, the evidence shows that the '697 accused products have been used in a manner that practices the method steps of claim 1 of the '223 patent.

The standard of proof is a preponderance of the evidence, meaning Motorola need only show that it is more likely than not that the '223 accused products are used in a manner that implements the QoS and EDCA functionality of the 802.11 standard. Notably, I find Dr. Almeroth's testimony on this issue much more persuasive than Mr. Lanning's testimony. Apple jabs at the sufficiency of the evidence presented by Motorola, but lands only glancing blows. Viewed individually or in total, Motorola has clearly met its burden on this point. As previously discussed, Apple admits its '223 accused products are [

] (and advertises them as 802.11n compliant), thus at a macro level Apple is arguing that its products, which are certified and touted by it as being WiFi 802.11 compliant, really do not operate according to the standard. The weakness of Apple's position is self-evident.

(1) 802.11 Interoperability Certification Testing

The evidence shows that with the exception of the Mac Pro, iMac and AppleTV, most of the '223 accused products have received a WiFi Certified Interoperability Certificate. (CX-2680C (Almeroth, DWS) at Q&A 153; CX-1015 through CX-1032.) With regard to the accused Mac Pro, iMac and AppleTV products, Motorola could not produce a WiFi Certificate. (*Id.*) However, the Mac Pro, iMac are admittedly 802.11n certified, which necessarily means that they

would have had to have been tested to ensure that they implement the QoS facility and EDCA mechanism (recall they are mandatory) for the 802.11n standard. (*Id.* at Q&A 153-55; *see* JX-96C (Burch Depo.).)

The evidence shows that the WiFi alliance sets forth [

] (CX-2680C (Almeroth, DWS) at Q&A 42, 154; CX-734C.) The evidence shows the [

] (CX-2680C (Almeroth, DWS) at Q&A 45.) The [

] (CX-2680C (Almeroth, DWS) at Q&A 42, 154; CX-734C at §§ 5.2.27 through 5.2.30.) Thus, the evidence establishes that the '223 accused products that have received [

] (CX-2680C (Almeroth, DWS) at Q&A 154-55.) In fact, the evidence shows that the iPhone 4 (both versions), iPad Wifi and 3G, iPad 2 Wifi and 3G, iPod Touch 4th Generation, Macbook Pro, MacBook, Mac mini, and MacBook Air have all received device-specific WiFi Certified Interoperability Certificates indicating that each device passed all of the 802.11n testing, [

] (CX-2680C (Almeroth, DWS) at Q&A 153; CDX-1.8 through CDX 1.1.3; CX-1015 through CX-1032.) Because the evidence shows that [

] the QoS and EDCA functionality of the 802.11 standard and because implementation of the QoS facility and EDCA mechanism practices claim 1 of the '223 patent, I find Motorola has shown by a preponderance of the evidence that the certification

testing of the '223 accused products, with the exception of the AppleTV (for which the evidence is lacking), is a direct infringement of claim 1 of the '223 patent.

(2) Consumer Use of '223 Accused Products

Motorola argues that use of the '223 accused products constitutes direct infringement. (*See* CRB at 19.) However, the evidence adduced by Motorola is for the most part entirely insufficient to prove, even by a preponderance of the evidence, that the accused products were actually used in a manner that would implement the QoS facility and EDCA mechanism of the 802.11 standard. That is, with the exceptions discussed below, Motorola has failed to show that the accused products are in fact used to send information wirelessly on an 802.11n WLAN. Motorola's claim that the products would necessarily infringe when used for their intended purpose falls short of Motorola's obligation to prove that the method steps of claim 1 of the '223 patent were actually performed. Motorola has argued, and I have found herein, that claim 1 of the '223 patent is necessary to implement the QoS facility and EDCA mechanism in the 802.11n standard, which covers communications over an 802.11 wireless LAN. However, it is beyond question that the '223 accused products are not limited to such communications and in fact can be used in all manner of ways that do not implicate the 802.11n standard. Thus, contrary to Motorola's argument the products do not necessarily practice the 802.11n standard during their ordinary use.

However, Motorola has adduced evidence that shows that it is more likely than not that the iPhone 4 and iPad 2 were used in a manner that practices the method steps of claim 1 of the '223 patent. [

] (*See* CRB at 20; *See* Apple's Responses to Motorola's Second Set of

Requests for Admission at ¶¶ 257, 271.) Accordingly, I find that Motorola has shown by a preponderance of the evidence that the [ ] on the iPad 2 and iPhone 4 constitute a direct infringement of claim 1 of the '223 patent.

2. Indirect Infringement – Inducement

Motorola argues that it has proven direct infringement and that there can be no serious dispute that Apple induces infringement of claim 1 when the 802.11 products are tested and certified, as well as when they are used by users for their intended purpose. (CIB at 56-57.) Motorola also argues that Apple has known about the existence of the '223 patent for some time. (*Id.* at 57.) Motorola further argues that Apple's non-infringement arguments are not credible. (*Id.*)

Apple argues that Motorola has failed to meet its burden of showing that Apple actively induces infringement of claim 1 of the '223 patent. (RRB at 76.) Specifically, Apple argues that Motorola has failed to prove that each of the accused products directly infringe. (*Id.* at 76-79.) Apple also argues that Motorola has failed to prove that Apple had the requisite intent to induce acts of infringement. (*Id.* at 80.)

Analysis

Under 35 U.S.C. § 271(b), "[w]hoever actively induces infringement of a patent shall be liable as an infringer." A finding of inducement requires a threshold finding of direct infringement-- either a finding of specific instances of direct infringement or a finding that the accused products necessarily infringe. *Ricoh Co., Ltd. v. Quanta Computer Inc.*, 550 F.3d 1325 (Fed. Cir. 2008); *ACCO Brands, Inc. v. ABA Locks Mfrs. Co.*, 501 F.3d 1307, 1313 (Fed. Cir. 2007). Liability for active inducement may be found "where evidence goes beyond a product's characteristics or the knowledge that it may be put to infringing uses, and shows statements or actions directed to promoting infringement." *Metro-Goldwyn-Mayer Studios, Inc. v. Grokster,*

Ltd., 545 U.S. 913, 935, n.10 (2005). Accordingly, "[e]vidence of active steps ... taken to encourage direct infringement, such as advertising an infringing use or instructing how to engage in an infringing use, show an affirmative intent that the product be used to infringe, and a showing that infringement was encouraged overcomes the law's reluctance to find liability when a defendant merely sells a commercial product suitable for some lawful use." *Id.* at 936 (internal quotation marks and citation omitted). To prove active inducement:

> It must be established that the defendant possessed specific intent to encourage another's infringement and not merely that the defendant had knowledge of the acts alleged to constitute inducement. The plaintiff has the burden of showing that the alleged infringer's actions induced infringing acts and that he knew or should have known his actions would induce actual infringements.

DSU Medical Corp. v. JMS Co., 471 F.3d 1293, 1306 (Fed. Cir. 2006) (*en banc* as to Section III.B) (emphasis in original) (quoting *Manville Sales Corp. v. Paramount Sys., Inc.*, 917 F.2d 544, 553 (Fed. Cir. 1990)). Specific intent may be proven by circumstantial evidence. *Id.* ("'While proof of intent is necessary, direct evidence is not required; rather, circumstantial evidence may suffice.'"). Moreover, specific intent may be inferred from circumstantial evidence where it is shown that a defendant has both knowledge of the patent and specific intent to cause the acts constituting infringement. *See Ricoh Co., Ltd.*, 550 F.3d at 1342; *MEMC Elec. Materials, Inc. v. Mitsubishi Materials Silicon Corp.*, 420 F.3d 1369, 1378 n. 4 (Fed. Cir. 2005) ("Thus, assuming that MEMC is able to demonstrate that SUMCO had intent to induce the specific acts constituting infringement, intent additionally to cause an infringement can be presumed.").

I have already found, *supra*, that Motorola has shown by a preponderance of the evidence that claim 1 of the '223 patent is directly infringed. Thus, the only questions that remain are whether Apple's actions induced infringing acts and whether Apple knew or should have known

its actions would induce actual infringement.

Apple was served with a copy of the Complaint in this investigation on November 03, 2010. (*See* Notice of Institution of Investigation (U.S.I.T.C. November 03, 2010.).) Among other things, the Complaint alleged that Apple infringed the '223 patent. (*See* Complaint.) In fact, the Complaint included a claim chart explicitly setting forth the basis of Motorola's infringement allegations, namely that Apple's accused 802.11 compliant devices practiced the method of claim 1 of the '223 patent. (*See* Complaint, ¶ 75, Exs. 31, 36, 37.) Thus, the evidence shows that Apple had knowledge of the '223 patent at least as of the time they were served the Complaint. *See Certain Inkjet Ink Cartridges With Printheads and Components Thereof*, Inv. No. 337-TA-723, Initial Determination, 2011 ITC LEXIS 1503 at *145 (June 10, 2011) (finding the knowledge requirement for contributory infringement satisfied based on service of the complaint). In addition to the Complaint, the evidence also shows that Apple was made aware [

] (CX-2683C (Dailey, DWS) at Q&A 115, 116, 125; CX-665C.)

As previously discussed, Apple was aware at least as of the time they were served the Complaint in this investigation that its accused 802.11 compliant devices were alleged to infringe claim 1 when sending information over a wireless medium. The evidence also shows that Apple has all of its accused products tested and certified 802.11n compliant.[9] (*See* CX-2680 (Almeroth, DWS) at Q&A 148-55; CDX-1.42; JX-118C at 230:14, 231:11, 235:7-17, 253:2-10, 257:3, 258:2.) Thus, the evidence shows that Apple knows its products practice the 802.11 standard. Moreover, the evidence shows that Apple instructs consumers and its third party

[9] Recall, a device that is 802.11n compliant must implement the 802.11 standard QoS facility and EDCA mechanism.

testing company to use its devices in a manner that implements the 802.11 standard to send information over a wireless network. Thus, I find Apple knew, or at least should have known, that its accused 802.11n compliant devices could, and would, be used to send information over a wireless medium thereby practicing claim 1 of the '223 patent.

Despite of having been on notice of the '223 patent and having been provided claim charts showing alleged infringement, the evidence shows Apple continues to manufacture, import, and sell the accused products. In addition, specific intent to cause infringement can be inferred from a defendant's knowledge of the patent and control over the design or manufacturing of the product used for direct infringement. *See Water Technologies*, 850 F.2d at 668-69. The evidence also shows that Apple instructs consumers to use its[ ] applications to send information over a wireless network and that the use of these applications to send information over a wireless network necessarily requires implementation of the 802.11 standard QoS facility and EDCA mechanism. (*See e.g.*, CX-132, CX-841) *Grokster*, 545 U.S. at 936 (Recognizing that providing instruction on how to engage in an infringing use "show[s] an affirmative intent that the product be used to infringe."). Additionally, Motorola adduced evidence showing [

] (*See* Apple's Responses to Motorola's Second Set of Requests for Admission at 257, 268, 270-73.) The evidence further shows that [

] Accordingly, I find that Apple has actively encouraged consumers of its accused products, as well as its third party testing company, to use the accused products in a manner that implements the QoS facility and EDCA mechanism of the 802.11 standard to send information over a wireless network.

Thus, for the reasons espoused above, I find that Apple manufactures, imports and sells the accused products with the specific intent to induce infringement of claim 1 of the '223 patent. Accordingly, I find that Apple actively induces infringement of claim 1 of the '223 patent in violation of 35 U.S.C. § 271(b).

E. Technical Prong of Domestic Industry

Motorola argues that the Droid 2 practices claim 1 of the '223 patent. (CIB at 36; CRB at 28.) In particular, Motorola argues that the Droid 2 implements the QoS and EDCA features of the 802.11 standard and that implementation of those features infringes claim 1 of the '223 patent. (*Id.*) In particular, Motorola argues that when the Droid 2 is tested for WiFi interoperability certification the Droid 2 implements the QoS and EDCA features of the 802.11 standard. (CIB at 85.) Similarly, Motorola argues that its expert, Dr. Almeroth, confirmed that the Droid 2 practices claim 1 based on his source code analysis and his packet trace analysis. (*Id.* at 86.)

Apple argues that Motorola has failed to prove the technical prong of the domestic industry requirement, because it has failed to show that the Droid 2 has been used in an infringing manner. (RIB at 193.) Apple also argues that the Droid 2 does not practice claim 1 of the '223 patent, but this argument are a repeat of Apple's arguments that claim 1 is not essential to the 802.11n standard. Because I have already addressed those arguments, *supra*, and found that claim 1 is in fact essential to the 802.11n standard, I will not address them again here.

Analysis

The evidence shows that the Motorola Droid 2 is certified 802.11n compliant. (CX-2680C (Almeroth, DWS) at Q&A 194.) Specifically, Motorola's internal Droid 2 technical manuals and Droid 2 WiFi Certified Interoperability certificate show that the Droid 2 is 802.11n compliant. (See *id.* at Q&A 196-97; CX-534 at 330; CX-744C.) The evidence also shows that

the [ ] in the Droid 2 is 802.11n compliant. (*See* CX-1394; CX-744C.) Thus, I find Motorola has shown by a preponderance of the evidence that the Droid 2 is 802.11n compliant.

Because the Droid 2 is 802.11n compliant, the evidence shows that the Droid 2 must implement and QoS facility and EDCA mechanism in accordance with the 802.11 standard when communicating over an 802.11n-compliant network. (*See* CX-2680C (Almeroth, DWS) at Q&A 21, 31.) I have already found, *supra*, that implementation of the QoS facility and EDCA mechanism according to the 802.11 standard satisfies the limitations of claim 1 of the '223 patent. Accordingly, when the Droid 2 communicates over an 802.11n-compliant network, the Droid 2 directly infringes claim 1 of the '223 patent.

The evidence shows that the Droid 2 is certified by the WiFi alliance to ensure that it is 802.11n compliant. (CX-2680C (Almeroth, DWS) at Q&A 42, 196; CX-744C.) The evidence also shows that the WiFi alliance sets [

]

(CX-2680C (Almeroth, DWS) at Q&A 42, 198; CX-734C.) The evidence shows that the[

] Thus, the Droid 2 must have [

] to be certified 802.11n compliant. (CX-2680C (Almeroth, DWS) at Q&A 198.) In fact, the full WiFi Certified Interoperability Certificate and accompanying documentation explicitly shows that the Droid 2 [

] exercise the QoS and EDCA functionality of the 802.11 standard and because implementation of the QoS facility and EDCA mechanism practices claim 1 of the '223 patent, I find Motorola has shown by a preponderance of the evidence [ ] direct infringement of claim 1 of the '223 patent.

Motorola's argument with regard to Dr. Almeroth's source code analysis and packet trace analysis is deficient. Motorola provides nothing more than a conclusory statement regarding Dr. Almeroth's source code and packet tracing analysis with a citation to large swaths of Dr. Almeroth's witness statement in support. (CIB at 86.) Motorola provides no explanation in its brief of how Dr. Almeroth's source code or packet trace analysis shows that the Droid 2 practices claim 1 of the '223 patent. Moreover, Apple's reliance on Dr. Almeroth's witness statement to set forth the entirety of its argument is wholly improper -- substantive arguments and analysis must be briefed. Also, to permit Motorola to rely on citation to the evidentiary record to make its argument without any analysis of the issues in its brief would be tantamount to permitting Motorola to circumvent the page limits I imposed on the parties' post hearing briefs. Accordingly, I find that Motorola has failed to prove that Dr. Almeroth's source code or packet trace analysis shows that the Droid 2 practices claim 1 of the '223 patent.

As discussed above, Motorola has adduced evidence that the Droid 2 has been [ ] claim 1 of the '223 patent. Accordingly, I find that Motorola has proven by a preponderance of the evidence that the Droid 2 satisfies the technical prong of the domestic industry requirement.

F. Validity

1. Anticipation

a. Mahany '317

Apple argues that claim 1 of the '223 patent is anticipated by U.S. Patent No. 5,657,317, which issued to Mahany et al. ("the Mahany '317 patent"). (*See* RX-290, cover page.) To that end, Apple's expert, Mr. Lanning, testified in detail that the Mahany '317 patent meets each of the limitations of claim 1 of the '223 patent. (RX-1286C (Lanning, DWS) at Q&A 90-115.)

Motorola argues that the Mahany '317 patent does not anticipate. (CIB at 58.) In particular, Motorola argues the Mahany '317 patent does not disclose the limitations: "determining an access priority value", "ascertaining a random time, responsive to said access priority value", and "if said channel is not available, waiting for said random time to expire and repeating said step of testing." (*Id.*).

Analysis

The Mahany '317 patent is titled, "Hierarchical communication system using premises, peripheral and vehicular local area networking." (RX-290, cover page.) The Mahany '317 patent was filed on July 22, 1994 and issued on August 12, 1997. (*Id.*) Because the Mahany '317 patent has an earlier effective filing date than the asserted '223 patent, the Mahany '317 patent is prior art under 35 U.S.C. § 102(e). *See* 35 U.S.C. § 102(e). The Mahany '317 patent was not disclosed to the Patent Office and was not considered during the examination or reexamination of the '223 patent. (*See* JX-005.)

As described in detail below, I find that Apple has proven by clear and convincing evidence that the Mahany '317 patent discloses each and every limitation of asserted claim 1 of the '223 patent. Accordingly, claim 1 of the '223 patent is anticipated under 35 U.S.C. § 102(e).

(1) Preamble

The preamble of the '223 patent recites "In a data communication system including infrastructure arranged to communicate with a plurality of terminals over a channel, a method of adaptable channel access practiced at a terminal comprising the steps of."

The Mahany '317 patent discloses "[a] hierarchical communication system" "in which wireless local area networks (LANs) exhibiting substantially different characteristics are employed in an overall scheme to link portable or mobile computing devices." (RX-290, Abstract; RX-1286C (Lanning, DWS) at Q&A 93-94.) More particularly, the Mahany '317 patent discloses a "premises LAN" that consists of:

> an infrastructure network comprising radio base stations 15 and a data base server 16 which may be part of a more extensive, wired LAN (not shown). The radio base stations 15 may communicate with each other via hard-wired links, such as Ethernet, RS232, etc., or via wireless (radio frequency) links. A plurality of roaming terminal devices, such as a roaming computing device 20, participate in the premises LAN of the hierarchical communication network 10 to exchange information with: 1) other roaming computing devices; 2) the data base server 16; 3) other devices which might be associated with data base server 16 (not shown); and 4) any other devices accessible via the premises LAN (not shown). A roaming computing device can be, for example, a hand-held computer terminal or vehicle mounted computer terminal (vehicle terminal).

(RX-290 at 9:36-5; RX-1286C (Lanning, DWS) at Q&A 101.) The Mahany '317 patent also discloses a channel access algorithm, where, in one embodiment of the invention, the "low battery power device itself exercises protocol priority." (RX-1286C (Lanning, DWS) at Q&A 102; RX-290 at 50:50-51:8, 54:9-12, Fig. 32.) Specifically, the Mahany '317 patent discloses that:

> for channel access after detecting that the channel is clear at the end of an ongoing transmission, devices with normal energy levels are required to undergo a pseudo-random back-off before attempting a transmission (to avoid collision). The low power device may either minimize the back-off period or ignore the back-off period completely. Thus, the low power device gains channel access easier than other normal power level devices.

(RX-290 at 54:9-19; RX-1286C (Lanning, DWS) at Q&A 102.)

Motorola does not dispute that the preamble is disclosed by the Mahany '317 patent. Accordingly, for the reasons above, I find that the Mahany '317 patent discloses the preamble of claim 1 of the '223 patent.

(2) "determining an access priority value"

The Mahany '317 patent teaches that a device has a battery with an associated energy level and that based on that energy level a device is considered either a "normal power level device[]" or "low power device." (RX-290 at 55:9-19; RX-1286C (Lanning, DWS) at Q&A 104-105.) Thus, according to the Mahany '317 patent, a device's power level (*i.e.*, normal or low) is determined based on the device's battery's energy level, which I find is unquestionably information available to the device. The Mahany '317 patent also discloses that the amount of time a device must wait before attempting transmission can be varied based on the device's power level. In particular, Mahany teaches that a low power device may minimize the backoff time. (RX-290 at 55:13-16; RX-1286C (Lanning, DWS) at Q&A 104-105.) Because the power level is used to determine whether to minimize the backoff time, the power level must be represented by some value. (*See* RX-1286C (Lanning, DWS) at Q&A 104-105.) Accordingly, I find the power level to be a value based on information available to the terminal and thus, I find the Mahany '317 patent teaches "determining an access priority value.

Motorola argues that the power level disclosed in the Mahany '317 patent is not an access priority value, because it does not represent "a value." (CIB at 59-60; CX-2680C(Almeroth, RWS) at Q&A 60.).) However, as Mr. Lanning convincingly testified:

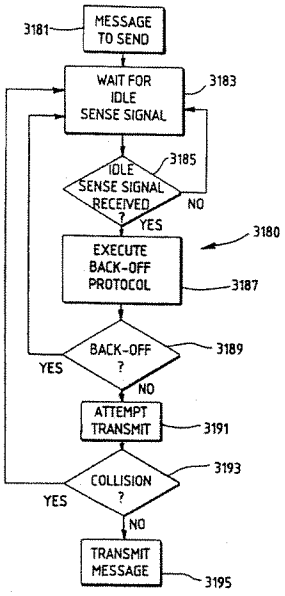
> One of ordinary skill in the art would understand that, in order for the device in the Mahany '317 patent to take the power state into consideration when determining the back-off period, the power state of the device must be represented by some value that is amenable to processing.

(RX-1286C (Lanning, DWS) at Q&A 105.) Accordingly, I find Motorola's argument not persuasive. As an aside, I note that claim 1 of the '223 patent requires only an "access priority value" and does not specify the exact nature of how that value must be presented.

(3) "ascertaining a random time, responsive to said access priority value"

The Mahany '317 patent discloses a channel access method. (RX-290 at 50:50-52; RX-1286C (Lanning, DWS) at Q&A 102.) This method is illustrated in Figure 32, which is reproduced below. (RX-290 at 50:50-52, Fig. 32.)

Fig. 32



The specification discloses that "the slave device executes a back-off protocol at a block 3187 in an attempt to avoid collisions." (*Id.* at 50:55-57.) The specification goes on to describe the back-off protocol, stating that:

> Basically, instead of permitting every slave device from repeatedly transmitting immediately after an idle sense message is received, each waiting slave is required to first wait for a pseudo-random time period before attempting a transmission. The pseudo-random time period is generated and the waiting takes place at a block 3187.

(*Id.* at 50:58-64.)

As discussed, *supra*, one embodiment of the invention uses the power level of a device to prioritize channel access. Specifically, the specification discloses that "devices with normal energy levels are required to undergo a pseudo-random back-off before attempting a transmission (to avoid collision)" and that "low power device[s] may either minimize the back-off period or ignore the back-off period completely." (*Id.* at 54:9-19; RX-1286C (Lanning, DWS) at Q&A 106.) Thus, I find the Mahany '317 patent explicitly teaches ascertaining a random time (*i.e.*, pseudo-random time or minimized pseudo-random time). I also find that this embodiment of the invention discloses selecting the random back-off time based on the power level (*i.e.*, access priority value) of the device. That is, devices with normal power levels use a pseudo-random back-off time and devices with low power levels use a minimized pseudo-random back-off time. (*Id.*)

Accordingly, I find that the Mahany '317 patent discloses the step of "ascertaining a random time, responsive to said access priority value."

Motorola argues that the Mahany '317 patent does not disclose a random time for low power devices, but rather "the low power device either ignores the backoff completely or it uses a minimum value—it does not use a random backoff algorithm." (CIB at 61.) Contrary to Motorola's argument, the specification of the Mahany '317 patent discloses that a low power device may "minimize the back-off period," not "use a minimum value." The word "minimize" is a commonly understood word meaning "to reduce." (*See* Merriam Webster Dictionary, http:/www.m-w.com (minimize - "1: to reduce").) Thus, the Mahany '317 patent explicitly teaches that for low-power devices the back-off period may be reduced. Recalling that the back-off period is a pseudo-random time, it is elementary that reducing (*i.e.*, minimizing) that pseudo-

random time by some amount still results in a random time (*i.e.*, random time – some amount of time = random time). Accordingly, I find Motorola's argument not persuasive.

With regard to Motorola's argument that the low power device described in the Mahany '317 patent does not use a random backoff algorithm, I note at the outset that claim 1 of the '223 patent does not require that the random time be derived in any particular way. Claim 1 only requires "ascertaining a random time." (*See* JX-005 at 8:43-55.) Further, the specification explicitly states that "[t]he low power device may … minimize the back-off period." (RX-290 at 54:9-19.) In order to "minimize *the back-off period*," the back-off period must first be known. Accordingly, I find Motorola's argument that the Mahany '317 patent does not use a random backoff algorithm both irrelevant and contrary to the specification.

(4) "testing to see if the channel is available"

The specification of the Mahany '317 patent discloses that "at a block 3189, the channel is sensed to determine whether it is clear for transmission." (RX-290 at 50:64-65, Fig. 32.) This passage discloses "that a device with a packet to send performs a testing step at block 3189 of Figure 32." (RX-1286C (Lanning, DWS) at Q&A 109.) Motorola does not contest that this limitation is met. Accordingly, I find that the Mahany '317 patent discloses the step of "testing to see if the channel is available."

(5) "if said channel is not available, waiting for said random time to expire and repeating said step of testing"

The Mahany '317 patent discloses that at box 3189 the channel is tested to see if it is available. (RX-292 at 50:64-65, Fig. 32.) If the channel is not available, the channel access method loops back to blocks 3183 and 3185 and thereafter executes the back-off protocol (*i.e.*, waiting said random time to expire) at block 3187. (*Id.* at 50:55-67, Fig. 32.) After the back-off time expires, the specification teaches that the channel is again tested at block 3189. (*See id.* at

64-65, Fig. 32.) Thus, as set forth above, the Mahany '317 patent describes a device that waits a random time period in block 3187 after the determination is made that the channel is not available in block 3189 (a Yes decision to back off) and then after waiting the random time again tests the channel to see if its available at 3189. (RX-1286C (Lanning, DWS) at Q&A 110-13.) Accordingly, I find that the Mahany '317 patent discloses the step of "if said channel is not available, waiting for said random time to expire and repeating said step of testing."

Motorola argues that the Mahany '317 patent does not disclose waiting for a random time when the channel is not available (*i.e.*, busy). (*See* CIB at 61-62.) Rather, Motorola argues that the Mahany '317 patent discloses executing the back-off procedure when the channel is idle (*i.e.*, available). (*Id.*) In support, Motorola argues that Figure 32 shows that a device must wait for the idle sense signal to be received in boxes 3183 and 3185 before executing the back-off protocol in box 3187. (*Id.*)

Motorola's argument is premised on the false notion that claim 1 of the '223 patent requires that once the channel is tested and found not available the terminal must *immediately* wait for the random time to expire before retesting the channel. Contrary to Motorola's argument, there is no such requirement in claim 1 and therefore, Motorola's attempt to read "immediately" into the claim language is improper. *See Seachange Int'l, Inc. v. C-Cor Inc*, 413 F.3d 1361, 1376 (Fed. Cir. 2005) ("[I]t is improper to import a limitation into a claim where the limitation has no basis in the intrinsic record."). Moreover, claim 1 uses "comprising" language, which implies that there can be additional steps between "testing whether said channel is available" and "waiting for said random time to expire and repeating said step of testing." *See, e.g., Smith & Nephew, Inc. v. Ethicon, Inc.*, 200 F.3d 795, 811("The signal 'comprising' implements the general rule that absent some special circumstance or estoppel which excludes

the additional factor, infringement is not avoided by the presence of elements or steps in addition to those specifically recited in the claim."); *Genentech, Inc. v. Chiron Corp.*, 112 F.3d 495, 501 (Fed. Cir. 1997) (construing "comprising" as a "term of art used in claim language which means that the named elements are essential, but other elements may be added and still form a construct within the scope of the claim").) Further, I note that Motorola's argument here is inconsistent with the arguments it makes in support of its infringement contentions. (*See* CRB at 23 ("The word "immediately" is not set forth in the "executing step" of claim 1, and Apple's attempt to spin Dr. Almeroth's words in any other direction is simply improper."); CX-2680C (Almeroth, DWS) at Q&A 129 ("In light of the open-ended nature of this claim, by using the term "comprising," it is my understanding that additional steps that may occur during the performance of these steps does not affect whether or not the 'if said channel …' step is performed.") Motorola also argues that "the Mahany '317 patent teaches away from the manner disclosed and claimed in the '223 patent for the 'if said channel is not available …' step" (CIB at 62), but "teaching away" is irrelevant to anticipation. *Celeritas Techs., Ltd. v. Rockwell Int'l Corp.*, 150 F.3d 1354, 1361 (Fed. Cir. 1998) ("[T]he question whether a reference 'teaches away' from the invention is inapplicable to an anticipation analysis."). Accordingly, I find Motorola's arguments not persuasive.

(6) "executing, responsive to said step of testing, a channel access attempt when said channel is available"

The specification of the Mahany '317 patent discloses:

> At a block 3189, the channel is sensed to determine whether it is clear for transmission. … If the channel is still clear, at a block 3191, a relatively small request to send type packet is transmitted indicating the desire to end a message.

(RX-290 at 50:64-51:3, Fig. 32.) The above passage teaches that "if the channel is available after step 3189 (where the channel is tested), the device will attempt to transmit at block 3191

(Attempt Transmit)." (RX-1286C (Lanning, DWS) at Q&A 114.) Motorola does not contest that this limitation is satisfied. Accordingly, I find that the Mahany '317 patent discloses the step of "executing, responsive to said step of testing, a channel access attempt when said channel is available."

b. Molle '651

Apple argues that claim 1 of the '223 patent is anticipated by U.S. Patent No. 5,600,651, which issued to Molle ("the Molle '651patent"). (*See* RIB at 202; RX-286, cover page.) To that end, Apple's expert, Mr. Lanning, testified in detail that the Molle '651patent meets each of the limitations of claim 1 of the '223 patent. (RX-1286C (Lanning, DWS) at Q&A 192-219.)

Motorola argues that the Molle '651 patent does not anticipate. (CIB at 66.) In particular, Motorola argues the Molle '651 patent does not disclose the limitation "if said channel is not available, waiting for said random time to expire and repeating said step of testing." (*Id.*).

Analysis

The Molle '651 patent is titled, "Binary Logarithmic Arbitration Method for Carrier Sense Multiple Access with Collision Detection Network Medium Access Control Protocols." (RX-286, cover page.) The Molle '651 patent was filed on April 7, 1995 and issued on February 4, 1997. (*Id.*) Because the Molle '651 patent has an earlier effective filing date than the asserted '223 patent, the Molle '651 patent is prior art under 35 U.S.C. § 102(e). *See* 35 U.S.C. § 102(e). The Molle '651 patent was not disclosed to the Patent Office and was not considered during the examination or reexamination of the '223 patent. (*See* JX-005.)

As described in detail below, I find that Apple has failed to prove by clear and convincing evidence that the Molle '651 patent discloses each and every limitation of asserted claim 1 of the '223 patent. Accordingly, claim 1 of the '223 patent is not anticipated under 35 U.S.C. § 102(e).

(1) preamble

The preamble of the '223 patent recites "In a data communication system including infrastructure arranged to communicate with a plurality of terminals over a channel, a method of adaptable channel access practiced at a terminal comprising the steps of."

The Molle '651 patent "is directed to the operation of a host, which may have data to transmit, in a network having a plurality of hosts connected to a shared channel." (RX-286 at 4:18-20.) Figure 1 specifically shows a "network 10 [that] consists of a channel 12 which is shared by multiple hosts … includ[ing] computers 15a, file server 15b, printer 15c, and other known devices." (RX-286 at 4:51-54, Fig. 1; RX-1286C (Lanning, DWS) at Q&A 196.)

In general, the Molle '651 patent discloses a channel access algorithm, where, "a terminal must wait a random time (Back) in the DoBackoff state in Fig. 3 based upon a random number derived from CCounter, and thus discloses varying a terminal's access parameters across access attempts." (RX-1286C (Lanning, DWS) at Q&A 196.) The Molle '651 patent also discloses that the random time a terminal must wait varies between access attempts depending on the priority of the data packet it is attempting to transmit. (*Id.*) Specifically, the Molle '651 patent discloses that "multiple priority classes could be created by initializing CCounter to smaller or larger values for high or low priority traffic, respectively" and that the "host calculates a backoff delay, Back, …[which] equals a random integer between 0 and $2^{\min(CCounter,10)}$ -1 multiplied by slotTime." (RX-286 at 6:21-23, 6:30-34.)

Motorola does not dispute that the preamble is disclosed by the Molle '651 patent. Accordingly, for the reasons above, I find that the Molle '651 patent discloses the preamble of claim 1 of the '223 patent.

(2) "determining an access priority value"

The Molle '651 patent teaches a network system that assigns different initial values to

CCounter based on the priority level of the data traffic. (RX-1286C (Lanning, DWS) at Q&A 197; RX-286 at 6:21-23.) It is inherent that in order to assign different values to CCounter based on the priority level of the traffic, the host (*i.e.*, terminal) in the Molle '651 patent must first determine the priority value assigned to the traffic. (*Id.*) The language of dependent claim 11 confirms the disclosure of an access priority value in the Molle '651patent, stating that "said counter is reset to a value dependent upon the priority of transmission of the data packet." (RX-286, claim 11.) There can be no question that the priority of the data traffic, which is based on data traffic type, is information available to the terminal.

Motorola does not dispute that the Molle '651 patent discloses this limitation. Accordingly, I find for the reasons above that the CCounter is a value that is determined based on information available to the terminal and thus, I find the Molle '651 patent teaches "determining an access priority value."

(3) "ascertaining a random time, responsive to said access priority value"

The Mole '651 patent states that:

> [o]nce in state DoBackoff 57, the host calculates a backoff delay, Back, using the truncated binary exponential distribution. Back equals a random integer between 0 and $2^{\min(CCounter,10)}$ -1 multiplied by slotTime.

(RX-286 at 6:30-34, Fig. 3.) Thus, the Molle '651 patent teaches calculating the random backoff delay based on the value of CCounter (*i.e.*, the access priority value). (RX-1286C (Lanning, DWS) at Q&A 198.)

Motorola does not dispute that that the Molle '651 patent discloses this limitation. Accordingly, for the reasons above, I find that the Molle '651 patent discloses the limitation "ascertaining a random time, responsive to said access priority value" of claim 1 of the '223 patent.

(4) "testing to see if the channel is available"

The specification of the Molle '651 patent states that "[t]he host begins in state Start 55 ... [t]hen the host checks for the presence of a carrier." (RX-286 at 5:62-66, Fig. 3; RX-1286C (Lanning, DWS) at Q&A 109.) Thus, the specification explicitly discloses that the host checks (*i.e.*, tests) for the presence of a carrier (*i.e.*, if the channel is available). Motorola does not contest that this limitation is met. Accordingly, I find that the Molle '651 patent discloses the step of "testing to see if the channel is available."

(5) "if said channel is not available, waiting for said random time to expire and repeating said step of testing"

Apple argues that the Molle '651 patent discloses this limitation, relying in support on the testimony of Mr. Lanning and demonstrative RDX-11-165. Neither Mr. Lanning's testimony nor the citations to the specification of the Molle '651 patent in RDX-11-165, however, provide any evidence, much less clear and convincing evidence, that after the random time expires the channel is again tested. Mr. Lanning testified that in the Molle '651 patent the channel is continuously tested *while* the terminal performs the random backoff, but does not state whether the channel is again tested after the random backoff time expires. (*See* RX-1286C (Lanning, DWS) at Q&A 201 ("the terminal performs the random backoff and continues testing *until* the random time expires. Specifically, the terminal continuously senses the carrier *during* the backoff time.") (emphasis added).) The only evidence Apple provides as to what happens after the random time expires is Mr. Lanning's testimony that "[a] packet is transmitted if the backoff time is 0 or when the timeout counter expires without detection of a carrier" and that statement makes no mention of retesting the channel after the random time expires. (*Id.*) Similarly, the demonstrative cited and relied on by Mr. Lanning only states that "[i]f the timeout expires without detection of a carrier, then the host proceeds to state Deferring 62." Apple sets forth no

evidence of what happens in state Deferring 62 and my own review of the specification reveals that

> [a] host in state Deferring 62 is committed to a transmission attempt. The host waits for a time equal to the interFrameGap to expire, and then proceeds to state Xmit 70.

(RX-286 at 6:62-64.) The above text teaches that once the host proceeds to state Deferring 62, the host merely waits the interFramGap period and then transmits; there is no disclosure that the channel is tested in state Deferring 62.

Accordingly, for the reasons above, I find that Apple has failed to show by clear and convincing evidence that the Molle '651 patent discloses "if said channel is not available, waiting for said random time to expire and repeating said step of testing."

(6) "executing, responsive to said step of testing, a channel access attempt when said channel is available"

The Molle '651 patent discloses checking for the presence of a carrier and, if no carrier is present, proceeding to the DoBackoff 57 state followed by the Deferring 62 state and then the Xmit state. (*See* RX-1286C (Lanning, DWS) at Q&A 203; RX-286, Fig. 3.) Thus, the Molle '651 patent discloses transmitting (*i.e.*, a channel access attempt) when the host detects that no carrier is present (*i.e*, the channel is available). Motorola does not contest that this limitation is satisfied. Accordingly, I find that the Molle '651 patent discloses the step of "executing, responsive to said step of testing, a channel access attempt when said channel is available."

c. Tran '987

Apple argues that claim 1 of the '223 patent is anticipated by U.S. Patent No. 5,453,987, which issued to Tran ("the Tran '987 patent"). (*See* RIB at 206RX-289, cover page.) To that end, Apple's expert, Mr. Lanning, testified in detail that the Tran '987 patent meets each of the limitations of claim 1 of the '223 patent. (RX-1286C (Lanning, DWS) at Q&A 158-173.)

Motorola argues that the Tran '987 patent does not anticipate. (CIB at 68-70.) In particular, Motorola argues the Tran '987 patent does not disclose the preamble of claim 1 and the limitations "ascertaining a random time, responsive to said access priority value" and "if said channel is not available, waiting for said random time to expire and repeating said step of testing." (*Id.*)

Analysis

The Tran '987 patent is titled, "Hierarchical communication system using premises, peripheral and vehicular local area networking." (RX-290, cover page.) The Tran '987 patent was filed on February 15, 1994 and issued on September 26, 1995. (*Id.*) Because the Tran '987 patent has an earlier effective filing date than the '223 patent, the Tran '987 patent is prior art under 35 U.S.C. § 102(e). *See* 35 U.S.C. § 102(e). The Tran '987 patent was not disclosed to the Patent Office and was not considered during the examination or reexamination of the '223 patent. (*See* JX-005.)

As described in detail below, I find that Apple has proven by clear and convincing evidence that the Tran '987 patent discloses each and every limitation of asserted claim 1 of the '223 patent. Accordingly, claim 1 of the '223 patent is anticipated under 35 U.S.C. § 102(e).

(1) preamble

The preamble of the '223 patent recites "In a data communication system including infrastructure arranged to communicate with a plurality of terminals over a channel, a method of adaptable channel access practiced at a terminal comprising the steps of."

The Tran '987 patent discloses a method practiced by a data communication system that includes infrastructure arranged to communicate with a plurality of terminals over a channel. (CX-1286C (Lanning, DWS) at Q&A 162.) In particular, Figure 2 illustrates a "local area

network for voice and data 100 wherein a plurality of data terminals 112, on printer 114 and a plurality of voice terminals 122 are all coupled to the communications channel 116." (RX-289 at 3:26-29, Fig. 2; *see also id.* at 1:9-15 ("In particular, this invention directs itself to a protocol for mixed voice and data transmission on a synchronous broadcast communications channel. More in particular, this invention directs itself to a protocol wherein both voice and data users contend for any of the time slots of a time division frame.").)

The Tran '987 patent also discloses an adaptable channel access algorithm that is illustrated in Figure 7 below.

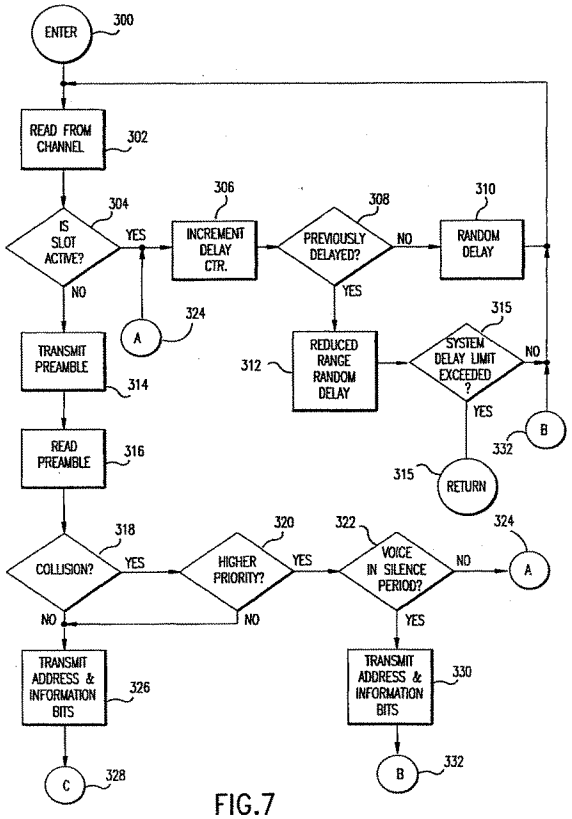


FIG.7

(RX-289, Fig. 7.) Specifically, the Tran '987 patent discloses that a terminal must wait a random period of time based upon the delay counter, which tracks transmission attempts, and thus discloses varying a terminal's access parameters across access attempts. (RX-1286C (Lanning, DWS) at Q&A 162; RX-289 at 6:46-7:8, Fig. 7.) The random time is adaptable because the Tran

'987 patent teaches that it varies depending on the number of channel access attempts. (*Id.*) In particular, the Tram '987 patent discloses that terminals that have experienced multiple delays will have a higher delay counter and thus shorter random backoff times (*i.e.*, higher priority) then terminals that have experienced few or no delays. (RX-1286C (Lanning, DWS) at Q&A 162.)

Accordingly, for the reasons above, I find that the Tran '987 patent discloses the preamble of claim 1 of the '223 patent.

Motorola argues that the Tran '987 patent does not disclose a method of adaptable channel access because the priority values of the data and voice terminals in the Tran '987 patent are static and cannot change. (CIB at 69.) Motorola's argument is premised on the disclosure in the Tran '987 patent that describes assigning priority values based on class of user, such that those transmitting voice will be given a higher priority over those users transmitting data. While I agree with Motorola that assigning priority values based on class of user is not an adaptable channel access method practiced at the terminal, because, as Motorola correctly points out, the priority values are static and thus by definition are not adaptable, the Tran '987 patent also discloses, as discussed above, prioritizing channel access based on the number of channel access attempts. Thus, I find Motorola's argument not persuasive. Notably, Motorola does not address this aspect of the Tran '987 patent.

(2) "determining an access priority value"

The Tran '987 patent teaches that a terminal maintains a delay counter that counts each time a terminal with a packet to transmit encounters a busy channel. (RX-1286C (Lanning, DWS) at Q&A 165; RX-289 at 6:46-7:8.) Thus, the delay counter is unquestionably a value based on information available to the terminal and thus as construed herein, an access priority value. Notably, the '223 patent itself discloses that an access priority value may be based on the number of channel access attempts. (JX-005 at 4:1-4.) As required by claim 1 and discussed in

more detail below, the Tran '987 patent also discloses that the delay counter is used to determine the range of values for the random backoff period. (*Id.*)

Accordingly, for the reasons above, I find that the Tran '987 patent discloses the step of "determining an access priority value."

(3) "ascertaining a random time, responsive to said access priority value"

The Tran '987 patent discloses in the description of Figure 7 that:

> subsequent to incrementing the delay counter in block 306, the flow passes to decision block 308, wherein it is determined whether the intended transmission was previously delayed. If an attempt to transmit a packet has not been previously delayed, the flow passes to block 310 wherein retransmission is delayed by a random delay (pseudo-random).

(RX-289 at 6:57-63.) The TRAM '987 patent also discloses that:

> In order to improve the throughput of the communications channel, on each successive attempt to access the data channel, the maximum delay which can be generated can be reduced, and such reduction could be as much as 50%. Thus, if in decision block 308 it is determined that the attempted access to a slot is already a retransmission of an attempted access (delay counter greater than one), then the flow passes to block 312 wherein a random delay having a reduced range is generated.

(RX-289 at 6:67-7:8.) The above methodology is further explained in the Tram '987 patent by way of example. Specifically, the Tram '987 patent discloses that:

> if subsequent to a first transmission a random delay having the range of one to twelve time slots may be generated in block 310 on the first attempt to retransmit a packet. On the third attempt (the second retransmission), the range for the random delay may be reduced so as to range from one to six time slots in block 312. On a subsequent retransmission, the range of the random delay may be further reduced.

(RX-289 at 19:26.)

Thus, as recited above, the Tram '987 patent teaches that the random delay, or reduced random delay as applicable, is ascertained responsive to the value of the delay counter. (*See* RX-1286C (Lanning, DWS) at Q&A 167, 169.) If the delay counter (*i.e.*, access priority value) is

one (indicating no prior channel access attempts), the Tran '987 patent discloses that retransmission is delayed by a random delay in block 310. If, however, the delay counter (*i.e.*, access priority value) is greater than one (indicating that there have been prior access attempts), the Tran '987 patent discloses that retransmission is delayed by a random delay having a reduced range. Accordingly, I find that the Tran '987 patent discloses the step of "ascertaining a random time, responsive to said access priority value."

Motorola argues that the Tran '987 patent does not disclose ascertaining a random time responsive to an access priority value, because the Tran '987 patent does not disclose that the random time is selected responsive to the access priority value. (CIB at 69.) Motorola's argument is based on its mistaken notion that the priority value disclosed in the Tran '987 patent is class of user (*i.e.*, voice terminals, data terminal, etc.). (See CIB at 68-69.) However, as explained in detail, *supra*, the Tran '987 patent discloses a delay counter that meets the requirements of claim 1 of the '223 patent for access priority value—namely, it is based on information available to the terminal and is used to determine the random time delay. Accordingly, I find Motorola's argument not persuasive.

(4) "testing to see if the channel is available"

The specification of the Tran '987 patent explicitly discloses testing the channel to see if it is available stating that:

> [b]eginning from the entry point 300, the flow passes to block 302 wherein a respective terminal reads from the communications channel. From block 302, the flow passes to decision block 304 wherein it is determined whether the slot is active or not.

(RX-289 at 6:51-55.) Thus, a terminal with a packet to send tests the channel by sensing whether the slot is active at block 304. (RX-1286C (Lanning, DWS) at Q&A 170.) The Tran '987 patent teaches that a channel is available when it is determined that the slot is not active.

(*Id.*) Motorola does not contest that this limitation is met. Accordingly, I find that the Tran '987 patent discloses the step of "testing to see if the channel is available."

(5) "if said channel is not available, waiting for said random time to expire and repeating said step of testing"

The Tran '987 patent discloses testing the channel to see if it is available at block 304. (RX-289 at 6:51-55, Fig. 7; RX-1286C (Lanning, DWS) at Q&A 170.) The Tran '987 patent discloses that if the slot determined to be active in block 304 (*i.e.*, the channel is not available), the delay counter in block 306 is incremented and then a decision is made at block 308 as to whether the intended transmission was previously delayed. (RX-289 at 6:55-60, Fig. 7; RX-1286C (Lanning, DWS) at Q&A 171.) If the intended transmission had not been previously delayed, the Tran '987 patent teaches that its retransmission is delayed by a random delay in block 310. (RX-289 at 6:60-63, Fig. 7; RX-1286C (Lanning, DWS) at Q&A 171.) If in block 308 it is determined that the intended transmission had been previously delayed (*i.e.*, delay counter greater than 1), the Tran '987 patent teaches that its retransmission is delayed by a random delay having a reduced range at block 312. (RX-289 at 7:3-8, Fig. 7; RX-1286C (Lanning, DWS) at Q&A 171.) The Tran '987 patent discloses that after the random time delay or reduced random time delay expires, the process loops back to blocks 302 and 304 where the channel is again tested to see if the channel is available. (RX-289 at 6:63-66, Fig. 7; RX-1286C (Lanning, DWS) at Q&A 171.) Thus, as set forth above, the Tran '987 patent clearly discloses that if the slot is determined to be active (*i.e.*, the channel is not available), waiting for either a random time delay or reduced random time delay to expire and then testing again to see if the slot is active or inactive.

Accordingly, I find that the Tran '987 patent disclose the step of "if said channel is not available, waiting for said random time to expire and repeating said step of testing."

Motorola argues that the Tran '987 patent does not disclose this step because the random time delay in block 310 and reduced time delay in 312 have nothing to do with a user's priority. Thus, Motorola's argument is really a repeat of its argument, *supra,* that the Tran '987 patent does not disclose the step of ascertaining an access priority value, responsive to said step of testing. (*See* CIB at 70 ("Consequently, because the Tran '987 patent does not disclose the "ascertaining" step, it therefore does not disclose the "if said channel is not available" step.).) Because I have already found that the Tran '987 patent does in fact disclose the step of ascertaining a random time, responsive to an access priority level, I find Motorola's argument here equally unavailing.

(6) "executing, responsive to said step of testing, a channel access attempt when said channel is available"

The specification of the Tran '987 patent discloses:

> If it is determined in block 304 that the time slot is not active, then the flow passes to block 314, wherein the terminal seeking access to the communication channel transmits its preamble.

(RX-290 at 7:31-35, Fig. 7.) Thus, as described in the above passage, the Tran '987 patent explicitly discloses that if the slot is not active (*i.e.*, the channel is available) executing a channel access attempt in block 314. (RX-1286C (Lanning, DWS) at Q&A 173.) Motorola does not contest that this limitation is satisfied. Accordingly, for the reasons above, I find that the Tran '987 patent discloses the step of "executing, responsive to said step of testing, a channel access attempt when said channel is available."

2. Obviousness

Apple argues that claims 1-4 of the '697 patent would have been obvious to one of ordinary skill in the art at the time of the invention in view of the Molle '651 patent in combination with the Mahany '317 patent, but only under Apple's construction of "access

priority value." (RIB at 203.) Similarly, Apple argues that the asserted claims are obvious in view of the Tran '987 patent in combination with the Mahany '317 patent, but only under Apple's construction of "access priority value." (*Id.* at 207.) As I have not adopted Apple's construction of "access priority value," Apple's asserted obviousness combinations are inapplicable.

VI. U.S. Patent No. 6,246,697

The '697 patent, titled "Method and system for generating a complex pseudonoise sequence for processing a code division multiple access signal," was originally filed on January 24, 1998, and issued on June 12, 2001. (JX-004, cover page.) The '697 patent issued to inventors Nicholas William Whinnett and Kevin Michael Laird and names Motorola, Inc. as the assignee. (*Id.*)

The '697 claims a system and method for generating a complex pseudonoise ("PN") sequence used to process a code division multiple access ("CDMA") signal. (*See* JX-004.) PN sequences have noise-like characteristics such that a particular PN sequence appears as noise to any other users in the system that are transmitting on the same frequency. (CX-2685C (Kenney, DWS) at Q&A 35, 37.) The PN sequences are generated to look random, but actually are not random. (*Id.*) Because the PN sequences are only pseudorandom, the base station receiver can reproduce the identical code sequence to decode a particular user's transmission. (*Id.*) The PN sequences are used in CDMA networks so that cell towers and multiple cell phones can transmit and receive at the same time and still understand each other. (*Id.* at Q&A 28.) Thus, PN sequences are necessary for the operation of a CDMA network. (*Id.* at Q&A 36.) The '697 patent provides a method for generating PN sequences where the phase difference between a selected chip and a previous chip is restricted to a preselected phase angle. (JX-004, Abstract.)

A. Asserted Claims

The '697 patent has sixteen claims. Claims 1-4 of the '697 patent are asserted in this investigation. Claim 1 is an independent claim. Claims 2-4 are dependent claims. The asserted claims read as follows:

> 1. A method in a wireless communication system for generating a complex pseudonoise (PN) sequence for processing a code division multiple access signal, the method comprising the steps of:
>
> selecting a chip time in a complex PN sequence generator; and
>
> at each selected chip time, restricting a phase difference between a previous complex PN chip and a next complex PN chip to a preselected phase angle.
>
> 2. The method for generating a complex pseudonoise sequence according to claim 1 wherein the step of selecting a chip time in a complex PN sequence generator further includes periodically selecting every Nth chip time in a complex PN sequence generator.
>
> 3. The method for generating a complex pseudonoise sequence according to claim 2 wherein N equals 2 for selecting every other chip time in the complex PN sequence generator.
>
> 4. The method for generating a complex pseudonoise sequence according to claim 1 wherein the step of restricting a phase difference between a previous complex PN chip and a next complex PN chip to a preselected phase angle further includes restricting a phase difference between a previous complex PN chip and a next complex PN chip to 90 degrees.

B. Level of Ordinary Skill in the Art

Motorola does not address the level of ordinary skill in the art with regard to the '697 patent in its post-hearing briefs. Apple argues based on the testimony of its expert, Mr. Lanning, that one of ordinary skill in the art pertinent to the '697 patent at the time of the invention would have at least a Bachelor's or Master's degree in Electrical Engineering, Computer Science or equivalent. (RIB at 125 (citing RX-1286C (Lanning, DWS) at Q&A 255).) Apple also argues that this person would need to have at least four years' experience in the field of

telecommunications, including at least two years of experience in the design and configuration of CDMA cellular networks and/or the design and development of CDMA cellular handsets and/or base stations. (*Id.*) Apple asserts that Motorola's expert, Dr. Kenney, testified to a similar level of ordinary skill and that both experts agreed that their opinions would be unchanged if the other expert's proposed level of ordinary skill were adopted. (*See* RIB at 125.)

Because Apple was the only party to address the level of ordinary skill in the art relevant to the '697 patent in their post-hearing briefs, I adopt the testimony of Apple's expert, Mr. Lanning, on this point and find that a person of ordinary skill in the art relevant to the '697 patent at the time of the invention would have at least a Bachelor's or Master's degree in Electrical Engineering, Computer Science or equivalent and at least four years' experience in the field of telecommunications, including at least two years of experience in the design and configuration of CDMA cellular networks and/or the design and development of CDMA cellular handsets and/or base stations.

C. Claim Construction

Although Motorola and Apple assert in their initial post-hearing briefs multiple limitations as needing claim construction, the parties' indicate in their post-hearing reply briefs that the only limitation needing construction is "restricting a phase difference … to a preselected phase angle." (*See* CRB at 34; RRB at 46.) However, I find from the parties' infringement and validity arguments that there is also disagreement regarding the proper construction of the limitation "selecting a chip time." Thus, I will construe both limitations.

Only claim terms in controversy need to be construed, and only to the extent necessary to resolve the controversy. *Vanderlande Indus. Nederland BV v. Int'l Trade Comm'n.*, 366 F.3d 1311, 1323 (Fed. Cir. 2004); *Vivid Tech., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

1. "selecting a chip time"

The parties construe the phrase "selecting a chip time" as follows:

Motorola	Apple
choosing a time interval over which a particular complex PN chip is generated	identifying particular chip times where the phase angle differences relative to a previous PN chip are to be restricted to a predetermined angle

The only meaningful dispute regarding this claim limitation that must be resolved in order to address the parties' infringement and validity arguments is whether selecting every chip time (and by extension restricting at every chip time) in a complex pseudonoise sequence generator falls within the scope of the claim.

Motorola argues that selecting every chip time falls outside the scope of the asserted claims. Motorola argues that the claims require that at each selected chip time the phase difference is restricted. (*See* CX-2685C (Kenney, DWS) at Q&A 106.) Thus, Motorola argues that selecting every chip time would result in a restriction at every chip time to the same preselected phase angle. (*Id.*) Motorola argues that restricting the phase difference at every chip time to the same angle is no restriction at all. (*Id.*) Accordingly, Motorola argues that Apple's proposed construction would read the limitation "restricting" out of the claims. (*Id.*)

Apple argues that a modulation scheme where the restriction is applied at each chip time would fall within the scope of claim 1. (RIB a 126.) That is, Apple argues that the step of "selecting a chip time" can be met by an operation performed at every chip time. (*Id.* at 126, 134.) Apple also argues that limiting "selection" to less than all chip times is contrary to the ordinary meaning of selection. (*Id.* at 126.)

Analysis

The plain language of claim 1 requires "selecting a chip time" and "at each selected chip time, restricting a phase difference … to a preselected phase angle." It is clear from the claim language "selecting a chip time" that there must be at least one chip time selected. However, it is equally clear from the language "at each selected chip time" that selection of more than one chip time is also contemplated.

I find the language of claim 1 counsels against adopting Apple's construction of "selecting" to include selecting every chip time in a complex PN sequence generator. There is a heavy presumption that claims should carry their plain and ordinary meaning. *Epistar Corp. v. International Trade Com'n*, 566 F.3d 1321, 1334 (Fed. Cir. 2009) (There is "a heavy presumption that claim terms carry their full ordinary and customary meaning, unless it can [be] show[n] the patentee expressly relinquished claim scope.). Here, the words "selecting" and "selected" are commonly understood words that mean "to choose … from a number or group: pick out." (*See* http://www.m-w.com.) Thus, the words "selecting" and "selected" imply a choice. By allowing selection at every chip time, Apple's position would impermissibly vitiate that choice.

The plain language of claim 1 requires that "at each selected chip time, restricting … to a predetermined phase angle." Thus, selection is an operation that entails restriction. If every chip time were selected, as Apple proposes, then there would be a restriction to a predetermined phase angle at every chip time. A restriction step that is performed in the same way during every chip time is not a restriction at all. Thus, Apple's proposed construction would in effect read the restricting step out of the claim.

The specification also counsels against adopting Apple's proposed construction. Nowhere in the specification is there a suggestion that an operation performed at every chip time

would constitute "selecting" a chip time. Moreover, as Dr. Kenney convincingly testified with regard to the disclosed preferred embodiment of the invention, if every chip time were selected (and consequently restricted), the system would implement the prior art $\pi/2$ BPSK method that was clearly disclosed to the examiner in the specification of the '697 patent. Thus, I agree with Dr. Kenney that one of ordinary skill in the art at the time of the invention reading the specification would not have understood that "selecting" could include selecting every chip time.

Accordingly, I find that properly construed the step of "selecting a chip time" requires "selecting a chip time, but not every chip time."

2. "restricting a phase difference ... to a preselected phase angle"

The parties construe the limitation "restricting a phase difference ... to a preselected phase angle" as follows:

Motorola	Apple
restricting an angle between two consecutive complex PN chips to a preselected phase angle	at the selected chip time, the next complex PN chip is limited to a predetermined phase transition

The only meaningful dispute with regard to this limitation that must be resolved in order to address the parties' infringement and validity arguments is whether the "phase angle" refers to the magnitude of the angle or both the magnitude and direction of the angle.

Motorola argues that the "preselected phase angle" refers only to the magnitude of the angle. (CIB at 81; CRB at 34-37.) Motorola argues that its construction is consistent with the description in the specification of the preferred embodiment of the invention, which describes the preselected phase angle as 90 degrees. (CIB at 81.) Motorola argues that Apple's proposed construction of "preselected phase angle" is contrary to the specification, as well as Apple's own construction of other terms in the asserted claims. (*Id.*) In particular, Motorola argues that

Apple's attempt to limit the phase angle to both a magnitude and direction is contradicted by Apple's proposed construction of dependent claim 4, which required the phase difference to be "90 degrees." (*Id.*)

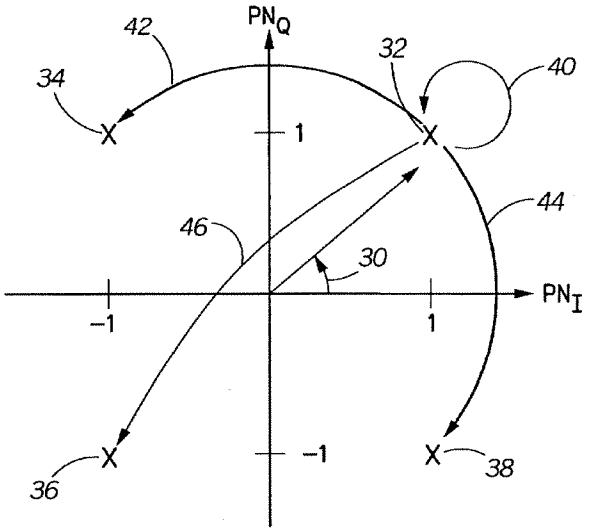
Apple argues that properly construed the term "preselected phase angle" requires a single unique angle with a predetermined direction and magnitude. (RIB at 133.) Apple argues that the claims require the phase difference to be a preselected phase angle, where the angle corresponds to a single set of polar coordinate values in a polar coordinate representation. (*Id.*) Apple argues that the fact that the preselected phase angle is a difference confirms that the angle must be treated as having both a magnitude and a sign. (*Id.*) Apple argues that when starting at a particular coordinate, the difference to the next point is determined by subtraction and that subtraction produces both a magnitude and sign. (*Id.*)

Analysis

The plain language of claim 1 requires that at each selected chip time, the phase difference between two consecutive PN chips be restricted to a preselected phase angle. Thus, at each selected chip time, the "phase difference" is restricted to a "preselected phase angle." Dependent claim 4 depends directly from claim 1 and adds a limitation requiring that the phase difference be restricted to 90 degrees. (JX-004 at 5:32-37.) Thus, dependent claim 4 suggests that the phase difference, and by extension the preselected phase angle, is an angle represented only by its magnitude. Accordingly, I find the claim language cuts against Apple's proposed construction.

The specification also counsels against adopting Apple's proposed construction. In fact, Apple's own proposed construction, which equates the claimed "preselected phase angle" with "a predetermined phase transition," is contrary to its argument when viewed in light of the

specification. Specifically, the specification describes Figure 1 of the '697 patent, which is reproduced below, as having a constellation point 32 with phase 30 and "90° transitions … shown at reference numerals 42 and 44." (*Id.* at 1:34-35.)



(*Id.*, Figure 1.) As illustrated above and described in the specification, both the phase transition in the positive direction from constellation point 32 to constellation point 34 and the phase transition in the negative direction from constellation point 32 to constellation point 38 are described as 90 degrees. Thus, a phase transition is clearly referred to only by the magnitude of the angle and not the magnitude and direction of the angle as Apple argues.

In the preferred embodiment of the invention, the phase difference between a previous and next complex PN chip is restricted from the possible QPSK phase transitions of -90°, 0°, +90°, and 180° to either ± 90 degrees. (*See* JX-004 at 3:8-11, 3:38-49.) The specification states explicitly that the 90 degrees is either added or subtracted from the phase angle of the previous chip depending upon certain coefficient values of the previous chip. (*Id.* at 3:41-43.) The specification goes on to state that "in the preferred embodiment, at every other chip time, the phase of the next complex PN chip differs from the phase of the previous complex PN chip by 90

degrees." (*Id.* at 3:62-65.) Here, in language that is strikingly similar to that of claim 1, the specification describes the phase difference between consecutive PN chips as 90 degrees. In so doing, the specification teaches that the phase difference refers only to the magnitude of the phase angle and does not dictate a particular direction.

Moreover, adoption of Apple's proposed construction of phase angle as a single unique angle with a predetermined direction and magnitude would read the preferred embodiment out of the invention. The specification is clear that in the preferred embodiment the phase difference is restricted to 90 degrees—sometimes +90 degrees and sometimes -90 degrees. However, under Apple's proposed construction the phase difference would be restricted to only one of either +90 degrees or -90 degrees. Thus, Apple's proposed construction would exclude the $\pi/2$-BPSK transition disclosed in the preferred embodiment. *Adams Respiratory Therapeutics, Inc. v. Perrigo Co.*, 616 F.3d 1283, 1290 (Fed. Cir. 2010) ("A claim construction that excludes the preferred embodiment 'is rarely, if ever, correct and would require highly persuasive evidentiary support.'") (quoting *Vitronics Corp. v. Conceptronic Inc.*, 90 F.3d 1576, 1583-84 (Fed. Cir. 1996)).

In the end, "[t]he construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be ... the correct construction." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1316 (Fed. Cir. 2005) (*en banc*). As discussed above, both the language of the claims and specification suggest that the term "preselected phase angle" refers only to the magnitude of the phase angle. Accordingly, I find that properly construed, the "preselected phase angle" refers to the magnitude of the phase angle and not the magnitude and direction as Apple contends.

D. Infringement

Motorola accuses Apple's iPhone 3GS, the AT&T iPhone 4, iPad 3G, and AT&T iPad 2 3G (collectively, "the '697 accused products") of infringing claims 1-4 of the '697 patent. (CIB at 82 n.10; CX-2685C (Kenney, DWS) at Q&A 233.)

1. Direct Infringement

a. Any device that utilizes the C-long equation set forth in Section 4.3.2.2 of the 3GPP standard infringes claims 1-4 of the '697 patent

Motorola argues that any device that utilizes the C-long equation set forth in Section 4.3.2.2 of the 3GPP TS 25.213 to generate a scrambling code used to scramble the message portion of the PRACH channel infringes claims 1-4 of the '697 patent. (CIB at 82.) Motorola argues that the '697 accused products do just that. (*Id.*) Accordingly, Motorola argues that a user of one of the '697 accused products who interoperates with a 3GPP-UMTS-compliant (a.k.a., WCDMA) cellular network necessarily practices each and every limitation of the claims 1-4 in the course of such interoperation. (CX-2685C (Kenney, DWS) at Q&A 159, 178, 235-38.) Motorola argues that such interoperation may occur when a user places a phone call, sends an email, uploads data, or simply powers on the device. (*Id.* at Q&A 177.)

Apple argues that use of the 3GPP standard to create a complex PN sequence does not infringe the asserted claims of the '697 patent. (RIB at 130.) Apple argues that the 3GPP standard deviates from the claims of the '697 patent in two fundamental respects. (*Id.*) First, Apple argues that the formula never uses a "preselected phase angle," but rather always produces at least two distinct angle differences (either $+90^{\circ}$ or -90°). (*Id.*) Second, Apple argues that the formula is applied identically at every chip time rather than at selected chip times. (*Id.*)

Analysis

The 3GPP-UMTS standard specifies that communications in frequency division duplex bands will use wideband CDMA ("WCDMA"). (CX-2685C (Kenney, DWS) at Q&A 171.) The standard further specifies that the physical layer, that is the portion of the device that interfaces to the physical medium, the airwaves, be implemented in a particular way. (*Id.*) In the frequency division duplex mode, which is used in the frequency division duplex bands, spreading and modulation characteristics are specified in 3GPP TS 25.213. (*Id.*) 3GPP TS 25.213 explains that all uplink physical channels shall be scrambled with a complex-valued scrambling code. (*Id.*; CX-0272.) 3GPP TS 25.213 specifies that the message part of a transmission on the physical random access channel ("PRACH") shall be scrambled using a long scrambling code.[10] (CX-2685C (Kenney, DWS) at Q&A 171.) In this way, a user of a 3GPP-UMTS device must generate the proper scrambling codes to successfully communicate in a frequency division duplex band. (*Id.*) For the reasons discussed below, I find that generation of this scrambling code necessarily practices the method of claims 1-4 of the '697 patent.

(1) Claim 1

(a) Preamble

The preamble of claim 1 reads "A method in a wireless communication system for generating a complex pseudonoise (PN) sequence for processing a code division multiple access signal, the method comprising the steps of." Generally, the preamble does not limit the claims. *See Allen Eng'g Corp. v. Bartell Indus., Inc.*, 299 F.3d 1336, 1346 (Fed.Cir.2002). Nonetheless, the preamble may be construed as limiting "if it recites essential structure or steps, or if it is

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[10] The PRACH is a channel that is used as part of the random access procedure that a mobile device must use to access the cellular network. (CX-2685C (Kenney, DWS) at Q&A 172.) Before any call can be completed the PRACH procedure must be performed. (*Id.*)

'necessary to give life, meaning, and vitality' to the claim." *Catalina Mktg. Int'l, Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002) (quoting *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1305 (Fed. Cir. 1999)). A preamble is not regarded as limiting, however, "when the claim body describes a structurally complete invention such that deletion of the preamble phrase does not affect the structure or steps of the claimed invention." *Catalina*, 289 F.3d at 809. Neither Motorola nor Apple argues in their post-hearing briefs that the preamble of claim 1 limits the claim, but in any event the evidence shows that generation of the scrambling code according to 3GPP TS-25.213 in a WCDMA cellular network satisfies the language of the preamble.

3GPP TS-25.213 standard requires that "[a]ll uplink physical channels shall be scrambled with a complex-valued scrambling code." (CX-0272 at § 4.3.2.1.) While the dedicated physical channels may be scrambled by either a long or a short scrambling code, the PRACH message part must be scrambled using the long scrambling code. (*Id.*) The long scrambling code, $C_{long,n}$ is built from constituent long sequences defined in subclause 4.3.2.2. (*Id.*) The constituent long sequences consist of a real part, $c_{long,1,n}$, and an imaginary part, $c_{long,2,n}$. (*Id.* at § 4.3.2.2; CX-2685C (Kenney, DWS) at Q&A 181-82.) Because the long scrambling code is a combination of a real (*i.e.*, in-phase) sequence and an imaginary (*i.e.*, quadrature) sequence, it is a complex sequence. (*See* CX-2685C (Kenney, DWS) at Q&A 181; CX-0272 at § 4.3.2.2 ("the complex-valued long scrambling sequence $C_{long,n}$").)

A long scrambling code, $C_{long,n}$ (i), generated in accordance with 3GPP TS 25.213 is a product of a Gold sequence,[11] $c_{long,n,1}$, with a non-identical sequence. (*See* CX-2685C (Kenney,

[11] Gold sequences form a particular class of sequences that have good periodic cross-correlation properties.

DWS) at Q&A 181, 184; CX-0272 at § 4.3.2.2.) Such a product retains its noise-like properties and thus appears random. (*See* CX-2685C (Kenney, DWS) at Q&A 181, 184.) Thus, generation of long scrambling codes from complex-valued scrambling sequences in accordance with 3GPP TS 25.213 entails generation of a complex pseudonoise sequence. (*Id.*)

Accordingly, I find by a preponderance of the evidence that generation of the complex-valued pseudonoise scrambling code according to 3GPP TS-25.213 in a WCDMA cellular network satisfies the language of the preamble.

(b) "selecting a chip time in a complex PN sequence generator; and"

The first step of the method of claim 1 of the '697 patent requires "selecting a chip time in a complex PN sequence generator." The complex-valued long scrambling sequence, $C_{long,n}$ (*i.e.*, the complex PN sequence generator), is defined in 3GPP TS-25.213 § 4.3.2.2 as follows:

$$C_{long,n}(i) = c_{long,1,n}(i)\left(1 + j(-1)^i c_{long,2,n}(2\lfloor i/2 \rfloor)\right) \quad \text{for } i = 0, 1, 2, \ldots, 2^{25} - 2$$

where, the real-valued long scrambling sequences $c_{long,1,n}$ and $c_{long,2,n}$ are defined as follows:

$$c_{long,1,n}(i) = Z_n(i), \qquad i = 0, 1, 2, \ldots, 2^{25} - 2; \text{ and}$$

$$c_{long,2,n}(i) = Z_n((i + 16777232) \text{ modulo } (2^{25} - 1)), \qquad i = 0, 1, 2, \ldots, 2^{25} - 2.$$

The $C_{long,n}(i)$ equation incorporates the floor function $\lfloor\ \rfloor$, which is a mathematical operator that rounds the input to the nearest lower integer. (CX-2685C (Kenney, DWS) at Q&A 190; CX-0272 at § 4.3.2.2 ("where … $\lfloor\ \rfloor$ denotes to nearest lower integer.").) For example, if i=6 then $\lfloor i/2 \rfloor = \lfloor 6/2 \rfloor = \lfloor 3 \rfloor = 3$. However, if i=7 then $\lfloor i/2 \rfloor = \lfloor 7/2 \rfloor = \lfloor 3.5 \rfloor = 3$. Similarly, if i=8 then $\lfloor i/2 \rfloor = \lfloor 8/2 \rfloor = \lfloor 4 \rfloor = 4$, but if i=9 then $\lfloor i/2 \rfloor = \lfloor 9/2 \rfloor = \lfloor 4.5 \rfloor = 4$. (*See* CDX 2.60.) The net effect of the floor function in the $C_{long,n}(i)$ equation for even values of i is nothing, while odd values of i evaluate to a different result. (*See* CX-2685C (Kenney, DWS) at Q&A 191; Lanning, Tr. at 1691:4-8, 1692:12-15; *see also* CDX-2.60.) More particularly, when i is even,

the floor function has no effect on the value of $i/2$, but when i is odd, the floor function rounds the value of $i/2$ downward to the proceeding even value. (*Id.* at Q&A 192; CDX-2.60.) Thus, the floor function acts to select odd chip times for disparate treatment. (CX-2685C (Kenney, DWS) at Q&A 191-92; Lanning, Tr. at 1689:8-14.) Accordingly, I find by a preponderance of the evidence that generation of the complex-valued pseudonoise scrambling code according to 3GPP TS-25.213 in a WCDMA cellular network practices the step of "selecting a chip time in a complex PN sequence generator."

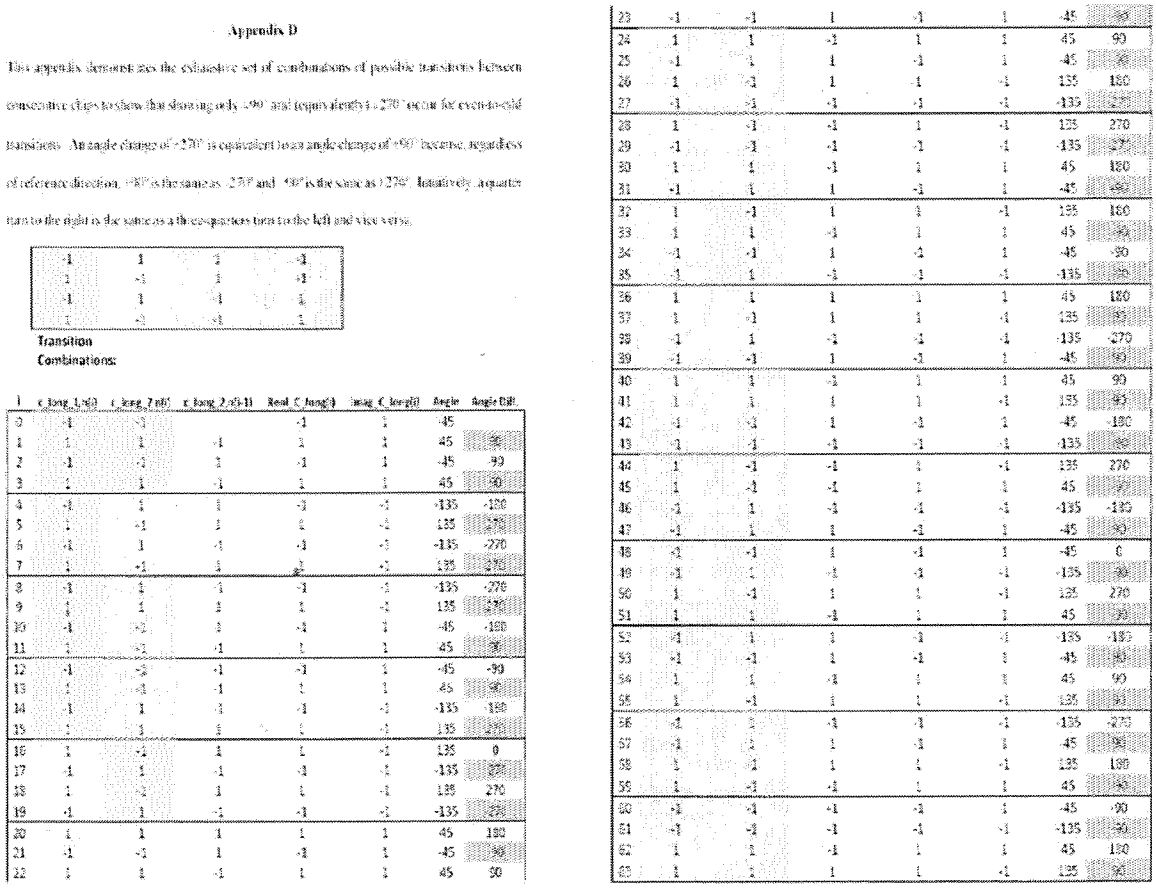
Apple argues that the 3GPP formula is performed at every chip time, not at selected chip times as required by the claims. (RIB at 134.) Apple argues that Motorola's construction of "selecting a chip time" excludes operations at every chip time from falling within the scope of the claim, but that there is no dispute that under the 3GPP standard the same formula is applied in the same way at every chip time. (*Id.* at 134-35.) Particularly, Apple argues that "the 3GPP formula is applied to every set of chips at every chip time" and that "[e]very application of the 3GPP formula restricts the possible phase angle transitions in some way at every time—operation of the formula results in a phase transition that is limited to only a small set of the possible angles from zero to 360^0." (*Id.* at 134.) Likewise, Apple argues that the floor function is applied at every chip time. (*Id.* at 135.) Thus, Apple argues there can be no infringement under Motorola's interpretation of the claim. (*Id.*)

Contrary to Apple's argument, the $C_{long,n}(i)$ equation does not function in the same way at every chip time. As discussed above, the weight of the evidence shows that the floor function in the $C_{long,n}(i)$ equation operates in one manner for even chip times and another for odd chip times and that only at odd chip times is the phase difference restricted. (CX-2685C (Kenney, DWS) at Q&A 191-92.) Apple appears to agree in that it explicitly recognizes in its post hearing

brief that the floor function is applied at both even and odd chip times, but that the floor function affects only the result at odd chip times. (CIB at 135.) Thus, Apple seemingly admits that the floor function in the $C_{long,n}$ (i) equation chooses odd chip times for disparate treatment from the entire group of both even and odd chip times, thereby satisfying the limitation "selecting a chip time." Accordingly, I find Apple's argument not persuasive.

(c) "at each selected chip time, restricting a phase difference between a previous complex PN chip and a next complex PN chip to a preselected phase angle"

The second step of the method of claim 1 of the '697 patent requires that "at each selected chip time, restricting a phase difference between a previous complex PN chip and a next complex PN chip to a preselected phase angle." The evidence shows that calculation of $C_{long,n}(i)$, for values of $i = 0, 1, 2, \ldots, 2^{25} - 2$, results is phase differences between consecutive chip times of either -90°, 0°, $+90^{\circ}$, or 180°. (CX-2685C (Kenney, DWS) at Q&A 197-98; *see* CDX-18C at 12.) The evidence shows that at the selected odd chip times, however, the phase difference between the previous complex PN chip and the next complex PN chip is always restricted to either -90° or $+90^{\circ}$ (*i.e.*, a preselected phase angle of 90°). (*See id.*; *see also* RIB at 130.) These facts are demonstrated in the chart reproduced below, which shows the results of the $C_{long,n}$ (i) equation for numerous values of i.



Appendix D

This appendix demonstrates the exhaustive set of combinations of possible transitions between consecutive chips to show that alternately +90° and (equivalently) -270° occur for even-to-odd transitions. An angle change of +270° is equivalent to an angle change of +90° because, regardless of reference direction, +90° is the same as -270° and +90° is the same as +270°. Intuitively, a quarter turn to the right is the same as a three-quarters turn to the left and vice versa.

-1	1	1	-1
1	-1	1	-1
-1	1	-1	1
1	-1	-1	1

Transition Combinations:

i	c_long_1(i)	c_long_2(i)	c_long_2(i-1)	Real{C_long(i)}	Imag{C_long(i)}	Angle	Angle Diff.
0	-1	-1		-1	1	-45	
1	1	1	-1	1	1	45	90
2	-1	-1	1	-1	1	-45	-90
3	1	1	-1	1	1	45	90
4	-1	1	1	-1	-1	-135	-180
5	1	-1	1	1	-1	135	270
6	-1	1	-1	-1	-1	-135	-270
7	1	-1	1	1	-1	135	270
8	-1	1	-1	-1	-1	-135	-270
9	1	1	1	1	-1	135	270
10	-1	-1	1	-1	1	-45	-180
11	1	-1	-1	1	1	45	90
12	-1	-1	-1	-1	1	-45	-90
13	1	-1	-1	1	1	45	90
14	-1	1	1	-1	-1	-135	-180
15	1	1	1	1	-1	135	270
16	1	-1	1	1	-1	135	0
17	-1	1	-1	-1	-1	-135	-270
18	1	-1	1	1	-1	135	270
19	-1	1	-1	-1	-1	-135	-270
20	1	1	1	1	1	45	180
21	-1	-1	1	-1	1	-45	-90
22	1	1	-1	1	1	45	90
23	-1	-1	1	-1	1	-45	-90
24	1	1	-1	1	1	45	90
25	-1	1	1	-1	1	-45	-90
26	1	-1	1	1	-1	135	180
27	-1	-1	-1	-1	-1	-135	-270
28	1	-1	-1	1	-1	135	270
29	-1	-1	-1	-1	-1	-135	-270
30	1	1	-1	1	1	45	180
31	-1	1	1	-1	1	-45	-90
32	1	-1	1	1	-1	135	180
33	1	1	-1	1	1	45	-90
34	-1	-1	1	-1	1	-45	-90
35	-1	1	-1	-1	-1	-135	-90
36	1	1	1	1	1	45	180
37	1	-1	1	1	-1	135	90
38	-1	1	-1	-1	-1	-135	-270
39	-1	-1	1	-1	1	-45	-90
40	1	1	-1	1	1	45	90
41	1	1	1	1	-1	135	90
42	-1	-1	1	-1	1	-45	-180
43	-1	-1	-1	-1	-1	-135	-90
44	1	-1	-1	1	-1	135	270
45	1	-1	-1	1	1	45	-90
46	-1	1	-1	-1	-1	-135	-180
47	-1	1	1	-1	1	-45	-90
48	-1	-1	1	-1	1	-45	0
49	-1	1	-1	-1	-1	-135	90
50	1	-1	1	1	-1	135	270
51	1	1	-1	1	1	45	-90
52	-1	1	1	-1	-1	-135	-180
53	-1	-1	1	-1	1	-45	-90
54	1	1	-1	1	1	45	90
55	1	-1	1	1	-1	135	90
56	-1	1	-1	-1	-1	-135	-270
57	-1	1	1	-1	1	-45	-90
58	1	-1	1	1	-1	135	180
59	1	-1	-1	1	1	45	-90
60	-1	-1	-1	-1	1	-45	-90
61	-1	1	-1	-1	-1	-135	-90
62	1	1	-1	1	1	45	180
63	1	1	1	1	-1	135	90

Accordingly, I find by a preponderance of the evidence that generation of the complex-valued pseudonoise scrambling code according to 3GPP TS-25.213 in a WCDMA cellular network practices the step of "at each selected chip time, restricting a phase difference between a previous complex PN chip and a next complex PN chip to a preselected phase angle."

Apple argues that generation of the complex-valued pseudonoise scrambling code according to the 3GPP TS-25.213 standard does not satisfy this claim limitation because "[t]he 3GPP formula never restricts a phase difference to a preselected phase angle, it maintains the possibility of no fewer than two distinct phase angles"-- $+90^{o}$ and -90^{o}. (RIB at 133.) Apple argues that the phase angle "must be a single (unique) angle, and it must have both magnitude and a sign." (*Id.*) Apple's non-infringement argument flows directly from the claim construction argument it made with respect to the limitation "restricting a phase difference … to

a preselected phase angle." As discussed, *supra*, I have not adopted Apple's proposed construction of "preselected phase angle." As construed herein, the term "preselected phase angle" refers only to the magnitude of the angle and not the magnitude and sign of the angle as argued by Apple. (*Id.*) Thus, under the proper construction of the term "preselected phase angle" Apple's argument must fail.

(2) Claim 2

Claim 2 depends from independent claim 1 and requires that "the step of selecting a chip time in a complex PN sequence generator further includes periodically selecting every Nth chip time in a complex PN sequence generator." As previously discussed, the floor function in the $C_{long,n}(i)$ equation operates to select odd chip times for disparate treatment. (*See* CX-2685C (Kenney, DWS) at Q&A 208, 210-11.) Selection of odd chip times necessarily entails selection of every Nth chip time, where N=2. (*Id.* at 211.) Thus, the fact that the floor function in the $C_{long,n}(i)$ equation selects every 2nd chip time satisfies the additional limitation of claim 2 requiring "periodically selecting every Nth chip time in a complex PN generator." (*Id.* at Q&A 208, 210-11.) Accordingly, I find by a preponderance of the evidence that generation of the complex-valued pseudonoise scrambling code according to 3GPP TS-25.213 in a WCDMA cellular network practices claim 2. Apple makes no argument to the contrary.

(3) Claim 3

Claim 3 depends from claim 2 and requires "N equals 2 for selecting every other chip time in the complex PN sequence generator." As discussed above with regard to Claim 2, selection of odd chip times necessarily entails selection of every Nth chip time, where N=2. (*See* CX-2685C (Kenney, DWS) at Q&A 211, 215, 217.) Thus, the fact that the floor function in the $C_{long,n}(i)$ equation selects every 2nd chip time satisfies the additional limitation of claim 3 requiring "N equals 2 for selecting every other chip time in the complex PN sequence generator."

(*Id.* at Q&A 215, 217.) Accordingly, I find by a preponderance of the evidence that generation of the complex-valued pseudonoise scrambling code according to 3GPP TS-25.213 in a WCDMA cellular network practices claim 3. Apple makes no argument to the contrary.

(4) Claim 4

Claim 4 depends from independent claim 1 and requires that "the step of restricting a phase difference between a previous complex PN chip and a next complex PN chip to a preselected phase angle further includes restricting a phase difference between a previous complex PN chip and a next complex PN chip to 90 degrees." As discussed above with regard to claim 1, the evidence shows that at the selected odd chip times the phase difference between the previous complex PN chip and the next complex PN chip is always restricted to either -90° or +90° (*i.e.*, a preselected phase angle of 90°). (CX-2685C (Kenney, DWS) at Q&A 197-98, 221-22; *see* CDX-18C at 12.) Accordingly, I find by a preponderance of the evidence that generation of the complex-valued pseudonoise scrambling code according to 3GPP TS-25.213 in a WCDMA cellular network practices claim 4. Apple makes no argument to the contrary

b. The '697 accused products utilize the $C_{long,n}$ (*i*) equation set forth in Section 4.3.2.2 of the 3GPP standard

I found hereinabove that generation of the complex-valued pseudonoise scrambling code according to 3GPP TS-25.213 § 4.3.2.2 in a WCDMA cellular network practices claims 1-4 of the '697 patent. To prove infringement, however, Motorola must show that the '697 accused products use the $C_{long,n}$ (*i*) equation set forth in section 4.3.2.2 of the 3GPP standard to generate the complex-valued pseudonoise scrambling code. Motorola asserts that the '697 accused products do just that because:[

] (*See* CX-2685C (Kenney, DWS) at Q&A 258.) Apple does not address these issues.

Analysis

At the hearing, Apple's expert, Mr. Lanning, explicitly testified:

Q. And you are familiar with the CLong equation there, is that right?

A. Yes, I am.

Q. And you're aware that the Clong equation provides, when implemented in the devices, provides the accused functionality in this case, correct?

A. It provides the scrambling code, which Motorola is accusing, yes.

***

Q. So you agree that the accused products, the accused products of Apple in this investigation implement the CLong equation from the 3GPP specification, correct?

A. That's correct, yes.

(Lanning, Tr. at 1681:5-13, 1685:16-21.) Thus, I note at the outset that it appears that Apple admits that the '697 accused products implement the $C_{long,n}(i)$ equation from the 3GPP TS-25.213 standard. Nevertheless, I address the evidence presented by Motorola, as it confirms beyond question that the '697 accused products use the $C_{long,n}(i)$ equation to generate the complex-valued pseudonoise scrambling code according to 3GPP TS-25.213 § 4.3.2.2 when interoperating in a 3GPP-UMTS cellular network.

The evidence shows that the '697 accused products are specified [

] (CX-0068C at ¶¶ 190-93; CX-2685C (Kenney, DWS) at Q&A 242.) Apple's technical specifications

for its accused devices also confirm that the '697 accused products support UMTS in the FDD frequency bands. (*See* CX-1128; CX-0584; CX-1101; CX-1090; CX-2685C (Kenney, DWS) at Q&A 242.) [

] (*See* CX-1003C (Model No. A1303, iPhone 3GS) at § 1.2, tbls. A.1, A.15; CX-0996C (Model No. A1332, iPhone 4) at § 1.2, tbls. A.1, A.15; CX-1010C (Model No. 1337, iPad 3G) at § 1.2, tbls. A.1, A.15; CX-1011C (Model No. A1396, iPad 2 3G) at § 1.2, tbls. A.1, A.15.) The evidence also shows that [

] (*See* CX-2685C (Kenney, DWS) at Q&A 244-51, 260, 290, 292, 294-96, 300-02, 306-308, 316-19, 324-327, 330-33.) The evidence further shows that the '697 accused products are [

] (*See id.* at Q&A 253-54, 261; CX-0271C; CX-0281C; CX-0512C; CX-0518C; CX-1004C; CX-1005C; CX-1006C; CX-1007C; CX-1008C; CX-0998C; CX-0999C; CX-1000C; CX-1001C; CX-1002C; CX-1847; CX-1848.)

To interoperate in a 3GPP-UMTS (a.k.a., WCDMA) cellular network, the evidence shows that the message portion of a transmission on the PRACH must be scrambled using the long scrambling code, $C_{long,n}(i)$, specified in 3GPP TS-25.213 § 4.3.2.2. (*See* CX-2685C (Kenney, DWS) at Q&A 171; CX-0272 at §§ 4.3.2.1, 4.3.2.2, 4.3.2.5.) Even Apple's expert, Mr. Lanning, admits as much. (Lanning, Tr. at 1685:17-1687:2, 1686:2-24.) Thus any device

that supports 3GPP-UMTS in the FDD frequency bands will necessarily use the $C_{long,n}(i)$ equation set forth in Section 4.3.2.2 of the 3GPP TS-25.213 standard to generate a complex-valued pseudonoise scrambling code when interoperating in a 3GPP-UMTS cellular network. As set forth above, the evidence presented by Motorola overwhelming supports a finding that the '697 accused products support 3GPP-UMTS in the FDD frequency bands.

Accordingly, I find that Motorola has shown by a preponderance of the evidence that the '697 accused products use the $C_{long,n}(i)$ equation set forth in Section 4.3.2.2 of the 3GPP TS-25.213 standard to generate a long scrambling code to scramble the message portion of the PRACH when interoperating with a 3GPP-UMTS cellular network.

c. The '697 accused products have been used in a manner that interoperates with a 3GPP-UMTS cellular network (*i.e.*, the accused products have been used in a manner that practices the method steps of claims 1-4)

Claims 1-4 of the '697 patent are method claims. To prove direct infringement of a method claim it must also be shown that someone performed the method. *Lucent Technologies, Inc. v. Gateway, Inc.*, 580 F.3d 1301, 1317 (Fed. Cir. 2009) ("To infringe a method claim, a person must have practiced all steps of the claimed method.") As discussed in more detail below, the evidence shows that the '697 accused products have been used in a manner that practices the method steps of claims 1-4 of the '697 patent. Apple does not address this issue in its post-hearing briefs.

(1) The interoperability testing by the PTCRB

The PTCRB is a global organization created by Mobile Network Operators to provide an independent evaluation process where GSM / UMTS Type Certification can take place. [

] (*See* CX-

2685C (Kenney, DWS) at Q&A 253-54; JX-143C at 62-16-23; JX-118C at 44:9-11, 314:21-315:2; CX-1004C; CX-1005C; CX-1006C; CX-1007C; CX-1008C; CX-0998C; CX-0999C; CX-1000C; CX-1001C; CX-1002C; CX-0281C; CX-0518C; CX-0271C; CX-0512C; CX-1847; CX-1848.) The evidence further shows that [

] (CX-2685C (Kenney, DWS) at Q&A 261.)

I have found herein that the '697 accused products use the $C_{long,n}(i)$ equation set forth in Section 4.3.2.2 of the 3GPP TS-25.213 standard to generate a long scrambling code to scramble the message portion of the PRACH when interoperating with a 3GPP-UMTS cellular network and that generation of the long scrambling code, $C_{long,n}(i)$, in accordance with 3GPP TS-25.213 § 4.3.2.2 meets the limitations of claims 1-4 of the '697 patent. Thus, I find that[

] practiced the method steps of claims 1-4 of the '697 patent. (*See* CX-2685C (Kenney, DWS) at Q&A 261.) Accordingly, I find Motorola has shown by a preponderance of the evidence that[

] is a direct infringement of claims 1-4 of the '697 patent.

(2) Dr. Kenney's testing of the accused products

The evidence shows that Motorola's expert, Dr. Kenney, tested the accused products on AT&T's 3G network. (CX-2685C (Kenney, DWS) at Q&A 255.) The evidence shows that Dr. Kenney was able to successfully send an email message on each of the '697 accused products while each of the accused products had a 3G cellular connection. (*Id.* at Q&A 256-57.) Additionally, the evidence shows that Dr. Kenney successfully placed a phone call using the iPhone 3GS and iPhone 4 while the products had a 3G cellular connection. (*Id.*)

AT&T's cellular network is a 3GPP-UMTS network that uses FDD bands. (*Id.* at Q&A 262.) I have previously found that a 3GPP-UMTS-capable device can only interoperate on a 3GPP-UMTS-compatible network if both the device and network use the long scrambling code in accordance with 3GPP TS 25.213§ 4.3.2.2. Specifically, I have found that the '697 accused products use the $C_{long,n}$ (*i*) equation set forth in Section 4.3.2.2 of the 3GPP TS-25.213 standard to generate a long scrambling code to scramble the message portion of the PRACH when interoperating with a 3GPP-UMTS cellular network. I have also found that generation of the long scrambling code, $C_{long,n}$ (*i*), in accordance with 3GPP TS-25.213 § 4.3.2.2 meets the limitations of claims 1-4 of the '697 patent. Thus, I find that when Dr. Kenney used the '697 accused products for their intended purpose to send an email message or make a phone call on AT&T's 3G cellular network, he necessarily practiced the method steps of claims 1-4 of the '697 patent. (CX-2685C (Kenney, DWS) at Q&A 257, 262.)

Accordingly, I find Motorola has shown by a preponderance of the evidence that Dr. Kenney's use of the '697 accused products constituted a direct infringement of claims 1-4 of the '697 patent.

2. Indirect Infringement – Inducement

Motorola asserts that there can be no serious dispute that Apple induces users of the '697 accused products to perform the steps required by the 3GPP standard that is accused by Motorola every time the user utilizes such devices for their intended purpose. (CIB at 90.) Motorola argues that Apple has had knowledge of the '697 patent for some time, but at least by the time this investigation was filed. Motorola argues that in order to make a call or perform any 3G network function, a user must register with the base station. (*Id.*) Therefore, Motorola argues

that based on Apple's design of the accused products, users must perform the accused method every time they utilize the accused devices for their intended purpose. (*Id.*)

Apple argues in its post-hearing reply brief that Motorola has failed to meet its burden of showing that Apple actively induces infringement of the '697 patent. (RRB at 50.) In particular, Apple argues that Motorola has failed to show direct infringement of the '697 patent. (*Id.*) Apple also argues that Motorola has failed to show that it acted with the necessary intent to find inducement. (*Id.*)

Analysis

I have already found, *supra*, that Motorola has shown by a preponderance of the evidence that claims 1-4 of the '697 patent are directly infringed. Thus, the only questions that remain are whether Apple's actions induced infringing acts and whether Apple knew or should have known its actions would induce actual infringement.

Apple was served with a copy of the Complaint in this investigation on November 03, 2010. (*See* Notice of Institution of Investigation (U.S.I.T.C. November 03, 2010.) Among other things, the Complaint alleged that Apple infringed the '697 patent. (*See* Complaint.) In fact, the Complaint included a claim chart explicitly setting forth the basis of Motorola's infringement allegations. (*See* Complaint, Ex. 22.) Thus, the evidence shows that Apple had knowledge of the '697 patent and Motorola's general infringement allegations at least as of the time they were served the Complaint. *See Certain Inkjet Ink Cartridges With Printheads and Components Thereof*, Inv. No. 337-TA-723, Initial Determination, 2011 ITC LEXIS 1503 at *145 (June 10, 2011) (finding the knowledge requirement for contributory infringement satisfied based on service of the complaint). In addition to the Complaint, the evidence also shows that Apple was made aware of the '697 patent and Motorola's assertion that it is essential to practicing the

3GPP-UMTS standard [

] (CX-2683C (Dailey, DWS) at Q&A 125.)

As previously discussed, Apple was aware at least as of the time they were served the Complaint in this investigation that its accused UMTS WCDMA-compliant products were alleged to infringe claims 1-4 when interoperating in a 3GPP-UMTS cellular network. (*See* Complaint, Ex. 22.) More particularly, Apple was aware by the claim chart provided by Motorola with the Complaint that its accused products were alleged to infringe the '697 patent when they generated the long scrambling code, $C_{long,n}(i)$, in accordance with the 3GPP TS 25.213 standard in a WCDMA cellular network. (*Id.*)

The 3GPP TS 25.213 standard requires a device interoperating in a 3GPP-UMTS cellular network to be able to scramble the message portion of the PRACH using the $C_{long,n}(i)$ equation in accordance with Section 4.3.2.2 of the standard. (*See* CX-2685C (Kenney, DWS) at Q&A 171-72, 175; CX-0272 at §§ 4.3.2.5, 4.3.3.2.) The evidence shows that [

] (*See* CX-2685C (Kenney, DWS) at Q&A 253-54.) In fact, [

] (CX-0068C at ¶¶ 190-93; CX-2685C (Kenney, DWS) at Q&A 242.) Thus, the evidence shows that Apple knew the '697 accused products were UMTS WCDMA-complaint and at least should have known that its UMTS WCDMA-compliant products generate the long scrambling code in accordance with the 3GPP TS 25.213 standard.

[

]

[ ] Apple makes the same request of its consumers of the '697 accused products by instructing them to use the accused products to make phone call, send emails, etc. on a UMTS cellular network. Thus, I find Apple knew, or at least should have known, that its accused 3GPP-UMTS-compliant products could, and would, be used to interoperate in a 3GPP-UMTS cellular network thereby generating the long scrambling code, $C_{long,n}(i)$, and practicing claims 1-4 of the '697 patent.

Despite of having been on notice of the '697 patent and having been provided claim charts showing alleged infringement, the evidence shows Apple continues to manufacture, import, and sell the '697 accused products. (RIB at 6; CX-068 at ¶¶ 2, 3, 5, 7, 17, 18, 20, 22, 32, 33, 35, 37, 47, 48, 50, 90, 91, 93, 95.) The evidence also shows that the '697 accused products are designed to operate in a 3GPP-UMTS cellular network and as such cannot be operated for their intended purpose without infringing claims 1-4 of the '697 patent. *See Water Technologies*, 850 F.2d at 668-69 (Inferring specific intent to cause infringement from a defendant's knowledge of the patent and control over the design or manufacturing of the product used for direct infringement.). The evidence also shows, as previously discussed, that Apple instructs consumers to use the '697 accused products to place phone calls, send emails, etc. on AT&T's 3GPP-UMTS cellular network and that the use of the '697 accused products in such a manner necessarily requires generation of the long scrambling code, $C_{long,n}(i)$, which infringes claims 1-4 of the '697 patent. *See Grokster*, 545 U.S. at 936 (Recognizing that providing instruction on how to engage in an infringing use "show[s] an affirmative intent that the product be used to infringe."). The evidence further shows [

] Accordingly, I find that Apple has actively encouraged

consumers of the '697 accused products, [ ] to use the accused products in a manner that necessarily requires generation of the long scrambling code, $C_{long,n}(i)$, in a 3GPP-UMTS cellular network thereby infringing claims 1-4 of the '697 patent.

Thus, for the reasons espoused above, I find that Apple designs, manufactures, imports and sells the accused products with the specific intent to induce infringement of claims 1-4 of the '697 patent. Accordingly, I find that Apple actively induces infringement of claims 1-4 of the '697 patent in violation of 35 U.S.C. § 271(b).

Apple argues that Motorola has failed to prove inducement, because it has failed to show direct infringement, but as I have already found hereinabove, Motorola has proven that claims 1-4 of the '697 patent are directly infringed. Thus, I find Apple's argument not persuasive. Apple also argues that Motorola has failed to prove inducement, because it has failed to prove culpable intent. Specifically, Apple argues that "Motorola has not proven culpable intent for either patent, particularly in light of the Initial Determination in the 744 Investigation involving Motorola's successful defense to similar contentions by Microsoft." I find this argument without merit as Microsoft's failure to prove that Motorola induces infringement of different patents in a different investigation is of no relevance here. Moreover, the Commission is currently reviewing the Administrative Law Judge's findings regarding inducement in the Initial Determination in the 337-TA-744 Investigation. (*See* 77 Fed. Reg. 14043.)

E. Technical Prong of Domestic Industry

Motorola argues that its Cliq XT mobile phone practices claims 1-4 of the '697 patent. (CIB at 82-83.) In particular, Motorola argues that the Cliq XT uses the C_{long} equation set forth in Section 4.3.2.2 of the 3GPP TS 25.213 standard to generate a scrambling code used to scramble the message portion of the PRACH channel. (*Id.* at 83.)

Apple argues that the Motorola Cliq XT does not meet the technical prong of the domestic industry requirement because the 3GPP standard that the Cliq XT allegedly implements does not infringe the asserted claims of the '697 patent. (RIB at 130.) Apple's argument is a repeat of its non-infringement contentions. Apple provides no particularized argument with respect to the Cliq XT.

Analysis

I found, *supra*, that generation of the complex-valued pseudonoise scrambling code according to 3GPP TS-25.213 § 4.3.2.2 in a 3GPP-UMTS cellular network practices claims 1-4 of the '697 patent. Thus, in order to show that the Cliq XT infringes the method steps of claims 1-4 (*i.e.*, satisfies the technical prong), it must be shown that the Cliq XT generates the complex-valued PN scrambling code, Clong,n (i), in a 3GPP-UMTS cellular network. Also, because claims 1-4 are method claims, it must be shown that the method is actually practiced.

The evidence shows that the Motorola Cliq XT is specified to support 3GPP-UMTS in a frequency division duplex band. (CX-2685C (Kenney, DWS) at Q&A 351-53.) [

] (*See* CX-0522; CX-0639C at tbls. A.1, A.6; CX-0649C.) The evidence also shows that [

] meets the limitations of claims 1-4 of the '697 patent. (*See* CX-2685C (Kenney, DWS) at Q&A 355-56, 364, 380-85, 389-91, 395-99, 407-11, 415-18, 421-25.) The evidence further shows that the Cliq XT is [

] (*See id.* at Q&A 358-59, 365; CX-0651; CX-0653; CX-0654; JX-143C at 93:14-18, 93:25-94:3; JX-122C at 104:8-16.)

To interoperate in a 3GPP-UMTS (a.k.a., WCDMA) cellular network, the evidence shows that the message portion of a transmission on the PRACH must be scrambled using the long scrambling code, $C_{long,n}(i)$, specified in 3GPP TS-25.213 § 4.3.2.2. (*See* CX-2685C (Kenney, DWS) at Q&A 171; CX-0272 at §§ 4.3.2.1, 4.3.2.2, 4.3.2.5.) Thus, any device that supports 3GPP-UMTS in the FDD frequency bands will necessarily use the $C_{long,n}(i)$ equation set forth in Section 4.3.2.2 of the 3GPP TS-25.213 standard to generate a complex-valued pseudonoise scrambling code when interoperating in a 3GPP-UMTS cellular network. As set forth above, the evidence presented by Motorola shows that Cliq XT supports 3GPP-UMTS in the FDD frequency bands. Thus, I find that Motorola has shown by a preponderance of the evidence that the Cliq XT uses the $C_{long,n}(i)$ equation set forth in Section 4.3.2.2 of the 3GPP TS-25.213 standard to generate a long scrambling code to scramble the message portion of the PRACH when interoperating with a 3GPP-UMTS cellular network. Accordingly, when the Cliq XT interoperates with a 3GPP-UMTS cellular network, the Cliq XT directly infringes claims 1-4 of the '697 patent.

The evidence shows that the Cliq XT [

] Because generating the long scrambling code, $C_{long,n}$ (i), in accordance with the 3GPP-UMTS standard practices the method steps of claims 1-4 of the '697 patent, I find Motorola has shown by a preponderance of the evidence [

] direct infringement of claims 1-4 of the '697 patent.

The evidence also shows that Motorola's expert, Dr. Kenney, tested the Cliq XT and was able to successfully send an email message on T-Mobile's 3GG-UMTS cellular network. (CX-2685C (Kenney, DWS) at Q&A 360-61.) T-Mobile's cellular network is a 3GPP-UMTS network that uses FDD bands. (*Id.* at Q&A 366.) I have previously found that the Cliq XT uses the $C_{long,n}$ (i) equation set forth in Section 4.3.2.2 of the 3GPP TS-25.213 standard to generate a long scrambling code to scramble the message portion of the PRACH when interoperating with a 3GPP-UMTS cellular network. I have also found that generation of the long scrambling code, $C_{long,n}$ (i), in accordance with 3GPP TS-25.213 § 4.3.2.2 meets the limitations of claims 1-4 of the '697 patent. Thus, I find that when Dr. Kenney used the Cliq XT for its intended purpose to send an email message on T-Mobile's 3G cellular network, he necessarily practiced the method steps of claims 1-4 of the '697 patent. (CX-2685C (Kenney, DWS) at Q&A 366.) Accordingly, I find Motorola has shown by a preponderance of the evidence that Dr. Kenney's use of the Cliq XT constituted a direct infringement of claims 1-4 of the '697 patent.

As discussed above, Motorola has adduced evidence that shows that the Cliq XT has been used in a manner that practices each of claims 1-4 of the '697 patent. (*Certain Ammonium Octamolybdate Isomers*, Inv. No. 337-TA-477, Comm'n Op. at 55 (U.S.I.T.C. Jan. 2004) ("In order to satisfy the technical prong of the domestic industry requirement, it is sufficient to show

that the domestic industry practices any claim of that patent, not necessarily an asserted claim of that patent."). Accordingly, I find that Motorola has proven by a preponderance of the evidence that the Cliq XT satisfies the technical prong of the domestic industry requirement for the '697 patent.

F. Validity

1. Anticipation - π/2-shift BPSK modulation

Apple argues that the π/2-shift BPSK modulation anticipates claims 1, 2, and 4 of the '697 patent. Apple argues that there is no dispute that the π/2-shift BPSK modulation is prior art and that the π/2-shift BPSK modulation scheme restricts the phase difference between consecutive chips to ± 90°. (RIB at 137.) Apple also argues that the limitation "each selected chip time" can be every chip time (or in the language of claim 4, N can equal 1). (*Id.*) Thus, Apple argues that under Motorola's proposed constructions, where the preselected phase difference can be ± 90°, the π/2-shift BPSK modulation anticipates. (*Id.*)

Apple also argues that claim 3 is anticipated by the π/2-shift BPSK modulation. (*Id.*) Apple argues that the π/2-shift BPSK modulation restricts the phase difference between a prior chip time and a next chip time by ± 90° at every chip time. (*Id.*) Because the π/2-shift BPSK modulation restricts the phase difference at every chip time by ±90°, Apple argues that it necessarily restricts the phase difference at every other chip time by ±90° as required by claim 3. (*Id.*) Apple argues that the fact that the π/2-shift BPSK modulation scheme restricts the phase difference at unselected chip is irrelevant because claim 3 places no restriction on what happens during unselected chip times. (*Id.*)

Motorola does not individually address Apple's invalidity arguments, but rather attacks Apple's contentions in general arguing that: (1) Apple's invalidity arguments are inconsistent with its statements concerning the invention and purpose of the restriction (*see* CIB at 91-93.);

(2) Apple's invalidity arguments are based on its erroneous construction of selecting a chip time to include selection at every chip (*see* CIB at 93-95.); (3) Apple admits that all the modulation schemes upon which it bases its invalidity contentions operate to restrict every transition from one chip to the next chip in the same way (*see* CIB at 96.); and (4) Apple's counsel admitted that its invalidity arguments fail for claim 3, because claim 3 requires N=2 and the prior art references on which Apple relies all operate with N=1 (*see* i*d.*).

Analysis

The $\pi/2$-shift BPSK modulation scheme was disclosed to the patent examiner as prior art in the specification of the '697 patent. (*See* JX-004 at 2:30-34.) The specification of the '697 patent explicitly distinguishes the claimed invention from the prior art $\pi/2$-shift BPSK modulation scheme. (*See id.* at 4:54-64.) Because $\pi/2$-shift BPSK modulation was disclosed to the patent examiner during the prosecution of the patent, Apple's burden of showing that the $\pi/2$-shift BPSK modulation scheme anticipates the asserted claims of the '697 patent is especially high. *Tokai Corp. v. Easton Enterprises, Inc.*, 632 F.3d 1358, 1367 (Fed. Cir. 2011) ([A]lthough the standard of proof does not depart from that of clear and convincing evidence, a party challenging validity shoulders an enhanced burden if the invalidity argument relies on the same prior art considered during examination by the U.S. Patent and Trademark Office.")

Apple's anticipation argument is premised on the notion that the limitation "each selected chip time" in independent claim 1 of the '697 patent can be every chip time. As discussed in detail, *supra*, I have construed that phrase "selecting a chip time" to mean "selecting a chip time, but not all chip times." Thus, under the proper claim construction, Apple's anticipation argument is without merit.

Claim 1 requires that "at each selected chip time, restricting the phase difference between a previous complex PN chip and a next complex PN chip to a preselected phase angle." In a π/2-shift BPSK modulation scheme, the only possible phase difference between consecutive chips is 90 degrees (either +90 degrees or -90 degrees). Thus, at every chip time, the phase difference is 90 degrees. Because the phase difference is always 90 degrees, I do not find that the phase difference is ever restricted. Thus, I do not find that a π/2-shift BPSK modulation scheme satisfies the "restricting the phase difference … to a preselected phase angle" limitation of claim 1 of the '697 patent.

For the reasons above, I do not find that π/2-shift BPSK modulation meets all the claim limitations of claim 1. Thus, I find that Apple has fallen far short of proving by clear and convincing evidence that π/2-shift BPSK modulation anticipates claim 1 of the '697 patent. Because π/2-shift BPSK modulation does not anticipate independent claim 1 of the '697 patent, it also does not anticipate dependent claims 2-4. *See In re Fritch*, 972 F.2d 1260, 1266 (Fed. Cir. 1992); *RCA Corp. v. Applied Digital Data Systems, Inc.*, 730 F.2d 1440, 1446 (Fed. Cir. 1984) ("Since claim 3 of the Cole patent is dependent upon claim 2, which is not anticipated, claim 3 cannot be anticipated.").

2. Obviousness

a. Combination of π/2-shift BPSK and QPSK modulation

Apple argues that asserted claims 1-4 of the '697 patent would have been obvious to one of ordinary skill in the art in light of π/2-shift BPSK modulation in combination with QPSK modulation. (RIB at 138-40.)

Motorola does not individually address Apple's invalidity arguments, but rather attacks Apple's contentions in general arguing that: (1) Apple's invalidity arguments are inconsistent with its statements concerning the invention and purpose of the restriction (*see* CIB at 91-93.);

(2) Apple's invalidity arguments are based on its erroneous construction of selecting a chip time to include selection at every chip (*see* CIB at 93-95.); (3) Apple admits that all the modulation schemes upon which it bases its invalidity contentions operate to restrict every transition from one chip to the next chip in the same way (*see* CIB at 96.); and (4) Apple's counsel admitted that its invalidity arguments fail for claim 3, because claim 3 requires N=2 and the prior art references on which Apple relies all operate with N=1 (*see id.*). Motorola also argues that Apple has not identified any prior art reference that discloses a combination of QPSK and π/2-BPSK. (*Id.* at 97.) Additionally, Motorola argues that Apple has failed to adduce any evidence that one of ordinary skill in the art would combine the two modulation schemes in a way to obtain the method of selection and restriction claimed in the '697 patent. (*Id.*)

Analysis

Both the QPSK and π/2-BPSK modulation schemes were disclosed to the patent examiner as prior art in the specification of the '697 patent. (*See* JX-004 at 2:30-41.) The specification of the '697 patent explicitly distinguishes the claimed invention from the prior art QPSK and π/2 BPSK modulation schemes. (*See id.* at 4:54-64.) Because QPSK and π/2 BPSK modulation were disclosed to the patent examiner during the prosecution of the patent, Apple's burden of showing that claims 1-4 of the '697 patent are obvious in light of the QPSK modulation scheme in combination with the π/2 BPSK modulation scheme is especially high. *Tokai Corp.*, 632 F.3d at 1367 ("[A]lthough the standard of proof does not depart from that of clear and convincing evidence, a party challenging validity shoulders an enhanced burden if the invalidity argument relies on the same prior art considered during examination by the U.S. Patent and Trademark Office.").

Apple's obviousness argument is without merit. Apple rests it entire obviousness case on attorney argument claiming that "[t]he asserted claims are thus a textbook case of combining known prior art modulation schemes to achieve predictable results, and thus are obvious as a matter of law." (RIB at 140; *Perfect Web Technologies, Inc. v. InfoUSA, Inc.*, 587 F.3d 1324, 1332 (Fed. Cir. 2009) ("Unsworn attorney argument is not evidence.") (quoting *Gemtron Corp. v. Saint-Gobain Corp.*, 572 F.3d 1372, 1380 (Fed. Cir. 2009)) (internal formatting omitted).) To prove obviousness, however, Apple must show that it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the QPSK and $\pi/2$ BPSK modulation schemes in a manner that would result in the invention disclosed in the asserted claims. *Unigene Laboratories, Inc. v. Apotex, Inc.*, 655 F.3d 1352, 1360 (Fed. Cir. 2011) ("Obviousness requires more than a mere showing that the prior art includes separate references covering each separate limitation in a claim under examination. Rather, obviousness requires the additional showing that a person of ordinary skill at the time of the invention would have selected and combined those prior art elements in the normal course of research and development to yield the claimed invention.") (internal citation omitted.). Yet Apple provides absolutely no evidence that one of ordinary skill would have been motivated to combine the QPSK and $\pi/2$ BPSK modulation schemes. Further, Apples provides absolutely no evidence that one of ordinary skill in the art would combine the QPSK and $\pi/2$ BPSK modulation schemes to select a chip time and restrict the phase difference at each selected chip time as required by claim 1 of the '697 patent.

Accordingly, I find that Apple has failed to prove by clear and convincing evidence that claims 1-4 of the '697 patent would have obvious in light of the QPSK modulation scheme in combination with the $\pi/2$ BPSK modulation scheme.

b. Sato '328 in combination with the knowledge of one of ordinary skill in the art

Apple argues that claims 1-4 of the '697 patent would have been obvious to one of ordinary skill in the art in light of U.S. Patent No. 5,956,328 to Sasaki ("the Sato '328 patent") in combination with the knowledge of one of ordinary skill in the art. (RIB at 140-41.) Motorola does not individually address Apple's invalidity arguments, but rather attacks Apple's contentions in general arguing that: (1) Apple's invalidity arguments are inconsistent with its statements concerning the invention and purpose of the restriction (*see* CIB at 91-93); (2) Apple's invalidity arguments are based on its erroneous construction of selecting a chip time to include selection at every chip (*see* CIB at 93-95); (3) Apple admits that all the modulation schemes upon which it bases its invalidity contentions operate to restrict every transition from one chip to the next chip in the same way (*see* CIB at 96); and (4) Apple's counsel admitted that its invalidity arguments fail for claim 3, because claim 3 requires N=2 and the prior art references on which Apple relies all operate with N=1 (*see id.*).

Analysis

Apple's obviousness argument is completely deficient. The totality of Apple's obviousness argument spans roughly one paragraph in its initial post-hearing brief and concludes by stating, "As explained by Mr. Lanning, Sato 328 renders obvious each of the asserted claims." (*See* RIB at 140-41.) Apple then cites in support to twenty-nine Q&As from Mr. Lanning's direct witness statement and fourteen demonstratives. (*Id.* at 141.) Apple provides no explanation in its brief of how the Sato '329 patent in combination with the knowledge of one of skill in the art reads on the asserted claims of the '697 patent. *Velander v. Garner*, 348 F.3d 1359, 1363 (Fed. Cir. 2003) (explaining that a requirement for a finding of obviousness is that "all the elements of an invention are found in a combination of prior art references"). Moreover,

Apple's reliance on Mr. Lanning's witness statement to set forth the entirety of its obviousness argument is wholly improper -- substantive arguments and analysis must be briefed. Also, to permit Apple to rely on citation to the evidentiary record to make its obviousness argument without any analysis of the issues in its brief would be tantamount to permitting Apple to circumvent the page limits I imposed on the parties' post hearing briefs. Accordingly, I find Apple has failed to prove by clear and convincing evidence that the Sato '328 patent in combination with the knowledge of one of ordinary skill in the art renders claims 1-4 of the '697 patent obvious.

On the merits, the evidence shows that the Sato '328 patent was filed on December 2, 1996 and issued on September 21, 1999. (RX-0126, cover page.) Because the Sato '328 patent has an earlier effective filing date than the '697 patent, the Sato '328 patent is prior art under 35 U.S.C. § 102(e).

The evidence shows that the Sato '328 patent discloses a $\pi/4$-shift QPSK modulation scheme in which the phase difference between two consecutive chips is always either -135°, -45°, $+45^{\circ}$, or $+135^{\circ}$. (*See* RX-0126; CX-2700C (Kenney, RWS) at Q&A 71.) The evidence shows that $\pi/4$-shift QPSK modulation operates in the same manner at every chip time. That is, at every chip time the phase difference between the previous chip and the next chip is always either $\pm 45^{\circ}$ or $\pm 135^{\circ}$. (*See* CX-2700C (Kenney, RWS) at Q&A 54; RX-1286C (Lanning, DWS) at Q&A 314.) Thus, for the same reasons I have expressed, *supra*, with regard to Apple's anticipation argument based on the $\pi/2$-shift BPSK modulation scheme, I find that the $\pi/4$-shift QPSK modulation scheme disclosed in the Sato '328 patent does not teach the steps of either "selecting a chip time" or "restricting a phase difference." (*See* CX-2700C (Kenney, RWS) at Q&A 105, 107-08.) Additionally, the Sato '328 patent does not disclose "restricting a phase

difference … to *a preselected phase angle,*" because π/4-shift QPSK modulation always results in a phase difference of one of either two phase angles, 45 degrees or 135 degrees. (CX-2700C (Kenney, RWS) at Q&A 109.) Neither Apple nor its expert, Mr. Lanning, provides any explanation of how the deficiencies I have cited hereinabove are rectified by the knowledge of one of ordinary skill in the art, or for that matter, why one of ordinary skill in the art would have chosen to modify the Sato '328 patent to reach the invention disclosed in claims 1-4 of the '697 patent. Accordingly, on the merits, I also find that Apple has failed to prove by clear and convincing evidence that the Sato '328 patent in combination with the knowledge of one of ordinary skill in the art renders claims 1-4 of the '697 patent obvious.

c. Kayshap in combination with the knowledge of one of ordinary skill in the art

Apple argues that claims 1-4 of the '697 patent would have been obvious to one of ordinary skill in the art in light of an October 1996, IEEE paper titled, "The performance of CDMA System Using π/4-Shift QPSK and π/2-Shift BPSK With The Nonlinearity Of HPA" by Kayshap et al. ("the Kayshap paper") in combination with the knowledge of one of ordinary skill in the art. (RIB at 141-42.)

Motorola does not individually address Apple's invalidity arguments, but rather attacks Apple's contentions in general arguing that: (1) Apple's invalidity arguments are inconsistent with its statements concerning the invention and purpose of the restriction (*see* CIB at 91-93.); (2) Apple's invalidity arguments are based on its erroneous construction of selecting a chip time to include selection at every chip (*see* CIB at 93-95.); (3) Apple admits that all the modulation schemes upon which it bases its invalidity contentions operate to restrict every transition from one chip to the next chip in the same way (*see* CIB at 96.); and (4) Apple's counsel admitted that

its invalidity arguments fail for claim 3, because claim 3 requires N=2 and the prior art references on which Apple relies all operate with N=1 (*see id.*).

Analysis

Apple's obviousness argument is completely deficient. The totality of Apple's obviousness argument spans slightly more than two paragraphs in its initial post-hearing brief and concludes by stating, "As explained by Mr. Lanning, Kayshap renders obvious each of the asserted claims." (*See* RIB at 141-42.) Apple then cites in support to twenty-four Q&As from Mr. Lanning's direct witness statement and thirteen demonstratives. (*Id.* at 142.) Apple provides no explanation in its brief of how the Kayshap paper in combination with the knowledge of one of skill in the art reads on the asserted claims of the '697 patent. *Velander v. Garner*, 348 F.3d 1359, 1363 (Fed. Cir. 2003) (explaining that a requirement for a finding of obviousness is that "all the elements of an invention are found in a combination of prior art references"). Moreover, Apple's reliance on Mr. Lanning's witness statement to set forth the entirety of its obviousness argument is wholly improper-- substantive arguments and analysis must be briefed. Also, to permit Apple to rely on citation to the evidentiary record to make its obviousness argument without any analysis of the issues in its brief would be tantamount to permitting Apple to circumvent the page limits I imposed on the parties' post hearing briefs. Accordingly, I find Apple has failed to prove by clear and convincing evidence that the Kayshap paper in combination with the knowledge of one of ordinary skill in the art renders claims 1-4 of the '697 patent obvious.

On the merits, the evidence shows that the Kayshap paper was published in October 1996. (RX-0128.) Because the Kayshap paper was described in a printed publication more than

one year prior to the effective filing date of the '697 patent, the Kayshap paper is prior art under 35 U.S.C. §§ 102(a) and (b).

The Kayshap paper discuses and compares the performance of two modulation schemes, the π/2-shift BPSK modulation scheme and the π/4-shift QPSK modulation scheme, when amplified by a high power amplifier ("HPA"). (*See* CX-2700C (Kenney, RWS) at Q&A 79; RX-0128, Figure 5.) The authors of the paper conclude based on their analysis that "both π/4-shift QPSK and the π/2-shift BPSK schemes are robust to nonlinear amplification from the point of view of error rate performance when used in CDMA." (RX-0128 at 495.) Further, they conclude that "both schemes have almost the same performance under the same data rate and bandwidth." (*Id.*)

The two modulation schemes disclosed in the Kayshap paper are π/2-shift BPSK and π/4-shift QPSK. (*See* CX-2700C (Kenney, RWS) at Q&A 83.) I have already discussed, *supra*, both of these modulation schemes (Apple's anticipation allegation is based on π/2-shift BPSK modulation and the Sato '328 patent discloses π/4-shift QPSK) and found they did not disclose all the elements of the asserted claims of the '697 patent. Both of these modulation schemes operate in the same manner at every chip time. In the case of π/4-shift QPSK modulation, the phase difference between a previous chip and a next chip is always either -135°, -45°, +45°, or +135°. In the case of π/2-shift BPSK modulation, the phase difference is always either -90° or +90°. Thus, as previously found, the π/2-shift BPSK modulation scheme and π/4-shift QPSK modulation scheme do not practice the steps of "selecting a chip time" or "restricting a phase difference." (*See* CX-2700C (Kenney, RWS) at Q&A 143-45.) Neither Apple nor its expert, Mr. Lanning, provides any explanation of how the deficiencies I have cited are rectified by the knowledge of one of ordinary skill in the art, or for that matter, why one of ordinary skill in the

art would have chosen to combine the two modulation schemes disclosed in the Kayshap paper to reach the invention disclosed in claims 1-4 of the '697 patent. Accordingly, on the merits, I also find that Apple has failed to prove by clear and convincing evidence that the Kayshap paper in combination with the knowledge of one of ordinary skill in the art renders claims 1-4 of the '697 patent obvious.

d. IS-95 in combination with the knowledge of one of ordinary skill in the art

Apple argues that claims 1-4 of the '697 patent would have been obvious to one of ordinary skill in the art in light of the TIA/EIA/IS-95-A Interim Standard, titled, "Mobile Station-Base station Compatibility Standard for Dual-Mode Wideband Spread Spectrum Cellular System," which was published in May 1995 by the Telecommunications Industry ("IS-95 Interim Standard") in combination with the knowledge of one of ordinary skill in the art. (RIB at 142-44; RX-0129.)

Motorola does not individually address Apple's invalidity arguments, but rather attacks Apple's contentions in general arguing that: (1) Apple's invalidity arguments are inconsistent with its statements concerning the invention and purpose of the restriction (*see* CIB at 91-93.); (2) Apple's invalidity arguments are based on its erroneous construction of selecting a chip time to include selection at every chip (*see* CIB at 93-95.); (3) Apple admits that all the modulation schemes upon which it bases its invalidity contentions operate to restrict every transition from one chip to the next chip in the same way (*see* CIB at 96.); and (4) Apple's counsel admitted that its invalidity arguments fail for claim 3, because claim 3 requires N=2 and the prior art references on which Apple relies all operate with N=1 (*see id.*).

Analysis

Apple's obviousness argument is completely deficient. The totality of Apple's obviousness argument spans little more than a paragraph in its initial post-hearing brief and concludes by stating, "As explained by Mr. Lanning, *Sato 328* renders obvious each of the asserted claims." (*See* RIB at 144 (emphasis added).) As Apple is arguing that the asserted claims are obvious in light of the IS-95 Interim Standard, the concluding statement and its accompanying citations to the Sato patent are irrelevant and leave Apple's initial post-hearing devoid of even a single statement (beyond the section heading) asserting that claims 1-4 of the '697 patent are obvious in light of the IS-95 Interim Standard in combination with the knowledge of one of ordinary skill in the art. Needless to say, Apple also provides no explanation in its brief of how the IS-95 Interim Standard in combination with the knowledge of one of skill in the art reads on the asserted claims of the '697 patent. *Velander v. Garner*, 348 F.3d 1359, 1363 (Fed. Cir. 2003) (explaining that a requirement for a finding of obviousness is that "all the elements of an invention are found in a combination of prior art references"). As Apple provides no substantive briefing, as well as no citation to evidentiary support for its argument that claims 1-4 of the '697 patent are obvious in light of the IS-95 Interim Standard, I find Apple has failed to prove by clear and convincing evidence that the IS-95 Interim Standard in combination with the knowledge of one of ordinary skill in the art renders claims 1-4 of the '697 patent obvious.

On the merits, the evidence shows that the IS-95 Interim Standard was published in May 1995. (RX-0129.) Because the IS-95 Interim Standard was described in a printed publication more than one year prior to the effective filing date of the '697 patent, the IS-95 Interim Standard is prior art under 35 U.S.C. §§ 102(a) and (b).

The IS-95 Interim Standard specifies that a compliant transmitter must use "offset" QPSK ("OQPSK"). (*See* CX-2700C (Kenney, RWS) at Q&A 89.) The evidence shows that in an OQPSK modulation scheme, the phase difference between two consecutive chips is always either -90°, 0°, or $+90^{\circ}$. (*See* CX-2700C (Kenney, RWS) at Q&A 36, 90.) The evidence shows that OQPSK modulation operates in the same manner at every chip time. That is, at every chip time the phase difference between the previous chip and the next chip is always either 0° or $\pm 90^{\circ}$. (*See* CX-2700C (Kenney, RWS) at Q&A 180.) Thus, for the same reasons I have expressed, *supra*, with regard to Apple's anticipation argument based on the $\pi/2$-shift BPSK modulation scheme, I find that the OQPSK modulation scheme disclosed in the IS-95 Interim Standard does not teach the steps of either "selecting a chip time" or "restricting a phase difference." (*See* CX-2700C (Kenney, RWS) at Q&A 180.) Additionally, the IS-95 Interim Standard does not disclose "restricting a phase difference … to *a preselected phase angle,*" because OQPSK modulation always results in a phase difference of one of either two phase angles, 0 degrees or 90 degrees. (CX-2700C (Kenney, RWS) at Q&A 180.) Neither Apple nor its expert, Mr. Lanning, provides any explanation of how the deficiencies I have cited are rectified by the knowledge of one of ordinary skill in the art, or for that matter, why one of ordinary skill in the art would have chosen to modify the OQPSK modulation scheme disclosed in the IS-95 Interim Standard to reach the invention disclosed in claims 1-4 of the '697 patent. Accordingly, on the merits, I also find that Apple has failed to prove by clear and convincing evidence that the IS-95 Interim Standard in combination with the knowledge of one of ordinary skill in the art renders claims 1-4 of the '697 patent obvious.

3. Lack of Written Description

Apple argues that Motorola's "attempt to stretch the claims to cover a scrambling sequence rather than the spreading sequences described in the patent as the sole means of achieving the benefits of the invention renders the asserted claims invalid for lack of written description." (RIB at 144.) Apple argues that the spreading code disclosed in the '697 patent is significantly different than the scrambling code Motorola accuses it of infringing. (*Id.*) Apple also argues that a spreading code is the only code used and restricted for processing a CDMA signal in the disclosure of the '697 patent. (*Id.*)

Motorola argues that Apple's contention that the asserted claims of the '697 patent are invalid for failure to comply with the written description requirement borders on the frivolous. Motorola asserts that Apple identified no case law to support its contention. Motorola contends that its expert, Dr. Kenney, testified that a person of ordinary skill in the art would understand the specification of the '697 patent to disclose both scrambling and spreading. Motorola also argues that the use of the term "processing" in the claims contradicts Apple's position that the claims are limited to spreading.

Analysis

Motorola asserts in this investigation that Apple's '697 accused products infringe claims 1-4 of the '697 patent when generating the long scrambling code, $C_{long,n}(i)$, according to the 3GPP standard. Apple's argument is premised on the fact that the asserted claims of the '697 patent do not cover scrambling sequences, but rather are limited to only spreading sequences. In support, Apple cites to the following passage from the specification:

> While the present invention generates a complex PN sequence use to process or spread a CDMA signal in a transmitter, this method and system for generating the complex PN sequence must also be used in a receiving unit to process or despread the received CDMA signal. Therefore, those persons skilled in the art should

> recognize that CDMA receivers must also practice the method and system of the present invention.

(JX-004 at 4:41-48.) The above passage makes clear that the present invention is used to "process or spread" a CDMA signal. In so doing, the passage distinguishes processing a signal from spreading a signal. Claims 1-4 of the '697 patent are all directed to a method for generating a complex pseudonoise sequence for *processing* a CDMA signal. Thus, contrary to Apple's argument, the specification and language of the claims suggest that the asserted claims are not limited to spreading. (*See also* JX-004 at 1:7-10, 4:41-48, 5:14-17.) Moreover, as Dr. Kenney convincingly testified, the language of the '697 specification is open to both spreading and scrambling operations and that a person of ordinary skill in the art at the time of the invention would have understood the specification in such a manner. Accordingly, I find Apple has failed to prove by clear and convincing evidence that claims 1-4 of the '697 patent are invalid for failure to comply with the written description requirement of Section 112 of the Patent Act.

4. Best Mode[12]

Apple argues that the inventors of the '697 patent had a preferred method for processing CDMA signals for peak-to-average reduction that is not disclosed or inferred in the '697 patent. (RIB at 153.) Specifically, Apple argues that the inventors had in their possession a preferred method that applied a particular type of Walsh codes to user data to form a CDMA signal that was subsequently processed by a complex PN sequence as part of the peak-to-average reduction scheme. (Id.) Apple argues that the combination of the specific Walsh codes and the restricted

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[12] Congress amended the patent laws in the Leahy-Smith America Invents Act to remove the Best Mode requirement as a basis for invalidity after a patent's issuance in cases filed after the enactment of the Act. (*See* Leahy-Smith America Invents Act, P.L. 112-29, Sec. 15 (Sept. 16, 2011).) Because the '697 patent was filed before the Act's enactment, the new law does not apply in this investigation.

complex PN sequence is necessary to provide the peak-to-average reduction disclosed in the '697 patent. (*Id.*) Apple argues that there is no disclosure of the use of specific Walsh codes in the '697 patent. (*Id.*) Apple argues that the '697 patent only discloses a process where the PN sequence is applied to real-valued user data. (*Id.* at 154.)

Motorola argues that Apple stretches the deposition testimony of Mr. Laird, an inventor of the '697 patent, to argue that the inventors did not disclose the best mode for practicing the '697 patent. (CIB at 49.) In particular, Motorola argues that Apple "cherry-picks" two statements from Mr. Laird's deposition testimony to conclude that Mr. Laird was aware that the use of Walsh codes would provide better peak-to-average reduction. (*Id.* at 49-50.) Motorola argues that Apple cannot clearly show based on Mr. Laird's testimony that Walsh codes were concealed. (*Id.* at 50.) Motorola argues that because the inventor's subjective belief is an element of the best mode requirement, Mr. Laird's deposition testimony cannot possible rise to the level of clear and convincing evidence. (*Id.*) Motorola also argues that Apple has failed to offer evidence that the Walsh codes are part of the claimed invention. (*Id.*) Motorola argues that because claims 1-4 of the '697 patent do not require use of a Walsh code in the course of selecting a chip time and restricting a phase difference, disclosure of Walsh codes is not required to satisfy the best mode requirement. (*Id.* at 50-51.) Thus, Motorola argues that even if Mr. Laird considered use of a Walsh code an improvement, it would not matter because Walsh codes are not part of the claimed method. (*Id.* at 51.)

Analysis

The inventors of the '697 patent disclosed in claims 1-4 a method for generating a complex PN sequence for processing a CDMA signal. (JX-004 at 5:14-27.) While the '697 patent notes the need for an improved method for generating a complex PN sequence that will

help reduce the peak-to-average ratio of the modulated signal, it is clear from the specification and plain language of the claims that the invention is directed to a method for generating a complex PN sequence not a method for reducing the peak-to-average ratio of the modulated signal. (*See* JX-004 at 1:7-10, 3:3-8, 3:26-27, 4:40-42, 5:14-27, 6:5-7.)

Apple's argument that the '697 patent is invalid for failing to satisfy the best mode requirement is premised on the fact that the inventors knew that the use of Walsh codes in combination with the claimed complex PN sequence provided improved peak-to-average reduction. However, because the claimed invention is directed to a method for generating a complex PN sequence and not a method for reducing the peak-to-average ratio of the modulated signal, I find the Walsh codes are outside of the scope of the claims. Dr. Kenney, who convincingly testified that using Walsh codes would be an entirely separate and independent way to affect a signal from the method disclosed in the '697 patent, confirms this conclusion. (*See* CX-2700C (Kenney, RWS) at Q&A 222.) Thus, I find Apple's argument that the inventors failed to disclose the use of Walsh codes beyond the best mode requirement of Section 112 of the Patent Act. Accordingly, I find Apple has failed to prove by clear and convincing evidence that claims 1-4 of the '697 patent are invalid for failing to satisfy the best mode requirement.

I also agree with Motorola that the evidence adduced by Apple allegedly showing that the inventors considered the use of Walsh codes in combination with the disclosed complex PN sequence their preferred method for reducing the peak-to-average ratio is lacking. Mr. Laird's testimony in no way suggests that the inventors preferred the use of Walsh codes and concealed that preference. (*See* JX-113C (Laird Depo.) at 109:22-110:18, 207:25-208:1.) Instead, Mr. Laird's testimony merely confirms that the invention discloses a QPSK modulation scheme, where at selected times there is a restriction of the phase transition. (*Id.*) Accordingly, for this

separate reason, I find Apple has failed to prove by clear and convincing evidence that claims 1-4 of the '697 patent are invalid for failing to satisfy the best mode requirement.

5. Unenforceability – Unclean Hand

Apple argues that even if I were to find that it is infringing the '697 patent, which I have, Motorola is barred from relief under the unclean hands doctrine. (RIB at 144.) Apple alleges Motorola has engaged in precisely the type of conduct that warrants application of this doctrine as anticipated by *Qualcomm Incorporated v. Broadcom Corporation*, 548 F.3d 1004 (Fed. Cir. 2008). Hence, Apple argues that Motorola's infringement claims of the '697 patent should be dismissed. (*Id.*)

Apple asserts that Motorola, as a participant in the creation of the 3GPP/UMTS standard and through its membership in the European Telecommunications Standards Institute ("ETSI"), had an obligation to timely disclose those of its patents Motorola believed were essential to the 3GPP/UMTS standard. (*Id.* at 147.) Despite its obligation, Apple argues that Motorola waited nearly four years before disclosing the '697 patent to ETSI. Apple alleges Motorola's tardy disclosure cannot be the result of mere negligence or honest oversight and points out the inventors of the '697 patent not only participated in the ESTI standards setting organization, but actively pushed to have the invention embodied in the '697 invention adopted as the standard [ ] (*Id.* at 149.) Accordingly, Apple alleges the single most reasonable inference that can be drawn from these uncontestable facts is that the inventors, and Motorola, acted in bad faith and thus it should not be permitted to benefit from its improper conduct in the form of license payments from those now practicing the standard. (*Id.* at 147.)

In particular, Apple alleges that: (1) ETSI IPR Policy requires disclosure of essential patents; (2) Motorola knew it had a duty to disclose its IPR (the '697 patent); (3) Motorola failed

to timely disclose the '697 patent in violation of ETSI's IPR Policy for more than four years; and (4) the facts compel a finding of unclean hands.

With regard to ETSI's IPR Policy, Apple argues that as a member of ETSI and participant in the creation of the 3GPP/UMTS standard, Motorola had an obligation to timely disclose those patents it believed might be essential to the 3GPP/UMTS standard. Apple asserts that ETSI's Intellectual Property Rights ("IPR") policy (Apr. 8, 2009) requires such disclosure:

> each MEMBER shall use its reasonable endeavors, in particular during the development of a STANDARD or TECHNICAL SPECIFICATION where it participates, to inform ETSI of ESSENTIAL IPRs in a timely fashion. In particular, a MEMBER submitting a technical proposal for a STANDARD or TECHNICAL SPECIFICATION shall, on a bona fide basis, draw the attention of ETSI to any of that MEMBER's IPR which might be ESSENTIAL if that proposal is adopted.

(RX-0120 at § 4.1.)

Apple argues the disclosure required by ETSI is important and that courts have acknowledged that competitors collaborating to set industry-wide standards implicate numerous concerns regarding anticompetitive behavior, noting that "[p]rivate standard setting occurs in a consensus-oriented environment, where participants rely on structural protections, such as rules requiring the disclosure of IPRs." (RIB at 148 (citing *Broadcom Corp.* v. *Qualcomm Inc.,* 501 F.3d 297, 312 (3d Cir. 2007).) Apples notes that courts understand that once a standard is adopted by an industry, manufacturers creating products practicing that standard are locked into the technology essential to that standard, which grants the owners of the patented technology a significant advantage over owners of other technologies. Apple also argues that those that do not own the intellectual property underlying a standard are at both a significant cost and competitive disadvantage and that this too is recognized by the courts. (*Id.*)

With regard to Motorola's duty to disclose the '697 patent, Apple argues Motorola and its inventors knew it was important to comply with IPR policies of the various SSOs. Apple asserts

that Motorola's 30(b)(6) witness testified that [

] (*See id.* at 148-49 (citing JX-106 at 139:10-140:15.)) Apple argues that Motorola and the '697 inventors nevertheless inexplicably failed to timely disclose the '697 patent to ETSI while they were actively soliciting ETSI to accept the '697 technology as the standard.

Concerning Apple's argument that Motorola failed to timely disclose the '697 patent for more than four years, Apple asserts that on January 24, 1998, Motorola filed the application for the 697 patent [

] (*See id.* at 149 (citing RX-140 at 1, 3).) Apple argues that [

] (*Id.* at 150 (citing JX-140C at 100:18-101:1).)

Apple alleges it was wrong that Motorola failed to disclose the '697 patent application to ETSI because Motorola and the inventors had publicly stated that the technology covered by the patent was adopted into standards by both ETSI and TIA. Further, Apple argues that the inventors even wrote an article explaining that the technology in the undisclosed Motorola '697 patent had been "adopted for the reverse link of third generation CDMA proposals by TIA for

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[13] I note that in its post-hearing briefs, Apple references CX-465, which is an exhibit that is not in evidence.

the U.S., ETSI for Europe, ARIB for Japan, and TTA for Korea." (*Id.* at 150 (citing RX-408 at 1).) Hence, Apple argues that Motorola knew it was seeking patent protection for technology that it was also actively seeking to have incorporated in a standard.

Apple asserts that the 3GPP standard, which allegedly includes the invention embodied in the '697 patent, was adopted in December 1999. (*Id.* at 151 (citing RX-970).) Apple argues that the '697 patent issued on June 12, 2001, [

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Apple argues that Motorola's disclosure violated ETSI's timely disclosure policy (paragraph 4.1). Apple alleges this "prevented ETSI members from considering an unencumbered alternative technology, and gave Motorola an advantage over other competing companies." (*Id.* at 151.)

Apple alleges the uncontested facts compel a finding of unclean hands, yet admits there is, only circumstantial evidence of bad faith. Nevertheless, Apple argues that the single most reasonable inference of Motorola's behavior is that it acted with bad intent. Specifically, Apple argues that Motorola made a submission to ETSI [

] Apple argues that this is despite: (1) having a duty to disclose IPR; (2) actively soliciting ETSI to accept their technology as the standard; and (3) having a patent (the '697) they believed was essential to the technology in question. Apple argues that the single most reasonable inference from this course of conduct is that Motorola and its inventors acted in bad faith and intentionally hid the 697 Patent.

Apple argues that the remaining elements of unclean hands are also established. Apple argues that Motorola's bad faith directly relates to the issues in this investigation (Motorola's

assertion of the '697 patent against Apple), and Apple, by having to defend against Motorola's '697 claims, has been directly injured. Accordingly, Apple argues I should not enforce the '697 patent against Apple under the doctrine of unclean hands.

Motorola argues that Apple has failed to prove unclean hands. (CIB at 98.) Motorola asserts that Apple must prove its right to this equitable defense by clear and convincing evidence, including proof that Motorola engaged in egregious and intentionally misleading conduct such as that outlined in the leading case of *Qualcomm*. Motorola asserts there is no such evidence here. Unlike the facts of *Qualcomm*, Motorola argues that it never hid its participation in the standards setting organization ("SSO"). Motorola argues there is no evidence of any *Qualcomm*-like "scheme" or "carefully orchestrated" plan to deceive. Instead, Motorola alleges it has always been a member in good standing of ETSI. Moreover, Motorola argues there is no patent "hold up" issue because Motorola has licensed the patent on FRAND ("Fair, Reasonable and Non-Discriminatory") terms, exactly as required by ETSI. Motorola also alleges that except for Apple, every major cell phone manufacturer has taken a license to the '697 patent.

Motorola also argues that it routinely endeavors to comply with the policies of standard setting organizations and has developed processes to ensure its essential patents are disclosed and licenses offered. Indeed, Motorola argues that it [

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Motorola alleges Apple's unclean hands accusation is based on "the thinnest of reeds," *i.e.*, an alleged failure by Motorola in 1998 to have disclosed a confidential pending U.S. patent application to ETSI when the W-CDMA standard was being developed. Motorola argues Apples claim fails because: (1) Apple incorrectly treats the rules of ETSI – a private, voluntary European organization – as creating a legally enforceable strict liability standard, any breach of which

results in rendering Motorola's U.S. patent unenforceable; (2) ETSI disclosure rules do not apply to confidential information, which the U.S. patent application was in 1998; (3) ETSI policy discourages technical attendees from discussing patents, and the only evidence from an ETSI participant as to the disclosure expectations was that in all the ETSI meetings [

] never recalled a participant disclosing a patent application to a technical group; (4) Motorola complied with ETSI's written policies because it stated, on more than one occasion, its willingness to license its essential patents on FRAND terms and because it told ETSI in writing that it did not know which of its patents might become essential to the W-CDMA standard, but should any become essential Motorola would license them on FRAND terms; and (5) Apple's position on essential patents is inconsistent and irreconcilable: it denies that the issued '697 patent covers the standard but simultaneously maintains that Motorola should have known in 1998 that its pending application would eventually cover the standard and therefore should have disclosed it. (*See* CIB at 99-100.)

Analysis

The evidentiary standard applicable to an unclean hands defense is stringent. This is because patents are presumed valid and enforceable, and an infringer that seeks to overcome this presumption must prove its defense by clear and convincing evidence. *Microsoft Corp. v. i4i Ltd., Partnership*, 546 U.S. ----, 131 S. Ct. 2238, 2243 (June 9, 2011). This heightened burden is "constant and never changing," and is applied consistently in the context of invalidity defenses. *See id.* (*citing American Hoist & Derrick Co. v. Sowa & Sons, Inc.*, 725 F.2d 1350, 1360 (Fed. Cir. 1984)). The same burden applies for defenses that a patent is unenforceable based on an alleged violation of a duty to a standards setting organization. *Hynix Semiconductor Inc. v. Rambus Inc.*, 645 F.3d 1336, 1348 (Fed. Cir. 2011); *Qualcomm Inc. v. Broadcom Corp.*, 548

F.3d 1004, 1020 (Fed. Cir. 2008). The same burden applies for defenses based on the doctrine of unclean hands. *Certain L-Lysine Feed Products, their Methods of Production and Genetic Constructs for Production*, 337-TA-571 ("*L-Lysine*"), Commission Determination at p. 47 (July 31, 2008).

Apple argues the case closest to the facts of the instant case is *Qualcomm*. In *Qualcomm*, the Federal Circuit analyzed whether the district court had correctly decided a case where Qualcomm Inc., had not disclosed the existence of its IPR to a SSO and in fact had actively concealed its IPR, while at the same time engaging in a plethora of other disreputable conduct. In reviewing the district court's decision, the Federal Circuit analyzed four separate areas. These four areas were: (1) Existence of Disclosure Duty (including an analysis of written agreements and the party's understanding of its duty of disclosure); (2) Scope of Disclosure Duty; (3) Breach of Disclosure Duty; and (4) the Appropriate Equitable Remedy. The starting point for the Federal Circuit's analysis was necessarily the district court's consideration of the written policies and procedures of the SSO, which were analyzed at length by the Federal Circuit and applied to the facts before it.

Therefore, the *sine qua non* for any analysis of the matters the Federal Circuit analyzed in *Qualcomm*, or any analysis for unclean hands, as it would pertain to this case, are the written ETSI agreements, directives, policies, procedures, etc., establishing Motorola's duty or obligation of disclosure, and the scope of Motorola's duty or obligation to disclose. In addition, any remedy or sanction that may be contained in the ETSI agreement, directives, policies, procedures, would also be relevant to determining an appropriate remedy if there was a breach of a duty of disclosure.

Despite the certain need for the existence of applicable ETSI agreements, directives,

policies, procedures, etc., the record before me contains no written ETSI agreements, procedures, or policies dated before 2008. Instead, both RX-120 and RX-1185 pertain to 2008 and later. Given the extremely remote dates of these exhibits, I find there is no written evidence in the record establishing by clear and convincing evidence, what, if any, obligations Motorola had to disclose its IPR as of the date of the '697 patent (June 12, 2001 – JX-004) or on September 20, 2002, the date Motorola did disclose the '697 patent, (among many others), to ETSI. (CX-0121 at MOTO-APPLE-0006037953_91873, MOTO-APPLE-0006037953 _91884.) Instead, the only probative evidence before me addressing ETSI disclosure is testimonial and it establishes attendees at standards setting meetings did not discuss IPR issues. (JX-140C, Whinnett Depo. at 145:11-25.) Further, as pointed out by Motorola and not mentioned by Apple, Apple's corporate representative on SSOs confirmed that disclosures are not made in technical groups, but instead are "formally filed with the organizational partners." (*See* JX-132C, Singer Depo. at 57:19-58:10.) Alternatively, Motorola's witnesses establish that its corporate practice is to be a good corporate citizen and comply with SSO rules.

Based upon the foregoing, I can only speculate as to what any relevant ETSI agreement, directive, policy, procedure, etc., provided as to Motorola's duty or obligation of disclosure, and the scope of Motorola's duty or obligation to disclose. Given the paramount importance of the written ETSI directives, policies, and procedures established in *Qualcomm*, I must conclude that Apple cannot sustain its burden of proof to sustain its allegation that Motorola acted in such an inequitable manner sufficient to deprive Motorola of its right to enforce its patent.

Even though I find the lack of proof of Motorola's ETSI obligations and duties for the relevant time period to be fatal to Apple's defense of unclean hands, I also note that I would not have sustained Apple's defense even if the ETSI evidence in record could be found to be relevant

to the time in question. Basically, Motorola's conduct does not even approach the wantonness of Qualcomm's conduct in *Qualcomm*, even if I were to view it in the light most favorable to Apple. I cannot find from the record before me that the most reasonable inference of Motorola's behavior was a plan to act in bad faith. Instead, I find, based upon the totality of the evidence before me that it is just as likely that Motorola: (1) made a mistake or administrative oversight in not providing notice to ETSI in a more timely fashion once the '697 patent issued; or (2) could reasonably have believed that as long as it did disclose its IPR and offered to license its patent under FRAND terms it was complying with the intent of the ETSI disclosure requirements as expressed in RX-120 and RX-1158. My interpretation of the ETSI documents before me establishes that there is an interest in protecting IPR holders, as well as developing useful standards, and as long as the IPR holders offer FRAND terms, the ETSI is satisfied, *e.g.*, " . . . ETSI IPR POLICY seeks a balance between the needs of the standardization for public use in the field of telecommunications and the rights of the owners of IPRs." (RX-120 at 1 (emphasis added).) Moreover, there is considerable discussion in the ETSI documents about what ETSI would do if FRAND terms are not offered.

In addition, I find Apple is wrong to insist the inventors understood they had an obligation to disclose the essential patents (IPR) they had been working on during ETSI technical meetings, although it is apparent this could have and theoretically should happen under the 2008 rules. (*See* RX-1158 at 52-55.) [

] Therefore, I cannot

find he had any understanding he was under an obligation to discuss or disclose IPR, a factor emphasized in the *Qualcomm* decision.

While it is true the 2008 ETSI standards establish ETSI members have an obligation to disclose "essential" IPR, it is equally true that Mr. Whinnet and others were already publishing, by 1999, how the technology underlying the '697 patent had been adopted by ETSI. (RX-408 at 1; *see* RIB at 150-51.) This, at least, indicates Motorola was not trying to hide that they developed the technology. What is more, even though there is evidence (*see* RX-408 at 1) that suggests that Motorola could have anticipate their technology would be essential to the ETSI standard in 1999, Motorola still had not been granted a U.S. patent and would not be until June 12, 2001. (JX-004, cover page.) Thus, June 12, 2001, would be the first date it can be said with certainty that Motorola knew or should have known it possessed IPR essential to the 3GPP standard and this occurred after the standard was promulgated. It is therefore, speculative for Apple to insist Motorola had to anticipate that its patent application filed in January 1998, would eventually be deemed essential even before ETSI promulgated the 3GPP standard in December of 1999, and before the application matured into the '697 patent several years later. (RX-970.) As noted, Motorola informed ETSI of its essential IPR on September 20, 2002. (CX-0121.)

The entire point of equity is to correct a wrong. As Apple recognizes in its Reply Brief, Motorola is at least partially arguing: "No harm, no foul." (RRB at 59.) Apple has generally attempted to overcome the rather apparent lack of a "foul" by speculating (without a scintilla of proof) that Motorola's silence in disclosing the '697 IPR somehow caused the ETSI to adopt the technology underlying the '697 patent as part of the 3GPP standard and this adoption resulted in potentially prohibitive expenses for the rest of the industry. Given the lack of any proof that any act of Motorola actually caused any harm (to anyone) and Apple's insistence the '697 patent is

not even required for a device to comply with the 3GPP standard, it is bold for Apple to request I grant it the most extreme sanction I can grant, the voiding of a properly issued U.S. patent. Rather, under the facts established in this record, it is wrong to expect me to refuse to enforce a patent because a party to a private and voluntary foreign SSO allegedly failed to timely comply with a disclosure requirement, even though Motorola pledged itself to offer its IPR, including the '697 patent, under FRAND terms, a stated goal of the SSO.

Accordingly, I find Apple has failed to show by clear and convincing evidence that Motorola acted with unclean hands.

VII. U.S. Patent No. 6,246,862

A. Introduction

The '862 patent[14] is directed to a portable communications device that has a sensor that disables the touch sensitive input device when brought in close proximity to the user. (JX-003 at 1:66-2:6.) In this way, the specification describes inadvertent actuations are prevented when a user holds the portable communications device up to his or her head. (*Id.* at 2:6-9.) The '862 patent describes the sensor as a proximity sensor.

B. Asserted Claim

Motorola is asserting claim 1 of the '862 patent against Apple's iPhone 4 and iPhone 3GS ("the '862 accused products"). Claim 1 reads as follows:

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[14] At the hearing and in its pre-trial brief, Apple characterized the invention of the '862 patent as "a trivial solution to a trivial problem." (Tr. at 1196:14-1197:1.) Nevertheless, upon cross examination, Mr. Lanning, Apple's primary expert, admitted the late Steve Jobs had characterized the incorporation of a proximity sensor into the iPhone as a "breakthrough." Specifically, "[a]nother breakthrough was the sensor that figured out when you put the phone to your ear, so that your lobes didn't accidentally activate some function." (Tr. at 1197:2-1198:25.)

1. A portable communication device comprising:

a processing section to control operation of the portable communication device in response to an input signal;

a user interface comprising a touch sensitive input device coupled to the processing section, the touch sensitive input device actuatable to generate the input signal; and

a sensor coupled to the user interface, the sensor to disable communication of the input signal to the processing section when the portable communication device is positioned in close proximity to a user, thereby, preventing inadvertent actuation of the touch sensitive input device.

C. Level of Ordinary Skill in the Art

The parties are in substantial agreement that a person of ordinary skill in the art pertinent to the '862 patent, as of February of 1999 (the filing date of the application for the '862 patent) would have at least a Bachelor's or Master's degree in Electrical Engineering, Computer Science or equivalent. In addition, such a person would need to have at least two years of experience in telecommunications technology, including at least one year of technical user interface requirements definition and/or design of wireless handsets. The evidence shows that Apple's expert, Mr. Lanning, and Motorola's expert, Dr. Vijay Madisetti, are substantially in agreement about the degree of ordinary skill required. (*See* RX-1286C (Lanning, DWS) at Q&A 411, 412; CX-2689C (Madisetti, DWS) at Q&A 56, 57.)

Accordingly, I find that a person of ordinary skill in the art at the time of the invention of the '862 patent would have a Bachelor's or Master's degree in Electrical Engineering, Computer Science or equivalent, and at least two years of experience in telecommunications technology, including at least one year of technical user interface requirements definition and/or design of wireless handsets.

D. Claim Construction

1. "input signal"

Claim Term	Motorola's Construction	Apple's Construction
"input signal"	"a signal representing user input from the touch sensitive input device"	"communication information generated from the user interface section in response to user actuation of the touch-sensitive input device"

Motorola states there is no real dispute over the meaning of this term. (CIB at 117.) In turn, Apple claims that neither party's infringement nor validity arguments turn on the construction of this term, but claims that the identification of where the input signal is generated on the iPhone 3GS, iPhone 4, and Droid 2 will determine whether other limitations of claim 1 are met. (RIB at 28.) Thus, I will construe this term.

The starting point for construing this term is to consider who is doing what to what. Here, the patent make clear that the input signal can originate with a user, but is not limited to such – a point both parties accept. (*See* RIB at 117 (quoting CX-2701C).) Thus, the "who" can be a user. The first "what" is input (*i.e.*, touching, etc.). The second "what" is the place where the input begins (*i.e.*, the touch sensitive screen or keypad). The specification makes clear that the touch sensitive input device can be a touch sensitive screen or keypad. Thus, once input is placed upon the touch screen, for example, the input is sent (in a manner not limited in claim 1) to the processing section that controls operation of the portable communication device.

Although claim 1 does not specify how the input is communicated to the processing section, Figure 2 of the patent does show an embodiment whereby the Touch Screen (TS) Driver Circuit 214 provides an input signal to the processing section in response to touches by the user's finger, etc. (JX-003, Figure 2, 4:30 – 57.)

In consideration of the foregoing, I find that Motorola's construction is incorrect. First, I find that Motorola's construction is not supported by its own expert, Dr. Madisetti, who stated the input signal could include more than user input. Second, I find neither the language of the claims nor the specification limits input to only user input. Further, I am reluctant to adopt Motorola's proposed construction because it uses the word "signal" to define a limitation that includes the word signal within it (*i.e.*, input signal).

Nor do I agree with Apple's construction. While I understand Apple's use of the words communication and information in its proposed construction, I cannot accept the remainder of its construction because I find it unnecessary and redundant. My paramount problem with Apple's construction is its use of the word "generated." I find Apple's use of the word "generated" is not relevant to properly defining the term input signal, *i.e.*, the source of the input signal is ultimately irrelevant to its definition and thus claim construction. Moreover, if I were to use the word "generated" to construe "input signal" it makes the claim language that directly follows the first use of "input signal" in claim 1 redundant. This too makes the use of "generated" and the language following it inappropriate. Further, because the rest of Apple's construction is dependent upon "generated" it too fails. I also note the language Apple uses after "generated" is particularly redundant and also inaccurate, for as I have found, the input signal does not have to be from a user, although it could be.

Therefore, after due consideration, I find the term "input signal" is properly construed in accordance with the language of the claims and specification as "information communicated from the touch sensitive input device."

2. "the sensor to disable communication of the input signal to the processing section"

Claim Term	Motorola's Construction	Apple's Construction
"the sensor to disable communication of the input signal to the processing section"	plain and ordinary meaning, but in the alternative, Motorola proposes "the input signal is not received by the processing section as a result of information provided by the sensor"	"the sensor sends a signal to the user interface instructing the user interface to stop generating input signals and to stop sending signals to the processing section"

a. Motorola's Allegations

Motorola argues:

As Dr. Madisetti testified, the phrase "the sensor to disable communication of the input signal to the processing section" does not require any construction. CX-2689C, Madisetti DWS at Q/A 65. The plain and ordinary meaning of this phrase is clear. A person of ordinary skill in the art reading the '862 patent would understand that there are many ways to disable communication of the input signal. CX-2689C, Madisetti DWS at Q/A 66. For example, the user interface could stop sending the input signal to the processing section, or the input signal could be labeled such that it is not acted upon by the processing section. *Id.*

In contrast, Apple proposes a construction that would import significant limitations from the preferred embodiments of the '862 patent, none of which have support in the plain language of the claim. The Federal Circuit has "repeatedly warned" courts against exactly the type of construction offered by Apple. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1323 (Fed. Cir. 2005) ("[A]lthough the specification often describes very specific embodiments of the invention, we have repeatedly warned against confining the claims to those embodiments." (internal citations omitted)). Indeed, even if the specification only describes a single preferred embodiment of the invention, it would still be improper to limit the claims to this preferred embodiment. *Id.* ("[W]e have expressly rejected the contention that if a patent describes only a single embodiment, the claims of the patent must be construed as being limited to that embodiment.") (internal citations omitted).

In particular, Apple's proposed construction would improperly import three significant limitations into claim 1 from the preferred embodiments of the '862 patent: (1) that the user interface stop generating input signals, (2) that the sensor send an instruction to the user interface, and (3) that "the sensor alone is responsible for disabling communication of the input signal." RX-1286C, Lanning DWS at Q/A 427 and 428. Each of these limitations is improperly limiting, and each was contradicted by testimony from Apple's own expert, as

addressed in turn below.

(1) As to Apple's contention that the user interface must stop *generating* input signals, rather than merely stop communicating them, Mr. Lanning specifically disclaimed Apple's contention in his Rebuttal Witness Statement: "claim 1 requires the disablement of the communication of the input signal from the user interface to the processing section, not the disablement of the generation of input signals by the user interface." RX-1290C, Lanning RWS at Q/A 640 (emphasis in original). Thus, Apple's own expert has recognized that Apple's proposed construction is improper.[15] Consistent with the plain meaning, claim 1 does not require that the user interface stop generating the input signal. *See* Lanning, Tr. at 1178:2-15 (acknowledging that the phrase "to stop generating input signals and to stop sending signals to the processing section" does not appear in claim 1). Within the scope of claim 1, for example, the user interface could continue generating the input signal, while disabling its communication in another manner.

(2) Apple also imports a second limitation into the claim requiring that the sensor send an instruction to the user interface. As opposed to the first limitation, Apple's expert waited until cross-examination to disclaim this portion of Apple's construction: on cross, Mr. Lanning acknowledged that the sensor could send any kind of signal. Lanning Tr. at 1177:2-22. In particular, Mr. Lanning admitted that the sensor could merely send a value or a series of ones and zeros. *Id.*

Given that Apple now acknowledges[16] that the signal from the sensor could be a value, a series of ones and zeros (*i.e.*, a digital signal), or another type of signal, the "instructing" language in Apple's proposed construction places no meaningful limitation on the scope of claim 1. *See also*, Lanning, Tr. at 1128:25-1129:6 ("Instructing could mean just sending a signal that has a status with it that instructs the user interface, meaning commands or tells the user interface to stop generating the signal."). Accordingly, while it is still Motorola's position that claim 1 does not require the sensor to send an instruction, this dispute has largely

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[15] Although Mr. Lanning attempted to backtrack from this admission at the hearing, his attempts at *post hoc* rationalization merely demonstrated the lack of any foundation for Apple's construction of this term. Lanning, Tr. at 1179:4-1180:4.

[16] Should Apple choose to contradict its own expert's testimony on this point, the intrinsic evidence also shows that the sensor could send signals which do not include an explicit instruction. Opening, Tr. at 191:11-192:17 (discussing Gordon '156 and Bowen '151). For example, Gordon '156, which is cited on the face of the '862 patent, "describes a proximity sensor that provides a signal representing the strength of the reflected light to a microprocessor that 'compares the level to a preset threshold in the microprocessor 30 to determine whether a user is located within a predetermined range of the communication device.'" CX-2689C, Madisetti DWS at Q/A 80; *see also*, JX-055, Gordon '156 at 3:38-4:3.

been rendered moot.[17]

(3) Finally, Mr. Lanning has also conceded that there is no requirement in claim 1 that the sensor ***alone*** disable communication of the input signal:

> ***Apple's construction does not require that the disable signal go directly from the sensor to the user interface section.*** Apple's construction requires that the instruction to stop generating and stop sending input signals to the processing section is an instruction that is issued by the proximity sensor. ***If the signal generated by the proximity sensor to disable the input signal passes through other components or circuitry before reaching the user interface, then the disclosure nonetheless would satisfy Apple's proposed construction.***
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> RX-1286C, Lanning DWS at Q/A 488 (emphasis added). Mr. Lanning acknowledged here that other components or circuitry may be involved in disabling communication of the input signal within the scope of claim 1, at least to the extent that these components may pass a disable signal from the sensor to the user interface. For example, the sensor could disable communication of the input signal by sending a signal through the processing section. Apple's proposed construction goes even further than Mr. Lanning's testimony, explicitly requiring the ***user interface*** to stop generating the input signal and to stop sending signals to the processing section. The user interface is separate from the sensor and, under Apple's construction, would play a critical role in disabling communication of the input signal. Accordingly, there is no real dispute that other components may be involved in disabling communication of the input signal, even under Apple's proposed construction. This argument is a red herring.[18]
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> The Court should reject Apple's improper attempts to import limitations into claim 1 and construe the phrase "the sensor to disable communication of the input signal to the processing section" according to its plain and ordinary meaning.

(CIB at 117-21.)

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[17] The sensors in both iPhones [

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[18] Moreover, to the extent Apple's argument is that the sensor must send an ***instruction*** to the user interface, this is incorrect for the reasons addressed immediately above.

b. Apple's Allegations

Apple argues:

As Apple's proposed construction makes clear, claim 1 emphasizes not only that communication of the input signal is disabled, but also that the sensor must be the component that disables communication of the signal. Indeed, the plain language of the claim requires that the component responsible for disabling communication of the input signal is the sensor itself, and that the input signals are not sent to the processing section: "*the sensor to disable* communication of the input signal to the processing section." **JX-3** [862 Patent] at 8:26-29; **RX-1286C.136** [Lanning DWS] at Q.427. Claim 1 further emphasizes that communication of the input signals must be disabled: "the touch sensitive input device actuatable to generate the input signal . . . the sensor ***to disable*** communication of the input signal to the processing section." **JX-3** [862 Patent] at 8:24-28; **RX-1286C.137** [Lanning DWS] at Q.427.

The specification of the 862 Patent also supports Apple's proposed construction. Indeed, the specification is replete with language teaching both that (1) the sensor itself is responsible for disabling communication of the input signal, and (2) as a result of the disabling, the input signal is no longer generated and no longer sent to the processing section. **JX-3** [862 Patent] at 2:3-6 ("The sensor disables the touch sensitive input device from generating the input signal when the portable communication device is positioned in close proximity to a user"); *id.* at 3:17-20 ("[T]he smartphone 100 has a sensor 134 that triggers when brought into close proximity to the user and, while triggered, disables the touch sensitive input device."); *id.* at 5:34-45 ("[T]he IR receiver 222 sends a signal TS_DISABLE to the touch screen driver circuit 214 via connection 231. The touch screen driver circuit 214, in response to receiving the signal TS_DISABLE, disables communication of the signal TS_INPUT on connection 229. Communication of the signal TS_INPUT remains disabled until the IR receiver 222 stops receiving the reflected IR transmission beam. Once stopped the IR receiver 222 stops sending the signal TS_DISABLE on connection 231 which, in turn, causes the touch screen driver circuit 214 to enable communication of the signal TS_INPUT on connection 229."); *see also* **RX-1286C.137-138** [Lanning DWS] at Q.428.

Similarly, in describing the operation of the sensor, the specification describes how the circuit between the proximity sensor and the user interface sends the signal that disables communication of touch information to the processing section of the phone. For example, the patent states that the "latch circuit formed of the capacitor C11 and the resistor R20 latches the signal TS_DISABLE with a suitable time constant, such as 200 ms. The signal TS_DISABLE is output on connection 231 for the suitable time constant." **JX-3** [862 Patent] at 7:51-55; *see also id.* at 7:59-61 ("Thus it can be seen that a sensor controlled user interface eases and improves operation of a portable communication device."); *id.* at Abstract ("The sensor (134) disables the touch sensitive input device (128) from generating the input signal (TS_INPUT) when the portable communication device

(100) is positioned in close proximity to a user..."); *id.* at claim 6 ("[T]he IR receiver to output a disable signal while receiving reflections of the IR transmission beam..."); *id.* at claim 16 ("[T]he sensor to disable the touch screen driver circuit from communicating the input signal to the processing section..."); **RX-1286C.138** [Lanning DWS] at Q.429. This language emphasizes how the sensor *controls* the user interface in disabling the input signal.

Finally, both Figures 2 and 4 depict "TS_DISABLE" signals coming out from the sensor, and in Figure 2, the TS_DISABLE signal is output from the sensor and goes directly to the touchscreen driver circuit. **JX-3** [862 Patent] at Figures 2, 4. Thus, the figures emphasize that the sensor itself disables the driver circuit from generating input signals and sending them to the processing section.

Motorola's proposed construction of this term lacks support in the claims, specification, and prosecution history. For example, Dr. Madisetti opines that the "disable communication" language of the claim encompasses "ignoring, suppressing, masking, canceling, rejecting, or bypassing the input signal." **CX-2689C** [Madisetti DWS] at Q.66, 70. Thus, Dr. Madisetti concludes that even though the signal is communicated to the processing section, communication is nevertheless disabled if the input signal is "ignored." *Id.* But Dr. Madisetti took the opposite position to avoid prior art in Apple's invalidity case. Indeed, Dr. Madisetti attempted to distinguish the prior art by testifying that "cell phone providers solved this problem [of inadvertent actuation] by developing software to detect—and ***ignore***—multiple key presses occurring at the same time, ***not by using proximity sensors***." **CX-2701C** [Madisetti Rebuttal WS] at Q.16; *see also* **CDX-8.5** [Madisetti Rebuttal Slides] (explaining that the prior art used software to ignore input signals rather than using a sensor to disable them); **Tr.** [Madisetti] at 2028:7-14 (acknowledging his prior testimony). Dr. Madisetti thus expressly acknowledged that software to ignore input signals is *not* the same as disabling communication of the input signal to the processing section. Additionally, "a person of ordinary skill in the art would not consider 'ignoring receipt' of a signal to be the same as 'disabling communication' of a signal"; these are in fact opposites. **RX-1290C.156-157** [Lanning RWS] at Q.559.

Dr. Madisetti also opines that the phrase under construction does not require that the sensor send a signal to the user interface and that "a signal could be sent from the sensor to the main processor and, in response, the main processor could generate a signal that ultimately disables the touch screen." **CX-2689C** [Madisetti DWS] at Q.73. Yet the claim under construction explicitly requires "*the sensor* to disable communication of the input signal" – not the main processor or any other component. **JX-3** [862 Patent] at Claim 1. Dr. Madisetti's understanding of the claim language thus broadens the claim beyond its express scope. There is no disclosure anywhere in the 862 specification that the signal to disable the input signal comes from anything other than the sensor. *See, e.g., id.* at Abstract; 2:3-6, 3:17-20, 5:36-41; Fig. 2.

(RIB at 30-33.)

c. Findings

I concur with Motorola's logic and its analysis of the applicable law as explained by it in both its Initial Post-Hearing Brief and Reply Post-Hearing Brief. Consequently, I find that the term "the sensor to disable communication of the input signal to the processing section" is properly construed in accordance with its plaint and ordinary meaning. *Elbex Video, Ltd. v. Sensormatic Electronics Corp.*, 508 F.3d 1366, 1371 (Fed. Cir. 2007) ("Claim terms are entitled to a "heavy presumption" that they carry their ordinary and customary meaning to those skilled in the art in light of the claim term's usage in the patent specification.")

In adopting the plain meaning of the term, I note the word "disable", which is not specifically defined intrinsically, has a broad meaning, *i.e.*, the dictionary definition of disable is generally: "to make ineffective, cripple, and incapacitate" (*Webster's New World College Dictionary, 4th Edition, 2008*).[19] This meaning is consistent with the word's contextual use in the specification. (*See e.g.*, JX-003 at 5:34-45.) *Lazare Kaplan Intern., Inc. v. Photoscribe Technologies, Inc.*, 628 F.3d 1359, 1373 (Fed. Cir. 2010) ("As we explained in *Phillips*, courts are free to consult dictionaries 'and may ... rely on dictionary definitions when construing claim terms, so long as the dictionary definition does not contradict any definition found in or ascertained by a reading of the patent documents.'")(quoting *Phillips*, 415 F.3d at 1322). Accordingly, as generally testified to by Dr. Madisetti, a person of ordinary skill in the art would read the language to mean that as long as the sensor somehow causes the input signal to be disabled (become ineffective, incapacitated, etc.) so the input signal is not communicated to the processing section [permitting the processing section to act upon it], that is sufficient to meet the

[19] The Oxford Dictionary of the English Language is consistent, plus it adds the phrase "put out of action."

terms of the claim. Dr. Madisetti's opinion is supported by the specification, which suggests in its description of the impetuous for the invention that the inventors sought to tie the ability of the input signal to communicate to the processing section to operation of a sensor.

As Motorola correctly argues, Apple attempts to make too much of the preferred embodiments in the '862 patent and history. The law on this point is clear; it is improper to construe a clam by importing limitations from the preferred embodiments of a patent into the claims, especially when none of them are required by the plain language of the claim. Here, the plain language of the claim requires a sensor to disable the communication of the input signal. How that is accomplished in any one particular embodiment need not be the only acceptable way to accomplish that goal. *Phillips*, 415 F.3d at 1323. It is clear to me that the preferred embodiments disclosed in the '862 specification are meant as specific examples of how the invention accomplishes the goals stated in the claim, not that the specification and the claim are coextensive.

Apple makes too much of the phrase "the sensor to disable." I note the claim does not explain how the sensor will disable communication of the input signal to the processing section, just that it will. This means that as long as the sensor is integral to disabling communication from the touch sensitive device to the processing section the plain language of the claim limitation is met. As Dr. Madisetti clearly grasps, and Mr. Lanning conveniently ignores, a person of ordinary skill in the art would comprehend that the heart and soul of the '862 invention is that a sensor causes the input signal to be disabled, not how the sensor causes the signal to be disabled. (*See* CX-2689C (Madisetti, DWS) at Q&A 66; Tr. 2027:23-2028:14; *see also* CX-2701C (Madisetti, RWS) at Q&A 16.) As Dr. Madisetti convincingly testified, there are many ways to disable communication of the input signal.

This also means I cannot accept Apple's argument (RRB at 7) that Motorola's construction reads out the preferred embodiment. As I have found throughout, as long as the disabling of the input signal through the action of the sensor is integral to disabling communication from the touch sensitive device to the processing section, the plain language of the claim, the "how" as it were, is met.

I also find that Apple misunderstands or misstates the obvious import of Dr. Madisetti's position on the prior art. Specifically, when Dr. Madisetti distinguished the prior art by testifying that "cell phone providers solved this problem [of inadvertent actuation] by developing software to detect—and ignore—multiple key presses occurring at the same time, not by using proximity sensors, " he was pointing out the obvious differences between the '862 patent and that prior art – in one software detects multiple touches and those signals are ignored and in the other the sensor (a hardware solution) causes the input, whether it be a single key/single input or a multiple key/multiple input to not be acted upon. (CX-2701C (Madisetti, RWS) at Q&A 16; *see also* CDX-8.5 (explaining that the prior art used software to ignore input signals rather than using a sensor to disable them).) Certainly a person of ordinary skill in the art would immediately comprehend the difference between a software solution to a multiple touch problem and a hardware solution to a problem that may involve multiple touches, but could also involve a single touch.

3. "close proximity to the user"

Claim Term	Motorola's Construction	Apple's Construction
"close proximity to a user"	plain and ordinary meaning, but in the alternative, Motorola proposes "a location near the user"	Indefinite

a. Motorola's Allegations

Motorola argues:

The parties dispute whether the term "close proximity to a user" is indefinite. In order for a claim to be found indefinite, an accused infringer must demonstrate "by clear and convincing evidence that one of ordinary skill in the art could not discern the boundaries of the claim based on the claim language, the specification, the prosecution history, and the knowledge in the relevant art." *Haemonetics Corp. v. Baxter Healthcare Corp.*, 607 F.3d 776, 783 (Fed. Cir. 2010). "Only claims not amenable to construction or insolubly ambiguous are indefinite." *Id.* (internal quotations omitted). A claim is not indefinite merely because reasonable persons might disagree as to its construction. *See id.*

At the hearing, Apple failed to demonstrate by clear and convincing evidence that the term "close proximity to a user" is insolubly ambiguous. To the contrary, Motorola presented a wealth of evidence that this term has a clear meaning to persons of ordinary skill in the art. Mr. Lanning himself admitted that "I understand the general principle" of what close proximity to a user means. Lanning, Tr. at 1185:4-11. Accordingly, the Court should construe this term as having its plain and ordinary meaning.

Apple's main argument is that the phrase "close proximity to a user" is indefinite because it does not specify how close the device should be to which part of the user. RX-1286C, Lanning DWS at Q/A 438; *see* CX-2689C, Madisetti DWS at Q/A 93. But claim 1 makes clear the circumstances in which the device is in close proximity to a user, because it describes "the sensor to disable communication of the input signal...thereby, preventing inadvertent actuation of the touch sensitive input device." *See* Lanning, Tr. at 1181:21-25. The "thereby" clause clarifies that the device is in close proximity to a user when there is a danger of inadvertent actuation. In the context of a phone call, this would occur when the phone is near the user's head during a call. *See, e.g.*, JX-003, '862 patent at 1:47-51, 3:17-20. Because the claim describes preventing ***inadvertent*** actuation, there could be other situations within the scope of claim 1 when actuation of the touch sensitive input device would ***not*** be inadvertent – that is, the actuation would be intentional. *See, e.g.*, Hearing Tr. at 1092:8-24. In these situations, communication of the input signal would not necessarily be disabled, even though the device is in close proximity when the user intentionally actuates the touch screen.

As acknowledged by Mr. Lanning, the specification describes numerous examples of positioning the device in close proximity to a user, further apprising a person of ordinary skill in the art as to the meaning of this term. Lanning, Tr. at 1186:24-1187:14. The specification describes embodiments in which the device is in "close proximity to a user" when the phone is near or against a user's head during a telephone call. *See, e.g.*, JX-003, '862 patent at 2:3-9. For example, the specification describes that:

> To prevent inadvertent actuations by a user's face, the smartphone 100 has a sensor 134 that triggers when brought into close proximity to the user and, while triggered, disables the touch sensitive input device. The sensor 134 is best positioned on the smartphone 100 in a location that is guaranteed to be obstructed by the user's head when the user is participating in a telephone call and to not be obstructed when the user is inserting information via the touch screen 128 or the keypad 116.

Id. at 3:16-25. This passage describes positioning the proximity sensor to trigger when a user's head is in close proximity, but to avoid triggering in response to a user's hand or fingers while inputting information to the touch screen or keypad (*i.e.*, when the actuation is intentional). Thus, a person of ordinary skill in the art would recognize that merely holding the phone in the user's hand and touching the screen with a finger should not trigger the proximity sensor in this implementation. Indeed, the invention of the '862 patent is what made discrimination between these types of situations possible.

The specification goes on to describe an embodiment of the invention with an infrared ("IR") sensor, in which "[t]he sensor 134 triggers when an object such as the user's head is brought within the sensing region and reflects the IR transmission beam back to the IR receiving element." *Id.* at 3:62-65. Thus, a person of ordinary skill in the art would understand that, for this embodiment, the device is in "close proximity to a user" when sensor 134 is triggered by a user's body part within the sensing region. The specification provides a detailed description of how such an exemplary IR sensor may be implemented. *See, e.g.*, *id.* at 3:62-4:9, 6:59-7:58, and Figs. 3 and 4.

Of course, claim 1 of the '862 patent is not limited to a phone call. A person of ordinary skill in the art would understand that there are other applications for the invention as well, such as disabling communication of the input signal when the smartphone is placed in a user's pocket. In fact, Mr. Lanning testified that the first time he read claim 1, he thought about using the invention in precisely this context. Lanning, Tr. at 1182:9-15.

The prior art cited in the prosecution history is part of the intrinsic record and may shed light on how a claim term would be understood by persons of ordinary skill in the art. *See V-Formation, Inc. v. Benetton Group SpA*, 401 F.3d 1307, 1311 (Fed. Cir. 2005). At the hearing, Mr. Lanning acknowledged that patents cited on the face of the '862 patent use the exact phrase "close proximity" that appears in claim 1 of the '862 patent. Lanning, Tr. at 1187:15-1190:14; *see also*, CX 2689C, Madisetti DWS at Q/A 89. In particular, So '722 describes "a sensor...arranged to switch the telephone circuitry from a standby mode into the operation mode in response to a user coming into *close proximity* to a part of the telephone casing." JX-077, So '772 at 1:18-2:3 (emphasis added). Similarly, Gordon '156 describes

that "the proximity sensor determines when the first speaker is within close proximity...of the person." JX-055, Gordon '156 at 1:65-67. Bowen '151 also describes a portable communication device that switches from speakerphone mode to handset mode when "in close proximity" with a user's head. JX-049, Bowen '151 at 2:10-14. These references establish that persons of ordinary skill in the art in 1999 understood and used the term "close proximity" in the context of portable communication devices. Such a person reading claim 1 of the '862 patent would have understood the phrase: "in close proximity to a user" to have its plain and ordinary meaning.

The prosecution history also supports the conclusion that the phrase: "close proximity to a user" is definite. Claim 1 of the '862 Patent was granted in a first action allowance. The Examiner clearly did not consider claim 1 to have a definiteness problem. Otherwise, he would have issued a rejection, rather than an allowance. Moreover, the Examiner explicitly included in his reasons for allowance a statement that: "*the sensor can detect the position of a user in close proximity as the portable device is brought near to the user.*" JX-008.130, '862 FH, Office Action mailed Feb. 13, 2001, at page 2 (emphasis in original). Thus, the Examiner reviewed the close proximity language and considered it to be definite.

Mr. Lanning acknowledged at the hearing that Apple's own engineers, who are persons of ordinary skill in the art, [

] Lanning, Tr. at 1191:2-1192:17. In particular, the Engineering Requirements Specification for the proximity sensor in the iPhone 4 describes that:

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CX-0159C, N90 Prox ERS at 7 (emphasis added). As Mr. Lanning explained, Apple's engineers [

] further evidence that "close proximity to a user" has a definite meaning to persons of ordinary skill in the art.

Indeed, in *Rosemount, Inc. v. Beckman Instruments, Inc.*, the Federal Circuit

previously held the term "close proximity" to be definite. 727 F.2d 1540 (Fed. Cir. 1984). In *Rosemount*, one of the claims at issue included the limitation of "a field effect transistor mounted with said electrode and in ***close proximity*** to said high impedance material." *Id.* at 1542 (emphasis added). The defendant attacked the claim as indefinite, because the term "close proximity" was not specifically or precisely defined. *Id.* at 1546. The Federal Circuit agreed with the district court that "to accept [the defendant's] contention would turn the construction of a patent into a mere semantic quibble that serves no useful purpose." *Id.* at 1547 (internal quotations omitted). As here, the evidence in *Rosemount* indicated that the Examiner, the industry, and the defendant itself had no problem understanding the term "close proximity" in the context of the claim. *Id.* Noting the district court's statement that the term "is as precise as the subject matter permits," the Federal Circuit easily concluded that "close proximity" is definite. *Id.* For much the same reasons, the term "close proximity to a user" in the '862 patent is definite here.

At the hearing, Apple's counsel relied heavily on *Chef America* and similar cases in making its indefiniteness argument. *See, e.g.,* Opening, Tr. at 346:7-349:13. In *Chef America*, the Federal Circuit refused to rewrite a claim that included the requirement that the dough be heated to a specific temperature, even though read literally the resulting dough would be burned to a crisp. *Chef America, Inc. v. Lamb-Weston, Inc.*, 358 F.3d 1371, 1373-74 (Fed. Cir. 2004). Apple argues that Motorola is similarly asking this Court to rewrite claim 1 of the '862 patent to require disabling communication of the input signal when the proximity sensor of the portable communication device is positioned in close proximity to a user's head. Opening, Tr. at 350:3:-351:18. This argument is another red herring. Motorola is not asking this Court to rewrite the limitation "close proximity to a user." Rather, Motorola is asking this Court to construe the phrase: "close proximity to a user" according to its plain and ordinary meaning, which is well-understood. Claim 1 is clear on its face, and there is no need to rewrite it.

Apple's argument that the term "close proximity to a user" renders claim 1 indefinite fails for several additional reasons. Initially, claim 1 does not require disabling communication of the input signal ***each and every time*** the device is positioned in close proximity to a user, as Apple contends. *See, e.g.,* Tr. at 1094:15-1095:7. It would be improper to limit claim 1 to such a narrow construction. Claim 1 is not so restricted and, in fact, states that disabling communication of the input signal prevents ***inadvertent actuation***. Clearly, there may be other circumstances when the device is positioned in close proximity to the user but the input signal is not disabled, such as when a user ***intentionally*** actuates the touch sensitive input device. Claim 1 is infringed if ***at some time*** the sensor disables communication of the input signal when the portable communication device is positioned in close proximity to a user. Even if this only happens once, that is enough for infringement. *See, e.g., Shamrock Techs, Inc. v. Medical Sterilization, Inc.*, 903 F.2d 789, 792 (Fed. Cir. 1990) (holding that defendant infringed claim element requiring "uniform irradiat[ion]" even though

the accused process did not achieve perfect uniformity of radiation every time).

In addition, claim 1 is a comprising claim. Under the patent laws, "comprising" means including but not limited to. *CIAS, Inc. v. Alliance Gaming Corp.*, 504 F.3d 1356, 1360 (Fed. Cir. 2007). Accordingly, the portable communication device of claim 1 could include other elements not described in the claim and still infringe. For example, if a step were added to describe "the sensor to disable communication of the input signal to the processing section ***during a phone call and*** when the portable communication device is positioned in close proximity to a ***user's head***," this would still infringe claim 1, as written. But claim 1 is not limited to a phone call or proximity to a user's head. As is a patentee's right, claim 1 was drafted broadly enough to encompass other applications for the invention – such as preventing inadvertent actuation when the device is placed in the user's pocket. The mere fact that claim 1 is broad does not make it indefinite.

At the hearing, Motorola introduced a wealth of evidence showing that the phrase "close proximity to a user" is definite. The phrase was understood by the Examiner, understood by Apple's expert witness, used by persons of ordinary skill in the art in other contemporaneous patent applications, and used by Apple itself. As in *Rosemount*, the Court should hold the term "close proximity to a user" to be definite.

(CIB at 121-28.)

b. Apple's Allegations

Apple argues:

Apple has not proposed a construction for this term because it lacks an adequate written description and/or is indefinite. Claim 1 is indefinite not because the phrase "close proximity" cannot be understood in isolation; rather, when read in the context of the entire claim, the invention has no utility because it would nonsensically require disabling the touch sensitive input device *every* time the phone is in "close proximity" to the ***user***. *See Process Control*, 190 F.3d at 1357 ("where as here, claims are susceptible to only one reasonable interpretation and that interpretation results in a nonsensical construction of the claim as a whole, the claim must be invalidated, thus preventing unduly burdening competitors who must determine the scope of the claimed invention based on an erroneously drafted claim"). Indeed, while the phrase "close proximity" in isolation might have some meaning to one skilled in the art, the problem is that this phrase cannot be meaningfully applied to the claim overall because as the claim is drafted, the mobile phone would *always* be disabled when a "user" is close to the device. In such a case the claim must be invalidated for indefiniteness. *See, e.g., Regents of the Univ. of Minn. v. AGA Med. Corp.*, 2011 U.S. Dist. LEXIS 144194, *43-46 (D. Minn. Dec. 14, 2011) (invalidating the claim because the term "tautly holding" could be construed but could not be meaningfully applied in the context of the overall claim).

In the recent *Regents* case, the term "tautly holding" was construed during earlier *Markman* proceedings, but the court later found the claim invalid as indefinite because the phrase "for tautly holding" was "so confused that the phrase is utterly unparseable... The Court continues to believe that the claim language is clear enough to construe the phrase 'tautly holding' in isolation — which is all that the Court did in its *Markman* order. But construing 'tautly holding' is not the same thing as construing '*for* tautly holding.' To construe '*for* tautly holding,' the Court must identify what the phrase modifies, and that is an impossible task. Needless to say, if the Court cannot identify the thing that is 'for tautly holding' a portion of a closure device in place, neither can a potential infringer." *Id.* Similarly, while "close proximity" may be assigned some definition, the claim is still indefinite because it has no meaning to a potential infringer.

Each of Motorola's attempted explanations to avoid the nonsensical result of a permanently disabled mobile phone are unavailing because all of them require redrafting claim 1, which is not permitted under the patent laws. *See e.g., Halliburton Energy Servs., Inc. v. M-I LLC*, 456 F. Supp. 2d 811, 824 (E.D. Tex. 2006) ("court[s] cannot rewrite a claim to make it more definite") *aff'd*, 514 F.3d 1244 (Fed. Cir. 2008). Motorola's attempted explanations years after the patent has issued are furthermore inappropriate, because the patent laws require the patentee provide to the public precise notice of what it considers its invention, and between the patentee and the public at large, it is the patentee that must suffer the consequences of poorly written claims. *Haemonetics Corp. v. Baxter Healthcare Corp.*, 607 F.3d 776, 781 (Fed. Cir. 2010) ("patent claims function to delineate the precise scope of a claimed invention and to give notice to the public, including potential competitors, of the patentee's right to exclude"); *Process Control Corp. v. HydReclaim Corp.*, 190 F.3d 1350, 1357 (Fed. Cir. 1999) (noting that the function of claims is to put "competitors on notice of the scope of the claimed invention"). When a patentee fails to comply with the notice function, such as by carelessly drafting claims, it is the patentee, not the public at large, that must suffer the consequences. *See id.* (an erroneously written claim "must be invalidated, thus preventing unduly burdening competitors who must determine the scope of the claimed invention based on an erroneously drafted claim").

Properly disregarding Motorola's attempted corrections to claim 1, the literal interpretation of the invention would require that the input signals be disabled every time that the mobile device is in close proximity to a user. In this regard, the claim does not specify (i) the distance that the proximity sensor must be to the user, (ii) what part of a user the sensor should be close to, and (iii) under what circumstances the sensor should disable the input signal, such as when the user is on a phone call. Thus, the claim does not reasonably apprise those of ordinary skill in the art of the scope of the invention when read in light of the claims, specification, and prosecution history.

Cell phones are in close proximity to their users almost the entire time they are used, and the claim language gives no guidance to allow one of ordinary skill in

the art to distinguish between the times when the input device should be disabled and the times it should not be. **RX-1286C.140-141** [Lanning DWS] at Q.438. For example, during a phone call, there are instances when the user would not want the input signal to be disabled. If a user is in speakerphone mode or is using a headset, the user would not want the input signals to be disabled because the user would be unable to (i) mute the microphone, (ii) place the call on hold, (iii) disconnect the call, or (iv) change the call from speakerphone mode to normal operation. *Id.* Additionally, if the input signals were disabled when the device was in close proximity to the user, then the user would be unable to multi-task by, for example, being able to access e-mail or the address book during a phone call. *Id.* In normal operation of the phone (not in speakerphone and not using a headset), a user would also not want the input signals to be disabled if, for example, the user pulls the device away from his ear to end the call, place the call on hold, switch the device to speakerphone mode, mute the microphone, or access other applications during the call. *Id.* Moreover, when not using the device to make a phone call, if the user is instead, for example, using the device to browse the Internet while holding the device in his hand, the user would not want communication of the input signal to be disabled because the user would effectively be unable to use the device for its intended purposes. *Id.* In other circumstances, a portable communication device is in close proximity to a user—but not near the user's head—when the user *would not* want input signals to be generated. *Id.* For example, if the device is in a user's pocket or purse, a user likely would not want touches to generate an input signal. *Id.*

In all of the above circumstances, the portable communication device is in close proximity to the user as claimed in the 862 Patent. *Id.* But the claim language does not provide any guidance on how to distinguish between when "close proximity" disables and when it does not. Thus summarized, a device designer attempting to make a phone that avoids Motorola's patent woult not know how to do so. The designer could not ascertain what is the "less than always" scope of disablement that infringes and the scope that does not. This violation of the notice function of a patent is the hallmark of indefiniteness.

The "plain meaning" that Dr. Madisetti gives to the term ("a location near the user") likewise makes no sense. *Id.* at Q.439. Touch sensors, by their very nature, are designed to operate at locations near the user—a touch sensor is in fact designed to be touched by a user. *Id.* at Q.439. If given the plain meaning ascribed by Dr. Madisetti, the claim is still inoperable and provides no utility (*i.e.*, it is a touch-sensitive device that does nothing because it is always disabled when it is near the user). *Id.* at Q.439. Accordingly, the claim limitation is still indefinite under Dr. Madisetti's proposed construction.

At the hearing, Dr. Madisetti attempted to explain further what "close proximity to a user" meant, but his explanation improperly imported numerous limitations from the specification into the claim and emphasized that the patentees chose to draft claim 1 impermissibly broad. For example, **CDX-8.10** is a demonstrative

slide that Dr. Madisetti used to explain his testimony. That slide added no less than five limitations not present in claim 1: (i) "prevent inadvertent actuations ***by a user's face***"; (ii) "location guaranteed to be obstructed ***by the user's head***"; (iii) "in the context of a phone call"; (iv) "when a user is holding it ***in their hand***"; and (v) "[no proximity event] ***when using a headset.***" **CDX-8.10** [Madisetti Rebuttal Slides]; **CX-2689C** [Madisetti DWS] at Q.86-87 (importing these limitations from the specification into claim 1); **CX-2701C** [Madisetti RWS] at Q.28-30 (adding various limitations to claim 1 in attempting to show definiteness). Dr. Madisetti's testimony added still another limitation to this claim—proximity should trigger only "when there is a ***danger*** of inadvertent actuation" by the user. **CX-2701C** [Madisetti RWS] at Q.30. But unlike the specification, claim 1 does *not* provide any of the context that Dr. Madisetti now attempts to add. The plain language of the claim simply requires "close proximity to a **user**," not to a particular part of a user such as a user's head, face, or hand. The claim also requires that the input signals be disabled "**when**" the device is in close proximity to a user. "When" means "when." It does not mean sometimes, nor does it mean "during a phone call" or "when there is a danger of inadvertent actuation" as Dr. Madisetti attempts to explain. Nor is it permissible to redraft claim 1 in light of Dr. Madisetti's explanation to make the claim more definite: *Halliburton Energy Servs., Inc. v. M-I LLC*, 456 F. Supp. 2d 811, 824 (E.D. Tex. 2006) ("court[s] cannot rewrite a claim to make it more definite") *aff'd*, 514 F.3d 1244 (Fed. Cir. 2008); *Allen Eng'g Corp. v. Bartell Indus.*, 299 F.3d 1336, 1349 (Fed. Cir. 2002) ("It is not our function to rewrite claims to preserve their validity.").

Dr. Madisetti acknowledges that if the proximity sensor triggered every time the device was close to a user, this would "render the phone inoperable for its intended use as a communications device." **CX-2689C** [Madisetti DWS] at Q.95. He instead proposes that the claim be interpreted in a different way to avoid such an absurd result. But the Federal Circuit has expressly held that courts cannot construe a claim term to avoid the absurd result of the term's plain and ordinary meaning. *See Chef America, Inc. v. Lamb-Weston, Inc.*, 358 F.3d 1371 (Fed. Cir. 2004). In *Chef America*, the patent claimed a process for baking bread that involved heating the dough—rather than the oven—to a temperature of 400 to 850 degrees. *Id.* at 1373. Thus, "[i]nstead of the dough products suitable for freezing and finish cooking to a light, flaky, crispy texture, which the patented process is intended to provide, the resultant product of such heating will be something that, in the words of one of the attorneys in this case, resembles a charcoal briquet." *Id.* The court reasoned that even though the specification provided more clarity and one skilled in the art would know to heat the oven and not the dough to the specified temperature, "[e]ven a nonsensical result does not require the court to redraft the claims of the ['290] patent. Rather, where as here, claims are susceptible to only one reasonable interpretation and that interpretation results in a nonsensical construction of the claim as a whole, the claim must be invalidated." *Id.* at 1374-75. Thus, the question for indefiniteness is not whether one can divine from the specification the true intent of the patentee, but whether

the claim itself was written properly. Here, interpreted literally, claim 1 of the 862 Patent requires that the input signals be disabled *when* the portable communication device is positioned in close proximity to a user. This language, though resulting in a non-functional product, cannot be rewritten and must be found invalid. *See id.* at 1375 (declining to rewrite the claim so that the patented process can perform its intended function).

In spite of Motorola's arguments, the phrase "thereby, preventing inadvertent actuation" provides no additional clarity as to the meaning of claim 1 because one of ordinary skill in the art would still be unable to discern when the input signals should be disabled. When the claim is given its plain meaning, the portable communication device will always be disabled, and thus, there will never be an inadvertent actuation. Because there is no identified standard for how the device should operate, the result is a device that can never be inadvertently actuated, but never *purposefully* be actuated either. The only solution to this problem is an interpretation that "close proximity to a user" and "preventing inadvertent actuation" depend upon the subjective desires of individual users and how those users choose to practice the invention, which the Federal Circuit prohibits as indefinite. *See Datamize LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1350 (Fed. Cir. 2005):

> [Plaintiff] has offered no objective definition identifying a standard for determining when an interface screen is "aesthetically pleasing." In the absence of a workable objective standard, "aesthetically pleasing" does not just include a subjective element, it is completely dependent on a person's subjective opinion. To the extent [plaintiff] argues that such a construction of "aesthetically pleasing" does not render the phrase indefinite, we disagree. ***The scope of claim language cannot depend solely on the unrestrained, subjective opinion of a particular individual purportedly practicing the invention.***

Dr. Madisetti next attempts to rely on three prior art references to show that others of ordinary skill would have known what "close proximity to a user" meant. *See* **CX-2689C** [Madisetti DWS] at Q.89 (characterizing Bowen 151, Gordon 156, and So 722); **CDX-3.37** [Madisetti Opening Slides] (same). But each of these references provides significantly more context than what is present in claim 1 and are thus inapposite. For example, Bowen 151 specifies at dependent claim 7 that "close proximity" means close to "an ear of the user," and in dependent claim 8, when in "tactile contact" with a user's ear. **JX-049.010** [Bowen 151]. Claim 1 of the 862 Patent provides no such specificity. Similarly, Gordon 156 specifies that "near user" means "within one to five inches of the person" at dependent claim 2, and "near the first side of the housing" at dependent claim 8. **JX-55.7** [Gordon 156]. Dependent claim 9 also specifies that the device should be in "telephony mode." *Id.* Claim 1 of the 862 Patent, however, does not specify the specific distance, nor does it clarify that proximity should only trigger when the device is

in "telephony mode." Finally, So 722 specifies that close proximity means "to a part of the telephone casing" at claim 1. **JX-77.15** [So 722]. Thus, proximity in So 722 would only trigger if the user were in close proximity to a specific part of the casing, not any part of the device as required by claim 1 of the 862 Patent. These references do not, therefore, show that one of ordinary skill would know what "close proximity to a user" would mean as claim 1 is written.

Finally, Dr. Madisetti opines that [

] **JX-126C** [Parivar Tr.] at 183:9-184:16 (testifying that **CX-159C** is inaccurate). Accordingly, these documents do not resolve the problematic claim language that requires disabling the touch sensitive device when it is in close proximity to a user. In any event, construing the claim based upon descriptions of the accused products is impermissible. *See Cohesive Techs., Inc. v. Waters Corp.*, 543 F.3d 1351, 1367 (Fed. Cir. 2008) ("Although it is appropriate for a" tribunal "to consider the accused device when determining what aspect of the claim should be construed, it is not appropriate for the" tribunal "to construe a claim solely to exclude the accused device.").

"Close proximity to a user" is thus incapable of construction, and claim 1 of the 862 Patent is therefore indefinite and the patent should be found invalid.

(RIB at 33-41.)

c. Motorola's Reply Allegations

In its reply brief, Motorola argues:

Apple now recognizes that the phrase "close proximity to a user" is not itself indefinite. APostHB at p. 33 ("the phrase 'close proximity' in isolation might have some meaning to one skilled in the art...."). Instead, Apple argues that claim 1 is indefinite in its entirety "because as the claim is drafted, the mobile phone would always be disabled when a 'user' is close to the device." *Id.* Specifically, Apple argues that "the literal interpretation of the invention would require that the input signals be disabled every time that the mobile device is in close proximity to a user." APostHB at p. 35 (emphasis in original).

But claim 1 states that disabling communication of the input signal prevents ***inadvertent actuation***, not all actuations "every time" a user is near it, as Apple contends. There plainly could be situations when the portable communication

device is in close proximity to a user but the input signal is not disabled, such as when the user ***intentionally*** actuates the touch sensitive input device. This understanding of claim 1 is consistent with the specification, which describes that "[t]he sensor 134 is best positioned on the smartphone 100 in a location that is guaranteed to be obstructed by the user's head when the user is participating in a telephone call and to not be obstructed when the user is inserting information via the touch screen 128 or the keypad 116." JX-003, '862 patent at 3:20-25.[20]

Apple's contention that claim 1 is indefinite should be rejected. Motorola demonstrated at the hearing that the claim was understood by the Examiner and understood by Apple's expert witness, and that "close proximity" was used by persons of ordinary skill in the art in other contemporaneous patent applications and by Apple itself. *See* MPostHB at pp. 121-128. Thus, the phrase "close proximity to a user" should be given its plain and ordinary meaning.[21]

(CRB at 63-64.)

d. Apple's Reply Allegations

In its reply brief, Apple argues:

Motorola's attempt to preserve the validity of the 862 Patent over the phrase "close proximity to a user" fails because the claim is written so broadly that the portable communication device will always be disabled unless claim 1 is redrafted. Motorola is correct that Mr. Lanning testified that he understood "close proximity" in the general sense, and that examples of close proximity are provided in the specification. CPostHB at 122-24. But those points are irrelevant because the phrase "close proximity"—not standing alone, but *as used in claim 1*—is too broad and results in a mobile phone that virtually never works.

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[20] As Dr. Madisetti testified, a person of ordinary skill in the art reading claim 1 would understand that it is infringed if ***at some time*** the sensor disables communication of the input signal when the portable communication device is positioned in close proximity to a user. CX-2701C, Madisetti RWS at Q/A 29; CX-2689C, Madisetti DWS at Q/A 96. The input signal need not be disabled in situations where a user wants to input data, such as when holding the phone away from their head or when using a headset. CX-2701C, Madisetti RWS at Q/A 28; CX-2689C, Madisetti DWS at Q/A 95-96.

[21] Dr. Madisetti has repeatedly made clear that Motorola's proposed construction of "a location near the user" is an alternative to the plain and ordinary meaning. CX-2701C, Madisetti RWS at Q/A 24; CX-2689, Madisetti DWS at Q/A 85 and 86; *see also*, MPHB at pp. 491-492. Yet, Apple continues to mischaracterize Dr. Madisetti's opinion by conflating the two constructions. APostHB at p. 37 (incorrectly representing that the "plain meaning" given by Dr. Madisetti is "a location near the near").

In this regard, Motorola's reliance on the *Rosemount* court's definiteness finding for the term "close proximity" is misplaced, because in *Rosemount*, the context surrounding the phrase "close proximity" was unambiguous. *See Rosemount, Inc. v. Beckman Instruments, Inc.*, 727 F.2d 1540, 1546-47 (Fed. Cir. 1984). The defendant had quibbled that "close proximity" could mean as little as one inch, or as much as seven to ten inches, and thus the term must be indefinite. *Id.* at 1548. But the context of the claims, particularly dependent claim 2, made clear that "close proximity" meant close enough to produce a heat exchange relationship between a field effect transistor and a glass membrane. *Id.* at 1547. Thus, the precise distance in inches was irrelevant to the meaning of the claims, because one skilled in the art would know how close two objects need to be to each other in order to produce a heat exchange relationship between them. But the problem with the 862 Patent is entirely different. As claim 1 is drafted, one skilled in the art would not understand how to build a functional mobile phone that is disabled "when the portable communication device is positioned in close proximity to a user." Indeed, the issue is not the phrase "close proximity" standing alone; the issue is the context of the phrase: "disable communication of the input signal . . . when the portable communication device is in close proximity to a user." The precise distance implied by "close proximity" is irrelevant because at *no* distance will the device be functional so long as it is anywhere near the user.

Motorola relies on the "thereby" clause to attempt to supply the missing context for how claim 1 might be understood, but this argument would impermissibly require reordering the clauses of the claim. CPostHB at 122. The "thereby" clause does not clarify *when* the disablement should occur; it explains what is avoided once the disablement has *already* occurred. Motorola's explanation would require reordering and rewriting the clauses of claim 1 to state, "To prevent inadvertent actuation only when there is a danger of such inadvertent actuation, the sensor disables communication of the input signal . . . ." But this is not what claim 1 states, and as Apple has already shown, the Court may not redraft the claim to preserve its validity. *See* RPostHB at 34-35, 38.

Motorola also imports numerous limitations into the claim in Motorola's attempt to explain "close proximity to a user," but as Motorola itself acknowledged, "[t]he Federal Circuit has 'repeatedly warned' courts against exactly" this practice. *See* CPostHB at 118 (warning against importing limitations), 122-24, 127 (importing at least the following limitations: "in the context of a phone call," "near the user's head," "by a user's body part within the sensing region," "in a user's pocket," and "***at some time*** the sensor disables communication") (emphasis in original). Motorola's statement that these additional limitations can be added to claim 1 "under Hornbook law" because claim 1 is a "comprising claim" is legally incorrect—indeed, Motorola confuses the standard for infringement with the standard for indefiniteness. CPostHB at 127-28, Tr. at 1088:19-1089:23. If an apparatus includes every element of a comprising claim, the apparatus infringes notwithstanding the fact that the apparatus includes additional elements not present in the claim. *CIAS, Inc. v. Alliance Gaming Corp.*, 504 F.3d 1356, 1360

> (Fed. Cir. 2007) ("[P]atent claims use the signal "comprising," which is generally understood to signify that the claims do not exclude the presence in the accused device or method of factors in addition to those explicitly recited."). But this has no legal bearing at all on the question of the meaning of the words used in the claim.
>
> Motorola's argument appears to be that, because the claims use the word "comprising," it is free to add whatever limitations it needs to render the claims definite. That is simply not the law, and Motorola cites no authority suggesting that a "comprising" claim is not indefinite where additional elements must be added in order for the claim to have meaning. Indeed, the Commission and Federal Circuit have found that even "comprising" claims can be indefinite where they are insolubly ambiguous. For example, in *Honeywell Int'l, Inc. v. Int'l Trade Comm'n*, 341 F.3d 1332, 1399-40 (Fed. Cir. 2003), the asserted claims required measurement of a melting point elevation but provided no guidance as to which of the four known measurement methods should be used, a critical element for a finding of infringement. The asserted claims were comprising claims, and thus, under Motorola's argument, the specific measurement method could have been added to the claim to provide guidance to one skilled in the art—indeed the complainant attempted to do just that during claim construction. *Id.* at 1335, 1340. But the Commission and the Federal Circuit rejected this argument, finding the claim insolubly ambiguous for failing to specify with specificity the method that should be used. *Id.* at 1340. Here too, claim 1 lacks the required specificity as written, and Motorola may not add limitations to resolve the ambiguity of the claim.
>
> Finally, Apple has previously explained how the prior art references and Apple documents cited by Motorola do nothing to resolve the insolubly ambiguous claim language. *See* CPostHB at 124-26; RPostHB at 40-41.

(RRB at 10-13.)

e. Findings

Apple's argument about the effect of the term "close proximity" to a user deserves serious consideration. Even though Motorola is correct that the specification does discuss that the inventors were concerned about close proximity to the user's head and specified an embodiment within the patent designed to deal with proximity to a head, the claim does not say that. *Elbex Video, Ltd.*, 508 F.3d at 1371 ("Claim terms are entitled to a "heavy presumption" that they carry their ordinary and customary meaning to those skilled in the art in light of the claim term's usage in the patent specification."). Instead, the claim says:

> A sensor coupled to the user interface, the sensor to disable communication of the input signal to the processing section when the portable communication device is positioned in close proximity to a user, thereby, preventing inadvertent actuation of the touch sensitive input device.

(JX-003 at 8:26-31.)

As both parties essentially agree, it is not that the concept of "close proximity to a user" cannot be understood by a person of ordinary skill in the art. (*See* RIB at 128; CX-2689C at Q&A 94; RRB at 10.) Instead, the problem is caused when the limitation "close proximity to a user" is read in light of the language in the rest of the claim.

Specifically, the language of claim 1 requires the sensor to disable communication of the input signal to the processing section when the portable communication device is positioned in close proximity to the user and thus prevent inadvertent actuation of the touch sensitive device. This claim language presents a problem, because while the only reasonable meaning of claim 1 does prevent inadvertent actuation (its stated purpose), the language is so broad and over inclusive that it also requires the sensor stop all input signals, including intentional input signals, whenever the user is in close proximity to the phone, etc. What is more, there is nothing in the specification limiting or defining "close proximity to a user" to only faces, ears, or heads. In fact, the specification makes clear that a user's head is just an exemplar, stating that the sensor will be triggered "when an object *such as* the user's head is brought within the sensing region...." *See* JX-003 at 3:61-64 (emphasis added).) In addition, I find nothing in the specification nor the prosecution history (JX-008) stating that the sensor will not be triggered by fingers or hands or other body parts of a user (*e.g.*, accidental pocket dialing).

Let us consider further. The only reasonable meaning of the claim language directly requires the sensor to disable (without exception) user input when the device is in close proximity to a user, not just a user's head, face, or ear. This means that if a user is holding the

device and attempting to touch the device with his or her finger, (*i.e.*, input to the touch sensitive surfaces whether those surfaces are keypads or touchscreens), the device will be in close proximity to the user and thus be disabled. Accordingly, the writer of the claim made a terrible mistake in drafting this claim language because this language makes the device inoperable, preposterous, or as Apple alleges, nonsensical. In turn, this rather apparent lack of operability or utility inherent in the above discussed claim language creates a problem for me, *i.e.*, Can I construe the language at issue so it makes sense and has utility without reforming/rewriting the claim language?

Motorola's expert, Dr. Madisetti argues a person of ordinary skill in the art would understand the sensor would be triggered by a person's head, not be triggered by fingers, and would not apply when the device is being used as a speakerphone. Otherwise, Dr. Madisetti recognizes the phone would be inoperable for its intended use. (CX-2689C (Madisetti, DWS) at Q&A 28, 95.) The difficulty with accepting any of Dr. Madisetti's testimony concerning what a person of ordinary skill would understand concerning this issue is that it is a bare opinion that is plainly contrary to the language of the claims. Instead, as Apple correctly argues, Dr. Madisetti's opinion is actually an addition to the language in claim 1 because there is ***no*** language in claim 1: (1) limiting the sensor to only facial or head detection; (2) saying fingers or other body parts will not be detected; or (3) saying the sensor will not operate during use as a speakerphone. Instead, the claim uses only one word – the user and thus I cannot accept Dr. Madisetti's testimony.

I conclude that I cannot construe the existing language of claim 1 to give utility to any device without substantially rewriting or reforming claim 1. The meaning of the following language:

> A sensor coupled to the user interface, the sensor to disable communication of the input signal to the processing section when the portable communication device is positioned in close proximity to a user, thereby, preventing inadvertent actuation of the touch sensitive input device

from claim 1 is clear and susceptible to only one reasonable interpretation. As a result, I can discern no way that the device can be actuated, whether in either an intentional (desirable) or inadvertent (undesirable) manner, when a user is in close proximity to the device. This is almost precisely the same issue raised in *Chef America, Inc., v. Lamb-Weston, Inc.,* 358 F.3d 1371 (Fed. Cir. 2004), wherein virtually every one could recognize what was intended by the patent (like Dr. Madisetti's asserts here), but the problem was the language of the claim required the dough to be heated and not the oven. While this claim does not cause the creation of a charcoal briquette as existed in *Chef America*, claim 1 does cause the creation of what amounts to a very expensive paperweight that cannot be used as a phone, or any other intended purpose (*e.g.*, sending email, texting, etc.). Hence, I hold that Apple's arguments and analysis concerning construction of this term are correct and I accept them in full. Accordingly, I find by clear and convincing evidence that the language in question to be incapable of a meaningful construction and herewith find claim 1 of the '862 patent invalid under 35 U.S.C. § 112.[22]

In so holding, I considered all of Motorola's arguments. In particular, I considered Motorola's argument that the language "thereby preventing inadvertent actuation of the touch sensitive input device" (the purpose language) narrows the claim to only inadvertent touches. (CRB at 64.) I find this argument nonsensical. As Apple accurately points out, there is no way

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[22] In the alternative, I would find based on the interpretation of the claim language I have adopted herein (*i.e.*, that the claim requires the device to be disabled whenever it is in close proximity to the user) that the '862 accused products do not infringe claim 1 because they unquestionably can be operated upon and thus are not disabled whenever they are in close proximity to the user. For the same reason, I would also alternatively find that Motorola's asserted domestic product, the Droid 2, does not practice claim 1 of the '862 patent.

for the proximity sensor to determine what is an intentional and what an inadvertent touch (actuation) when the device is in close proximity to the user. To the extent Motorola argues otherwise, I note that there is no disclosure in the specification of the '862 patent that describes such a sensor, let alone describe it a manner that would allow one of ordinary skill in the art to practice the claim without undue experimentation.

I reiterate that the meaning of the term "close proximity to a user" is not the issue with claim 1. Instead, the problem is that as long as the device **is** in close proximity to a user, claim 1 requires that the device cannot be actuated. Because the touch sensitive input device on these portable communication devices must be operated in close proximity to a user, this creates a device that is inoperable for its intended use as a communication device and thus has no utility as even Dr. Madisetti recognized. (*See* CX-2689C (Madisetti, DWS) at Q&A 28, 95.)

I also reject Motorola's argument that the claim does not require the input signal to be disabled "each and every time" the device is positioned in close proximity to a user.[23] (CIB at 127.) First, that is not the language of the claim. Rather, the operative language is "*when* the communication device is positioned in close proximity to a user." (emphasis added) This language clearly provides that as long as the device is in close proximity to the user, communication of the input signal is disabled; this is obviously an absolute requirement that plainly means all of the time the device is operational.

Although Motorola disagrees, I find the only way I could construe claim 1 to make a portable communication device to be operable for its intended purpose is to rewrite it – substantially. At a minimum, I would have to make it clear that the sensor: (1) only prevents actuation when the device is in close proximity to the user's face, head, or ear as opposed to the

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[23] Motorola used this term in response to Apple's use of it. (*See* CRB at 64; RIB at 35.)

user's fingers or hands, etc.; and (2) does not operate when the communication device is in a hands free (speakerphone) mode. Redrafting or reforming claim 1 under the facts of this case to make the portable communications devices operable is prohibited. As emphasized in *Chef America* at 1374, even a nonsensical result does not require a court to redraft a claim. Instead, the claim must be invalidated.

What is more, it is plain to me that claim 1, under Motorola's proposed construction, would put no one on notice that close proximity to the user did not apply to hands or fingers, but only face, ear, and head. Hence, Motorola's proposed construction would not support the public notice function of the claims, because based on Motorola's proposed construction, the '862 patent would fail to put the public on notice of what is claimed and what is not claimed. *See Halliburton Energy Services, Inc. v. M-I LLC*, 514 F.3d 1244, 1249 (Fed. Cir. 2008) ("Because claims delineate the patentee's right to exclude, the patent statute requires that the scope of the claims be sufficiently definite to inform the public of the bounds of the protected invention, *i.e.*, what subject matter is covered by the exclusive rights of the patent. Otherwise, competitors cannot avoid infringement, defeating the public notice function of patent claims.").

Because claim 1 is not amenable to construction (cannot be construed as written to permit the operation of a portable communication device for its intended purpose), I find it is indefinite and invalid as a matter of law under 35 U.S.C. § 112, ¶ 2. *Honeywell International, Inc. v. ITC*, 341 F.3d 1332, 1338 (Fed. Cir. 2003); citing *Exxon Research & Eng'g Co. v. United States*, 265 F.3d 1371, 1375 (Fed. Cir. 2001).

E. Infringement

Because I have found that claim 1 of the '862 patent is indefinite, I cannot address the parties' infringement contentions. *Honeywell International, Inc.*, 341 F.3d at 1342 ("Because the claims are indefinite, the claims, by definition, cannot be construed. Without discernible claim

construction, an infringement analysis cannot be performed.")(internal citation omitted); *Certain Zero-Mercury-Added Alkaline Batteries, Parts Thereof, and Products Containing Same*, Inv. No. 337-TA-493, Commission Opinion at 22 (October 15, 2004) ("If claims are invalid for indefiniteness, by definition they cannot be construed, and any issue that depends on the claims being construed, such as infringement, cannot be addressed"), reversed on other grounds *Energizer Holdings v. Int'l Trade Comm'n*, 435 F.3d 1366, 1370 (Fed. Cir. 2006)).

F. Validity

Because I have found that claim 1 of the '862 patent is indefinite, I cannot evaluate whether it is anticipated or obvious, because both of these analysis require that I am first able to construe claim 1. *Certain Zero-Mercury-Added Alkaline Batteries, Parts Thereof, and Products Containing Same*, Inv. No. 337-TA-493, Commission Opinion at 22 (October 15, 2004) ("If claims are invalid for indefiniteness, by definition they cannot be construed, and any issue that depends on the claims being construed, such as infringement, cannot be addressed"), reversed on other grounds *Energizer Holdings v. Int'l Trade Comm'n*, 435 F.3d 1366, 1370 (Fed. Cir. 2006))

G. Technical Prong of Domestic Industry Requirement

Because I have found that claim 1 of the '862 patent is indefinite, I cannot address the technical prong of the domestic industry requirement for the '862 patent, because to do so requires that I am first able to construe claim 1. *Certain Zero-Mercury-Added Alkaline Batteries, Parts Thereof, and Products Containing Same*, Inv. No. 337-TA-493, Commission Opinion at 22 (October 15, 2004) ("If claims are invalid for indefiniteness, by definition they cannot be construed, and any issue that depends on the claims being construed, such as infringement, cannot be addressed"), reversed on other grounds *Energizer Holdings v. Int'l Trade Comm'n*, 435 F.3d 1366, 1370 (Fed. Cir. 2006)); *Certain Video Graphics Display Controllers and Products Containing Same*, Inv. No. 337-TA-412, Notice, 64 *Fed. Reg.* 40042, 40043 (July 23,

1999) ("Commission clarifies that it understands the ID to mean that complainant cannot meet the burden of demonstrating the practice of an indefinite claim.")

VIII. U.S. Patent No. 6,272,333

A. Introduction

The '333 patent, titled "Method and Apparatus in a Wireless Communications System for Controlling a Delivery of Data," was filed on June 12, 1998 and issued on August 7, 2001. (JX-2 at 2.) The inventor is Dwight Randall Smith and Motorola, Inc. is the assignee. (*Id.* at 1.)

1. Motorola's Viewpoint

Motorola states that the '333 patent relates to controlling a delivery of data from a fixed portion of a wireless communication system to a subscriber unit. (*See* JX-002, '333 patent at 1:7-10.) Motorola contends that before the '333 patent, data was delivered to a subscriber unit based on the class-of-service for the device. (*See id.* at 1:14-19.) For example, if the class-of-service for the device only allowed numeric messages, then the fixed portion would not send the device alphanumeric messages. Motorola asserts that the inventor of the '333 patent realized that "[a]s subscriber units become increasingly user customizable with enhanced software application upgradability, it is impractical to expect that a class-of-service distinction or a subscriber unit class can define all the types of data that the applications accessible to a specific subscriber unit can support." (*See id.* at 1:20-25; Tr. at 50:17-25 (Madisetti).)

Motorola argues to solve this problem, the '333 patent discloses a solution to controlling the delivery of data from the fixed portion of the network to the subscriber unit. Motorola states that in one aspect of the invention, the '333 patent discloses a subscriber unit that contains a "processing system ... programmed to maintain an application registry for registering applications accessible to the subscriber unit." (JX-002 at 2:18-20.) Motorola argues in response to a change in the accessibility of an application, the subscriber unit will "update the

application registry and control the transmitter to communicate the change to the fixed portion of the wireless communication system." (*Id.* at 2:20-24.) Motorola asserts this aspect of the invention is described in claim 12, which is the sole asserted claim against Apple.

2. Apple's Viewpoint

Although Apple agrees with Motorola's stated purpose for the '333 patent, it points out that subscriber units described in the '333 patent were typically pagers similar to those sold by Motorola at the time the patent was filed. (JX-2 at 2:61-67.) In addition, Apple emphasizes different aspects of the specification. For example, Apple notes the patent specification describes that each subscriber unit maintains a software application registry that includes a list of all applications that are accessible to that particular subscriber unit. (JX-2 at 3:65-4:11.) Apple asserts a controller (in the fixed portion of the wireless communication system or base unit) also maintains a current copy of the application registry in order to verify that an application is accessible to a particular subscriber unit before allowing data intended for that application to be transmitted to that subscriber unit. (JX-2 at 5:51-54.) Apple further details how the subscriber unit is capable of updating its application registry in response to a change in accessibility of an application and communicating that change to the controller for updating the copy of the application registry maintained in the fixed portion of the wireless communication system, thereby keeping the two copies consistent. (*Id.* at 5:24-48.) Finally, Apple alleges that because network bandwidth and the memory capacity of pagers were both limited at the time the '333 patent was filed, the goal was to avoid "send[ing] data to the subscriber unit that the subscriber

unit cannot utilize" (JX-2 at 1:28-30) but also alleges bandwidth is no longer a problem for mobile phones.[24]

B. Asserted Claim

Claim 12 is the sole asserted claim against Apple and is as follows:

> 12. A subscriber unit in a wireless communication system for controlling a delivery of data from a fixed portion of the wireless communication system, the subscriber unit comprising:
>
> a receiver for receiving the data;
>
> a processing system coupled to the receiver for processing the data; and
>
> a transmitter coupled to the processing system for communicating with the fixed portion of the wireless communication system,
>
> wherein the processing system is programmed to:
>
> maintain an application registry comprising a list of all software applications that are currently accessible to the subscriber unit; and
>
> in response to a change in accessibility of an application,
>
> update the application registry; and
>
> control the transmitter to communicate the change to the fixed portion of the wireless communication system.

(JX-2 at 9:3-10:8.)

C. Level of Ordinary Skill in the Art

Apple directly addresses the level of ordinary skill in the art directly applicable to the '333 patent (RIB at 74) while Motorola does so in a footnote (CIB at 156). Apple notes its expert, Dr. Noble, testified a person of ordinary skill in the art, at the time that the '333 patent was filed, would have had a Bachelor's degree or equivalent in electrical engineering or

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[24] Apple's citation of JX-2 1:28-30 is correct, but there is no evidence in the record concerning availability of bandwidth.

computer science (or related academic fields) and two or three years of experience in the area of mobile device application or system development. (RX-1285C, Noble DWS at Q/A 31-32.)

Motorola's expert, Dr. Madisetti, proposed a slightly different level of ordinary skill, *i.e.*, he testified "a person of ordinary skill in the field of the '333 patent as of mid-1998 was typically a person with a bachelors or equivalent degree (often in mathematics, computer science or electrical engineering) and approximately 2 years of experience working with mobile wireless communications." (CX-2689C, Madisetti DWS at Q/A 233-234.)

Both experts agreed their views were similar and that their opinions would be the same regardless of which level of ordinary skill was adopted. As such, I find, to the extent it is relevant, that a person of ordinary skill in the art, at the time that the '333 patent was filed, would have had a Bachelor's degree or equivalent in electrical engineering or computer science (or related academic fields) and approximately 2 years of experience working with mobile wireless communications.

D. Claim Construction

Although Motorola and Apple assert in their initial post-hearing briefs multiple limitations as needing claim construction, the parties indicate in their post-hearing reply briefs that the only limitation needing construction are (1) "software applications" and (2) "a list of all software applications that are currently accessible to the subscriber unit " / "an application registry comprising a list of all software applications that are currently accessible to the subscriber unit." (CIB at 155; RIB at 75 n.14; CRB at 82; RRB at 27.)

Only claim terms in controversy need to be construed, and only to the extent necessary to resolve the controversy. *Vanderlande Indus. Nederland BV v. Int'l Trade Comm'n*, 366 F.3d 1311, 1323 (Fed Cir. 2004); *Vivid Tech., Inc. v. Am. Sci. & Eng'g Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

The parties' proposed constructions for the disputed terms of claim 12 of the '333 patent are summarized as follows:

Claim Term	Motorola's Construction	Apple's Construction
"software applications"	*See* construction of "an application registry comprising a list of all software applications that are currently accessible to the subscriber unit" below	"computer program designed to perform specific tasks"
"a list of all software applications that are currently accessible to the subscriber unit"	*See* construction of "an application registry comprising a list of all software applications that are currently accessible to the subscriber unit" below	"a list of every software application that the subscriber unit can access"
"an application registry comprising a list of all software applications that are currently accessible to the subscriber unit"	"a registry that includes a list of all software applications that are available for present use on the device by the subscriber"	"list of all software applications that are currently accessible to the subscriber unit"

(CIB at 155; RIB at 75.)

1. "software applications"

a. Motorola's Contentions

Motorola argues that a court may interpret a term to have its "plain and ordinary meaning," as proposed by Motorola, and in so doing reject a specific construction that is inconsistent with the ordinary meaning, such as Apple's proposed construction. CIB at 156. Motorola states according to its expert, the term "software application" has a well-understood and plain meaning, and does not require separate construction. CX-2689C, Madisetti DWS at Q/A 262; CX-2701C, Madisetti RWS at Q/A 139. Motorola states Dr. Madisetti testified a software application is a software program that performs a specific task for a user, and it is not part of the operating system or system software. (Tr. at 1005:6-1006:4; CX-2689C at Q/A 262-

263; CX-2701C at Q/A 139-140.)

Motorola argues Apple's proposed construction of "software applications"—a "computer program designed to perform specific tasks"—should be rejected because it includes system software such as the operating system. Motorola states that Dr. Noble admitted during cross examination, all computer programs perform specific tasks. (Tr. at 1458:2-1458:6.) Motorola thus argues that Apple's proposed construction would cover all computer programs, because every computer program is designed to perform a specific task. (CIB at 157.)

Motorola argues Apple's construction also should be rejected because it is inconsistent with the definitions cited by Apple and its expert, and by Apple's own development documents. (*Id.*) Motorola states that in his Direct Witness Statement, Dr. Noble cited a definition of "software" in the Microsoft Press Computer Dictionary. (RX-196.003-4; RX-1285C, Noble RWS at Q/A 53.) Motorola asserts Dr. Noble's definition makes clear that software applications ("such as word processing programs, spreadsheets, and databases") are different from "system software (operating systems), which control the workings of the computer …" (*see* RX-196.003-4; *see also* CDX-12.4):

> software … n. Computer programs; instructions that make hardware work. ***Two main types of software are system software (operating systems)***, which controls the working of the computer, ***and applications, such as word processing programs, spreadsheets, and databases, which perform the tasks for which people use computers***.

Motorola states that similarly, Apple introduced excerpts from two IEEE dictionaries during Dr. Madisetti's cross examination, which also support Motorola's proposed

construction.[25] Motorola states according to both of these dictionaries, "application software" is "software designed to fulfill specific needs of a user, for example, software for navigation, payroll, or process control." (*See* CDX-12.2-12.3.) Consistent with Dr. Madisetti's opinion, both IEEE definitions distinguish "application software" from "support software" and "system software," as shown below (*see* CDX-12.2):

> ***application software (1) Software designed to fulfill specific needs of a user***, for example, software for navigation, payroll, or process control. ***Contrast: support software; system software.***

Motorola asserts neither party contends that the term "software application" is defined by the intrinsic evidence. As a result, Motorola argues the undersigned can rely on these dictionary definitions in construing the term "software applications." *Lazare Kaplan Int'l, Inc. v. Photoscribe Techs, Inc.*, 628 F.3d 1359, 1373 (Fed. Cir. 2010) ("As we explained in *Phillips*, courts are free to consult dictionaries 'and may ... rely on dictionary definitions when construing claim terms, so long as the dictionary definition does not contradict any definition found in or ascertained by a reading of the patent documents.'"). Motorola asserts at the hearing, Dr. Madisetti confirmed that these definitions support his proposed construction of plain and ordinary meaning. (Tr. at 946:8-946:15, 950:1-950:16, 1010:18-1011:23, 1011:24-1012:16, 1013:4-1014:5.) Motorola states, on cross examination, Dr. Noble admitted that he agrees with the distinction between "software applications" and "system software" set forth in the Microsoft dictionary "as far as it goes." (Tr. at 1460:2-1462:2.)

Motorola argues Apple's own development documents further support Dr. Madisetti's opinion that the plain meaning of "software applications" does not include the underlying

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[25] Dr. Madisetti is an elected Fellow of the IEEE. CX2689C at Q 10.

operating system. Motorola notes, for example, an Apple document titled "About iOS Development" notes that iOS, the operating system for the accused iPhones and iPads, "acts as an intermediary between the underlying hardware and the applications that appear on the screen." (CX-1390; *see also* Noble, Tr. 1465:25-1466:4.) Thus, Motorola argues its proposed construction for this term should be adopted.

Motorola asserts the parties agree it is appropriate for the Court to consult dictionary definitions, and Apple introduced at least three definitions at the hearing. (*See* RIB at 76; CIB at 158.) Motorola contends the very dictionary used by Apple supports Dr. Madisetti's position that "software applications" perform tasks for a user and are not part of the operating system or system software. (CIB at157-158; Madisetti, Tr. at 1005:25-1006:4.) Motorola argues because these definitions cannot be any clearer and because Apple did not even attempt to refute them in its Opening Post-Hearing Brief Motorola's proposed construction should stand. For example:

> IEEE Authoritative Dictionary (*see* CDX-12.2): "application software (1) Software designed to fulfill specific needs of a user; for example, software for navigation, payroll, or process control. Contrast: support software; system software."
>
> The New IEEE Standard Dictionary of Electrical and Electronics Terms (*see* CDX-12.3): "application software. Software designed to fulfill specific needs of a user; for example, software for navigation, payroll, or process control. Contrast with: support software; system software."

Motorola notes in its brief, Apple argues that Dr. Madisetti "presented for the first time a new proposed construction for 'software application,' namely 'software program that performs specific tasks for a user.'" (RIB at 77.) Motorola argues Apple mischaracterizes Dr. Madisetti's testimony by citing only a portion of his answer. (*Id.* (citing Tr. at 1005:6-15).) Motorola states in the remainder of the answer not cited by Apple, Dr. Madisetti explained that a skilled artisan would understand that a "software application" (i) performs a specific task for a user, and (ii) is

not part of the operating system or system software. (Tr. at 1005:25-1006:4.) Moreover, Motorola asserts that Apple relies on its incorrect understanding of Dr. Madisetti's testimony throughout its brief. Specifically, Motorola incorporates by reference the above response in each instance where Apple incorrectly argues that Dr. Madisetti "presented for the first time a new proposed construction for 'software application,' namely 'software program that performs specific tasks for a user.'" (RIB at 77.)

Motorola states that next, Apple argues Dr. Madisetti did not disclose this position prior to his testimony on re-direct. (*Id.*) Motorola contends that Apple again mischaracterizes the record, because Dr. Madisetti consistently described the ordinary meaning of a software application throughout this case as exemplified by:

> CX-2689C, Madisetti WS at Q/A 262: "Additionally, Apple's construction is too broad to the extent it includes parts of the operating system."
>
> CX-2701C, Madisetti RWS at Q/A 140: "Please refer to CDX-8.50. In my opinion, the Microsoft Press Computer Dictionary definitions cited by Dr. Noble support Motorola's position. As shown by RX0196.003-4, the definition of "software" makes clear that software applications ('such as word processing programs, spreadsheets, and databases') are different from 'system software (operating systems), which control the workings of the computer ....'"
>
> CDX-8.50 (Dr. Madisetti demonstrative exhibits): Identifying "applications, such as word processing programs, spreadsheets, and databases, which perform the tasks for which people use computers" as the part of the definition cited by Dr. Noble that describes "software applications."
>
> Madisetti cross, Tr. at 950:5-16: "Q. And Apple's definition was a computer program designed to perform specific tasks? A. Yes, it is the user that is as defined in this definition, and it contrasts with support software and system software, so as I meant in the plain and ordinary meaning of the term, application software performs specific needs of the user, for example, paying your taxes,

payroll, navigation, and this contrasts with system software that is used for maintaining a computer, operating a computer, running a computer, and –"

Motorola argues Apple incorrectly states that "[t]he only dispute appears to be whether a 'software application' must be 'for a user'" (RIB at 77), because the parties also dispute whether software applications are different from system software (such as the operating system).

b. Apple's Contentions

Apple contends the phrase "software applications" should be construed to mean "computer program designed to perform specific tasks."

As does Motorola, Apple avers the intrinsic evidence provides no guidance as to the meaning of this claim term. Apple argues thus, in the absence of intrinsic evidence, it is appropriate to consult technical dictionaries to discern how one of ordinary skill in the art would have understood the phrase "software applications." *See, e.g.*, *Phillips v. AWH Corp.*, 415 F.3d 1303, 1322-23 (Fed. Cir. 2005) (*en banc*) ("As we said in *Vitronics*, judges are free to consult dictionaries and technical treatises: 'at any time in order to better understand the underlying technology and may also rely on dictionary definitions when construing claim terms, so long as the dictionary definition does not contradict any definition found in or ascertained by a reading of the patent documents.'").

Apple asserts its proposed construction, "computer program designed to perform specific tasks," is supported by the Microsoft Press Computer User's Dictionary, cited by both Dr. Noble and Dr. Madisetti in their witness statements. (*See, e.g.*, RX-1285C, Noble DWS at Q/A 53; CX-2701C, Madisetti RWS at Q/A140.) Apple notes this reference defines software as "computer programs; instructions that make hardware work." (RX-196, Microsoft Press Computer User's Dictionary.) Apple further notes it defines an application as "a program designed to assist in the performance of a specific task, such as word processing, accounting, or

inventory management." (RX-196.) Apple argues its proposed construction, "computer program designed to perform specific tasks," is entirely consistent with these definitions.

Apple asserts Motorola and its expert, Dr. Madisetti, maintained from discovery through Dr. Madisetti's cross-examination at the evidentiary hearing that "software applications" had a plain and well-understood ordinary meaning, and thus required no additional construction. (CX-343C, Madisetti Init. Rep. at ¶ 331; CX-441C, Madisetti Reb. Rep.at ¶ 104; RX-110C,[26] Madisetti Tr. at 272:19-23, 273:3-8; CX-2689C, Madisetti DWS, at Q/A 260; CX-2701C, Madisetti RWS at Q/A 139; Tr. at 944-945.) Apple contends, as Dr. Noble observed, Motorola never explained what the purported well-understood and plain meaning of the term "software applications" is, and the apparent meaning attributed to the phrase by Dr. Madisetti does not correspond to any known ordinary meaning. (RX-1285C, Noble DWS at Q/A 54.)

Apple alleges Motorola realized it had a deficiency in the middle of the hearing and thus presented, for the first time, a new proposed construction for "software application," namely "software program that performs specific tasks for a user." (Tr. at 950:1-4; 1005:6-15.) Apple asserts this construction was never disclosed at any point in the Investigation prior to Dr. Madisetti's re-direct testimony, and thus is untimely and should be rejected on that basis alone.

Apple asserts even if Motorola is permitted to change its position now, however, Dr. Madisetti's new construction and Apple's proposed construction are quite similar. Apple contends the only dispute appears to be whether a "software application" must be "for a user." Apple notes Dr. Madisetti asserts that this limitation is required to prevent "software application"

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[26] Although this alleged exhibit comes directly from Apple's brief, this exhibit is not before me, either physically or in a list of exhibits.

from encompassing system software, such as operating systems. Apple states Dr. Madisetti pointed to the Microsoft Dictionary definition that "[t]wo main types of software are system software (operating systems), which controls the workings of the computer, and applications, such as word processing programs, spreadsheets, and databases, which perform the tasks for which people use computers." (RX-196.4, Microsoft Press Computer User's Dictionary at 745-Apple0010737; Tr. at 1013:11-1014:5.)

Apple argues putting aside the fact that nothing in the '333 patent or its file history would compel such an absolute distinction between system software and applications, all of the examples of software Apple argues are not listed in the alleged "application registries" are "for a user" and therefore software applications under both Apple's definition and Dr. Madisetti's newly proffered definition.

Apple asserts Motorola attempted to ambush it by introducing a previously undisclosed claim construction position for the first time in the middle of trial and that this alleged new claims construction should be rejected. Apple argues Motorola consistently took the position throughout this Investigation that "software applications" required no construction and refused to clarify what it understood to be the plain and ordinary meaning. (Complainant's Prehearing Brief (CPB) at 647; Executive Summary of CPB at 30; RX-110C,[27] Madisetti Dep. at 272:19-23, 273:3-8; CX-2689C at Q 260; CX-2701C, Madisetti RWS at Q139; Tr. at 944-945.) Apple asserts Motorola repeated its assertion that no construction was needed in its post-hearing brief. (CIB at 156.)

Apple argues Dr. Madisetti offered testimony regarding what he alleged to be the plain and ordinary meaning of "software applications" for the first time during his redirect

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[27] *See* previous note.