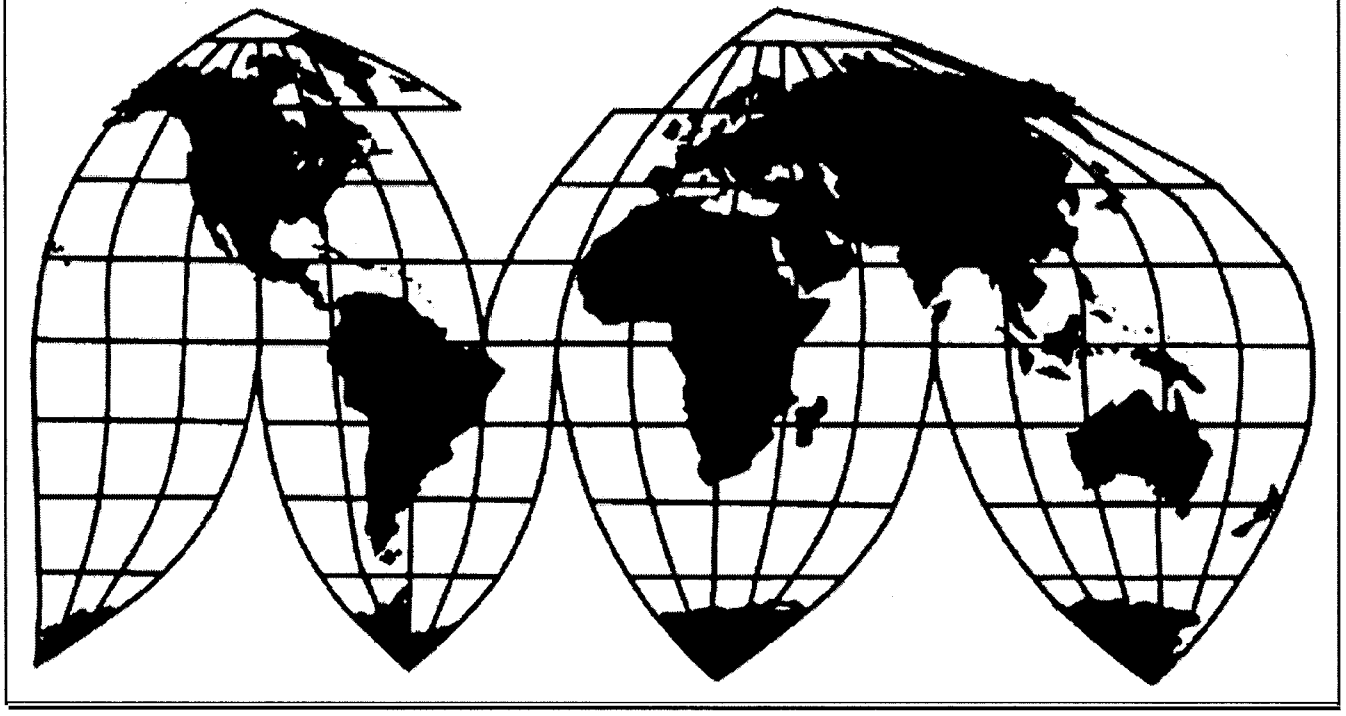
In the Matter of

Certain Wireless Devices With 3G Capabilities and Components

Investigation No. 337-TA-800

Publication 4475 **June 2014**

U.S. International Trade Commission



Washington, DC 20436

U.S. International Trade Commission

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U.S. International Trade Commission

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UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

In the Matter of **CERTAIN WIRELESS DEVICES WITH 3G CAPABILITIES AND COMPONENTS THEREOF**	**Investigation No. 337-TA-800**

NOTICE OF COMMISSION DETERMINATION TO GRANT AN UNOPPOSED MOTION BY COMPLAINANTS TO WITHDRAW THE COMPLAINT AS TO THE REMAINING RESPONDENTS; TERMINATION OF THE INVESTIGATION

AGENCY: U.S. International Trade Commission.

ACTION: Notice.

SUMMARY: Notice is hereby given that the U.S. International Trade Commission has determined to grant an unopposed motion by complainants to withdraw the investigation as to the following remaining respondents: LG Electronics, Inc. of Seoul, Republic of Korea; LG Electronics U.S.A., Inc. of Englewood Cliffs, New Jersey; and LG Electronics Mobilecomm U.S.A., Inc. of San Diego, California (collectively, "LG"). The investigation is terminated in its entirety.

FOR FURTHER INFORMATION CONTACT: Panyin A. Hughes, Office of the General Counsel, U.S. International Trade Commission, 500 E Street, S.W., Washington, D.C. 20436, telephone (202) 205-3042. Copies of non-confidential documents filed in connection with this investigation are or will be available for inspection during official business hours (8:45 a.m. to 5:15 p.m.) in the Office of the Secretary, U.S. International Trade Commission, 500 E Street, S.W., Washington, D.C. 20436, telephone (202) 205-2000. General information concerning the Commission may also be obtained by accessing its Internet server at *http://www.usitc.gov*. The public record for this investigation may be viewed on the Commission's electronic docket (EDIS) at *http://edis.usitc.gov*. Hearing-impaired persons are advised that information on this matter can be obtained by contacting the Commission's TDD terminal on (202) 205-1810.

SUPPLEMENTARY INFORMATION: The Commission instituted this investigation on August 31, 2011, based on a complaint filed by InterDigital Communications, LLC of King of Prussia, Pennsylvania; InterDigital Technology Corporation of Wilmington, Delaware; and IPR Licensing, Inc. of Wilmington, Delaware (collectively, "InterDigital"). 76 *Fed. Reg.* 54252 (Aug. 31, 2011). The complaint alleged violations of section 337 of the Tariff Act of 1930, as amended 19 U.S.C. § 1337, in the importation into the United States, the sale for importation, and the sale within the United States after importation of certain wireless devices with 3G capabilities

and components thereof by reason of infringement of certain claims of United States Patent Nos. 7,349,540 (terminated from the investigation); 7,502,406 (the '406 patent); 7,536,013 (the '013 patent); 7,616,970 (the '970 patent); 7,706,332 (the '332 patent); 7,706,830 (the '830 patent); and 7,970,127 (the '127 patent). The notice of investigation named several respondents. The complaint and notice of investigation were subsequently amended to allege infringement of certain claims of United States Patent No. 8,009,636 (the '636 patent) and to add the LG entities as respondents. 76 *Fed. Reg.* 81527 (Dec. 28, 2011). The complaint and notice of investigation were further amended to include an additional respondent. 77 *Fed. Reg.* 26788 (May 7, 2012).

InterDigital Communications, LLC subsequently moved for leave to amend the Complaint and Notice of Investigation to reflect the fact that it converted from a Pennsylvania limited liability company to a Delaware corporation, and changed its name to InterDigital Communications, Inc. The ALJ issued an ID granting the motion and the Commission determined not to review. *See* Order No. 91 (Jan. 17, 2013); Notice of Commission Determination Not to Review an Initial Determination Granting Complainants' Motion for Leave to Amend the Complaint and Notice of Investigation (Feb. 4, 2013).

On June 4, 2012, the ALJ granted a motion by LG under 19 C.F.R § 210.21(a)(2) to terminate the investigation as to LG based on an arbitration agreement. *See* Order No. 30 (June 4, 2012). The Commission determined not to review. InterDigital appealed LG's termination from this investigation, and the Federal Circuit reversed the Commission's determination. *InterDigital Commc'ns, LLC v Int'l Trade Comm'n*, 718 F.3d 1336 (Fed. Cir. 2013). The mandate issued on October 10, 2013, returning jurisdiction to the Commission.

On June 28, 2013, the ALJ issued his final initial determination ("ID"), finding no violation of section 337 by respondents whose products were adjudicated ("Adjudicated Respondents"). On December 19, 2013, the Commission determined to affirm the ALJ's finding of no violation of section 337 as to those respondents with the modifications set forth in a Commission opinion that issued on December 20, 2013. The Commission adopted the ALJ's findings that the '970, '013, and '127 patents are invalid in light of the prior art. However, due to the LG remand, the Commission noted that all other issues, namely, validity of the '830, '636, '406, and '332 patents, domestic industry, and FRAND continue to remain under review.

On January 13, 2014, InterDigital moved to withdraw the complaint as to LG. On January 23, 2014, the Commission investigative attorney filed a response in support of the motion. That same day, LG filed a response stating that it does not oppose the motion.

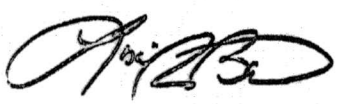
Having reviewed the motion and responses, the Commission has determined to grant the motion. The motion complies with the requirements of Commission Rule 210.21 (19 C.F.R § 210.21) and includes the required statement that there are no agreements, written or oral, express or implied, between the parties concerning the subject matter of this investigation. In addition, there appear to be no extraordinary circumstances that would compel denying the motion. *Certain Ultrafiltration Membrane Sys. and Components Thereof*, Inv. No. 337-TA-107, Commission Action and Order, at 2 (Mar. 11, 1982). As all the parties observe, terminating the investigation as to LG will conserve substantial public and private resources. Under these

circumstances, termination of LG will not adversely affect the public health and welfare, competitive conditions in the U.S. economy, the production of like or directly competitive articles in the United States, or U.S. consumers.

In its December 19, 2013, notice terminating the Adjudicated Respondents, the Commission noted that due to the LG remand, issues pertaining to the validity of the Power Ramp Up (the '830 and '636 patents) and Power Control (the '406 and '332 patents) patents as well as domestic industry and FRAND remained under review. The Commission has determined to adopt the ALJ's finding in the final ID that the Adjudicated Respondents failed to establish by clear and convincing evidence that the '830, '636, '406, and '332 patents are invalid. The Commission has determined to take no position on whether InterDigital established a domestic industry as required by 19 U.S.C. § 1337(a)(2). In view of its finding that Adjudicated Respondents did not violate section 337 because of non-infringement and the withdrawal of the remaining respondents, the Commission has also determined to take no position on the FRAND issues. *See Beloit Corp. v. Valmet Oy*, 742 F.2d 1421, 1423 (Fed. Cir. 1984) ("The Commission . . . is at perfect liberty to reach a 'no violation' determination on a single dispositive issue. That approach may often save the Commission, the parties, and this court substantial unnecessary effort.").

The authority for the Commission's determination is contained in section 337 of the Tariff Act of 1930, as amended (19 U.S.C. § 1337), and in sections 210.21, 210.42-46 and 210.50 of the Commission's Rules of Practice and Procedure (19 C.F.R. §§ 210.21, 210.42-46 and 210.50).

By order of the Commission.



Lisa R. Barton
Acting Secretary to the Commission

Issued: February 12, 2014

CERTAIN WIRELESS DEVICES WITH 3G CAPABILITIES AND COMPONENTS THEREOF **Inv. No. 337-TA-800**

PUBLIC CERTIFICATE OF SERVICE

I, Lisa R. Barton, hereby certify that the attached **NOTICE** has been served by hand upon the Commission Investigative Attorney, Brian Koo, Esq., and the following parties as indicated on **February 12, 2014.**

Lisa R. Barton, Acting Secretary
U.S. International Trade Commission
500 E Street, SW, Room 112
Washington, DC 20436

On Behalf of Complainants InterDigital Communications, Inc., InterDigital Technology Corporation, IPR Licensing, Inc. and InterDigital Holdings, Inc.:

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( ) Via Express Delivery
(√) Via First Class Mail
( ) Other:_____

On Behalf of Respondents Huawei Technologies Co., Ltd., Huawei Device USA, Inc., and FutureWei Technologies, Inc.:

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On Behalf of Respondents ZTE Corporation and ZTE (USA) Inc.:

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On Behalf of Respondents Nokia Corporation and Nokia Inc.:

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(√) Via First Class Mail
( ) Other:_____

On Behalf of LG Electronics, Inc., LG Electronics USA, Inc. and LG Electronics Mobilecomm USA, Inc.:

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(√) Via First Class Mail
( ) Other:_____

PUBLIC VERSION

In the Matter of	
CERTAIN WIRELESS DEVICES WITH 3G CAPABILITIES AND COMPONENTS THEREOF	**Investigation No. 337-TA-800**

COMMISSION OPINION

I. INTRODUCTION

On June 28, 2013, the presiding administrative law judge ("ALJ") (Judge Shaw) issued his final initial determination ("ID") in this investigation.[1] The ALJ found no violation of section 337 of the Tariff Act of 1930, 19 U.S.C. § 1337, as amended, by respondents Huawei Technologies Co., Ltd. of Shenzhen, China; Huawei Device USA of Plano, Texas ("Huawei Device"); FutureWei Technologies, Inc. d/b/a Huawei, Technologies (USA) of Plano, Texas (together "Huawei"); Nokia Corporation of Espoo, Finland; Nokia Inc. of White Plains, New York (together "Nokia"); ZTE Corporation of Shenzhen, China; and ZTE (USA) Inc. of Richardson, Texas (together "ZTE") (collectively, "Adjudicated Respondents") in connection with claims 1, 2, 3, and 5 of U.S. Patent No. 7,706,830 ("the '830 patent"); claims 1, 2, 4, and 6-8 of U.S. Patent No. 8,009,636 ("the '636 patent"); claims 6, 13, 20, 26, and 29 of U.S. Patent No. 7,502,406 ("the '406 patent"); claims 2-4, 7-11, 14, 22-24, and 27 of U.S. Patent No. 7,706,332 ("the '332 patent"); claims 1-7 of U.S. Patent No. 7,970,127 ("the '127 patent"); claims 16-19 of U.S. Patent No. 7,536,013 ("the '013 patent"); or claims 1-18 of U.S. Patent No. 7,616,970 ("the '970 patent"). On September 4, 2013, the Commission determined to review the

[1] The ID was served on July 1, 2013.

final ID in its entirety and requested briefing on a single issue concerning domestic industry. 78 *Fed. Reg.* 55294 (Sept. 10, 2013).

Upon review of the ID, the Commission has determined to affirm the ALJ's finding of no violation of section 337 as to the Adjudicated Respondents, *i.e.*, Huawei, Nokia, and ZTE. Specifically, with respect to the Power Ramp-Up patents (the '830 and '636 patents), the Commission (1) affirms the ALJ's findings that the accused products do not satisfy the "successively sends transmissions" limitation as construed to mean "transmits to the base station, one after the other, codes that are shorter than a regular length code" to the extent that the "successively sends transmissions" refer to the short codes and (2) for the '636 patent vacates the ALJ's findings regarding the "subsequent transmission" limitation. With respect to the Power Control Patents (the '406 and '332 patents), the Commission modifies the ALJ's construction of the claim term "power control bit" to mean "single-bit power control information transmitted at an APC data rate equivalent to the APC update rate" and construes the limitation to encompass only "single-bit power control information." The Commission adopts the ALJ's findings that the '127, '013, and '970 patents are invalid in view of prior art. The Commission supplements and modifies the ID as discussed below.

The Commission notes that this investigation is still pending with respect to certain respondents. Thus, except for non-infringement of Adjudicated Respondents' products, all issues pertaining to the Power Ramp-Up patents (the '406 and '332 patents) and Power Control patents (the '830 and '636 patents) including domestic industry continue to remain under review.

II. BACKGROUND

A. Procedural History

The Commission instituted this investigation on August 31, 2011, based on a complaint filed by complainants InterDigital Communications, LLC of King of Prussia, Pennsylvania;[2] InterDigital Technology Corporation of Wilmington, Delaware; and IPR Licensing, Inc. of Wilmington, Delaware (collectively, "InterDigital"). 76 *Fed. Reg.* 54252 (Aug. 31, 2011). The complaint alleged violations of section 337 of the Tariff Act of 1930 (19 U.S.C. § 1337) in the importation into the United States, the sale for importation, and the sale within the United States after importation of certain wireless devices with 3G capabilities and components thereof that infringe one or more of claims 1-15 of U.S. Patent No. 7,349,540 ("the '540 patent"); claims 1, 2, 6-9, 13, 15-16, 20-22, 26, 28-30, 34-36, and 40 of the '406 patent; claims 1-19 of the '013 patent; claims 1-18 of the '970 patent; claims 1-27 of the '332 patent; claims 1-3, 5-8, 10, 16-18, 20-23, and 25 of the '830 patent; and claims 1-14 of the '127 patent. *Id.* The notice of investigation named the following respondents: Huawei (except Huawei Device), Nokia, and ZTE. *Id.*

The Office of Unfair Import Investigations ("OUII") was also named as a party to this investigation. However, pursuant to the Supplement to the Strategic Human Capital Plan 2009-2013, issued by the Commission on January 18, 2012, OUII provided notice that its participation

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[2] InterDigital Communications, LLC subsequently moved for leave to amend the Complaint and Notice of Investigation to reflect the fact that it converted from a Pennsylvania limited liability company to a Delaware corporation, and changed its name to InterDigital Communications, Inc. The ALJ issued an ID granting the motion and the Commission determined not to review. *See* Order No. 91 (Jan. 17, 2013); Notice of Commission Determination Not to Review an Initial Determination Granting Complainants' Motion for Leave to Amend the Complaint and Notice of Investigation (Feb. 4, 2013).

in this investigation "will be limited to issues relating to U.S. Patent Nos. 7,349,540, 7,536,013, and 7,970,127, as well as issues relating to Respondents' patent misuse and/or FRAND defenses." *See* Commission Investigative Staff's Notice of Partial Participation (Jan 18, 2012).

On December 5, 2011, the ALJ issued an ID, granting a motion by InterDigital to amend the complaint and notice of investigation (1) to add allegations of infringement of claims 1-4, 6-9, and 29-31 of the '636 patent and (2) to name LG Electronics, Inc.; LG Electronics U.S.A., Inc.; and LG Electronics Mobilecomm U.S.A., Inc. (collectively, "LG") as respondents. *See* Order No. 5 (Dec. 5, 2011). The Commission determined not to review. *See* Notice of Commission Determination Not to Review an Initial Determination Granting Complainants' Motion for Leave to Amend the Complaint and Notice of Investigation (Dec. 21, 2011); 76 *Fed. Reg.* 81527 (Dec. 28, 2011).

On April 11, 2012, the ALJ issued an ID, granting a motion by InterDigital to amend the complaint and notice of investigation to add Huawei Device as a respondent. *See* Order No. 19 (Apr. 11, 2012). The Commission determined not to review. *See* Notice of Commission Determination Not to Review an Initial Determination Granting Complainants' Motion for Leave to Amend the Complaint and Notice of Investigation (May 1, 2012); 77 *Fed. Reg.* 26788 (May 7, 2012).

On June 4, 2012, the ALJ granted a motion by LG under 19 C.F.R § 210.21(a)(2) to terminate the investigation as to LG based on an arbitration agreement. *See* Order No. 30 (June 4, 2012). The Commission determined not to review. *See* Notice of Commission Determination Not to Review an Initial Determination Terminating Certain Respondents From the Investigation

(July 6, 2012). InterDigital appealed LG's termination from the investigation, and the Federal Circuit reversed the Commission's determination. *InterDigital Commc'ns, LLC v Int'l Trade Comm'n*, 718 F.3d 1336 (Fed. Cir. 2013). LG subsequently filed a combined petition for panel rehearing and rehearing en banc. On October 3, 2013, the Court denied the petition. *InterDigital Commc'ns, LLC v. Int'l Trade Comm'n*, No. 12-1628 (Fed. Cir. Oct. 3, 2013). The mandate issued on October 10, 2013, returning jurisdiction to the Commission. This investigation is still pending as to LG.

On July 24, 2012, the ALJ granted a motion by InterDigital to terminate the investigation in part as to claims 1-15 of the '013 patent; claims 8-14 of the '127 patent; all claims of the '540 patent; claims 1, 2, 9, 16, 28, 30, 34-36, and 40 of the '406 patent; claims 5, 6, 12, 13, 15-20, 25, and 26 of the '332 patent; and claims 16-18, 20-23, and 25 of the '830 patent. *See* Order No. 38 (July 24, 2012). The Commission determined not to review. *See* Notice of Commission Determination Not to Review an Initial Determination Terminating Certain Claims From the Investigation (Aug. 9, 2012).

On January 3, 2013, the ALJ granted a motion by InterDigital to terminate the investigation in part as to claims 7, 8, 15, 21, and 22 of the '406 patent; claims 1 and 21 of the '332 patent; and claims 6-8 and 10 of the '830 patent. *See* Order No. 87 (Jan. 3, 2013). The Commission determined not to review. *See* Notice of Commission Determination Not to Review an Initial Determination Terminating Certain Claims From the Investigation (Jan. 23, 2013).

The ALJ held an evidentiary hearing from February 12, 2013 through February 22, 2013, and thereafter received post-hearing briefing from the parties.

On June 28, 2013, the ALJ issued his final ID, finding no violation of section 337 by the Adjudicated Respondents. Specifically, the ALJ found that the Commission has subject matter jurisdiction, *in rem* jurisdiction over the accused products, and *in personam* jurisdiction over the respondents. ID at 15. The ALJ also found that the importation requirement of section 337 (19 U.S.C. § 1337(a)(1)(B)) has been satisfied. *Id.* at 16. The ALJ, however, found that the Adjudicated Respondents' accused products do not infringe asserted claims 1-3 and 5 of the '830 patent; asserted claims 1, 2, 4, 6, 7, and 8 of the '636 patent; asserted claims 6, 13, 20, 26, and 29 of the '406 patent; asserted claims 2-4, 7-11, 14, 22-24, and 27 of the '332 patent; asserted claims 1-7 of the '127 patent; asserted claims 16-19 of the '013 patent; or asserted claims 10-18 of the '970 patent. *See* ID at 59-69, 141-168, and 240-257.

The ALJ concluded that the Adjudicated Respondents' accused products satisfy each limitation of claims 1-9 of the '970 patent but found that all the asserted claims, claims 1-18, of the '970 patent are invalid in view of the prior art. *See id.* at 315-339, 345-381. He also found that asserted claims 1-7 of the '127 patent and asserted claims 16-19 of the '013 patent are invalid in view of the prior art. *See id.* at 260-286. The ALJ found that the Adjudicated Respondents failed to establish by clear and convincing evidence that the asserted claims of the '830, '636, '406 or '332 patents were invalid in light of the cited prior art references. *See id.* at 74-94, 191-208. The ALJ also found that the Adjudicated Respondents failed to prove that they hold licenses under the asserted patents and failed to prevail on their equitable/FRAND defenses.

The ALJ further found that InterDigital established the existence of a domestic industry

that practices the asserted patents under 19 U.S.C. § 1337(a)(2). *See* ID at 20, 31, 45, and 58. The ALJ issued his recommended determination on remedy and bonding on July 10, 2013.

On July 15, 2013, InterDigital filed a petition for review of the ID, challenging a number of the ALJ's findings. *See* Complainant InterDigital's Petition for Review of the Final Initial Determination ("InterDigital Pet."). Specifically, InterDigital sought review of the ALJ's finding that the accused products do not infringe the asserted claims of the '830, '636, '406, and '332 patents. *Id.* InterDigital also challenged the ALJ's finding that the '970 patent is invalid in view of the cited prior art. *Id.* Also on July 15, 2013, the Commission investigative attorney and the Adjudicated Respondents filed separate petitions for review challenging the ALJ's finding that InterDigital established the presence of a domestic industry that practices the asserted patents. *See* Petition of the Office of Unfair Import Investigations for Review of the Initial Determination on Violation of Section 337; *See* Respondents' Petition for Review on Domestic Industry and Contingent Petition for Review of Other Issues. Respondents also filed a contingent petition for review. *See id.*

On July 23, 2013, the parties filed responses to the petitions for review. *See* Respondents' Response to InterDigital's Petition for Review of the Initial Determination on Violation ("Resp. Rep."); Respondents' Response to Office of Unfair Import Investigations' Petition for Review of the Initial Determination on Violation of Section 337; Complainant InterDigital's Response to the Respondents' and the Staff's Petitions for Review of the Final Initial Determination; Response of the Office of Unfair Import Investigations to the Private Parties' Petition for Review of the Initial Determination on Violation of Section 337.

On September 4, 2013, the Commission determined to review the final ID in its entirety and requested briefing on a single issue concerning domestic industry. 78 *Fed. Reg.* 55294 (Sept. 10, 2013).

On September 27, 2013, the parties filed written submissions on the issue under review. *See* Complainant InterDigital's Response to Notice of Commission Determination to Review, Dated September 4, 2013; Response of the Office of Unfair Import Investigations to the Commission's Question; Respondents' Brief Addressing Domestic Industry Issues Raised in Commission's Decision of September 4, 2013. On October 21, 2013, the parties filed reply submissions.[3] *See* Complainant InterDigital's Reply Regarding the Notice of Commission Determination to Review, Dated September 4, 2013; Reply of the Office of Unfair Import Investigations to the parties' Responses to the Commission's Question; Respondents' Reply Brief Addressing Domestic Industry Issues Raised in Commission's Notice of September 4, 2013.

B. Patents and Technology at Issue

The technology at issue in this investigation generally relates to wireless communications devices with Third Generation ("3G") cellular capabilities, and components thereof. ID at 7 (citing CX-1310C (Prucnal WS) at Q58). 3G describes a family of technologies that fulfills the International Mobile Telecommunications-2000 specifications ("IMT-2000") defined by the International Telecommunication Union ("ITU"). *Id.* Two of the most widely adopted 3G systems are based on code division multiple access ("CDMA") technology, *i.e.*, Wideband

[3] The delay in filing responses was due to the government shutdown.

CDMA ("WCDMA") developed by the Third Generation Partnership Project ("3GPP") and CDMA2000 developed by the Third Generation Partnership Project 2 ("3GPP2"). *Id.*

The '830 patent entitled "Method and Subscriber Unit for Performing an Access Procedure" issued on April 27, 2010. The patent names Fatih M. Ozluturk and Gary R. Lomp as the inventors. '830 patent (JX-6). The patent describes a way in which a subscriber unit gains access to a cellular CDMA system. *Id.* at Abstract. InterDigital owns the patent and has asserted independent claim 1 and dependent claims 2, 3, and 5 in this investigation.

The '636 patent entitled "Method and Apparatus for Performing an Access Procedure" issued on August 30, 2011. '636 patent (JX-7). The patent names Fatih Ozluturk and Gary R. Lomp as the inventors. The patent describes a way in which a subscriber unit gains access to a cellular CDMA system. *Id.* at Abstract. InterDigital owns the '636 patent and has asserted independent claim 1 and dependent claims 2 and 4-8 in this investigation. The '636 patent and the '830 patent are related to the same technology, and share a common specification. The patents are collectively referred to as the "Power Ramp-Up" patents.

The '406 patent, entitled "Automatic Power Control System for a Code Division Multiple Access (CDMA) Communications System" issued on March 10, 2009. '406 patent (JX-1). The patent names Gary Lomp, Fatih Ozluturk, and John Kowalski as the inventors. The patent describes automatic power control for a CDMA system. *Id.* at Abstract. InterDigital owns the patent and has asserted independent claim 29 and dependent claims 6, 13, 20, and 26, which depend respectively from independent claims 1, 7, 15, and 21, and dependent claim 22 in this investigation.

The '332 patent entitled "Method and Subscriber Unit for Performing Power Control" issued on April 27, 2010. '332 patent (JX-2). The patent names Fatih Ozluturk and Gary Lomp as the inventors. The patent describes a way in which subscriber units and base stations communicate to control the power level of transmissions from the base station to a subscriber unit within a cellular CDMA system. *Id.* at Abstract. InterDigital owns the '332 patent and has asserted independent claim 8 with its dependent claims 9, 10, 11, and 14, as well as dependent claims 2, 3, 4, 7, 22-24, and 27 in this investigation. These claims depend from non-asserted independent claims 1 and 21. The '332 patent and the '406 patent are related, and the two patents are collectively referred to as the "Power Control" patents.

The '127 patent, entitled "User Equipment Identification Specific Scrambling" issued on June 28, 2011. '127 patent (JX-4). The patent names Stephen G. Dick, Nader Bolourchi, and Sung-Hyuk Shin as the inventors. The patent describes aspects of the High Speed Downlink Packet Access (HSDPA) used in 3G WCDMA systems. *Id.* at Abstract. InterDigital owns that patent and has asserted independent claim 1 and dependent claims 2-7 in this investigation.

The '013 patent entitled "User Equipment Identification Specific Scrambling" issued on May 19, 2009. '013 patent (JX-3). The patent names Stephen G. Dick, Nader Bolourchi, and Sung-Hyuk Shin as the inventors. The patent describes aspects of the High Speed Downlink Packet Access (HSDPA) used in 3G WCDMA systems. *Id.* at Abstract. InterDigital owns the '013 patent and has asserted independent claim 16 and dependent claims 17-19 in this investigation. The '013 patent is related to the '127 patent and the two patents are referred to as the "UE ID" patents.

The '970 patent entitled "Dual Mode Unit for Short Range, High Rate and Long Range, Lower Rate Data Communications" issued on November 10, 2009. '970 patent (JX-5). The patent names Thomas E. Gorsuch as the inventor. The patent describes short-range, higher speed and long-range, lower speed wireless communications. *Id.* at Abstract. The '970 patent is referred to as the "Dual Mode Subscriber" patent. InterDigital owns the patent and has asserted independent claims 1 and 10, and dependent claims 2-9 and 11-18 in this investigation. [4]

C. Products at Issue

InterDigital has accused about 150 devices of infringement in this investigation. ID at 7. Each of the accused products is designed to operate with either the WCDMA standard, the CDMA2000 standard, or both standards. *Id.* The accused products can be grouped into three categories according to the baseband processor used in the device: the "Qualcomm accused products" use baseband processors developed by Qualcomm, the "Nokia/TI accused products" use baseband processors developed by Nokia and manufactured by Texas Instruments, and the [ ] *Id.* For a complete list of accused products, see ID at 7-15.

[4] As noted above, the ALJ found that the '970, '013, and '127 patents are invalid in view of the prior art. InterDigital petitioned for review of the ALJ's findings with respect to the '970 patent but did not petition for review of the findings regarding the '013 patent or '127 patent. By not petitioning for review of the findings pertaining to the '013 and '127 patents, InterDigital has waived its right to challenge those findings. *Allied Corp. v. U. S. Int'l Trade Comm'n*, 850 F.2d 1573, 1580 (Fed. Cir. 1988). With respect to the '970 patent, the Commission finds InterDigital's petition unpersuasive and adopts the ALJ's findings.

III. DISCUSSION OF ISSUES UNDER REVIEW

A. The Power Ramp-Up Patents ('830 & '636 Patents)

InterDigital has asserted independent claim 1 and dependent claims 2, 3, and 5 of the '830 patent in this investigation. Claim 1 of the '830 patent recites:

> 1. A wireless code division multiple access (CDMA) subscriber unit comprising:
>
> a transmitter configured such that, when the subscriber unit is first accessing a CDMA network and wants to establish communications with a base station associated with the network over a communication channel to be indicated by the base station, the transmitter ***successively sends transmissions*** prior to the subscriber unit receiving from the base station an indication that at least one of the successively sent transmissions has been detected by the base station;
>
> wherein each of the ***successively sent transmissions*** is produced using a sequence of chips, wherein the sequence of chips is not used to increase bandwidth;
>
> the transmitter further configured such that the transmitter sends to the base station a message indicating to the base station that the subscriber unit wants to establish the communications with the base station over the communication channel to be indicated by the base station, the message being sent only subsequent to the subscriber unit receiving the indication;
>
> wherein at least two of the ***successively sent transmissions*** are produced using different sequences of chips;
>
> wherein each of the ***successively sent transmissions*** is shorter than the message; and
>
> wherein each of the ***successively sent transmissions*** and the message are produced using portions of a same sequence of chips, wherein the same sequence of chips is not used to increase bandwidth.

'830 patent, col. 10, l. 54 – col. 11, l. 16 (claim 1) (emphasis added).

InterDigital also asserted independent claim 1 and dependent claims 2, 4, and 6-8 of

the '636 patent in this investigation. Claim 1 of the '636 patent recites:

> **1**. A wireless code division multiple access (CDMA) subscriber unit comprising:
>
> a transmitter configured such that, when the subscriber unit is first accessing a CDMA network, the transmitter ***successively sends transmissions*** wherein each of the transmissions are derived from a first length of a plurality of chips until the subscriber unit receives from a base station associated with the network an indication that at least one of the transmissions has been detected by the base station; and
>
> the transmitter further configured such that, subsequent to the subscriber unit receiving the indication, the transmitter sends a ***subsequent transmission*** derived from a second length of the plurality of chips, wherein the first length is less than the second length.

'636 patent, col. 10, ll. 48 – 64 (claim 1) (emphasis added).

1. Construction of Disputed Claim Terms

a. Applicable Law on Claim Construction

Claim construction begins with the plain language of the claim. Claims should be given their ordinary and customary meaning as understood by a person of ordinary skill in the art, viewing the claim terms in the context of the entire patent. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312-13 (Fed. Cir. 2005) (en banc).

In some instances, claim terms do not have particular meaning in a field of art, and claim construction involves little more than the application of the widely accepted meaning of commonly understood words. *Phillips*, 415 F.3d at 1314. "In such circumstances, general purpose dictionaries may be helpful." *Id.* In many cases, however, claim terms have a specialized meaning, and it is necessary to determine what a person of skill in the art would have understood the disputed claim language to mean. *Id.* "Because the meaning of a claim term as

understood by persons of skill in the art is often not immediately apparent, and because patentees frequently use terms idiosyncratically, the court looks to 'those sources available to the public that show what a person of skill in the art would have understood disputed claim language to mean.'" *Id.* (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1116 (Fed. Cir. 2004)). The public sources identified in *Phillips* include "the words of the claims themselves, the remainder of the specification, the prosecution history, and extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art." *Id.*

In cases in which the meaning of a claim term is uncertain, the specification usually is the best guide to the meaning of the term. *Id.* at 1315. As a general rule, the particular examples or embodiments discussed in the specification are not to be read into the claims as limitations. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995) (*en banc*), *aff'd*, 517 U.S. 370 (1996). The specification is, however, always highly relevant to the claim construction analysis, and is usually dispositive. *Phillips*, 415 F.3d at 1315 (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). Moreover, "[t]he construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be, in the end, the correct construction." *Id.* at 1316.

Claims are not necessarily, and are not usually, limited in scope to the preferred embodiment. *RF Delaware, Inc. v. Pacific Keystone Techs., Inc.*, 326 F.3d 1255, 1263 (Fed. Cir. 2003); *Decisioning.com, Inc. v. Federated Dep't Stores, Inc.*, 527 F.3d 1300, 1314 (Fed. Cir. 2008) ("[The] description of a preferred embodiment, in the absence of a clear intention to limit

claim scope, is an insufficient basis on which to narrow the claims."). Nevertheless, claim constructions that exclude the preferred embodiment are "rarely, if ever, correct and require highly persuasive evidentiary support." *Vitronics*, 90 F.3d at 1583. Such a conclusion can be mandated in rare instances by clear intrinsic evidence, such as unambiguous claim language or a clear disclaimer by the patentees during patent prosecution. *Elekta Instrument S.A. v. O.U.R. Sci. Int'l, Inc.*, 214 F.3d 1302, 1308 (Fed. Cir. 2000); *Rheox, Inc. v. Entact, Inc.*, 276 F.3d 1319 (Fed. Cir. 2002).

If the intrinsic evidence does not establish the meaning of a claim, then extrinsic evidence may be considered. Extrinsic evidence consists of all evidence external to the patent and the prosecution history, and includes inventor testimony, expert testimony, and learned treatises. *Phillips*, 415 F.3d at 1317. Inventor testimony can be useful to shed light on the relevant art. In evaluating expert testimony, a court should discount any expert testimony that is clearly at odds with the claim construction mandated by the claims themselves, the written description, and the prosecution history. *Id.* at 1318. Extrinsic evidence may be considered if a court deems it helpful in determining the true meaning of language used in the patent claims. *Id.*

b. Construction of the Claim Term "Successively Sends Transmissions"

i. The ID

The claim term "successively sends transmissions" appears in the asserted claims of both the '830 and '636 patents. *See* '830 patent (JX-6) at col. 10, l. 54 – col. 11, l. 16; '636 patent (JX-7) at col. 10, ll. 49-63. The ALJ construed the claim term to mean "transmits to the base station, one after the other, codes that are shorter than a regular length code," adopting the

construction proposed by the Adjudicated Respondents. ID at 22-25. In construing the claim term, the ALJ pointed to the specification and noted that it describes "transmissions" from the subscriber unit to the base station as follows:

> As the base station **14** transmits the pilot code **40** (step 100), the base station **14** searches (step 101) for an "access code" **42** transmitted by a subscriber unit **16**. The access code **42** is a known spreading code transmitted from a subscriber unit **16** to the base station **14** during initiation of communications and power ramp-up.

'830 patent, col. 6, ll. 14-20. The ALJ further referenced the specification's description of a preferred embodiment:

> The preferred embodiment of the present invention utilizes 'short codes' and a two-stage communication link establishment procedure to achieve fast power ramp-up without large power overshoots. The spreading code transmitted by the subscriber unit 16 is much shorter than the rest of the spreading codes (hence the term short code), so that the number of phases is limited and the base station 14 can quickly search through the code. The short code used for this purpose carries no data.

Id. at col. 7, lns. 36-44. The ALJ concluded that "[t]hese passages from the '830 specification make clear that the claimed 'transmissions' from the subscriber unit to the base station comprise codes" and that at "no point does the specification indicate that the claimed transmissions are generalized 'RF emissions,' as proposed by InterDigital." ID at 24 (citing Compls. Br. at 38-39).

The ALJ further found that the patents "disclose that the codes successively transmitted during the random access process (*i.e.*, the short codes) are neither modulated with data, nor used to modulate data." ID at 24-25 (citing RX-3526C (Lanning WS) at Q69,Q92-95, Q130-132; CX-1309C (Jackson WS) at Q625; Jackson Tr. 119, 177, 178; Haas Tr. 1822, 1823-1826; RX-3999C (Lanning RWS) at Q132-134, Q141-143; *see also InterDigital Commc'ns, LLC v. Int'l*

Trade Comm'n, 690 F.3d 1318, 1326 (Fed. Cir. 2012) ("As noted, the specification describes various codes, such as pilot codes and short codes, as 'spreading codes' even though they carry no data and are not intended to do so."); *id.* at 1326 (finding that experts confirmed that the short codes and the access codes described in the specification do not spread, or modulate, data)). That is, the ALJ found that the "codes" themselves are what are successively transmitted, not codes modulated with data.

The ALJ discounted InterDigital's argument that "Respondents' expert Mr. Lanning defines the term 'code' as used in Respondents' construction as a specific type of code, specifically one that is "not modulated by data,"' stating that the phrase "not modulated by data" does not appear in any of Adjudicated Respondents' proposed constructions. ID at 25. The ALJ observed that "Mr. Lanning does not distinguish codes that can be modulated by data from those that cannot be modulated by data." *Id.* Rather, "Mr. Lanning testified that a code modulated by data is no longer a code, *i.e.*, the transmission of a code modulated by data is not the transmission of a code." *Id.* (citing RX-3999C (Lanning RWS) at Q152).

ii. InterDigital's Petition

InterDigital filed a petition for review, challenging the ALJ's claim construction and arguing that the ALJ improperly restricts the plain meaning of the word "transmission." InterDigital Pet. at 11. According to InterDigital, "transmission" means "RF emissions" or "signals," not "codes shorter than a regular length code," as construed by the ALJ. *Id.* Specifically, InterDigital contends that nothing in the intrinsic evidence suggests that the patentees intended to limit the ordinary meaning of "transmission" and accuses the ALJ of

violating the basic rule of claim construction by permitting a preferred embodiment to restrict the ordinary meaning of the claim term. *Id.* at 17-18 (citing ID at 23-24).

InterDigital further argues that the intrinsic evidence supports its construction and points to the original application from which the patents derive. *Id.* at 19. That application included claims reciting "transmitting a periodic signal" and according to InterDigital shows that the specification contemplates "transmitting 'signals,' which requires a broader construction of the claim term 'transmissions' than the ALJ's construction of 'codes that are shorter than a regular length code." *Id.* InterDigital also argues that the ALJ observed incorrectly that under its proposed construction the claim "term 'transmissions' can be generalized 'RF emissions.'" *Id.* at 21 (emphasis omitted). InterDigital asserts that the claim itself, particularly the surrounding language, make clear that the RF emissions are specific and not general. *Id.* (citing '830 patent, claim 1).

iii. Adjudicated Respondents' Response

In response, the Adjudicated Respondents argue that the ALJ's construction finds support in the intrinsic evidence, expert testimony, and the Federal Circuit's opinion in a related investigation, *InterDigital Commc'ns, LLC v. Int'l Trade Comm'n*, 690 F.3d 1318, 1326 (Fed. Cir. 2012) ("*InterDigital I*"). Resp. Rep. at 5. Adjudicated Respondents point out that the Federal Circuit found, consistent with InterDigital's arguments, that "the specification makes clear [that the initiation codes] are not used to spread signals." *Id.* at 7 (citing *InterDigital I*, 690 F.3d at 1325; Haas Tr. 1825:17-1826:14; Jackson Tr. 178:15-21).

iv. Analysis

The Commission finds InterDigital's arguments unpersuasive and adopts the ALJ's construction of the claim term "successively sends transmissions" to mean "transmits to the base station, one after the other, codes that are shorter than a regular length code." This construction is supported by both the intrinsic and extrinsic evidence of the patents. ID at 22-25.

InterDigital argues that the ALJ's construction is incorrect because it improperly restricts the plain meaning of the word "transmissions," which according to InterDigital means "RF emissions" or signals. InterDigital Pet. at 11. While "transmissions" may mean "RF emissions" (Lanning Tr. at 1080:3-17; CX-1309C (Jackson WS) at 694, 696-97) the claim limitation in dispute recites "successively sends transmissions" not merely "transmissions," and the Federal Circuit has explained that claims should be given their ordinary and customary meaning as understood by a person of ordinary skill in the art, viewing the claim terms in the context of the entire patent. *Phillips v. AWH Corp.,* 415 F.3d 1303, 1312-13 (Fed. Cir. 2005) (*en banc*). In the context of the '830 and '636 patents, "successively sends transmissions" refers to transmitting short codes to the base station. The "summary of the invention" for both the '830 and '636 patents states that

> The present invention comprises a novel method of controlling transmission power during the establishment of a channel in a CDMA communication system by utilizing the transmission of a short code from a subscriber unit to a base station during initial power ramp-up. The short code is a sequence for detection by the base station which has a much shorter period than a conventional spreading code. The ramp-up starts from a power level that is guaranteed to be lower than the required power level for detection by the base station. The subscriber unit quickly increases transmission power while repeatedly transmitting the short code

until the signal is detected by the base station.

'830 patent, col. 3, ll. 17-29; '636 patent, col. 3, ll. 16-28. In other words, the patent teaches that the "successively sends transmissions" refers to "repeatedly transmitting the short code." Consistent with the summary of the invention, the specification describes a preferred embodiment where

> [w]hen a communication link is desired, the subscriber unit **16** starts transmitting a short code at the minimum power level . . . and continuously increases the transmission power level while retransmitting the short code until it receives an acknowledgement from the base station **14** that the short code has been detected by the base station.

'830 patent, col. 7, ll. 60-65. As the ALJ found, the disclosures of the ramp-up patents "make clear that the claimed 'transmissions' from the subscriber unit to the base station comprise codes," in particular short codes, and at "no point do[] the specification[s] indicate that the claimed transmissions are generalized 'RF emissions,' as proposed by InterDigital." ID at 24.

In addition, the language of the claims provides further support. Claim 1 of the '830 patent describes "a transmitter configured such that, when the subscriber unit is first accessing a CDMA network and wants to establish communications with a base station . . . the transmitter successively sends transmissions prior to the subscriber unit receiving from the base station an indication that at least one of the successively sent transmissions has been detected by the base station," and that "each of the successively sent transmissions is shorter than the message." '830 patent, col.10, ll. 56-64; col. 11, ll. 11-12. That is, the claim itself establishes that the "successively sends transmissions" limitation refers to transmitting short codes.

Moreover, the extrinsic evidence also supports the ALJ's construction of "successively

sends transmissions" to mean "transmits to the base station, one after the other, codes that are shorter than a regular length code." Indeed, InterDigital's own expert admitted that the "successively sent transmissions" of claim 1 refers to the short codes. Jackson Tr. 176:25-177:5 (Q. All right. Now, the successively sent transmissions of claim 1, those are the short codes described in the 830 patent, correct? A. Yes, the repeated transmissions of the short code are the successively sent transmissions.).

The ALJ's construction finds support in both the intrinsic and extrinsic evidence of the patent. Accordingly, the Commission adopts the construction and declines InterDigital's invitation to change it.

2. Whether the Accused Products Infringe the Asserted Claims of the Power Ramp-Up Patents ('830 & '636 Patents)

a. Applicable Law on Infringement

Direct infringement of a patent under 35 U.S.C. § 271(a) consists of making, using, offering to sell, or selling a patented invention without consent of the patent owner or importing a patented invention into the United States without consent of the patent owner. Section 337 prohibits "the importation into the United States, the sale for importation, or the sale within the United States after importation . . . of articles that infringe a valid and enforceable United States patent . . . ." 19 U.S.C. § 1337(a)(1)(B).

A determination of patent infringement encompasses a two-step analysis. *Advanced Cardiovascular Sys., Inc. v. Scimed Life Sys., Inc.*, 261 F.3d 1329, 1336 (Fed. Cir. 2001). First, the court determines the scope and meaning of the patent claims asserted, and then the properly construed claims are compared to the allegedly infringing device. *Id.* Each patent claim element

or limitation is considered material and essential to an infringement determination. *See London v. Carson Pirie Scott & Co.*, 946 F.2d 1534, 1538 (Fed. Cir. 1991). "Literal infringement of a claim exists when each of the claim limitations reads on, or in other words is found in, the accused device." *Allen Eng. Corp. v. Bartell Indus.*, 299 F.3d 1336, 1345 (Fed. Cir. 2002). To prove direct infringement, the plaintiff must establish by a preponderance of the evidence that one or more claims of the patent read on the accused device either literally or under the doctrine of equivalents. *Scimed*, 261 F.3d at 1336.

In a section 337 investigation, the complainant bears the burden of proving infringement of the asserted patent claims by a preponderance of the evidence. *Certain Flooring Products*, Inv. No. 337-TA-443, Commission Notice of Final Determination of No Violation of Section 337, 2002 WL 448690 at 59, (March 22, 2002); *Enercon GmbH v. Int'l Trade Comm'n*, 151 F.3d 1376 (Fed. Cir. 1998).

b. Whether the Accused Products Satisfy the "Successively Sends Transmissions" Limitation

i. The ID

The ALJ noted that each asserted claim of the Power Ramp-Up patents recites the "successively sends transmissions" limitation, construed to mean "transmits to the base station, one after the other, codes that are shorter than a regular length code." ID at 53. Under that construction, the ALJ found that the accused WCDMA Products do not satisfy the limitation and consequently, found no infringement. Specifically, the ALJ observed that for all the WCDMA accused products, InterDigital identifies the PRACH (Physical Random Access Channel) preambles as the claimed "successively sent transmissions" and found that PRACH Preamble is

not the transmission of a code. *Id.* (citing RX-3999C (Lanning RWS) at Q310-311).

The ALJ explained that, "as set forth in the 3GPP WCDMA standard, the PRACH preambles are composed of a scrambling code that scrambles a repeated signature" and that each "repeated signature comprises data, indicating at least the Access Service Class for that particular handset." *Id.* (citing RX-3999C (Lanning RWS) at Q310, Q312-317; RX-3964 (3GPP TS 25.331) at §§ 10.3.6.52-10.3.6.55; *Certain 3G Mobile Handsets and Components Thereof*, Inv. No. 337-TA-613, USITC Pub. No. 4145, Initial Determination at 92 ("[T]he administrative law judge finds that the PRACH preamble is modulated by data as the signal as modulated by the scrambling code uniquely identifies the cell."). Because the PRACH preamble is modulated by data, the ALJ found that it did not meet the claim limitation, stating:

> Inasmuch as the adopted construction of "successively sends transmissions" requires that the transmissions comprise codes, and inasmuch as the PRACH preamble comprises a repeated data signature scrambled by a code, it is determined that the WCDMA Accused Products do not satisfy this claim limitation under the adopted construction because the PRACH preamble is not a code.

ID at 53-54.

ii. InterDigital's Petition

As noted above, InterDigital challenges the ALJ's construction of the claim term "successively sends transmissions," and invites the Commission to reject the ALJ's construction in favor of its proposed construction. InterDigital also argues that even under the ALJ's construction, the accused WCDMA products infringe. InterDigital Pet. at 14. Specifically, InterDigital contends that the ALJ's non-infringement finding depends on his view that a code

modulated by data is outside the scope of the asserted claims. *Id.* InterDigital disagrees and points to the Federal Circuit's decision in *InterDigital I.* InterDigital explains that the patents at issue in that appeal "share a common specification with the '830 and '636 patents" and that the Federal Circuit found that a "code" is simply "a sequence of bits" or a "sequence of chips." *Id.* at 15. InterDigital asserts that the Federal Circuit's ruling, which is binding on the Commission, does not suggest that "short codes cannot be modulated by data" but instead ruled that the intrinsic evidence lacks a restrictive definition or disclaimer for "code." *Id.* (citing *InterDigital I,* 690 F.3d at 1326). Thus, InterDigital states that "[w]hen the Federal Circuit's controlling construction of the word 'code' is applied to the ALJ's construction of the disputed claim term, the PRACH preambles in the Accused WCDMA Products are 'successively sent transmissions.'" *Id.* at 16.

iii. Adjudicated Respondents' Response

Adjudicated Respondents contend that the ALJ correctly relied on evidence that the transmission of a code modulated by data is not the transmission of a code, and because the accused products [ ]

Resp. Rep. at 2-3. (citing RX-3999C (Lanning RWS) at Q.152).

Adjudicated Respondents further argue that the Federal Circuit's opinion in *InterDigital I* is not to the contrary. Adjudicated Respondents explain that in *InterDigital I* the Federal Circuit rejected a construction of the claim term "code" that limited the term to spreading codes but that the Court did not conclude as a factual matter that a code that has been modulated with data is still a code. *Id.* at 5 (citing *InterDigital I,* 690 F.3d at 1326). Adjudicated Respondents further

point to the Federal Circuit's statement in *InterDigital I*, agreeing with InterDigital, that "[t]he specification makes clear [that the initiation codes] are not used to spread data signal." *Id.* at 7 (citing *InterDigital*, 690 F.3d at 1325; Haas Tr. at 1825:17-1826:14; Jackson Tr. at 178:15-21. Adjudicated Respondents also point to the Federal Circuit's reasoning that "the specification describes various codes, such as pilot codes and short codes, as 'spreading codes even though they carry no data and are not intended to do so. If a code carries no data, *i.e*, it is not modulated with a data signal, there is no signal whose bandwidth is increased or intended to be increased." *Id.* (citing *InterDigital I*, 690 F.3d at 1326). Adjudicated Respondents note that in its brief to the Federal Circuit in *InterDigital I*, InterDigital "emphasized several times that the short codes and access codes do not modulate data." *Id.* at 10. Adjudicated Respondents add that testimony in this investigation supports the ALJ's finding that the short codes do not modulate data. *Id.* at 8 (citing Jackson Tr. at 176:25-178:24; 178:15-21; Haas Tr. at 1822:11-1825:6).

iv. Analysis

In our view, the ALJ's finding that the accused products do not satisfy the "successively sends transmissions" limitation as construed to mean "transmits to the base station, one after the other, codes that are shorter than a regular length code" is correct. This construction recognizes that the "successively sends transmissions" limitation refers to the transmission of short codes, and the parties do not dispute that the short codes do not modulate data and are not intended to do so. The record evidence, however, demonstrates that the [ ]. Thus, in our view, the ALJ's non-infringement finding is correct.

However, as InterDigital notes, in reaching his non-infringement determination, the ALJ

relied on his understanding that the transmission of a code modulated by data is not the transmission of a code. *See* ID at 24-25 (relying on RX-3999C (Lanning RWS) at Q152). Specifically, the ALJ stated that under the adopted construction of "'successively sends' transmissions the WCDMA Accused Products do not infringe this limitation because [

]" ID at 53 (citing RX-3999C (Lanning RWS) at Q310-311). In our view, the ALJ's distinguishing between transmission of codes modulated by data and transmission of codes not modulated by data, and referring only to the latter as "codes" is unnecessary and confusing.

As noted above, we agree with the ALJ's claim construction, which does not include the phrase "not modulated by data." We further agree with the ALJ's finding that the patents "disclose that the codes successively transmitted during the random access process (*i.e.*, the short codes) are neither modulated with data, nor used to modulate data." ID at 24-25 (citing RX-3526C (Lanning WS) at Q69,Q92-95, Q130-132; CX-1309C (Jackson WS) at Q625; Jackson Tr. 119, 177, 178; Haas Tr. 1822, 1823-1826; RX-3999C (Lanning RWS) at Q132-134, Q141-143; *see also InterDigital Commc'ns, LLC v. Int'l Trade Comm'n*, 690 F.3d 1318, 1326 (Fed. Cir. 2012) ("As noted, the specification describes various codes, such as pilot codes and short codes, as 'spreading codes' even though they carry no data and are not intended to do so."); *id.* at 1326 (finding that experts confirmed that the short codes and the access codes described in the specification do not spread, or modulate, data)).

The ALJ concluded that "[i]nasmuch as the adopted construction of 'successively sends transmissions' requires that the transmissions comprise codes, and inasmuch as [

] it is determined that the WCDMA Accused Products do not satisfy this claim limitation under the adopted construction because the PRACH preamble is not a code." ID at 53-54. We agree with the ALJ to the extent "code" refers to "short code," but not with the ALJ's conclusion that codes that modulate date are not actually codes. The Ramp-Up Patents disclose various "codes," and do not teach that codes that modulate data are not codes. For example, the '830 patent states that "[e]ach subscriber unit's baseband data signal is multiplied by a code sequence, called the 'spreading code,' which has a much higher rate than the data" and that "[t]his coding results in a much wider transmission spectrum than the spectrum of the baseband data signal . . . ." '830 patent, col. 2, ll. 5-11. In other words, the specification discloses spreading codes that modulate data and refers to them as "codes." Indeed, in *InterDigital I*, the Federal Circuit reversed the Commission's restriction of "spreading codes" to only codes that modulate data, finding that the shared specifications of the Power Ramp-Up patents also disclose spreading codes that do not modulate data such as the short codes and pilot codes. *InterDigital I*, 690 F.3d at 1326. Thus, in our view, stating that codes that modulate data are not codes creates confusion. Importantly, such a finding is unnecessary to establish non-infringement in this investigation.

As discussed above with respect to claim construction, the Power Ramp-Up patents, their common specification, and expert testimony make clear that the "successively sends transmissions" limitation refers to transmissions of short codes. No credible dispute exists that the short codes do not modulate data. For example, the Federal Circuit referencing the common specification of the Power Ramp-Up Patents noted that "the specification describes various codes,

such as pilot codes and short codes, as 'spreading codes' even though they carry no data and are not intended to do so." *InterDigital I*, 690 F.3d at 1326; 830 Patent, col. 7, ll. 39-44. InterDigital's expert confirmed that "successively sends transmissions" limitation refers to transmissions of short codes and that short codes do not modulate data:

> Q. All right. Now the successively sent transmissions of claim 1, those are the short codes described in the 830 patent, correct?
>
> A. Yes, the repeated transmissions of the short code are the successively sent transmissions.
>
> Q. And in the power ramp-up patents, the short code is not applied to a data signal, correct?
>
> A. Correct.

Jackson Tr. at 176:25-177:9. In addition, there is no dispute that in the Adjudicated Respondents' accused products, [

] RX-3999C (Lanning RWS) at Q310, Q312-317; RX-3964 (3GPP TS 25.331) at §§ 10.3.6.52-10.3.6.55; ID at 53-54. Thus, the ALJ's finding that the accused products do not meet the "successively sends transmissions" limitation is correct. The Commission therefore affirms the ALJ's findings with the clarification provided above.

b. Whether the Accused Products Satisfy the "Subsequent Transmissions" Limitation

Given the Commission's findings that the Adjudicated Respondents' products do not meet the "successively sends transmissions" limitation recited in the asserted claims of both the '830 and '636 patents, the Commission need not reach whether those products satisfy the

"subsequent transmissions" limitation of the '636 patent. The Commission thus vacates the ALJ's findings with respect to the "subsequent transmissions" limitation. *See Beloit Corp. v. Valmet Oy*, 742 F.2d 1421, 1423 (Fed. Cir. 1984) ("The Commission . . . is at perfect liberty to reach a 'no violation' determination on a single dispositive issue. That approach may often save the Commission, the parties, and this court substantial unnecessary effort.").

B. The Power Control Patents ('406 & '332 Patents)

InterDigital has asserted the following claims of the '406 patent in this investigation: independent claim 29; claim 6, which depends from independent claim 1; claim 13, which depends from independent claim 7; claim 20, which depends from independent claim 15; and claims 22 and 26, which depend from independent claim 21. Claim 29 recites:

> **29**. A method for controlling transmission power levels of a code division multiple access (CDMA) subscriber unit, the method comprising:
>
> receiving by the subscriber unit a ***power control bit*** on a downlink control channel, the ***power control bit*** indicating either an increase or decrease in transmission power level;
>
> transmitting a plurality of channels by the subscriber unit, the plurality of channels including a traffic channel and a reverse control channel;
>
> in response to the received power control bit, adjusting a transmission power level of both the traffic channel and the reverse control channel,
>
> separately adjusting the transmission power level of the traffic channel and the reverse control channel; and
>
> transmitting the traffic channel and the reverse control channel at their respective adjusted transmit power levels.

'406 patent, col. 17, ll. 5-22 (claim 29) (emphasis added).

InterDigital has asserted the following claims of the '332 patent in this investigation:

Independent claim 8 together with its dependent claims 9, 10, 11, and 14; claims 2, 3, 4, and 7, which depend from independent claim1; and claims 22, 23, 24, and 27, which depend from independent claim 21. Claim 8 recites:

> **8**. A code division multiple access subscriber unit, comprising:
>
> an antenna configured to receive a first radio frequency signal; and
>
> a circuit, operatively coupled to the antenna, configured to generate ***power control bits*** in response to the first radio frequency signal, wherein the circuit is further configured to establish an in-phase (I) pre-spread channel and a quadrature (Q) pre-spread channel, such that the power control bits are included on only one of the I pre-spread channel or the Q pre-spread channel;
>
> wherein a second radio frequency signal output by the code division multiple access subscriber unit is derived at least in part from the I and Q pre-spread channels.

'332 patent, col. 101, ll. 37 – 50 (claim 8) (emphasis added).

1. Construction of the Claim Term "Power Control Bit"

a. The ID

The ALJ adopted the Adjudicated Respondents' proposed construction and construed the claim term "power control bit" to mean "single-bit power control information transmitted at an APC data rate equivalent to the APC[5] update rate." ID at 101. In construing the limitation, the ALJ observed that neither the specification of the '406 patent nor the specification of the '332 patent contain the specific term "power control bit." *Id.* The ALJ, however, found that the specifications "describe the way in which the claimed invention conveys power control, or APC,

[5] The 406 patent refers to both adaptive power control and automatic power control as APC. *See* '406 patent, col. 4, l. 32; col. 5, l. 50.

information," pointing to the following disclosures:

> The APC signal is transmitted as one bit signals on the APC channel. The one-bit signal represents a command to increase (signal is logic-high) or decrease (signal is logic-low) the associated transmit power. In the described embodiment, the 64 kbps APC data stream is not encoded or interleaved. '406 patent, col. 6, ll. 47-51.
>
> APC information is always conveyed as a single bit of information, and the APC Data Rate is equivalent to the APC update rate. The APC update rate is 64 kb/s. '406 patent, col. 9, ll. 46-48; '332 patent, col. 67, ll. 43-45.
>
> The APC bits are transmitted as one bit up or down signals on the APC channel. '332 patent, col. 64, ll. 11-13.

In addition, the ALJ found that the flow chart depicted in Figure 4 of the '406 patent indicates that "RCS[6] transmits the APC bit to SU[7] in the forward APC channel," "SU modem receives the single APC bit," and "SU increases or decreases its transmit power according to the APC bit received." ID at 102 (citing '406 patent, Fig. 4). Similarly, the ALJ found that Figure 27 of the '332 patent teaches that "SU modem hard limits the combined error signal to form a single APC bit," "SU transmits the APC bit to RCS in the reverse APC channel," and "RCS modem receives the single APC bit." *Id.* (citing '332 patent, Fig. 27).

The ALJ found further support for his construction from the language of the claims. *Id.* He noted that claim 1 of the '406 patent, from which asserted claim 6 depends, requires that the claimed invention adjust the transmission power of the mobile device "in response to *the* received power control bit" and that claim 7 of the '406 patent, from which asserted claim 13

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[6] "RCS" stands for "radio carrier station." '406 patent, col. 3, ll. 48-51.

[7] "SU" stands for "subscriber unit." '406 patent, col. 3, ll. 46-47.

depends, claims a method in which a subscriber unit receives "a series of power control bits on a down link channel, each power control bit indicating either an increase or decrease in transmission power level." *Id.* (citing '406 patent, col. 14, l. 58 – col. 15, l. 8; col. 15, ll. 28-45).

The ALJ rejected InterDigital's proposal to construe the claim limitation to mean "binary information relating to power control," finding that InterDigital's proposed construction seeks to construe the term "bit" to include any type of binary information, even when that information is not a "bit." ID at 103.

b. InterDigital's Petition

InterDigital challenges the ALJ's construction of the claim term, arguing that the plain and ordinary meaning of the claim term "power control bit" is "binary information relating to power control." InterDigital Pet. at 28. According to InterDigital, experts for both sides agreed that a bit "is simply a representation of a piece of information that has two states," meaning information that is "binary." *Id.* (citing Tr. at 1204:22-25, CX-1310C at ¶93). InterDigital also argues that the '332 patent claims do not limit the type of binary information that makes up a power control bit and that the '406 patent simply requires that the power control indicates either an increase or decrease in transmission power level. *Id.* at 28-29 (citing '406 patent, col. 15, ll. 32-34; col 16, ll. 38-40; CX-1310C at ¶93).

InterDigital points to the dependent claims for further support and asserts that because some of them require that "the power control bit has a value of +1 or -1," the claimed invention "must be broad enough to include implementations for which the power control bit can have a value of +1 or -1, 0 or 1, and so on." *Id.* at 29.

InterDigital explains that the specification uses the phrase "bit," "single APC bit," and "one bit signals" and that use of the modifiers "single" and "one" "'strongly implies' that the stand-alone and unmodified claim term 'bit' is not limited to a single (or one) bit, but instead encompass many bits as long as those bits ultimately represent only two binary states." *Id.* at 30. According to InterDigital, the ALJ's reliance on the specification's statement that "APC information is always conveyed as a single bit of information" is misplaced because the statement does not use the claim term "power control bit" and does not state that "the present invention" or "all embodiments" always use a single bit of information to convey APC information. *Id.* at 35.

InterDigital accuses the ALJ of erroneously limiting the claim term to disclosures in the specification. *Id.* Specifically, InterDigital contends that the ALJ did not "explain his rationale for imposing a limitation on the entire invention that the APC data rate be equal to the APC update rate," and that the ALJ imported this limitation from a preferred embodiment. *Id.* at 32. InterDigital asserts that this was a mistake because allegedly the specification describes embodiments in which the APC data rate is not equivalent to the APC update rate. *Id.* at 33-34 (citing Tr. at 322:18-23; 332 Patent, Fig. 29B).

c. Adjudicated Respondents' Response

Adjudicated Respondents argue that both the intrinsic and extrinsic evidence support the ALJ's claim construction. Resp. Rep. at 17. According to Adjudicated Respondents, the patents describe "transmit[ting] single-bit power control commands, or 'power control bits,' with each one-bit command indicating either an increase or a decrease in the transmission power level" and

that "[b]y designing their systems to update the power level once for each power control bit received, the inventors maximized the APC update rate (e.g., update per second), making it equivalent to the APC data rate (e.g., bits per second)." *Id.* at 18. Consistent with that objective, Adjudicated Respondents contend that the patentees defined "the way that is 'always' used to transmit APC information using power control bits": "APC information is always conveyed as a single bit of information, and the APC data rate is equivalent to the APC update rate." *Id.* (citing 406 Patent, col. 9, ll. 45-52; 332 Patent, col. 67, ll. 43-45). Adjudicated Respondents assert that the "always" statement "clearly and unmistakably informs one of ordinary skill in the art that the invention requires that power control commands always consist of a single bit, and that the power level is updated once per bit received (*i.e.*, the APC data rate is equivalent to the APC update rate)." *Id.* at 19 (citing RX-3529C (Williams Stmt.) at QQ. 20, 129-30). Adjudicated Respondents argue that the inventors disavowed multi-bit power control commands, which necessarily include more than one bit per power control command and require an APC data rate higher than the APC update rate. *Id.*

Adjudicated Respondents dismiss InterDigital's contention that the "always" statement does not relate to the claimed "power control bit," arguing that "[t]he 'always' statement begins with the acronym 'APC,' which undisputedly refers to adaptive/automatic power control." *Id.* at 22 (citing '406 patent, col. 2, ll. 29-30; col. 4, l. 23; col. 5, l. 50; '332 patent, col. 3, ll. 26-27). Adjudicated Respondents add that the "always" statement "explains that the APC (power control) information is always conveyed as single-bit information, which is precisely the purpose of the claimed 'power control bit.'" *Id.* at 22-23.

Adjudicated Respondents further state that InterDigital's argument that the "ALJ did not explain why the APC data rate must be equivalent to the APC update rate . . . ignores the relevant portion of both the ID and the patent specifications." *Id.* at 28. According to Adjudicated Respondents "[t]he ALJ's entire construction comes directly from the inventors' unified, clear, and unambiguous statement about how power control information is 'always' conveyed." *Id.* at 28-29. Adjudicated Respondents assert that the "always" modifies the entire sentence: "APC information is always conveyed as a single bit of information, and the APC data rate is equivalent to the APC update rate" and that the two clauses are "inherently and logically linked." *Id.* at 29. Specifically, Adjudicated Respondents argue that the first clause's disclosure that "each power control command or request is conveyed as a single bit of data" "necessarily means that the APC data rate (e.g., bits per second) at which power control information is sent will be equivalent to the APC update rate (e.g., updates per second) at which the power level is updated," and that second clause merely makes this equivalency explicit. *Id.* at 29.

d. Analysis

In our view, the ALJ correctly construed the claim limitation "power control bit" to mean "single-bit power control information." ID at 101. However, by also requiring that the "power control bit" "transmit[] at an APC data rate equivalent to the APC update rate," the ALJ limited the construction in a manner not plainly warranted by the specification. *See* ID at 101. Thus, we modify the construction by striking "transmitted at an APC data rate equivalent to the APC update rate" from the construction.

As the ALJ noted, neither the specification of the '406 patent nor the specification of

the '332 patent contains the specific term "power control bit." *Id.* However, the specifications of both the '406 and '332 patents describe the manner in which the claimed invention conveys power control (APC) information. Specifically, the specifications of both the '406 and '332 patents teach that

> APC information is ***always*** conveyed as a single bit of information, and the APC Data Rate is equivalent to the APC update rate. The APC update rate is 64 kb/s.

'406 patent, col. 9, ll. 46-48; '332 patent, col. 67, ll. 43-45 (emphasis added). The specification of the '406 patent explains that

> The APC signal is transmitted as one bit signals on the APC channel. The one-bit signal represents a command to increase (signal is logic-high) or decrease (signal is logic-low) the associated transmit power. In the described embodiment, the 64 kbps APC data stream is not encoded or interleaved.

'406 patent, col. 6, ll. 47-51. The specification of the '332 patent also explains that

> The APC bits are transmitted as one bit up or down signals on the APC channel.

'332 patent, col. 64, ll. 11-13. In other words, the specifications make clear that the APC is conveyed as a single-bit signal. Specifically, by disclosing that "APC information is ***always*** conveyed as a single bit of information," the patentees acted as their own lexicographers and defined the precise scope of the power control bit. *See* '406 patent, col. 9, ll. 46-48; '332 patent, col. 67, ll. 43-45 (emphasis added); *Astrazeneca AB v. Mutual Pharm.*, 384 F.3d 1333, 1338-39 (Fed. Cir. 2004). Consequently, we agree with the ALJ that the claimed "power control bit" is conveyed as a single bit.

InterDigital argues that a bit "is simply a representation of a piece of information that has

two states," meaning "binary" and that the asserted claims do not limit the type of binary information that makes up a power control bit. InterDigital Pet. at 28-29. InterDigital's argument is not persuasive. The claims recite "power control bit," a phrase that does not appear in the specifications. The only "power control" described in the specifications, however, is the APC (adaptive or automatic power control), and the specifications state that the "APC is ***always*** conveyed as a single bit of information." A bit being a representation of a piece of information that has two states has no bearing on the fact that the patentees acted as their own lexicographers and defined the scope of the power control bit. In short, the patentees specifically defined the scope of the power control bit, and their express definition must govern.

However, we find persuasive InterDigital's assertion that the ALJ did not "explain his rationale for imposing a limitation on the entire invention that the APC data rate be equal to the APC update rate." InterDigital Pet. at 32. Unlike the specific requirement that the APC information is always conveyed as a single bit of information, which is emphasized in other portions of the patents (*see, e.g.*, '406 patent, col. 9, ll. 46-48; col. 6, ll. 47-51; Fig. 4 '332 patent, col. 67, ll. 43-45; Fig 27), APC data rate being equal to the APC update rate is not emphasized in the specifications, and the placement of the comma suggests that the word "always" does not modify both clauses. It may be that the two clauses are "inherently and logically linked" as Adjudicated Respondents argue (Resp. Rep. at 29). However, the Federal Circuit has cautioned against limiting claim scope to disclosures in the specification absent a clear indication. *See Toshiba Corp. v. Imation Corp.*, 681 F.3d 1358, 1369 (Fed. Cir. 2012). Accordingly, the Commission strikes that second clause from the construction.

2. Whether the Accused Products Infringe the Power Control Patents ('406 & '332 Patents)

a. Brief Summary of the Issue and Parties' Arguments

InterDigital notes the ALJ's finding that the accused products infringe the asserted claims of the '406 and '332 patents except for the "power control bit" limitation. InterDigital Pet. at 37. InterDigital argues that the accused products infringe the asserted claims if the Commission adopts the single-bit portion of the ALJ's construction but rejects the data rate portion. *Id.* at 38. InterDigital explains that the ALJ found that WCDMA products do not satisfy the "power control bit" limitation because [

] and that this finding would be of no consequence if the Commission rejects the "data rate" portion of the construction. *Id.* at 38. Specifically, InterDigital points to the Commission's finding that the WCDMA products [

] *Id.* (citing ID at 116-16, 119; CX-0232 (3GPP TS 25.211) at §§ 3.2, 5.3.2.)

Similarly, InterDigital argues that the accused CDMA2000 products infringe because the ALJ found that those products [

]. *Id.* at 39 (citing ID at120-21, 125).

b. Analysis

InterDigital's argument is not persuasive. The ALJ's non-infringement conclusion depends on his findings that "all the accused products [

]" ID at 126-27 (citing RX-3994C (Williams RWS) at Q7-18, Q21-27, Q189, Q197, Q199-216, Q400-440, Q528; Goldberg Tr. 249-251; Prucnal Tr. 318-319, 320; RX-3994C (Williams RWS) at Q52-63). The ALJ further found that "a power control command in WCDMA-compliant devices always consists of at least 2 bits." *Id.* (citing Prucnal Tr. 318-319; RX-3994C (Williams RWS) at Q11-18; *see* RX-3531 (3GPP TS 25.211) at Fig. 13). The ALJ observed that experts for both sides, Dr. Goldberg and Dr. Prucnal, agreed that all of the accused WCDMA products [

]

Id. (citing Goldberg Tr. 249-51; Prucnal Tr. 320). Consequently, the handset [

] *Id.* The ALJ also noted that the TPC Bit Pattern transmitted by WCDMA-compliant handsets to the base station also includes two bits. *See* CX-1310C (Prucnal WS) at Q189; Prucnal Tr. 319. With respect to the CDMA2000-compliant devices, the ALJ found that

> CDMA2000 standard provides that the power control instruction is always transmitted as a set of at least 384 chips. *See* CX-0017 (3GPP2 C.S0002) § 2.1.3.1.10.1. In fact, the CDMA2000 specification requires that more than one bit of power control information is sent to or received from the mobile station to indicate an increase or decrease in power. The CDMA2000 standard provides that "[t]he duration and power level of power control bits" is greater than one symbol, where each symbol consists of at least one bit of information. *See* Prucnal Tr. 320; RX-3994C (Williams RWS) at Q24-25; CX-0017 (3GPP2 C.S0002) § 3.1.3.1.10. Therefore, none of the CDMA2000 accused devices receives or generates single-bit power control information. *See* RX-3994C (Williams RWS) at Q210-213, Q216.

The record evidence supports the ALJ's findings that the Adjudicated Respondents' products do not infringe the modified construction of "power control bit" to mean "single-bit power control information." Simply put, modifying the ALJ's construction of "power control bit" to mean "single-bit power control information" does not alter his infringement findings discussed above because those findings rest on the understanding that the "power control bit" must be a single bit.

IV. CONCLUSION

Upon review of the ID, the Commission affirms the ALJ's finding of no violation of section 337 as to the Adjudicated Respondents, *i.e.*, Huawei, Nokia, and ZTE. Specifically, with respect to the Power Ramp-Up patents (the '830 and '636 patents), the Commission (1) affirms the ALJ's findings that the accused products do not satisfy the "successively sends transmissions" limitation as construed to mean "transmits to the base station, one after the other, codes that are shorter than a regular length code" to the extent that the "successively sends transmissions" refer to the short codes and (2) for the '636 patent, vacates the ALJ's findings regarding the "subsequent transmission" limitation. With respect to the Power Control Patents (the '406 and '332 patents), the Commission modifies the ALJ's construction of the claim term "power control bit," construes the limitation to encompass only "single-bit power control information," and affirms the findings that the accused products do not satisfy those limitations. The Commission adopts the ALJ's findings that the '127, '013, and '970 patents are invalid in view of prior art.

By order of the Commission.

Lisa R. Barton
Acting Secretary to the Commission

Issued: February 19, 2014

CERTAIN WIRELESS DEVICES WITH 3G CAPABILITIES AND COMPONENTS THEREOF **Inv. No. 337-TA-800**

PUBLIC CERTIFICATE OF SERVICE

I, Lisa R. Barton, hereby certify that the attached **COMMISSION OPINION** has been served by hand upon the Commission Investigative Attorney, Brian Koo, Esq., and the following parties as indicated on **February 19, 2014.**

Lisa R. Barton, Acting Secretary
U.S. International Trade Commission
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UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

In the Matter of **CERTAIN WIRELESS DEVICES WITH 3G CAPABILITIES AND COMPONENTS THEREOF**	**Investigation No. 337-TA-800**

NOTICE OF COMMISSION DETERMINATION TO REVIEW THE FINAL INITIAL DETERMINATION FINDING NO VIOLATION OF SECTION 337 IN ITS ENTIRETY

AGENCY: U.S. International Trade Commission.

ACTION: Notice.

SUMMARY: Notice is hereby given that the U.S. International Trade Commission has determined to review in its entirety, the final initial determination issued by the presiding administrative law judge ("ALJ") finding no violation of section 337 of the Tariff Act of 1930, 19 U.S.C. § 1337, ("section 337") in the above identified investigation.

FOR FURTHER INFORMATION CONTACT: Panyin A. Hughes, Office of the General Counsel, U.S. International Trade Commission, 500 E Street, S.W., Washington, D.C. 20436, telephone (202) 205-3042. Copies of non-confidential documents filed in connection with this investigation are or will be available for inspection during official business hours (8:45 a.m. to 5:15 p.m.) in the Office of the Secretary, U.S. International Trade Commission, 500 E Street, S.W., Washington, D.C. 20436, telephone (202) 205-2000. General information concerning the Commission may also be obtained by accessing its Internet server at *http://www.usitc.gov*. The public record for this investigation may be viewed on the Commission's electronic docket (EDIS) at *http://edis.usitc.gov*. Hearing-impaired persons are advised that information on this matter can be obtained by contacting the Commission's TDD terminal on (202) 205-1810.

SUPPLEMENTARY INFORMATION: The Commission instituted this investigation on August 31, 2011, based on a complaint filed by InterDigital Communications, LLC of King of Prussia, Pennsylvania; InterDigital Technology Corporation of Wilmington, Delaware; and IPR Licensing, Inc. of Wilmington, Delaware (collectively, "InterDigital"). 76 *Fed. Reg.* 54252 (Aug. 31, 2011). The complaint alleged violations of section 337 of the Tariff Act of 1930, as amended 19 U.S.C. § 1337, in the importation into the United States, the sale for importation, and the sale within the United States after importation of certain wireless devices with 3G capabilities and components thereof by reason of infringement of certain claims of United States Patent Nos. 7,349,540 (terminated from the investigation); 7,502,406; 7,536,013; 7,616,970; 7,706,332; 7,706,830; and 7,970,127. The notice of investigation named the following entities as respondents: Huawei Technologies Co., Ltd. of Shenzhen, China; FutureWei Technologies, Inc. d/b/a Huawei, Technologies (USA) of Plano, Texas; Nokia Corporation of Espoo, Finland; Nokia

Inc. of White Plains, New York; ZTE Corporation of Shenzhen, China; and ZTE (USA) Inc. of Richardson, Texas (collectively, "Respondents"). The complaint and notice of investigation were subsequently amended to allege infringement of certain claims of United States Patent No. 8,009,636 (the '636 patent) and to add the following entities as respondents: LG Electronics, Inc. of Seoul Korea; LG Electronics U.S.A., Inc. of Englewood Cliffs, New Jersey; and LG Electronics Mobilecomm U.S.A., Inc. of San Diego, California (collectively, "LG"). 76 *Fed. Reg.* 81527 (Dec. 28, 2011). The complaint and notice of investigation were further amended to include Huawei Device USA of Plano, Texas as a respondent. 77 *Fed. Reg.* 26788 (May 7, 2012).

InterDigital Communications, LLC subsequently moved for leave to amend the Complaint and Notice of Investigation to reflect the fact that it converted from a Pennsylvania limited liability company to a Delaware corporation, and changed its name to InterDigital Communications, Inc. The ALJ issued an ID granting the motion and the Commission determined not to review. *See* Order No. 91 (Jan. 17, 2013); Notice of Commission Determination Not to Review an Initial Determination Granting Complainants' Motion for Leave to Amend the Complaint and Notice of Investigation (Feb. 4, 2013).

On June 4, 2012, the ALJ granted a motion by LG under 19 C.F.R § 210.21(a)(2) to terminate the investigation as to LG based on an arbitration agreement. *See* Order No. 30 (June 4, 2012). The Commission determined not to review. *See* Notice of Commission Determination Not to Review an Initial Determination Terminating Certain Respondents From the Investigation (July 6, 2012). InterDigital appealed LG's termination from this investigation, and the Federal Circuit reversed the Commission's determination. *InterDigital Commc'ns, LLC v Int'l Trade Comm'n*, No. 2012-1628 (Fed. Cir. June 7, 2013).

On June 28, 2013, the ALJ issued his final ID, finding no violation of section 337 by Respondents. Specifically, the ALJ found that the Commission has subject matter jurisdiction, *in rem jurisdiction* over the accused products, and *in personam* jurisdiction over the respondents. The ALJ also found that the importation requirement of section 337 (19 U.S.C. § 1337(a)(1)(B)) has been satisfied. The ALJ, however, found that the accused products do not infringe asserted claims 1-3 and 5 of the '830 patent; asserted claims 1, 2, 4, and 6-8 of the '636 patent; asserted claims 6, 13, 20, 26, and 29 of the '406 patent; asserted claims 2-4, 7 - 11, 14, 22 - 24, and 27 of the '332 patent; asserted claims 1-7 of the '127 patent; asserted claims 16-19 of the '013 patent; or asserted claims 10-18 of the '970 patent. The ALJ found that the accused products meet each limitation of claims 1-9 of the '970 patent but found that all the asserted claims, claims 1-18, of the '970 patent are invalid in view of the prior art. The ALJ also found that asserted claims 1-7 of the '127 patent and asserted claims 16-19 of the '013 patent are invalid in view of the prior art. The ALJ, however, found that Respondents failed to establish by clear and convincing evidence that the asserted claims of the '830, '636, '406 or '332 patents were invalid in light of the cited prior art references. The ALJ also found that the Respondents failed to prove that they hold licenses under the asserted patents and failed to prevail on their equitable/FRAND defenses. The ALJ further found that InterDigital established the existence of a domestic industry.

On July 15, 2013, InterDigital filed a petition for review of the ID. That same day, the Commission Investigative Attorney and Respondents filed separate petitions for review.

Respondents also filed a contingent petition for review. On July 23, 2013, the parties filed responses to the petitions and contingent petition for review.

Having examined the record of this investigation, including the ALJ's final ID, the petitions for review, and the responses thereto, the Commission has determined to review the final ID in its entirety.

In connection with its review, the Commission is particularly interested in responses to the following question:

> Please discuss, in light of the statutory language, legislative history, the Commission's prior decisions, and relevant court decisions, including *InterDigital Commc'ns, LLC v. Int'l Trade Comm'n*, 690 F.3d 1318 (Fed. Cir. 2012), and 707 F.3d 1295 (Fed. Cir. 2013), whether establishing a domestic industry based on licensing under 19 U.S.C. § 1337 (a)(3)(C) requires proof of "articles protected by the patent" (*i.e.*, a technical prong). If so, please identify and describe the evidence in the record that establishes articles protected by the asserted patents.

In connection with the final disposition of this investigation, the Commission may (1) issue an order that could result in the exclusion of the subject articles from entry into the United States, and/or (2) issue one or more cease and desist orders that could result in the respondent(s) being required to cease and desist from engaging in unfair acts in the importation and sale of such articles. The Commission, however, is not interested in receiving written submissions that address the form of remedy and bonding, if any, or the public interest at this time.

WRITTEN SUBMISSIONS: The parties to the investigation are requested to file written submissions on the issue identified in this notice. The written submissions must be filed no later than close of business on September 27, 2013. Initial submissions are limited to 15 pages. Reply submissions must be filed no later than the close of business on October 4, 2013. Reply submissions are limited to 10 pages. No further submissions on this issue will be permitted unless otherwise ordered by the Commission.

Persons filing written submissions must file the original document electronically on or before the deadlines stated above and submit 8 true paper copies to the Office of the Secretary by noon the next day pursuant to section 210.4(f) of the Commission's Rules of Practice and Procedure (19 C.F.R. 210.4(f)). Submissions should refer to the investigation number ("Inv. No. 337-TA-800") in a prominent place on the cover page and/or the first page. (*See* Handbook for Electronic Filing Procedures, http://www.usitc.gov/secretary/fed_reg_notices/rules/handbook_on_electronic_filing.pdf). Persons with questions regarding filing should contact the Secretary (202-205-2000).

Any person desiring to submit a document to the Commission in confidence must request confidential treatment. All such requests should be directed to the Secretary to the Commission and must include a full statement of the reasons why the Commission should grant such treatment. *See* 19 C.F.R. § 201.6. Documents for which confidential treatment by the Commission is properly sought will be treated accordingly. A redacted non-confidential version of the document must also be filed simultaneously with the any confidential filing. All non-confidential written submissions will be available for public inspection at the Office of the Secretary and on EDIS.

The authority for the Commission's determination is contained in section 337 of the Tariff Act of 1930, as amended (19 U.S.C. § 1337), and in sections 210.42-46 and 210.50 of the Commission's Rules of Practice and Procedure (19 C.F.R. § 210.42-46 and 210.50).

By order of the Commission.

Lisa R. Barton
Acting Secretary to the Commission

Issued: September 4, 2013

CERTAIN WIRELESS DEVICES WITH 3G CAPABILITIES AND COMPONENTS THEREOF **Inv. No. 337-TA-800**

PUBLIC CERTIFICATE OF SERVICE

I, Lisa R. Barton, hereby certify that the attached **NOTICE** has been served by hand upon the Commission Investigative Attorney, Brian Koo, Esq., and the following parties as indicated on **September 4, 2013**

Lisa R. Barton, Acting Secretary
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UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

In the Matter of **CERTAIN WIRELESS DEVICES WITH 3G CAPABILITIES AND COMPONENTS THEREOF**	**Investigation No. 337-TA-800**

NOTICE OF COMMISSION DETERMINATION TO AFFIRM IN PART, AND MODIFY IN PART A FINAL INITIAL DETERMINATION FINDING NO VIOLATION OF SECTION 337 BY CERTAIN RESPONDENTS; TERMINATION OF THE INVESTIGATION AS TO CERTAIN RESPONDENTS; EXTENSION OF THE TARGET DATE FOR COMPLETION OF THE INVESTIGATION

AGENCY: U.S. International Trade Commission.

ACTION: Notice.

SUMMARY: Notice is hereby given that the U.S. International Trade Commission has determined to affirm in part and modify in part the final initial determination issued by the presiding administrative law judge ("ALJ") finding no violation of section 337 of the Tariff Act of 1930, 19 U.S.C. § 1337, ("section 337") in the above identified investigation as to respondents Huawei Technologies Co., Ltd. of Shenzhen, China; Huawei Device USA of Plano, Texas ("Huawei Device"); FutureWei Technologies, Inc. d/b/a Huawei, Technologies (USA) of Plano, Texas (collectively, "Huawei"); Nokia Corporation of Espoo, Finland; Nokia Inc. of White Plains, New York (collectively, "Nokia"); ZTE Corporation of Shenzhen, China; and ZTE (USA) Inc. of Richardson, Texas (collectively, "ZTE"). The Commission has extended the target date for completion date of this investigation until February 17, 2014, to accommodate remand proceedings concerning other respondents.

FOR FURTHER INFORMATION CONTACT: Panyin A. Hughes, Office of the General Counsel, U.S. International Trade Commission, 500 E Street, S.W., Washington, D.C. 20436, telephone (202) 205-3042. Copies of non-confidential documents filed in connection with this investigation are or will be available for inspection during official business hours (8:45 a.m. to 5:15 p.m.) in the Office of the Secretary, U.S. International Trade Commission, 500 E Street, S.W., Washington, D.C. 20436, telephone (202) 205-2000. General information concerning the Commission may also be obtained by accessing its Internet server at *http://www.usitc.gov*. The public record for this investigation may be viewed on the Commission's electronic docket (EDIS) at *http://edis.usitc.gov*. Hearing-impaired persons are advised that information on this matter can be obtained by contacting the Commission's TDD terminal on (202) 205-1810.

SUPPLEMENTARY INFORMATION: The Commission instituted this investigation on August 31, 2011, based on a complaint filed by InterDigital Communications, LLC of King of

Prussia, Pennsylvania; InterDigital Technology Corporation of Wilmington, Delaware; and IPR Licensing, Inc. of Wilmington, Delaware (collectively, "InterDigital"). 76 *Fed. Reg.* 54252 (Aug. 31, 2011). The complaint alleged violations of section 337 of the Tariff Act of 1930, as amended 19 U.S.C. § 1337, in the importation into the United States, the sale for importation, and the sale within the United States after importation of certain wireless devices with 3G capabilities and components thereof by reason of infringement of certain claims of United States Patent Nos. 7,349,540 (terminated from the investigation); 7,502,406 (the '406 patent); 7,536,013 (the '013 patent); 7,616,970 (the '970 patent); 7,706,332 (the '332 patent); 7,706,830 (the '830 patent); and 7,970,127 (the '127 patent). The notice of investigation named the following entities as respondents: Huawei (except Huawei Device), Nokia, and ZTE. The complaint and notice of investigation were subsequently amended to allege infringement of certain claims of United States Patent No. 8,009,636 (the '636 patent) and to add the following entities as respondents: LG Electronics, Inc. of Seoul, Republic of Korea; LG Electronics U.S.A., Inc. of Englewood Cliffs, New Jersey; and LG Electronics Mobilecomm U.S.A., Inc. of San Diego, California (collectively, "LG"). 76 *Fed. Reg.* 81527 (Dec. 28, 2011). The complaint and notice of investigation were further amended to include Huawei Device as a respondent. 77 *Fed. Reg.* 26788 (May 7, 2012).

InterDigital Communications, LLC subsequently moved for leave to amend the Complaint and Notice of Investigation to reflect the fact that it converted from a Pennsylvania limited liability company to a Delaware corporation, and changed its name to InterDigital Communications, Inc. The ALJ issued an ID granting the motion and the Commission determined not to review. *See* Order No. 91 (Jan. 17, 2013); Notice of Commission Determination Not to Review an Initial Determination Granting Complainants' Motion for Leave to Amend the Complaint and Notice of Investigation (Feb. 4, 2013).

On June 4, 2012, the ALJ granted a motion by LG under 19 C.F.R § 210.21(a)(2) to terminate the investigation as to LG based on an arbitration agreement. *See* Order No. 30 (June 4, 2012). The Commission determined not to review. *See* Notice of Commission Determination Not to Review an Initial Determination Terminating Certain Respondents From the Investigation (July 6, 2012). InterDigital appealed LG's termination from this investigation, and the Federal Circuit reversed the Commission's determination. *InterDigital Commc'ns, LLC v Int'l Trade Comm'n*, 718 F.3d 1336 (Fed. Cir. 2013). The remand is currently pending before the Commission.

On June 28, 2013, the ALJ issued his final ID, finding no violation of section 337 by respondents Huawei, Nokia, and ZTE. Specifically, the ALJ found that the Commission has subject matter jurisdiction, *in rem jurisdiction* over the accused products, and *in personam* jurisdiction over the respondents. The ALJ also found that the importation requirement of section 337 (19 U.S.C. § 1337(a)(1)(B)) has been satisfied. The ALJ, however, found that the accused products do not infringe asserted claims 1-3 and 5 of the '830 patent; asserted claims 1, 2, 4, and 6-8 of the '636 patent; asserted claims 6, 13, 20, 26, and 29 of the '406 patent; asserted claims 2-4, 7 - 11, 14, 22 - 24, and 27 of the '332 patent; asserted claims 1-7 of the '127 patent; asserted claims 16-19 of the '013 patent; or asserted claims 10-18 of the '970 patent. The ALJ found that the accused products meet each limitation of claims 1-9 of the '970 patent but found that all the asserted claims, claims 1-18, of the '970 patent are invalid in view of the prior art. The ALJ also found that asserted claims 1-7 of the '127 patent and asserted claims 16-19 of the '013 patent are

invalid in view of the prior art. The ALJ, however, found that the respondents failed to establish by clear and convincing evidence that the asserted claims of the '830, '636, '406 or '332 patents were invalid in light of the cited prior art references. The ALJ also found that the respondents failed to prove that they hold licenses under the asserted patents and failed to prevail on their equitable/FRAND defenses. The ALJ further found that InterDigital established the existence of a domestic industry that practices the asserted patents under 19 U.S.C. § 1337(a)(2).

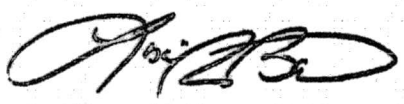
On July 15, 2013, InterDigital filed a petition for review of the ID. That same day, the Commission investigative attorney and the respondents filed separate petitions for review. Respondents also filed a contingent petition for review. On July 23, 2013, the parties filed responses to the petitions and contingent petition for review.

On September 4, 2013, the Commission determined to review the final ID in its entirety and requested briefing on a single issue. 78 *Fed. Reg.* 55294 (Sept. 10, 2013). On September 27, 2013, the parties filed written submissions on the single issue. On October 21, 2013, the parties filed reply submissions (the delay in filing replies was due to the government shutdown).

Having examined the record of this investigation, including the ALJ's final ID, the petitions for review, and the responses thereto, the Commission has determined to affirm the ALJ's finding of no violation of section 337 as to Nokia, Huawei, and ZTE with the modifications set forth in the Commission opinion, viz., with respect to the Power Ramp Up patents (the '830 and '636 patents), the Commission has determined to (1) affirm the ALJ's finding that the accused products do not satisfy the "successively sends transmissions" limitation construed to mean "transmits to the base station, one after the other, codes that are shorter than a regular length code" to the extent that the "successively sends transmissions" refer to the short codes and (2) for the '636 patent, the Commission has determined to vacate the ALJ's findings regarding the "subsequent transmission" limitation. With respect to the Power Control patents (the '406 and '332 patents), the Commission has determined to modify the ALJ's construction of the claim term "power control bit" to mean "single-bit power control information transmitted at an APC data rate equivalent to the APC update rate," and construes the limitation to encompass only the "single-bit power control information" portion. The Commission adopts the ALJ's findings pertaining to the '970, '013, and '127 patents. Due to the LG remand, all other issues, including domestic industry, continue to remain under review. A Commission opinion will follow issuance of this notice.

The authority for the Commission's determination is contained in section 337 of the Tariff Act of 1930, as amended (19 U.S.C. § 1337), and in sections 210.42-46 and 210.50 of the Commission's Rules of Practice and Procedure (19 C.F.R. §§ 210.42-46 and 210.50).

By order of the Commission.



Lisa R. Barton
Acting Secretary to the Commission

Issued: December 19, 2013

CERTAIN WIRELESS DEVICES WITH 3G CAPABILITIES AND COMPONENTS THEREOF **Inv. No. 337-TA-800**

PUBLIC CERTIFICATE OF SERVICE

I, Lisa R. Barton, hereby certify that the attached **NOTICE** has been served by hand upon the Commission Investigative Attorney, Brian Koo, Esq., and the following parties as indicated on **December 19, 2013.**

Lisa R. Barton, Acting Secretary
U.S. International Trade Commission
500 E Street, SW, Room 112
Washington, DC 20436

On Behalf of Complainants InterDigital Communications, Inc., InterDigital Technology Corporation, IPR Licensing, Inc. and InterDigital Holdings, Inc.:

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( ) Via Hand Delivery
( ) Via Express Delivery
(✓) Via First Class Mail
( ) Other:_____

On Behalf of Respondents Huawei Technologies Co., Ltd., Huawei Device USA, Inc., and FutureWei Technologies, Inc.:

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( ) Via Express Delivery
(✓) Via First Class Mail
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On Behalf of Respondents ZTE Corporation and ZTE (USA) Inc.:

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(✓) Via First Class Mail
( ) Other:_____

PUBLIC VERSION

UNITED STATES INTERNATIONAL TRADE COMMISSION
WASHINGTON, D.C. 20436

In the Matter of	
CERTAIN WIRELESS DEVICES WITH 3G CAPABILITIES AND COMPONENTS THEREOF	**Investigation No. 337-TA-800**

INITIAL DETERMINATION

Administrative Law Judge David P. Shaw

Pursuant to the notice of investigation, 76 Fed. Reg. 54252 (Aug. 31, 2011), this is the Initial Determination in *Certain Wireless Devices with 3G Capabilities and Components Thereof*, United States International Trade Commission Investigation No. 337-TA-800.

It is held that a violation of section 337 of the Tariff Act, as amended, has not occurred in the importation into the United States, the sale for importation, or the sale within the United States after importation, of certain wireless devices with 3G capabilities, or components thereof, with respect to asserted claims asserted claims 1, 2, 3, and 5 of U.S. Patent 7,706,830; asserted claims 1, 2, 4, 6, 7, and 8 of U.S. Patent No. 8,009,636; asserted claims 6, 13, 20, 26, and 29 of U.S. Patent No. 7,502,406; asserted claims 2, 3, 4, 7, 8, 9, 10, 11, 14, 22, 23, 24, and 27 of U.S. Patent No. 7,706,332; asserted claims 1, 2, 3, 4, 5, 6, and 7 of U.S. Patent No. 7,970,127; asserted claims 16, 17, 18, and 19 of U.S. Patent No. 7,536,013; or asserted claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, and 18 of U.S. Patent No. 7,616,970.

PUBLIC VERSION

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The following abbreviations may be used in this Initial Determination:

ACK	Acknowledgement
ALJ	Administrative Law Judge
APC	Adaptive Power Control
ASIC	Application Specific Integrated Circuit
CDMA	Code Division Multiple Access
CDX	Complainants' Demonstrative Exhibit
CPX	Complainants' Physical Exhibit
CX	Complainants' Exhibit
Dep.	Deposition
DPCCH	Dedicated Physical Control Channel
DPDCH	Dedicated Physical Data Channel
EDIS	Electronic Document Imaging System
E-DPDCH	Enhanced Dedicated Physical Data Channels
ETSI	European Telecommunications Standards Institute
FRAND	Fair, Reasonable and Non-Discriminatory
HSDPA	High Speed Downlink Packet Access
HS-PDSCH	High Speed Physical Downlink Shared Channel
HS-SCCH	High Speed Shared Control Channel
IMT-2000	International Mobile Telecommunications-2000 Standard
INPADOC	International Patent Document Center
ITU	International Telecommunications Union
JDX	Joint Demonstrative Exhibit

JPX	Joint Physical Exhibit
JX	Joint Exhibit
MPEP	Manual of Patent Examining Procedure
PRACH	Physical Random Access Channel
PTO	U.S. Patent and Trademark Office
RAND	Reasonable and Non-Discriminatory
RDX	Respondents' Demonstrative Exhibit
RF	Radio Frequency
RPX	Respondents' Physical Exhibit
RWS	Rebuttal Witness Statement
RX	Respondents' Exhibit
SDX	Staff's Demonstrative Exhibit
SPX	Staff's Physical Exhibit
SX	Staff's Exhibit
SSO	Standard-Setting Organization
TIA	Telecommunications Industry Association
TPC	Transmit Power Control
Tr.	Transcript
UE	User Equipment
UE ID	User Equipment Identification
UMTS	Universal Mobile Telecommunications System
WCDMA / W-CDMA	Wideband Code Division Multiple Access
WLAN / W-LAN	Wireless Local Area Network

WS	Witness Statement
3G	Third Generation
3GPP	Third Generation Partnership Project
3GPP2	Third Generation Partnership Project 2

I. Background

A. Institution of the Investigation; Procedural History

By publication of a notice in the *Federal Register* on August 31, 2011, pursuant to subsection (b) of section 337 of the Tariff Act of 1930, as amended, the Commission instituted this investigation to determine:

> [W]hether there is a violation of subsection (a)(1)(B) of section 337 in the importation into the United States, the sale for importation, or the sale within the United States after importation of certain wireless devices with 3G capabilities and components thereof that infringe one or more of claims 1-15 of the '540 patent [U.S. Patent No. 7,349,540]; claims 1, 2, 6-9, 13, 15-16, 20-22, 26, 28-30, 34-36, and 40 of the '406 patent [U.S. Patent No. 7,502,406]; claims 1-19 of the '013 patent [U.S. Patent No. 7,536,013]; claims 1-18 of the '970 patent [U.S. Patent No. 7,616,970]; claims 1-27 of the '332 patent [U.S. Patent No. 7,706,332]; claims 1-3, 5-8, 10, 16-18, 20-23, and 25 of the '830 patent [U.S. Patent No. 7,706,830]; and claims 1-14 of the '127 patent [U.S. Patent No. 7,970,127], and whether an industry in the United States exists as required by subsection (a)(2) of section 337.

76 Fed. Reg. 54252 (Aug. 31, 2011).

The Commission named as complainants InterDigital Communications, LLC of King of Prussia, Pennsylvania;[1] InterDigital Technology Corporation of Wilmington, Delaware; and IPR Licensing, Inc. of Wilmington, Delaware. *Id.*

The Commission named as respondents Huawei Technologies Co., Ltd. of Shenzhen, China; FutureWei Technologies, Inc. d/b/a Huawei, Technologies (USA) of Plano, Texas

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[1] InterDigital Communications, LLC subsequently moved to amend the Complaint and Notice of Investigation to reflect the fact that it converted from a Pennsylvania limited liability company to a Delaware corporation, and changed its name to InterDigital Communications, Inc. to reflect the change in corporate form. The administrative law judge granted this motion in an initial determination. *See* Order No. 91 (Jan. 17, 2013), *aff'd*, Notice of Commission Determination Not to Review an Initial Determination Granting Complainants' Motion for Leave to Amend the Complaint and Notice of Investigation (Feb. 4, 2013).

The InterDigital entities will be referred to collectively as "InterDigital."

(together, "Huawei"); Nokia Corporation of Espoo, Finland; Nokia Inc. of White Plains, New York (together, "Nokia"); ZTE Corporation of Shenzhen, China; and ZTE (USA) Inc. of Richardson, Texas (together, "ZTE") (collectively, "Respondents"). *Id.*

The Office of Unfair Import Investigations ("OUII" or "Staff") was also named as a party to this investigation. *Id.*

The target date for completion of this investigation was set at approximately 18 months, *i.e.*, February 28, 2013. Order No. 6 at 1 (Oct. 14, 2011), *aff'd*, Notice of Commission Determination Not to Review an Initial Determination Setting an 18-Month Target Date for Completion of the Investigation (Nov. 2, 2011).

InterDigital moved to amend the complaint and notice of investigation (1) to add allegations of infringement of claims 1-4, 6-9, and 29-31 of U.S. Patent No. 8,009,636 ("the '636 patent") and (2) to name LG Electronics, Inc.; LG Electronics U.S.A., Inc.; and LG Electronics Mobilecomm U.S.A., Inc. (together, "LG") as respondents. The administrative law judge granted InterDigital's motion in an initial determination. *See* Order No. 5 (Dec. 5, 2011), *aff'd*, Notice of Commission Determination Not to Review an Initial Determination Granting Complainants' Motion for Leave to Amend the Complaint and Notice of Investigation (Dec. 21, 2011).

InterDigital, Nokia, Huawei, and ZTE subsequently moved to extend the target date of this investigation by four months.[2] The administrative law judge granted the parties' motion in an initial determination, and extended the target date to June 28, 2013. *See* Order No. 13 (Jan. 6,

[2] LG did not join or otherwise respond to the motion. *See* Order No. 13. The Staff did not oppose the motion. *See id.*

2012), *aff'd*, Notice of Commission Determination Not to Review an Initial Determination Extending the Target Date for Completion of the Investigation (Jan. 25, 2012).

Pursuant to the Supplement to the Strategic Human Capital Plan 2009-2013, issued by the Commission on January 18, 2011, the Staff provided notice that its participation in this investigation "will be limited to issues relating to U.S. Patent Nos. 7,349,540, 7,536,013, and 7,970,127, as well as issues relating to Respondents' patent misuse and/or FRAND defenses." *See* Commission Investigative Staff's Notice of Partial Participation (Jan 18, 2012).

InterDigital filed a motion to amend the complaint and notice of investigation to add Huawei Device USA, Inc. as a respondent. The administrative law judge granted InterDigital's motion in an initial determination. *See* Order No. 19 (Apr. 11, 2012), *aff'd*, Notice of Commission Determination Not to Review an Initial Determination Granting Complainants' Motion for Leave to Amend the Complaint and Notice of Investigation (May 1, 2012).[3]

LG filed a motion pursuant to 19 C.F.R § 210.21(a)(2) to terminate the investigation as to LG based on an arbitration agreement. The administrative law judge granted LG's motion in an initial determination. *See* Order No. 30 (June 4, 2012), *aff'd*, Notice of Commission Determination Not to Review an Initial Determination Terminating Certain Respondents From the Investigation (July 6, 2012). InterDigital appealed LG's termination from this investigation, and the Federal Circuit recently issued an opinion reversing the termination. *InterDigital Commc'ns, LLC v Int'l Trade Comm'n*, No. 2012-1628 (Fed. Cir. June 7, 2013).

InterDigital moved to terminate this investigation in part, *i.e.*, as to claims 1-15 of the '013 patent; claims 8-14 of the '127 patent; all claims of the '540 patent; claims 1, 2, 9, 16, 28,

[3] "Huawei" hereinafter refers collectively to Huawei Technologies Co., Ltd.; FutureWei Technologies, Inc. d/b/a Huawei, Technologies (USA); and Huawei Device USA, Inc.

30, 34-36, and 40 of the '406 patent; claims 5, 6, 12, 13, 15-20, 25, and 26 of the '332 patent; and claims 16-18, 20-23, and 25 of the '830 patent. The administrative law judge granted InterDigital's motion in an initial determination. *See* Order No. 38 (July 24, 2012), *aff'd*, Notice of Commission Determination Not to Review an Initial Determination Terminating Certain Claims From the Investigation (Aug. 9, 2012).

On August 14, 2012, a prehearing conference was held to discuss discovery and scheduling matters.

In response to a joint motion filed by the private parties, the administrative law judge issued an initial determination extending the target date for this investigation to October 28, 2013. *See* Order No. 63 (Sept. 10, 2010), *aff'd*, Notice of Commission Determination Not to Review an Initial Determination Extending the Target Date for Completion of the Investigation (Oct. 1, 2012). The due date for the Initial Determination on violation is therefore June 28, 2013. Order No. 63 at 2.

InterDigital moved to terminate this investigation in part, *i.e.*, as to claims 7, 8, 15, 21, and 22 of the '406 patent; claims 1 and 21 of the '332 patent; and claims 6-8 and 10 of the '830 patent. The administrative law judge granted InterDigital's motion in an initial determination. *See* Order No. 87 (Jan. 3, 2013), *aff'd*, Notice of Commission Determination Not to Review an Initial Determination Terminating Certain Claims From the Investigation (Jan. 23, 2013).

A prehearing conference was held on February 12, 2013, with the evidentiary hearing in this investigation commencing immediately thereafter. The hearing concluded on February 22, 2013. *See* Order No. 62; Hearing Tr. 1-2542. The private parties were requested to file post-hearing briefs not to exceed 600 pages in length, and to file reply briefs not to exceed 300

pages in length. Hearing Tr. 14. The Staff was requested to file a post-hearing brief not to exceed 200 pages in length, and to file a reply brief not to exceed 100 pages in length. *Id.*

B. The Private Parties; Assignment of Patents

InterDigital Communications, Inc. is a Pennsylvania limited liability company with its principal place of business in King of Prussia, Pennsylvania. *See* Third Am. Compl. at 2, ¶ 2.1. InterDigital Technology Corporation is a Delaware corporation with its principal place of business in Wilmington, Deleware. *Id.* at 2, ¶ 2.2. IPR Licensing, Inc. is a Delaware corporation with its principal place of business in Wilmington, Delaware. *Id.* at 2-3, ¶ 2.3. InterDigital Communications, Inc.; InterDigital Technology Corporation; and IPR Licensing, Inc. are subsidiaries of InterDigital Inc., a Pennsylvania corporation. *Id.*

Huawei Technologies Co., Ltd. is a corporation organized and existing under the laws of the People's Republic of China with its principal place of business in Shenzhen, China. Resp. of Huawei Techs. Co., Ltd. to Third Am. Compl. at 3-4, ¶ 3.1. FutureWei Technologies, Inc. d/b/a Huawei, Technologies (USA) is a Texas corporation with a principal place of business in Plano, Texas. Resp. of Futurewei Techs., Inc. to Third Am. Compl. at 4, ¶ 3.2. Huawei Device USA, Inc. is a Texas corporation with a principal place of business in Plano, Texas. Resp. of Huawei Device USA, Inc. to Third Am. Compl. at 4, ¶ 3.3.

Nokia Corporation is a Finnish corporation with its principal place of business in Espoo, Finland. *See* Third Am. Compl. at 6, ¶ 3.4; Nokia's Resp. to Third Am. Compl. at 4, ¶ 3.3. Nokia Inc. is a Delaware corporation with its principal place of business in White Plains, New York. *See* Third Am. Compl. at 6, ¶ 3.5; Nokia's Resp. to Third Am. Compl. at 4, ¶ 3.4

ZTE Corporation is a Chinese corporation with a principal place of business in Shenzhen, China. *See* ZTE Resp. to Third Am. Compl. at 5, ¶ 3.6. ZTE (USA) Inc. is a New Jersey corporation with a principal place of business in Richardson, Texas. *See id.* at 5, ¶ 3.7.

The '830 patent is assigned to InterDigital Technology Corporation. JX-0006 ('830 patent).

The '636 patent is assigned to InterDigital Technology Corporation. JX-0007 ('636 patent).

The '406 patent is assigned to InterDigital Technology Corporation. JX-0001 ('406 patent).

The '332 patent is assigned to InterDigital Technology Corporation. JX-0002 ('332 patent).

The '970 patent is assigned to IPR Licensing, Inc. JX-0005 ('970 patent).

The '013 patent is assigned to InterDigital Technology Corporation. JX-0003 ('013 patent).

The '127 patent is assigned to InterDigital Technology Corporation. JX-0004 ('127 patent).

C. The Accused Products

The accused products in this investigation are listed in a joint filing required by the procedural schedule. *See* Order No. 18 (requiring a "joint statement regarding identification of accused products"). By listing a product in the joint filing, Respondents have not admitted infringement. Nevertheless, the joint filing indicates the final extent of InterDigital's accusations in this investigation. *See* Joint Statement Regarding Identification of Accused Products (EDIS

Doc. No. 486154) ("Joint Statement of Accused Products"); Order No. 86 (granting leave to amend the Joint Statement of Accused Products); Order No. 94 (same).

The products and technology at issue in this investigation concern wireless communications devices with Third Generation ("3G") cellular capabilities, and components thereof. *See, e.g.*, CX-1310C (Prucnal WS) at Q58. 3G describes a family of technologies that fulfills the International Mobile Telecommunications-2000 specifications ("IMT-2000") defined by the International Telecommunication Union ("ITU"). *Id.* Two of the most widely adopted 3G systems are based on code division multiple access ("CDMA") technology, *i.e.*, Wideband CDMA ("WCDMA") developed by the Third Generation Partnership Project ("3GPP") and CDMA2000 developed by the Third Generation Partnership Project 2 ("3GPP2"). *Id.* at Q59.

InterDigital accuses a total of 150 devices of infringement in this investigation. Each accused product is designed to operate with either the WCDMA standard, the CDMA2000 standard, or both standards. *See, e.g.*, CX-1310C (Prucnal WS) at Q118. The accused functionalities needed to comply with the relevant standards are generally implemented in a baseband processor, which is also referred to as a baseband ASIC,[4] chip, or chipset. *See id.* The accused products can be grouped into three categories according to the baseband processor used in the device: the "Qualcomm accused products" use baseband processors developed by Qualcomm, the "Nokia/TI accused products" use baseband processors developed by Nokia and manufactured by Texas Instruments, and the [

]. *See* Compls. Br. at 13.

[4] ASIC is an acronym for application-specific integrated circuit.

1. The Accused Nokia Products

There are 51 Nokia devices at issue in this investigation, and they include Nokia-branded phones, Vertu-branded phones, and a mini laptop. *See* Compls. Br. at 13. Of these accused products, 10 use baseband processors developed by Qualcomm, and 41 use baseband processors developed by Nokia and manufactured by [ ]. *Id.* at 13-14. The following table sets forth the Nokia devices at issue in this investigation, the baseband processor used in each device, including the baseband manufacturer and model identifier, and whether the device is designed to operate in accordance with the WCDMA or CDMA2000 standards:

Device Name	Baseband Processor Developer	Baseband Processor Model	WCDMA and/or CDMA2000
500 ([			WCDMA
700 ( )			WCDMA
701 ( )			WCDMA
6350 ( )			WCDMA
6700 Slide ( )			WCDMA
Astound C7 ( )			WCDMA
Astound C7 ( )			WCDMA
C3-01 ( )			WCDMA
C5-03 (			WCDMA
C5-04 ( )			WCDMA
C6-01 ( )			WCDMA
E5 ( )			WCDMA
E6 ( )			WCDMA
E7 ( )			WCDMA
E72 ( )			WCDMA
E73 ( )]			WCDMA

Device Name	Baseband Processor Developer	Baseband Processor Model	WCDMA and/or CDMA2000
N8 [( )			WCDMA
n9-00 ( )			WCDMA
N900 ( )			WCDMA
Pureview 808 ( )			WCDMA
Vertu ( )			WCDMA
Vertu ( )			WCDMA
Vertu ( )			WCDMA
Vertu ( )			WCDMA
X3-02 ( )			WCDMA
X7-00 ( )			WCDMA
5230 ( )			WCDMA
5230 ( )			WCDMA
6790 Slide ( )			WCDMA
6790 Slide ( )			WCDMA
C6-00 ( )			WCDMA
E71 ( )			WCDMA
N97 ( )			WCDMA
N97 mini ( )			WCDMA
X6 ( )			WCDMA
E63-2 ( )			WCDMA
2730 ( )			WCDMA
3710 ( )			WCDMA
7230 ( )			WCDMA
C2-01 ( )			WCDMA
Vertu ( )			WCDMA
710 Lumia ( )			WCDMA

Device Name	Baseband Processor Developer	Baseband Processor Model	WCDMA and/or CDMA2000
[800 Lumia ( )			WCDMA; CDMA2000
900 Lumia ( )			WCDMA
Booklet 3G ( )			WCDMA
Lumia 719 ( )			WCDMA; CDMA2000
Lumia 810 ( )			WCDMA
Lumia 820 ( )			WCDMA
Lumia 822 ( )			WCDMA
Lumia 920 ( )			WCDMA
7705 Twist ( )		]	CDMA2000

Compls. Br. at 14-15 (citing CX-1065C (7/25/12 Nokia's Resp. to Compls. Interrog. No. 38); CX-0104C; CX-0627C; CX-0151; CX-0152; CX-0153; CX-0154; CX-0155; CX-0156; CX-0158C; CX-0159C; CX-0160C; CX-0161C; CX-0185; CX-0186; CX-0187; CX-0188; CX-0189; CX-0190; CX-0191; CX-0192; CX-0193; CX-0194; CX-0195; CX-0196; CX-0197; CX-0198; CX-0199; CX-0200; CX-0201; CX-0202; CX-0203; CX-0204; CX-0205; CX-0206; CX-0207; CX-0208; CX-0209; CX-0210; CX-0211; CX-0212C; CX-0213C; CX-0214C; CX-0215C; CX-0216C; CX-0217C; CX-0218C; CX-0219C; CX-0290; CX-0294; CX-0295; CX-0296; CX-0297; CX-0298).

2. The Accused Huawei Products

There are 65 Huawei devices at issue in this investigation, and they include smartphones, feature phones, tablets, Mobile WiFi (a.k.a. "MiFi") devices, USB laptop sticks, wireless

[5] [ ]. CX-0157C (Nokia Booklet Configuration Chart, at NK800IDC04303985).

gateways, a fixed wireless terminal, and 3G modules. *See* Compls. Br. at 15-16. Of these accused products, [

]. *Id.* at 16. The following table sets forth the Huawei devices at issue in this investigation, the baseband processor used in each device, including the baseband manufacturer and model identifier, and whether the device is designed to operate in accordance with the WCDMA or CDMA2000 standards:

Compls. Br. at 16-17 (citing by CX-1109C (10/24/12 Huawei's Resp. to Compls. Interrog. No. 61); CX-1113C (10/29/12 Replacement Ex. D to Huawei's Resp. to Compls. Interrog. No. 61); CX-1111C (10/29/12 Huawei's Resp. to Compls. Interrog. No. 152); CX-1112C (10/29/12 Huawei's Resp. to Compls. Interrog. No. 11); CX-0163C; CX-0164C; CX-0165; CX-0166; CX-0167; CX-0221C; CX-0222C).

3. The Accused ZTE Products

There are 34 ZTE devices at issue in this investigation, and they include smartphones, feature phones, tables, MiFi devices, USB laptop sticks, 3G modules, and a wireless home phone device. *See* Compls. Br. at 18. All 34 ZTE accused devices use baseband processors developed by Qualcomm. *Id.* The following table sets forth the ZTE devices at issue in this investigation, the baseband processor used in each device, including the baseband manufacturer and model identifier, and whether the device is designed to operate in accordance with the WCDMA or CDMA2000 standards:

Model Number (Device Name)	Baseband Processor Developer	Baseband Processor Model	WCDMA and/or CDMA2000
AC30 (Fivespot)	Qualcomm	MSM7625	WCDMA; CDMA2000

Model Number (Device Name)	Baseband Processor Developer	Baseband Processor Model	WCDMA and/or CDMA2000
EuFi890 (Jetpack EuFi890)	Qualcomm	MDM9600	WCDMA; CDMA2000
F160 / P622F2 (F160)	Qualcomm	QSC6240 or QSC6270	WCDMA
F555 / P671A91 (Wombat)	Qualcomm	QSC6270	WCDMA
MF61 (4G Hotspot)	Qualcomm	MDM8200A	WCDMA
MF683 (Rocket 3.0)	Qualcomm	MDM8220	WCDMA
P671B30 (Z331 / Morgan)	Qualcomm	QCS6270	WCDMA
P671B40 (Z221 / Michael)	Qualcomm	QCS6270	WCDMA
P736T (Avail)	Qualcomm	MSM7227	WCDMA
WF720 (WF720)	Qualcomm	QSC6270	WCDMA
Z431 (Spider)	Qualcomm	QSC6270	WCDMA
Z990 (Merit)	Qualcomm	MSM7227	WCDMA
A210 (CAPTR II)	Qualcomm	QSC6055-CS3	CDMA2000
A310 (MSGM8 II)	Qualcomm	QSC6055-CS3	CDMA2000
A410 (TXTM8 3G)	Qualcomm	QSC6075	CDMA2000
A415 (Memo)	Qualcomm	QSC6075	CDMA2000
A605	Qualcomm	QSC6085	CDMA2000
AC3781 (Cradlepoint)	Qualcomm	QSC6085	CDMA2000
D930 (Chorus)	Qualcomm	MSM7627	CDMA2000
F350 (Salute)	Qualcomm	QSC6055-CS3	CDMA2000
F450 (Adamant)	Qualcomm	QSC6155	CDMA2000
MC2261 (Wombat)	Qualcomm	QSC1110	CDMA2000
MC2718 (Wombat)	Qualcomm	MDM6085	CDMA2000
N850 (Fury)	Qualcomm	MSM8655	CDMA2000
N859 (Render (aka "Tania"))	Qualcomm	MSM7627A	CDMA2000
N860 (Warp)	Qualcomm	MSM8655	CDMA2000
N910 (Anthem (LTE))	Qualcomm	MSM8660	CDMA2000
V55 (Optik)	Qualcomm	MSM8660	CDMA2000
X500 (Score (aka "Score M"))	Qualcomm	MSM7627	CDMA2000
N861 (Warp II)	Qualcomm	MSM8655, MDM9600	CDMA2000
V66 (Turbine 7.0)	Qualcomm	MSM8660, MDM9600	CDMA2000
V8000 (Engage)	Qualcomm	MSM8655	CDMA2000
X501 (Groove)	Qualcomm	MSM7627A	CDMA2000
N9500 (Flash)	Qualcomm	MSM8960	CDMA2000

Compls. Br. at 18-19 (citing CX-1140C (10/19/12 ZTE's Resp. to Compls. Interrog. No. 38); CX-1138C (8/13/12 ZTE's Corrected Resp. to Compls. Interrog. No. 11); CX-0169C; CX-0170C; CX-0171C; CX-0172C; CX-0173C; CX-0174; CX-0175C; CX-0176C; CX-0177C; CX-0178C; CX-0179C; CX-0180C; CX-0181C; CX-0182C; CX-0183C).

II. Jurisdiction

No party has contested the Commission's personal jurisdiction over it. *See, e.g.*, Compls. Br. at 19-20; Resps. Br at 22; Staff Br. at 20. Indeed, all parties appeared at the evidentiary hearing, and presented evidence. It is found that the Commission has personal jurisdiction over all parties.

No party has specifically contested the Commission's *in rem* jurisdiction over the accused products. *See, e.g.*, Compls. Br. at 19-20; Resps. Br at 22; Staff Br. at 20. InterDigital has based its importation arguments on completed acts of importation. Further, as discussed below, Respondents have stipulated to acts of importation with respect to the products accused under the asserted patents. Accordingly, it is found that the Commission has *in rem* jurisdiction over all products accused under the asserted patents.

No party has contested the Commission's jurisdiction over the subject matter of this investigation. *See, e.g.*, Compls. Br. at 19-20; Resps. Br at 22; Staff Br. at 20. Indeed, as indicated in the Commission's notice of investigation, discussed above, this investigation involves the alleged importation of products that infringe United States patents in a manner that violates section 337 of the Tariff Act, as amended. Accordingly, it is found that the Commission has subject matter jurisdiction over this investigation.

III. Importation

As indicated in the notice of investigation, quoted above, this investigation was instituted to determine whether a violation of section 337 has occurred in "the importation into the United States, the sale for importation, or the sale within the United States after importation" of certain products. *See* 76 Fed. Reg. 54252 (Aug. 31, 2011); 19 U.S.C. § 1337(a)(1)(B) (making unlawful, in certain circumstances, the "importation into the United States, the sale for importation, or the sale within the United States after importation by the owner, importer, or consignee, of articles that . . . infringe a valid and enforceable United States patent . . . ."). It has long been recognized that an importation of even one accused product can satisfy the importation requirement of section 337. *See Certain Trolley Wheel Assemblies*, Inv. No. 337-TA-161, Comm'n Op. at 7-8, USITC Pub. No. 1605 (Nov. 1984) (deeming the importation requirement satisfied by the importation of a single product of no commercial value).

In this investigation, it is uncontested that the importation requirement is satisfied with respect to the products alleged to infringe the asserted patents. *See* JX-0023C (Joint Stipulation Between InterDigital Complainants and Huawei Respondents Regarding Importation of Accused Products); JX-0024C (Joint Stipulation Between Nokia and InterDigital Regarding Importation of Accused Products); JX-0025C (Joint Stipulation Between ZTE Respondents and InterDigital Regarding Importation of Accused Products).

IV. The Power Ramp-Up ('830 and '636) Patents

A. Overview of the Patents and Asserted Claims

1. The '830 Patent

Asserted U.S. Patent No. 7,706,830 ("the '830 patent") is titled, "Method and Subscriber Unit for Performing an Access Procedure." JX-0006 ('830 patent). The '830 patent issued on

April 27, 2010, and the named inventors are Fatih M. Ozluturk and Gary R. Lomp. *Id.* The '830 patent relates generally to the way in which a subscriber unit gains access to a cellular CDMA system. *Id.* at Abstract. The '830 patent is related to the asserted '636 patent; these two patents together are also referred to as the "Power Ramp-Up" patents. The specifications of the '830 and '636 patents are substantially the same.

InterDigital asserts independent claim 1 and dependent claims 2, 3, and 5 of the '830 patent. These claims read as follows:

> **1**. A wireless code division multiple access (CDMA) subscriber unit comprising:
>
> a transmitter configured such that, when the subscriber unit is first accessing a CDMA network and wants to establish communications with a base station associated with the network over a communication channel to be indicated by the base station, the transmitter successively sends transmissions prior to the subscriber unit receiving from the base station an indication that at least one of the successively sent transmissions has been detected by the base station;
>
> wherein each of the successively sent transmissions is produced using a sequence of chips, wherein the sequence of chips is not used to increase bandwidth;
>
> the transmitter further configured such that the transmitter sends to the base station a message indicating to the base station that the subscriber unit wants to establish the communications with the base station over the communication channel to be indicated by the base station, the message being sent only subsequent to the subscriber unit receiving the indication;
>
> wherein at least two of the successively sent transmissions are produced using different sequences of chips;
>
> wherein each of the successively sent transmissions is shorter than the message; and
>
> wherein each of the successively sent transmissions and the message are produced using portions of a same sequence of chips, wherein the same sequence of chips is not used to increase bandwidth.

> **2**. The wireless code division multiple access (CDMA) subscriber unit of claim 1 wherein a beginning of each one of the successively sent transmissions, other than a first one of the successively sent transmissions, is at a higher power level with respect to a beginning of a prior one of the successively sent transmissions.
>
> **3**. The wireless code division multiple access (CDMA) subscriber unit of claim 1 wherein each one of the successively sent transmissions, other than a first one of the successively sent transmissions, is sent at a power level that is higher than the power level of a prior one of the successively sent transmissions.
>
> **5**. The wireless code division multiple access (CDMA) subscriber unit of claim 1 wherein the successively sent transmissions are sent until receipt of the indication that at least one of the successively sent transmissions has been detected by the base station.

JX-0006 at col. 10, ln. 54 – col. 11, ln. 28; col. 11, lns. 32-36.

2. The '636 Patent

Asserted U.S. Patent No. 8,009,636 ("the '636 patent") is titled, "Method and Apparatus for Performing an Access Procedure." JX-0007 ('636 patent). The '636 patent issued on August 30, 2011, and the named inventors are Fatih Ozluturk and Gary R. Lomp. *Id.* The '636 patent relates generally to the way in which a subscriber unit gains access to a cellular CDMA system. *Id.* at Abstract. The '636 patent is related to the asserted '830 patent; these two patents together are also referred to as the "Power Ramp-Up" patents. The specifications of the '830 and '636 patents are substantially the same.

InterDigital asserts independent claim 1 and dependent claims 2, 4, 6, 7, and 8 of the '636 patent. These claims read as follows:

> **1**. A wireless code division multiple access (CDMA) subscriber unit comprising:
>
> > a transmitter configured such that, when the subscriber unit is first accessing a CDMA network, the transmitter successively sends transmissions wherein each of the transmissions are derived from a first length of a plurality of chips until the subscriber unit receives

from a base station associated with the network an indication that at least one of the transmissions has been detected by the base station; and

the transmitter further configured such that, subsequent to the subscriber unit receiving the indication, the transmitter sends a subsequent transmission derived from a second length of the plurality of chips, wherein the first length is less than the second length.

2. The subscriber unit of claim 1 wherein at least two of the successively sent transmissions are different.

4. The subscriber unit of claim 1 wherein the plurality of chips are chips that are not used for spreading.

6. The subscriber unit of claim 1 wherein the successive transmissions facilitate power control when the subscriber unit is first accessing the network.

7. The subscriber unit of claim 6 wherein the power control of the successive transmissions is not closed loop power control.

8. The subscriber unit of claim 1 wherein the subsequent transmission is not closed loop power controlled.

JX-0007 at col. 10, lns. 49-65; col. 11, lns. 1-2; col. 11, lns. 5-12.

B. Claim Construction

1. General Principles of Law[6]

Claim construction begins with the plain language of the claim.[7] Claims should be given their ordinary and customary meaning as understood by a person of ordinary skill in the art,

[6] The legal principles set forth in this section apply equally to the construction of the other patents asserted in this investigation.

[7] Only those claim terms that are 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.*, 366 F.3d 1311, 1323 (Fed. Cir. 2004); *Vivid Tech., Inc. v. American Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

viewing the claim terms in the context of the entire patent.[8] *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312-13 (Fed. Cir. 2005), *cert. denied*, 546 U.S. 1170 (2006).

In some instances, claim terms do not have particular meaning in a field of art, and claim construction involves little more than the application of the widely accepted meaning of commonly understood words. *Phillips*, 415 F.3d at 1314. "In such circumstances, general purpose dictionaries may be helpful." *Id.*

In many cases, claim terms have a specialized meaning, and it is necessary to determine what a person of skill in the art would have understood the disputed claim language to mean. "Because the meaning of a claim term as understood by persons of skill in the art is often not immediately apparent, and because patentees frequently use terms idiosyncratically, the court looks to 'those sources available to the public that show what a person of skill in the art would have understood disputed claim language to mean.'" *Id.* (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1116 (Fed. Cir. 2004)). The public sources identified in *Phillips* include "the words of the claims themselves, the remainder of the specification, the prosecution history, and extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art." *Id.*

In cases in which the meaning of a claim term is uncertain, the specification usually is the best guide to the meaning of the term. *Id.* at 1315. As a general rule, the particular examples or embodiments discussed in the specification are not to be read into the claims as limitations.

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[8] Factors that may be considered when determining the level of ordinary skill in the art include: "(1) the educational level of the inventor; (2) type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; and (6) educational level of active workers in the field." *Environmental Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 696 (Fed. Cir. 1983), *cert. denied*, 464 U.S. 1043 (1984).

Markman v. Westview Instruments, Inc., 52 F.3d 967, 979 (Fed. Cir. 1995) (*en banc*), *aff'd*, 517 U.S. 370 (1996). The specification is, however, always highly relevant to the claim construction analysis, and is usually dispositive. *Phillips*, 415 F.3d at 1315 (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). Moreover, "[t]he construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be, in the end, the correct construction." *Id.* at 1316.

Claims are not necessarily, and are not usually, limited in scope to the preferred embodiment. *RF Delaware, Inc. v. Pacific Keystone Techs., Inc.*, 326 F.3d 1255, 1263 (Fed. Cir. 2003); *Decisioning.com, Inc. v. Federated Dep't Stores, Inc.*, 527 F.3d 1300, 1314 (Fed. Cir. 2008) ("[The] description of a preferred embodiment, in the absence of a clear intention to limit claim scope, is an insufficient basis on which to narrow the claims."). Nevertheless, claim constructions that exclude the preferred embodiment are "rarely, if ever, correct and require highly persuasive evidentiary support." *Vitronics*, 90 F.3d at 1583. Such a conclusion can be mandated in rare instances by clear intrinsic evidence, such as unambiguous claim language or a clear disclaimer by the patentees during patent prosecution. *Elekta Instrument S.A. v. O.U.R. Sci. Int'l, Inc.*, 214 F.3d 1302, 1308 (Fed. Cir. 2000); *Rheox, Inc. v. Entact, Inc.*, 276 F.3d 1319 (Fed. Cir. 2002).

If the intrinsic evidence does not establish the meaning of a claim, then extrinsic evidence may be considered. Extrinsic evidence consists of all evidence external to the patent and the prosecution history, and includes inventor testimony, expert testimony, and learned treatises. *Phillips*, 415 F.3d at 1317. Inventor testimony can be useful to shed light on the relevant art. In evaluating expert testimony, a court should discount any expert testimony that is clearly at odds with the claim construction mandated by the claims themselves, the written description, and the

prosecution history, in other words, with the written record of the patent. *Id.* at 1318. Extrinsic evidence may be considered if a court deems it helpful in determining the true meaning of language used in the patent claims. *Id.*

2. Level of Ordinary Skill

A person of ordinary skill in the art of the asserted '830 and '636 patents is someone with an undergraduate degree in electrical engineering, or an equivalent subject, together with three to five years of postgraduate experience in cellular communications, or comparable training.[9] *See* CX-1309C (Jackson WS) at Q504-Q505; CX-1524C (Haas RWS) at Q35.

3. Construction of Disputed Claim Terms[10]

a. "successively sends transmissions" ('830 and '636 patents)

Below is a chart showing the parties' proposed claim constructions.

Claim Term/Phrase	InterDigital's Construction	Respondents' Construction
successively sends transmissions	sends transmissions one after the other	transmits to the base station, one after the other, codes that are shorter than a regular length code

[9] Respondents propose that a person of ordinary skill in the art at the time of the filing of the asserted '830 and '636 patents would have at least a Bachelor's degree in electrical engineering, computer science or mathematics, with some working experience in CDMA communications. Resps. Br. at 285-86. The parties have not identified any way in which differences in their proposed definitions of the level of ordinary skill in the art affect issues in this investigation. *See* Compls. Br. at 35; Resps. Br. at 285-86.

[10] This Initial Determination addresses only the disputed claim terms identified by the parties as needing construction. *See* Joint Outline of the Issues to Be Decided in the Final Initial Determination (EDIS Doc. No. 505468) ("GR12 Filing"). The parties identified the claim terms for construction in a joint filing required by Ground Rule 12, which provides: "On the same day the initial posthearing briefs are due, the parties shall file a comprehensive joint outline of the issues to be decided in the final Initial Determination. The outline shall refer to specific sections of the posthearing briefs. Moreover, the claim terms briefed by the parties must be identical. The construction of any part of a disputed claim term that is not briefed is waived." Ground Rule 12 (emphasis original) (attached to Order No. 35 (Issuance of Amended Ground Rules)).

The claim term "successively sends transmissions" appears in asserted independent claim 1 of the '830 patent, as well as in asserted independent claim 1 of the '636 patent. JX-0006 at col. 10, ln. 54 – col. 11, ln. 16; JX-0007 at col. 10, lns. 49-63.

InterDigital construes this term to mean "sends transmissions one after the other." Compls. Br. at 38-40. Respondents construe this term to mean "transmits to the base station, one after the other, codes that are shorter than a regular length code." Resps. Br. at 291-93. The parties do not dispute the construction of "successively sends," which the parties agree means "sends one after the other." *See* Compls. Br. at 38-40; Resps. Br. at 291-93. The dispute between the parties instead centers on the proper construction of "transmissions."

As proposed by Respondents, the term "successively sends transmissions" is construed to mean "transmits to the base station, one after the other, codes that are shorter than a regular length code."

The intrinsic evidence supports Respondents' proposed construction. The '830 specification describes the claimed "transmissions" from the subscriber unit to the base station as follows: "As the base station 14 transmits the pilot code 40 (step 100), the base station 14 searches (step 101) for an 'access code' 42 transmitted by a subscriber unit 16. The access code 42 is a known spreading code transmitted from a subscriber unit 16 to the base station 14 during initiation of communications and power ramp-up." JX-0006 at col. 6, lns. 14-20. With reference to a preferred embodiment of the claimed invention, the specification further teaches: "The preferred embodiment of the present invention utilizes 'short codes' and a two-stage communication link establishment procedure to achieve fast power ramp-up without large power overshoots. The spreading code transmitted by the subscriber unit 16 is much shorter than the rest of the spreading codes (hence the term short code), so that the number of phases is limited

and the base station 14 can quickly search through the code. The short code used for this purpose carries no data." *Id.* at col. 7, lns. 36-44.

These passages from the '830 specification make clear that the claimed "transmissions" from the subscriber unit to the base station comprise codes. At no point does the specification indicate that the claimed transmissions are generalized "RF emissions," as proposed by InterDigital. *See* Compls. Br. at 38-39.

The Power Ramp-Up patents also disclose that the codes successively transmitted during the random access process (*i.e.*, the short codes) are neither modulated with data, nor used to modulate data. RX-3526C (Lanning WS) at Q69,Q92-95, Q130-132; CX-1309C (Jackson WS) at Q625; Jackson Tr. 119, 177, 178; Haas Tr. 1822, 1823-1826; RX-3999C (Lanning RWS) at Q132-134, Q141-143; *see also InterDigital Commc'ns, LLC v. Int'l Trade Comm'n*, 690 F.3d 1318, 1326 (Fed. Cir. 2012) ("As noted, the specification describes various codes, such as pilot codes and short codes, as 'spreading codes' even though they carry no data and are not intended to do so."); *id.* at 1326 (finding that experts confirmed that the short codes and the access codes described in the specification do not spread, or modulate, data). In other words, the "codes" themselves are what are successively transmitted, not codes modulated with data.

InterDigital argues against Respondents' proposed construction by contending, *inter alia*, that Respondents' expert Mr. Lanning defines the term "code" as used in Respondents' construction as a specific type of code, specifically one that is "not modulated by data." Compls. Br. at 37. This argument is not persuasive. In particular, the phrase "not modulated by data" does not appear in any of Respondents' proposed constructions, and Mr. Lanning does not distinguish codes that can be modulated by data from those that cannot be modulated by data. Instead, Mr. Lanning testified that a code modulated by data is no longer a code, *i.e.*, the

transmission of a code modulated by data is not the transmission of a code. RX-3999C (Lanning RWS) at Q152.

InterDigital further argues that Respondents' proposed construction excludes a preferred embodiment of the claimed invention that uses short codes and access codes. *See* Compls. Br. at 37-38. This argument is also not persuasive. The teachings of the patents make clear that the claimed "successively sent transmissions" are the short codes of the preferred embodiment, and that the claimed "same sequence of chips" and "the plurality of chips" are the access code of the preferred embodiment. *See* Compls. Br. at 95; Resps. Br. at 295, 362; CX-1309C (Jackson WS) at Q740 ("The 'same sequence of chips' in a preferred embodiment . . . is the access code (*i.e.*, LAXPT).").

Accordingly, the claim term "successively sends transmissions" is construed to mean "transmits to the base station, one after the other, codes that are shorter than a regular length code."

b. "sequence of chips" ('830 patent)

Claim Term/Phrase	InterDigital's Construction	Respondents' Construction
sequence of chips	chips in a particular order	code or portion of a code

The claim term "sequence of chips" appears in asserted independent claim 1 of the '830 patent. JX-0006 at col. 10, ln. 54 – col. 11, ln. 16.

InterDigital construes this term to mean "chips in a particular order." Compls. Br. at 40-41. Respondents construe this term to mean "code or portion of a code." Resps. Br. at 293-94.

As proposed by InterDigital, the claim term "sequence of chips" is construed to mean "chips in a particular order," which is the ordinary meaning of the term as understood by a person of ordinary skill in the art. *See* CX-1390C (Jackson WS) at Q714, Q719.

A person of ordinary skill in that art would understand that a sequence is "an order," and that a CDMA chip is simply a binary value at the chip rate. *See* Lanning Tr. 1089; CX-1309C (Jackson WS) at Q714-718. Moreover, the specification of the '830 patent does not indicate that anything other than the plain meaning of the term was intended. *See* CX-1309C (Jackson WS) at Q719.

Respondents argue that, inasmuch as the claimed "transmissions" from the subscriber unit to the base station comprise codes, the codes "corresponding to the successively sent transmissions under Respondents' proposed constructions must be created by a 'code.'" Resps. Br. at 294. This argument is not persuasive. Although it has been determined above that the claimed "transmissions" comprise codes, the intrinsic evidence does not suggest that these transmitted codes are necessarily "produced using" another code or portion of a code. *See* JX-0006 at col. 10, lns. 65-67 (relevant lines of claim 1). The '830 specification does not exclude the possibility that the transmitted codes are producing using a generic sequence of chips, which is the construction proposed by InterDigital.

Accordingly, the claim term "sequence of chips" is construed to mean "chips in a particular order."

c. "same sequence of chips" ('830 patent)

Claim Term/Phrase	InterDigital's Construction	Respondents' Construction
same sequence of chips	individual sequence of chips	a known code containing the different sequences of chips used to produce the at least two successively sent transmissions

The claim term "same sequence of chips" appears in asserted independent claim 1 of the '830 patent. JX-0006 at col. 10, lns. 54 – col. 11, ln. 16.

InterDigital construes this term to mean "individual sequence of chips." Compls. Br. at 41-42. Respondents construe this term to mean "a known code containing the different sequences of chips used to produce the at least two successively sent transmissions." Resps. Br. at 294-95.

As proposed by InterDigital, the claim term "same sequence of chips" is construed to mean "individual sequence of chips," which is the plain meaning of the term as understood by a person of ordinary skill in the art. *See* CX-1309C (Jackson WS) at Q714, Q719. In particular, the claim language states that "each of the successively sent transmissions and the message are produced using portions of a same sequence of chips." JX-0006 at col. 11, lns. 12-14. The term therefore refers to an individual sequence of chips, portions of which are used to produce the successively sent transmissions and the message.

In support of their proposed construction that the claimed "sequence of chips" must comprise "a known code," Respondents argue: "[T]he specification of the Power Ramp-up Patents discloses only one 'sequence of chips' -- the access code (LAXPT) – from which the successively sent transmissions (i.e., the short codes (SAXPT)) are produced. Thus, the 'same sequence of chips' used to produce the message and the successively sent transmissions *must* be

the same sequence used to produce the successively sent transmissions." Resps. Br. at 295 (emphasis original). As discussed above with respect to the claim term "sequence of chips," however, the '830 specification neither requires that the claimed "transmissions" be "produced using" a code, nor does the specification exclude the possibility that the transmitted codes are producing using a generic sequence of chips that do not comprise a code. *See* JX-0006 at col. 11, lns. 13-16 (relevant lines of claim 1).

Accordingly, the claim term "same sequence of chips" is construed to mean "individual sequence of chips."

d. "wants to establish" ('830 patent)

Claim Term/Phrase	InterDigital's Construction	Respondents' Construction
wants to establish	wants to initiate	requests

The claim term "wants to establish" appears in asserted independent claim 1 of the '830 patent. JX-0006 at col. 10, lns. 54 – col. 11, ln. 16.

InterDigital construes this term to mean "wants to initiate." Compls. Br. at 43. Respondents construe this term to mean "requests." Resps. Br. at 287-88.

As proposed by Respondents, the claim term "wants to establish" is construed to mean "requests."

A person of ordinary skill in the art would understand that the word "wants" suggests a desire, which inanimate objects such as the claimed subscriber unit do not have. RX-3526C (Lanning WS) at Q101. Therefore, when the claimed subscriber unit "wants to establish a communications channel," a person of ordinary skill in the art would understand that it is requesting a communications channel. *Id.* By contrast, InterDigital's proposed construction

further anthropomorphizes an inanimate object to suggest that the subscriber unit "wants" to establish or initiate a communications channel.

InterDigital argues that its proposed construction should be adopted inasmuch as it reflects the plain meaning of the claim term, but does not identify how Respondents' proposed construction is incorrect. *See* Compls. Br. at 43. InterDigital's proposed construction fails to clarify the meaning of the claim term, because it merely substitutes the word "initiate" for "establish," and does not address the issue of how an non-human, inanimate subscriber unit can "want" anything.

Accordingly, the claim term "wants to establish" is construed to mean "requests."

e. "communication channel" ('830 patent)

Claim Term/Phrase	InterDigital's Construction	Respondents' Construction
communication channel	channel for communication between a subscriber unit and a base station	two-way voice channel

The claim term "communication channel" appears in asserted independent claim 1 of the '830 patent. JX-0006 at col. 10, ln. 54 – col. 11, ln. 16.

InterDigital construes this term to mean "channel for communication between a subscriber unit and a base station." Compls. Br. at 43-46. Respondents construe this term to mean "two-way voice channel." Resps. Br. at 288-89.

As proposed by InterDigital, the term "communication channel" is construed to mean "channel for communication between a subscriber unit and a base station." This construction comports with the intrinsic evidence and reflects the understanding of a person of ordinary skill in the art. *See* CX-1309C (Jackson WS) at Q553-556.

The '830 specification does not provide a special definition of "communication channel," but often refers to a "communication channel" as a "channel for communication" between a subscriber unit and a base station. *See* JX-0006 at col. 3, lns. 35-38 ("Accordingly, it is an object of the present invention to provide an improved technique for controlling power ramp-up during establishment of a communication channel between a CDMA subscriber unit and base station."); col. 4, lns. 50-53 ("A two-way communication channel (link) 18 comprises a signal transmitted 21 (Tx) from the base station 14 to the subscriber unit 16 and a signal received 23 (Rx) by the base station 14 from the subscriber unit 16."). Although the '830 specification indicates that the claimed "communication channel" is two-way, the specification does not limit the claimed channel to a voice channel. *See id.* at col. 4, lns. 50-53.

Respondents argue that their proposed construction should be adopted because, "[a]t the time of the invention, a person of ordinary skill in the art would have understood 'communication channel' to be referring *only* to a two-way voice channel." Resps. Br. at 288 (citing RX-3526C (Lanning WS) at Q105-115). Respondents further argue:

> The Power Ramp-Up Patents are wireless local-loop systems, which replace the "last mile" connection to the two-way voice channels of the PSTN (Public Switched Telephone Network). . . . The PSTN, though it can convey data, is exclusively composed of two-way voice channels and is the only external network disclosed in the Power Ramp-up and 010 Patents; there is no discussion of a direct connection to any networks other than two-way voice channel networks. . . . Thus, all data transmissions in the Power Ramp-Up Patents are accomplished over two-way voice channels.

Resps. Br. at 288 (citations omitted).

Respondents' argument is not persuasive, inasmuch as the two-way voice channels of the PSTN discussed in the '830 specification are not related to the claimed "communication channel" between the subscriber unit and the base station. *See* JX-0006 at col. 4, lns. 21-25

("The communication network 10 may also be connected to a public switched telephone network (PSTN) 22, wherein the base station controller 20 also coordinates communications between the base stations 14 and the PSTN 22."). The PSTN's two-way voice channels do not connect the subscriber unit and the base station, but rather connect the base station with the land lines of the PSTN. *See id.* at Fig. 1.

Accordingly, the term "communication channel" is construed to mean "channel for communication between a subscriber unit and a base station."

f. "produced using" ('830 patent)

Claim Term/Phrase	InterDigital's Construction	Respondents' Construction
produced using	generated using	selected from [a] pre-existing

The claim term "produced using" appears in asserted independent claim 1 of the '830 patent. JX-0006 at col. 10, ln. 54 – col. 11, ln. 16.

InterDigital construes this term to mean "generated using." Compls. Br. at 46-49. Respondents construe this term to mean "selected from [a] pre-existing." Resps. Br. at 296-97.

As proposed by InterDigital, the claim term "produced using" is construed to mean "generated using."

Inasmuch as the term "produced using" does not appear in the '830 specification, the plain meaning of the term should control. *See Toshiba Corp. v. Imation Corp.*, 681 F.3d 1358, 1369 (Fed. Cir. 2012) ("Absent disclaimer or lexicography, the plain meaning of the claim controls.") (citation omitted). "Generated using," the construction proposed by InterDigital, reflects the plain and ordinary of the term as understood by a person of ordinary skill in the art. CX-1309C (Lanning WS) at Q745-747.

Respondents argue that their proposed construction, "selected from [a] pre-existing," "is required by the system disclosed in the Power Ramp-up Patents." *See* Resps. Br. at 296. Respondents' argument is as follows:

> The successively sent transmissions (i.e., the short codes) disclosed in the Power Ramp-up Patents are simply selected from a longer sequence of chips (*i.e.*, the access code) and *must* be selected in this manner for the system to function . . . . In other words, the successively sent transmissions *must* be transmitted without being modulated by data in order for any of the disclosed embodiments to operate. The reason for this is quite simple: if the sequence of chips for the successively sent transmissions (i.e., the short codes) are not selected form the access code, the base station would not recognize these transmissions and the disclosed system would not work . . . . In addition, if the successively sent transmissions and the longer code from which it is selected *are* modulated by data (or used to modulate data) the base station would not recognize them as either the successively sent transmissions (*i.e.*, short codes) or the access code . . . .

Id. (emphasis original; citations and footnotes omitted). Respondents further argue that their "proposed construction is further supported by the disclosure in the Power Ramp-up Patents that short codes are selected from portions of the access code (LAXPT) and stored and repeatedly transmitted every 3 milliseconds – thus, the short code transmissions or successively sent transmissions are selected from a 'pre-existing' sequence of chips." *Id.* at 296 n.4.

Respondents' primary argument is not persuasive, inasmuch as it relies on a hypothetical system in which the handset modulates the codes before transmission, even though the base station can only detect unmodulated codes. Respondents' secondary argument, that "the short codes are selected from portions of the access code (LAXPT)," is also unavailing, inasmuch as the LAXPT is generated on the fly, and is not stored either before or after the initial access procedure has been performed. *See* CX-1390C (Jackson WS) at Q757. Accordingly, Respondents' proposed construction both limits the claims to a hypothetical, undisclosed configuration, and excludes an embodiment of the invention.

Therefore, the claim term "produced using" is construed to mean "generated using."

g. "message being sent only subsequent to the subscriber unit receiving the indication" ('830 patent)

Claim Term/Phrase	InterDigital's Construction	Respondents' Construction
message being sent only subsequent to the subscriber unit receiving the indication	message is sent only after the subscriber unit receives the indication	message being the next transmission from the subscriber unit after receiving the indication

The claim term "message being sent only subsequent to the subscriber unit receiving the indication" appears in asserted claim 1 of the '830 patent. JX-0006 at col. 10, ln. 54 – col. 11, ln. 16.

InterDigital construes this term to mean "message is sent only after the subscriber unit receives the indication." *See* Compls. Br. at 49-51. Respondents construe this term to mean "message being the next transmission from the subscriber unit after receiving the indication." *See* Resps. Br. at 297-98.

As proposed by InterDigital, the term "message being sent only subsequent to the subscriber unit receiving the indication" is construed to mean "message is sent only after the subscriber unit receives the indication," which reflects the ordinary meaning of the term as understood by a person of ordinary skill in the art. *See* CX-1309C (Jackson WS) at Q762-763; Lanning Tr. 1095.

Respondents argue that InterDigital's proposed construction "places no temporal limitation on when the message is transmitted following the indication," but this argument ignores the claim language surrounding the disputed term. *See* Resps. Br. at 297. Specifically, claim 1 of the '830 patent provides that the transmitter sends the message "when the subscriber

unit is first accessing a CDMA network and wants to establish communications with a base station associated with the network over a communication channel to be indicated by the base station." JX-0006 at col. 10, lns. 56-60. Respondents' argument that adopting InterDigital's proposed construction would permit the subscriber unit from transmitting the message at any time is therefore incorrect.

Moreover, Respondents' proposed construction adds a limitation that the subscriber unit cannot send any transmissions between the indication and the message, but have not shown that such a limitation is supported by the intrinsic evidence. Therefore, Respondents' proposed construction is incorrect.

Accordingly, the claim term "message being sent only subsequent to the subscriber unit receiving the indication" is construed to mean "message is sent only after the subscriber unit receives the indication."

h. "message indicating to the base station that the subscriber unit wants to establish the communications with the base station" ('830 patent)

Claim Term/Phrase	InterDigital's Construction	Respondents' Construction
message indicating to the base station that the subscriber unit wants to establish the communications with the base station	transmission having data indicating to the base station that the subscriber unit wants to establish communications with the base station	message indicating to the base station that the subscriber unit requests communications with the base station

The claim term "message indicating to the base station that the subscriber unit wants to establish the communications with the base station" is recited in asserted claim 1 of the '830 patent. JX-0006 at col. 10, ln. 54 – col. 11, ln. 16.

InterDigital construes this term to mean "transmission having data indicating to the base station that the subscriber unit wants to establish communications with the base station." *See* Compls. Br. at 51-54. Respondents construe this term to mean "message indicating to the base station that the subscriber unit requests communications with the base station."[11] *See* Resps. Br. at 289-91.

As proposed by Respondents, the claim term "message indicating to the base station that the subscriber unit wants to establish the communications with the base station" is construed to mean "message indicating to the base station that the subscriber unit requests communications with the base station," which reflects the plain and ordinary meaning of this term as understood by a person of ordinary skill in the art. *See* RX-3526C (Lanning WS) at Q119.

InterDigital argues that the term "message" should be construed as a "transmission having data" because the "message" must be sent to the base station, but this argument is not persuasive. *See* Compls. Br. at 51-52. As explained by Mr. Lanning, a person of ordinary skill in the art would understand that the term "message" in the context of the claim refers to the underlying data that is transmitted, rather than to the actual "transmission." *See* RX-3526C (Lanning WS) at Q123; RX-3999C (Lanning RWS) at Q115.

Accordingly, the term "message indicating to the base station that the subscriber unit wants to establish the communications with the base station" is construed to mean "message indicating to the base station that the subscriber unit requests communications with the base station."

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[11] InterDigital represents that Respondents seeks to construe "message" to mean "data stored in memory." *See* Compls. Br. at 51. Respondents' proposed construction for "message," however, is "message." *See* Resps. Br. at 290; Resps. Reply at 117 n.24 (citing JX-0022C (Joint Chart of Proposed Claim Constructions) at 7).

i. "plurality of chips" ('636 patent)

Claim Term/Phrase	InterDigital's Construction	Respondents' Construction
plurality of chips	two or more chips	code or portion of a code

The claim term "plurality of chips" appears in asserted claims 1 and 4 of the '636 patent. JX-0007 at col. 10, lns. 49-63; col. 11, lns. 1-2.

InterDigital construes this claim to mean "two or more chips." *See* Compls. Br. at 54-55. Respondents construe this term to mean "code or portion of a code." *See* Resps. Br. at 299; Resps. Reply at 122-23.

As proposed by InterDigital, the term "plurality of chips" is construed to mean "two or more chips," which is the plain meaning of the term. *See* Lanning Tr. 1089.

Respondents argue that their proposed construction should be adopted for the same reasons that their proposed construction for the '830 claim term "sequence of chips," discussed above, should be adopted. Respondents' arguments are rejected for the reasons set forth previously with respect to the term "sequence of chips."

Accordingly, the term "plurality of chips" is construed to mean "two or more chips."

j. "subsequent transmission" ('636 patent)

Claim Term/Phrase	InterDigital's Construction	Respondents' Construction
subsequent transmission	transmission that is later in time	known code transmitted to the base station during power ramp-up

The claim term "subsequent transmission" is recited in asserted claims 1 and 8 of the '636 patent. JX-0007 at col. 10, lns. 49-63; col. 11, lns. 11-12.

InterDigital construes this term to mean "transmission that is later in time." *See* Compls. Br. at 55-58. Respondents construe this term to mean "known code transmitted to the base station during power ramp-up." *See* Resps. Br. at 299-301.

As proposed by Respondents, "subsequent transmission" is construed to mean "known code transmitted to the base station during power ramp-up." As discussed above with respect to the claim term "successively sends transmissions," the claimed invention relates to transmissions of codes from the subscriber unit to the base station during a power ramp-up sequence. A person of ordinary skill in the art would therefore understand that the claimed "subsequent transmission" also takes place during the power ramp-up sequence. *See* RX-3526C (Lanning WS) at Q194-198. By contrast, InterDigital's proposed construction is incorrect to the extent it leaves open the possibility that the "subsequent transmission" occurs after the power ramp-up sequence has completed.

Accordingly, the claim term "subsequent transmission" is construed to mean "known code transmitted to the base station during power ramp-up."

k. "derived from [a]/[the]" ('636 patent)

Claim Term/Phrase	InterDigital's Construction	Respondents' Construction
derived from [a]/[the]	produced using	selected from [a]/[the] pre-existing

The claim term "derived from [a]/[the]" appears in asserted claim 1 of the '636 patent. JX-0007 at col. 10, lns. 49-63.

InterDigital construes this term to mean "produced using." *See* Compls. Br. at 58. Respondents construe this term to mean "selected from [a]/[the] pre-existing." *See* Resps. Br. at 298-99.

Respondents argue that the '636 term "derived from [a]/[the]" should be construed the same as the '830 term "produced using," discussed above, and for the same reasons. *See* Resps. Br. at 298-99. Respondents' argument is rejected for the same reasons discussed above.

InterDigital's proposal, that the '636 term "derived from [a]/[the]" should be construed to mean "produced using," would create a circular construction if it were adopted, inasmuch as the '830 term "produced using" has been construed above to mean "generated using." Therefore, InterDigital's proposed construction of "produced using" will not be adopted. Instead, the term "derived from [a]/[the]" is construed to mean "generated using."

C. Infringement

1. General Principles of Law[12]

a. Direct Infringement

Under 35 U.S.C. § 271(a), direct infringement consists of making, using, offering to sell, or selling a patented invention without consent of the patent owner. The complainant in a section 337 investigation bears the burden of proving infringement of the asserted patent claims by a "preponderance of the evidence." *Certain Flooring Products*, Inv. No. 337-TA-443, Comm'n Notice of Final Determination of No Violation of Section 337, 2002 WL 448690, at *59, (Mar. 22, 2002); *Enercon GmbH v. Int'l Trade Comm'n*, 151 F.3d 1376 (Fed. Cir. 1998).

Literal infringement of a claim occurs when every limitation recited in the claim appears in the accused device, *i.e.*, when the properly construed claim reads on the accused device

[12] The legal principles set forth in this section apply equally to the infringement analysis of the other patents asserted in this investigation.

exactly.[13] *Amhil Enters., Ltd. v. Wawa, Inc.*, 81 F.3d 1554, 1562 (Fed. Cir. 1996); *Southwall Tech. v. Cardinal IG Co.*, 54 F.3d 1570, 1575 (Fed Cir. 1995).

If the accused product does not literally infringe the patent claim, infringement might be found under the doctrine of equivalents. "Under this doctrine, a product or process that does not literally infringe upon the express terms of a patent claim may nonetheless be found to infringe if there is 'equivalence' between the elements of the accused product or process and the claimed elements of the patented invention." *Warner-Jenkinson Co., Inc. v. Hilton Davis Chemical Co.*, 520 U.S. 17, 21 (1997) (citing *Graver Tank & Mfg. Co. v. Linde Air Products Co.*, 339 U.S. 605, 609 (1950)). "The determination of equivalence should be applied as an objective inquiry on an element-by-element basis."[14] *Id.* at 40.

"An element in the accused product is equivalent to a claim limitation if the differences between the two are insubstantial. The analysis focuses on whether the element in the accused device 'performs substantially the same function in substantially the same way to obtain the same result' as the claim limitation." *AquaTex Indus. v. Techniche Solutions*, 419 F.3d 1374, 1382 (Fed. Cir. 2005) (quoting *Graver Tank*, 339 U.S. at 608); *accord Absolute Software*, 659 F.3d at 1139-40.[15]

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[13] Each patent claim element or limitation is considered material and essential. *London v. Carson Pirie Scott & Co.*, 946 F.2d 1534, 1538 (Fed. Cir. 1991). If an accused device lacks a limitation of an independent claim, the device cannot infringe a dependent claim. *See Wahpeton Canvas Co. v. Frontier, Inc.*, 870 F.2d 1546, 1552 n.9 (Fed. Cir. 1989).

[14] "Infringement, whether literal or under the doctrine of equivalents, is a question of fact." *Absolute Software, Inc. v. Stealth Signal, Inc.*, 659 F.3d 1121, 1130 (Fed. Cir. 2011).

[15] "The known interchangeability of substitutes for an element of a patent is one of the express objective factors noted by *Graver Tank* as bearing upon whether the accused device is substantially the same as the patented invention. Independent experimentation by the alleged infringer would not always reflect upon the objective question whether a person skilled in the art

Prosecution history estoppel can prevent a patentee from relying on the doctrine of equivalents when the patentee relinquished subject matter during the prosecution of the patent, either by amendment or argument. *AquaTex*, 419 F.3d at 1382. In particular, "[t]he doctrine of prosecution history estoppel limits the doctrine of equivalents when an applicant makes a narrowing amendment for purposes of patentability, or clearly and unmistakably surrenders subject matter by arguments made to an examiner." *Id.* (quoting *Salazar v. Procter & Gamble Co.*, 414 F.3d 1342, 1344 (Fed. Cir. 2005)).

b. Induced Infringement

With respect to induced infringement, section 271(b) of the Patent Act provides: "Whoever actively induces infringement of a patent shall be liable as an infringer." 35 U.S.C. § 271(b). "To prevail on a claim of induced infringement, in addition to inducement by the defendant, the patentee must also show that the asserted patent was directly infringed." *Epcon Gas Sys. v. Bauer Compressors, Inc.*, 279 F.3d 1022, 1033 (Fed. Cir. 2002). Further, "[s]ection 271(b) covers active inducement of infringement, which typically includes acts that intentionally cause, urge, encourage, or aid another to directly infringe a patent." *Arris Group v. British Telecomms. PLC*, 639 F.3d 1368, 1379 n.13 (Fed. Cir. 2011). The Supreme Court recently held that "induced infringement under § 271(b) requires knowledge that the induced acts constitute patent infringement." *Global-Tech Appliances, Inc. v. SEB S.A.*, -- U.S. --, 131 S. Ct. 2060, 2068 (2011). The Court further held: "[g]iven the long history of willful blindness[ ] and its wide acceptance in the Federal Judiciary, we can see no reason why the doctrine should not apply in

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would have known of the interchangeability between two elements, but in many cases it would likely be probative of such knowledge." *Warner-Jenkinson*, 520 U.S. at 36.

civil lawsuits for induced patent infringement under 35 U.S.C. § 271(b)." 131 S. Ct. at 2060 (footnote omitted).

c. Contributory Infringement

As for contributory infringement, section 271(c) of the Patent Act provides: "Whoever offers to sell or sells within the United States or imports into the United States a component of a patented machine, manufacture, combination or composition, or a material or apparatus for use in practicing a patented process, constituting a material part of the invention, knowing the same to be especially made or especially adapted for use in an infringement of such patent, and not a staple article or commodity of commerce suitable for substantial noninfringing use, shall be liable as a contributory infringer." 35 U.S.C. § 271(c).

Section 271(c) "covers both contributory infringement of system claims and method claims." *Arris*, 639 F.3d at 1376 (footnotes omitted). To hold a component supplier liable for contributory infringement, a patent holder must show, *inter alia*, that (a) the supplier's product was used to commit acts of direct infringement; (b) the product's use constituted a material part of the invention; (c) the supplier knew its product was especially made or especially adapted for use in an infringement" of the patent; and (d) the product is not a staple article or commodity of commerce suitable for substantial noninfringing use. *Id.*

d. Infringement of Method Claims under *Electronic Devices*

The Commission's opinion in *Certain Electronic Devices with Image Processing Systems, Components Thereof, and Associated Software*, Inv. No. 337-TA-724, Comm'n Op. (Dec. 21, 2011) ("*Electronic Devices*"), holds that the practice of an asserted method claim within the United States after importation cannot serve as the basis for an exclusion order.

Electronic Devices, Comm'n Op. at 17. As discussed in *Electronic Devices*, section 337 prohibits:

> (B) The importation into the United States, the sale for importation, or the sale within the United States after importation by the owner, importer, or consignee, of articles that –
>
> (i) infringe a valid and enforceable United States patent or a valid and enforceable United States copyright registered under title 17; or
>
> (ii) are made, produced, processed, or mined under, or by means of, a process covered by the claims of a valid and enforceable United States patent.

19 U.S.C. § 1337(a)(1)(B).

The statute is violated only by the importation, sale for importation, or sale after importation of articles that either infringe a valid U.S. patent claim or are made by a method covered by a valid U.S. patent claim. An article, standing alone, cannot directly infringe a method claim. *Electronic Devices*, Comm'n Op. at 17; *see also Cardiac Pacemakers, Inc. v. St. Jude Medical, Inc.*, 576 F.3d 1348, 1364 (Fed. Cir. 2009). A method claim is infringed only where someone performs all of the claimed method steps. *See NTP v. Research in Motion, Ltd.*, 418 F.3d 1282, 1318 (Fed. Cir. 2005) ("[T]he use of a [claimed] process necessarily involves doing or performing each of the steps recited."); *Joy Techs., Inc. v. Flakt, Inc.*, 6 F.3d 770, 775 (Fed. Cir. 1993) ("A method claim is directly infringed only by one practicing the patented method.").

In *Electronic Devices*, the Commission ruled that complainant did not have a legally cognizable claim that respondent violated the statute by using articles within the United States when infringement allegedly occurred by virtue of that use. *Electronic Devices*, Comm'n Op. at 19 ("domestic use of such a method, without more, is not a sufficient basis for a violation of Section 337(a)(1)(B)(i)"). Relying expressly on the statutory language of section 337 and

applicable Federal Circuit law, the Commission ruled that the act of importation "is not an act that practices the steps of the asserted method claim," and "[m]erely importing a device that may be used to perform a patented method does not constitute direct infringement of a claim to that method." *Id.* at 17-18 (citing *Cardiac Pacemakers*, 576 F.3d at 1364; *NTP*, 418 F.3d at 1319; *Ricoh Co., Ltd. v. Quanta Computer Inc.*, 550 F.3d 1325, 1335 (Fed. Cir. 2008) ("[A] party that sells or offers to sell software containing instructions to perform a patented method does not infringe the patent under § 271(a)."); *Joy Techs.*, 6 F.3d at 773 ("The law is unequivocal that the sale of equipment to perform a process is not a sale of the process within the meaning of section 271(a).")).

The Commission stated:

> [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.

Electronic Devices, Comm'n Op. at 13-14. The Commission determined that the importation requirement was not met in that case by the respondent's post-importation performance of a claimed method. *Id.* at 18. Nevertheless, the Commission stated that the complainant "might have proved a violation of section 337 if it had proved indirect infringement" of the method claim. *Id.* The Commission cited, as an example, *Certain Chemiluminescent Compositions, and Components Thereof and Methods of Using, and Products Incorporating the Same*, Inv. No. 337-TA-285, USITC Pub. No. 2370, Order No. 25 (Initial Determination) at 38 n.12 (March 1991), in which "the ALJ found that the 'importation and sale' of the accused articles constituted

contributory and induced infringement of the method claim at issue in that investigation." *Electronic Devices*, Comm'n Op. at 18 n.11.

2. The Accused Power Ramp-Up Products

The devices accused of infringing the '830 and '636 patents ("WCDMA Accused Products") are [ ] *See* CX-1309C (Jackson WS) at Q787-817. The WCDMA Accused Products can be grouped by the manufacturer of the baseband processor in the device: [ ]. *See* Compls. Br. at 59. The specific model numbers of the WCDMA Accused Products are listed in the following [exhibits: CX-0289C ; CX-0291C (; CX-0292C); CX-0293C ; CX-0299C *See* Compls. Br. at 59, nn.18-19]

InterDigital alleges that [

] *See* Compls. Br. at 59. [

[16]

CX-1309C

CX-1309C

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[16] [

RPX-3790C,

RPX-3794C

]

CX-1309C

CX-1309C

CX-1309C

CX-1309C (

CX-1309C

CX-1309C

CX-0973C

CX-1309C

CX-1309C

CX-1309C

CX-1309C

] *Id.*

3. InterDigital's Reliance on the WCDMA Standard

As in initial matter, Respondents argue that InterDigital's infringement proof is insufficient as a matter of law, inasmuch as [

] *See* Resps. Br. at 301-03. Respondents argue, *inter alia*, that "InterDigital took a shortcut to proving infringement by arguing [

] Resps. Br. at 301 (citing CX-1309C (Jackson WS) at Q937-939). It is argued that InterDigital's reliance on the 3GPP WCDMA standard is not legally sufficient to prove infringement because "the 3GPP WCDMA Standard does not provide the level of specificity required to establish that practicing the standard would always result in infringement." *Id.* at 302. [

] *See id.*

In response to Respondents' arguments, InterDigital argues that, "for their 'failure of proof' defense, Respondents resort to mischaracterizing InterDigital's infringement evidence. [

] *See* Compls. Reply at 12-13 (citing CX-1309C (Jackson WS) at Q498, Q1131; Jackson Tr. 194, 209; CX-0301C; CX-0324C; CX-0325C; CX-0326C; CX-0309C (Source Materials Exhibits)) (emphasis original). It is argued that [

] Compls. Reply at 13; *see* Compls. Br. at 60-61.

Having considered the arguments of the parties, it is determined that InterDigital has adduced evidence to support its infringement case in addition to the accused WCDMA Accused Products' [ ] Accordingly, Respondents' argument that reliance on the standard alone is legally insufficient to prove infringement under the circumstances of this investigation is not persuasive.

Respondents further argue that InterDigital has not met its burden to provide evidence of infringement because, *inter alia*, "Dr. Jackson's witness statement (CX-1309C) does not contain any analysis of the source code that describes the actual design and operation of the Accused Products." Resps. Br. at 303. As discussed above, however, Dr. Jackson has testified that he relied on the source code to determine how the products work. To the extent Respondents argue

that InterDigital is required to provide an infringement analysis based on the source code for each separate accused product or product grouping, Respondents are incorrect. Source code is generally useful in proving an infringement case, but it has not been shown in this instance that documentary and testimonial evidence standing alone, without the addition of source code, is insufficient to prove infringement by a preponderance of the evidence. Therefore, it is determined that, to the extent that InterDigital did not provide a source code analysis for every accused product, that alleged failure is not enough, by itself, to preclude a finding of infringement. The ultimate burden of proving infringement remains, of course, upon InterDigital.

4. Global Infringement Issues

In their infringement analyses, the parties address several issues that apply to multiple claims and/or both the '830 and '636 patents. These global issues will be addressed first, followed by a claim-by-claim infringement analysis.

a. The "sequence of chips" ('830 Patent) and "plurality of chips" ('636 Patent) Limitations

The '830 asserted claims require that "each of the successively sent transmissions and the message are produced using portions of a same sequence of chips." *See, e.g.*, JX-0006 at col. 11, lns. 13-16. The '636 asserted claims require that each "successively sent transmission" is "derived from a first length of a plurality of chips," and that the "subsequent transmission" is "derived from a second length of the plurality of chips." *See, e.g.*, JX-0007 at col. 10, lns. 49-63.

InterDigital argues that[

See Compls. Br. at 65-70.

] *Id.*

Respondents argue that the accused products do not meet the "sequence of chips" and "plurality of chips" limitations because [

] *See* Resps. Br. at 307.[17]

[

] *Id.* at 308.

[

] *Id.* at 308 (emphasis original).

Turning first to Respondents' argument that [

] The 3GPP WCDMA standard explicitly identifies $c_{long,1,n}$ as a "long scrambling sequence" and depicts it as an output of the "uplink scrambling sequence generator." CX-1309C (Jackson WS) at Q1074 (citing CX-0023 (3GPP TS 25.213 v5.6.0); CDX-0003.0173). Respondents' expert Mr. Lanning, as

[17] Although Respondents' brief has a separate section addressing the "plurality of chips" limitation from the '636 patent, that section refers to the section addressing the "same sequence of chips" limitation from the '830 patent. Resps. Br. at 315-16.

well as several fact witnesses, [*See, e.g.*,

[RX-3996C

CX-1241C

CX-1242C

CX-0305C

] Lanning Tr. 1054-1055. [

] CX-1309 (Jackson WS) at Q930; *see also* CX-0023 (3GPP Standard)

[ ]

Respondents' other arguments are not persuasive, inasmuch as they rely on Respondents' proposed construction of "produced using" and "derived from," *i.e.*, "selected from a pre-existing." As discussed above, Respondents' proposed construction was rejected, and InterDigital's proposed construction, *i.e.*, "generated using," was adopted.

The '830 asserted claims require using "portions of a same sequence of chips," while the '636 asserted claims require using a "first length" and a "second length" of a plurality of chips, to generate the claimed transmissions. Under InterDigital proposed constructions, [

The [ ] WCDMA Accused Products.

RPX-3837C RX-3999C

RPX-3837C

RPX-3837C

CX-1309C

The [ ] WCDMA Accused Products.

Jackson Tr. 214-215; RPX-3910C

RX-4029C

RX-4029C

CX-1352C CX-1309C

RPX-3730C RX-3999C

(RPX-3727C)

CX-1309C

CX-1309C

RPX-3727C]

b. The "successively sends transmissions" ('830 and '636 Patent) Limitations

Each asserted claim of the Power Ramp-Up patents requires that the claimed transmitter "successively sends transmissions." Under the adopted construction for this term, the WCDMA Accused Products do not infringe the "successively sends transmissions" element.[18]

[ ] InterDigital identifies [

] *See, e.g.*, Compls. Br. at 65-70. Under the adopted construction of "successively sends transmissions," *i.e.*, "transmits to the base station, one after the other, codes that are shorter than a regular length code," [

] do not infringe this limitation [

RX-3999C .]

[

[

RX-3999C] RX-3964 (3GPP TS 25.331) at §§ 10.3.6.52-10.3.6.55; *see also Certain 3G Mobile Handsets and Components Thereof*, Inv. No. 337-TA-613, USITC Pub. No. 4145, Initial Determination at 92 ("[T]he administrative law judge finds that the PRACH preamble is modulated by data as the signal as modulated by the scrambling code uniquely identifies the cell."). Inasmuch as the adopted construction of

[18] As discussed above, Respondents' proposed construction of the term, *i.e.*, "transmits to the base station, one after the other, codes that are shorter than a regular length code," was adopted. InterDigital's proposed construction is "sends transmissions one after the other."

"successively sends transmissions" requires that the transmissions comprise codes, and inasmuch as [ ] it is determined that the WCDMA Accused Products do not satisfy this claim limitation under the adopted construction because the [ ]

Turning now to an analysis under InterDigital's proposed construction, it is determined that the WCDMA Accused Products would satisfy the "successively sends transmission" limitation if InterDigital's proposed construction were adopted, [

]

c. The "produced using" ('830 Patent) and "derived from" ('636 Patent) Limitations

The '830 asserted claims require: (i) that "each of the successively sent transmissions is produced using a sequence of chips," and (ii) that "each of the successively sent transmissions and the message are produced using portions of a same sequence of chips." *See, e.g.*, JX-0006 at col. 10, ln. 54 – col. 11, ln. 16. The '636 asserted claims require: (i) that "each of the transmissions are derived from a first length of a plurality of chips," and (ii) "a subsequent transmission derived from a second length of the plurality of chips." *See, e.g.*, JX-0007 at col. 10, lns. 49-63. As shown above, [[19]

]

It is therefore determined that the WCDMA Accused Products satisfy these claim limitations under the adopted claim constructions.

[19] As discussed above, the claim terms "produced using" and "derived from" have been construed to mean "generated using."

Respondents argue that the accused products do not meet the "produced using" / "derived from" limitations because [

] *See* Resps. Br. at 312-14. Inasmuch as Respondents' proposed constructions have not been adopted, Respondents' arguments fail.

If Respondents' proposed constructions were adopted, however, the evidence demonstrates that these claim limitations would not be satisfied. Specifically, [the

CX-1309C

]

d. The "message" and "first accessing a CDMA network" ('830 Patent) Limitations

The '830 asserted claims require that when the subscriber unit is "first accessing a CDMA network," it sends to the base station a "message indicating to the base station that the subscriber unit wants to establish the communications with the base station over the communication channel to be indicated by the base station." *See* JX-0006 at col. 10, ln. 54 – col. 11, ln. 16.

InterDigital argues that "[T]he WCDMA Accused Products meet this limitation because [

] Compls. Br. at 76 (citing CX-1309C (Jackson WS) at Q1012-1043); *see also id.* at 76-83.

Respondents argue that the WCDMA Accused Products do not satisfy the "message" limitation [

(citing RX-3999C

] Nevertheless, the evidence demonstrates that this claim limitation is satisfied.

[

] *See* CX-1309C (Jackson WS) at Q1070. [

] *Id.* [

] *Id.* This process aligns with the preferred embodiments disclosed in the '830 specification. Therefore, the WCDMA Accused Products send the claimed "message."

Respondents also argue that the WCDMA Accused Products do not satisfy the "first accessing a CDMA network" limitation, inasmuch as [

] *See* Resps. Br. at 314 (citing RX-3999C (Lanning RWS) at Q343-359). The record evidence, however, indicates otherwise.

Respondents' expert Mr. Lanning testified at the hearing that [

] Lanning Tr. at 1063; *see also* CX-1242C (Lanning Dep. from Inv. No. 337-601) at 464-465 [

CX-1240C

CX-1376

[

]

Mr. Lanning's testimony is consistent with the testimony of several fact witnesses. *See, e.g.*, [CX-1356C

CX-0306C

CX-0305C

CX-0304C

]

Accordingly, it is determined that the WCDMA Accused Products satisfy the "first accessing a CDMA network" limitation of the '830 patent.

e. The "subsequent transmission" ('636 Patent) Limitation

As discussed above, Respondents' proposed construction of "subsequent transmission," *i.e.*, "known code transmitted to the base station during power ramp-up," was adopted. Applying this construction, the WCDMA Accused Products do not satisfy this claim limitation.

InterDigital identifies the

] *See* RX-3999C (Lanning RWS) at Q377-378.

5. '830 Patent – Claim 1

a. "A wireless code division multiple access (CDMA) subscriber unit comprising:"

[

] CX-1309C (Jackson WS) at Q787-818, Q949-950. [

]. *Id.* at Q950. [

]. *Id.*

[ ]. *See* Resps. Br. at 307-15.

b. a transmitter configured such that, when the subscriber unit is first accessing a CDMA network and wants to establish communications with a base station associated with the network over a communication channel to be indicated by the base station, the transmitter successively sends transmissions prior to the subscriber unit receiving from the base station an indication that at least one of the successively sent transmissions has been detected by the base station;

[

] CX-1309C (Jackson WS) at Q951; Lanning Tr. 1049-1050. [

CX-1309C CX-0304C

CX-0950C

CX-0306C

CX-1309C

]

[

]."

c. wherein each of the successively sent transmissions is produced using a sequence of chips, wherein the sequence of chips is not used to increase bandwidth;

[

]. *See* CX-1309C (Jackson WS) at Q1004-1011. [Specifically, each of the WCDMA

] *Id.* at

Q1005. [

]

[CX-1351

]

[ ].

d. the transmitter further configured such that the transmitter sends to the base station a message indicating to the base station that the subscriber unit wants to establish the communications with the base station over the communication channel to be indicated by the base station, the message being sent only subsequent to the subscriber unit receiving the indication;

[

] Lanning Tr. 1054 [

] CX-1309C (Jackson WS) at

[CX-0305C

CX-1309C (Jackson WS) at

Q952-964, Q1014-1020.

[ ].

e. wherein at least two of the successively sent transmissions are produced using different sequences of chips;

[

]. CX-1309C (Jackson WS) at Q1056-1060. [

[

] *Id.* at Q1056. The WCDMA

[

] *Id.* at Q1056-1058; [ ]

[

] CX-1309C (Jackson WS) at Q1056-1058.

[ ].

f. wherein each of the successively sent transmissions is shorter than the message; and

[ ].

CX-1390C (Jackson WS) at Q1061. [

] Specifically, each [

Id.; CX-1352C

]

g. wherein each of the successively sent transmissions and the message are produced using portions of a same sequence of chips, wherein the same sequence of chips is not used to increase bandwidth.

[

]. CX-1390C (Jackson WS) at Q1062-1081. [

CX-1351C

CX-1309C

CX-1309C]

6. '830 Patent – Claim 2

a. "The wireless code division multiple access (CDMA) subscriber unit of claim 1"

Inasmuch as the WCDMA Accused Products do not infringe independent claim 1, it is further determined that they do not infringe dependent claim 2.

b. "wherein a beginning of each one of the successively sent transmissions, other than a first one of the successively sent transmissions, is at a higher power level with respect to a beginning of a prior one of the successively sent transmissions."

[

CX-1309C

Id.

] *Id.* [

].

7. '830 Patent – Claim 3

a. The wireless code division multiple access (CDMA) subscriber unit of claim 1

Inasmuch as the WCDMA Accused Products do not infringe independent claim 1, it is further determined that they do not infringe dependent claim 3.

b. wherein each one of the successively sent transmissions, other than a first one of the successively sent transmissions, is sent at a power level that is higher than the power level of a prior one of the successively sent transmissions.

[

]. *See* CX-1309C (Jackson WS) at Q1084.

8. '830 Patent – Claim 5

a. The wireless code division multiple access (CDMA) subscriber unit of claim 1

Inasmuch as the WCDMA Accused Products do not infringe independent claim 1, it is further determined that they do not infringe dependent claim 5.

b. wherein the successively sent transmissions are sent until receipt of the indication that at least one of the successively sent transmissions has been detected by the base station.

[

CX-1309C]

9. **'636 Patent – Claim 1**

a. **A wireless code division multiple access (CDMA) subscriber unit comprising:**

[

]. *See* RX-3999C (Lanning RWS) at Q365-387.

b. **a transmitter configured such that, when the subscriber unit is first accessing a CDMA network, the transmitter successively sends transmissions wherein each of the transmissions are derived from a first length of a plurality of chips until the subscriber unit receives from a base station associated with the network an indication that at least one of the transmissions has been detected by the base station; and**

[

]

].

[

CX-1309C]

c. the transmitter further configured such that, subsequent to the subscriber unit receiving the indication, the transmitter sends a subsequent transmission derived from a second length of the plurality of chips, wherein the first length is less than the second length.

[

CX-1309C

CX-1309C]

10. '636 Patent – Claim 2

a. The subscriber unit of claim 1

Inasmuch as the WCDMA Accused Products do not infringe independent claim 1, it is further determined that they do not infringe dependent claim 2.

b. wherein at least two of the successively sent transmissions are different.

[

] CX-1309C

]

Id.

11. '636 Patent – Claim 4

a. The subscriber unit of claim 1

Inasmuch as the WCDMA Accused Products do not infringe independent claim 1, it is further determined that they do not infringe dependent claim 4.

b. wherein the plurality of chips are chips that are not used for spreading.

[

CX-1309C

] *Id.* [

] *Id.*

12. '636 Patent – Claim 6

a. The subscriber unit of claim 1

Inasmuch as the WCDMA Accused Products do not infringe independent claim 1, it is further determined that they do not infringe dependent claim 6.

b. wherein the successive transmissions facilitate power control when the subscriber unit is first accessing the network.

[

CX-1309C

Id.; CX-0305C

]

13. '636 Patent – Claim 7

a. The subscriber unit of claim 6

Inasmuch as the WCDMA Accused Products do not infringe claim 6, it is further determined that they do not infringe dependent claim 7.

b. wherein the power control of the successive transmissions is not closed loop power control.

[

CX-1309C

Id.

]

14. '636 Patent – Claim 8

a. The subscriber unit of claim 1

Inasmuch as the WCDMA Accused Products do not infringe independent claim 1, it is further determined that they do not infringe dependent claim 8.

b. wherein the subsequent transmission is not closed loop power controlled.

[

]

D. Validity

1. General Principles of Law[20]

One cannot be held liable for practicing an invalid patent claim. *See Pandrol USA, LP v. AirBoss Railway Prods., Inc.*, 320 F.3d 1354, 1365 (Fed. Cir. 2003). Nevertheless, each claim of a patent is presumed to be valid, even if it depends from a claim found to be invalid. 35 U.S.C. § 282; *DMI Inc. v. Deere & Co.*, 802 F.2d 421 (Fed. Cir. 1986).

A respondent that has raised patent invalidity as an affirmative defense must overcome the presumption of patent validity by "clear and convincing" evidence of invalidity. *Checkpoint Systems, Inc. v. United States Int'l Trade Comm'n*, 54 F.3d 756, 761 (Fed. Cir. 1995).

In this investigation, Respondents raise the following validity defenses: anticipation, obviousness, indefiniteness, and lack of written description. *See* GR12 Filing.

a. Anticipation

Anticipation under 35 U.S.C. § 102 is a question of fact. *z4 Techs., Inc. v. Microsoft Corp.*, 507 F.3d 1340, 1347 (Fed. Cir. 2007). Section 102 provides that, depending on the circumstances, a claimed invention may be anticipated by variety of prior art, including publications, earlier-sold products, and patents. *See* 35 U.S.C. § 102 (*e.g.*, section 102(b) provides that one is not entitled to a patent if the claimed invention "was patented or described in

[20] The legal principles set forth in this section apply equally to the validity analysis of the other patents asserted in this investigation.

a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States").

The general law of anticipation may be summarized, as follows:

> A reference is anticipatory under § 102(b) when it satisfies particular requirements. First, the reference must disclose each and every element of the claimed invention, whether it does so explicitly or inherently. *Eli Lilly & Co. v. Zenith Goldline Pharms., Inc.*, 471 F.3d 1369, 1375 (Fed.Cir.2006). While those elements must be "arranged or combined in the same way as in the claim," *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1370 (Fed.Cir.2008), the reference need not satisfy an *ipsissimis verbis* test, *In re Bond*, 910 F.2d 831, 832-33 (Fed.Cir.1990). Second, the reference must "enable one of ordinary skill in the art to make the invention without undue experimentation." *Impax Labs., Inc. v. Aventis Pharms. Inc.*, 545 F.3d 1312, 1314 (Fed.Cir.2008); *see In re LeGrice*, 49 C.C.P.A. 1124, 301 F.2d 929, 940-44 (1962). As long as the reference discloses all of the claim limitations and enables the "subject matter that falls within the scope of the claims at issue," the reference anticipates -- no "actual creation or reduction to practice" is required. *Schering Corp. v. Geneva Pharms., Inc.*, 339 F.3d 1373, 1380-81 (Fed.Cir.2003); *see In re Donohue*, 766 F.2d 531, 533 (Fed.Cir.1985). This is so despite the fact that the description provided in the anticipating reference might not otherwise entitle its author to a patent. *See Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1562 (Fed.Cir.1991) (discussing the "distinction between a written description adequate to support a claim under § 112 and a written description sufficient to anticipate its subject matter under § 102(b)").

In re Gleave, 560 F.3d 1331, 1334 (Fed. Cir. 2009).

b. Obviousness

Under section 103 of the Patent Act, a patent claim is invalid "if 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."[21] 35 U.S.C. § 103. While the ultimate determination of whether an invention would have been obvious is a legal conclusion, it is based on "underlying factual inquiries including: (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 evidence of nonobviousness." *Eli Lilly and Co. v. Teva Pharmaceuticals USA, Inc.*, 619 F.3d 1329 (Fed. Cir. 2010).

The objective evidence, also known as "secondary considerations," includes commercial success, long felt need, and failure of others. *Graham v. John Deere Co.*, 383 U.S. 1, 13-17 (1966); *Dystar Textilfarben GmbH v. C.H. Patrick Co.*, 464 F.3d 1356, 1361 (Fed. Cir. 2006). "[E]vidence arising out of the so-called 'secondary considerations' must always when present be considered en route to a determination of obviousness." *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1538 (Fed. Cir. 1983). Secondary considerations, such as commercial success, will not always dislodge a determination of obviousness based on analysis of the prior art. *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 426 (2007) (commercial success did not alter conclusion of obviousness).

"One of the ways in which a patent's subject matter can be proved obvious is by noting that there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent's claims." *KSR*, 550 U.S. at 419-20. "[A]ny need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed." *Id.*

Specific teachings, suggestions, or motivations to combine prior art may provide helpful

[21] The standard for determining whether a patent or publication is prior art under section 103 is the same as under 35 U.S.C. § 102, which is a legal question. *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1568 (Fed. Cir. 1987).

insights into the state of the art at the time of the alleged invention. *Id.* at 420. Nevertheless, "an obviousness analysis cannot be confined by a formalistic conception of the words teaching, suggestion, and motivation, or by overemphasis on the importance of published articles and the explicit content of issued patents. The diversity of inventive pursuits and of modern technology counsels against limiting the analysis in this way." *Id.* "Under the correct analysis, any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed." *Id.* A "person of ordinary skill is also a person of ordinary creativity." *Id.* at 421.

Nevertheless, "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, or carry out the claimed process, 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); *see KSR*, 550 U.S. at 416 (a combination of elements must do more than yield a predictable result; combining elements that work together in an unexpected and fruitful manner would not have been obvious).[22]

c. Indefiniteness

The definiteness requirement of 35 U.S.C. § 112 ensures that the patent claims particularly point out and distinctly claim the subject matter that the patentee regards to be the invention. *See* 35 U.S.C. § 112, ¶ 2; *Metabolite Labs., Inc. v. Lab. Corp. of Am. Holdings*, 370 F.3d 1354, 1366 (Fed. Cir. 2004). If a claim's legal scope is not clear enough so that a person of ordinary skill in the art could determine whether or not a particular product infringes, the claim is

[22] Further, "when the prior art teaches away from combining certain known elements, discovery of a successful means of combining them is more likely to be nonobvious." *KSR*, 550 U.S. at 416 (citing *United States v. Adams*, 383 U.S. 39, 52 (1966)).

indefinite, and is, therefore, invalid. *Geneva Pharm., Inc. v. GlaxoSmithKline PLC*, 349 F.3d 1373, 1384 (Fed. Cir. 2003).[23]

Thus, it has been found that:

> When a proposed construction requires that an artisan make a separate infringement determination for every set of circumstances in which the composition may be used, and when such determinations are likely to result in differing outcomes (sometimes infringing and sometimes not), that construction is likely to be indefinite.

Halliburton Energy Servs. v. M-I LLC, 514 F.3d 1244, 1255 (Fed. Cir. 2008).

d. Lack of a Written Description

The issue of whether a patent is invalid for failure to meet the written description requirement of 35 U.S.C. § 112, ¶ 1 is a question of fact. *Bard Peripheral Vascular, Inc. v. W.L. Gore & Assocs., Inc.*, 670 F.3d 1171, 1188 (Fed. Cir. 2012). A patent's written description must clearly allow persons of ordinary skill in the art to recognize that the inventor invented what is claimed. The test for sufficiency of a written description is "whether the disclosure of the application relied upon reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date." *Id.* (quoting *Ariad Pharm., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (*en banc*)).

2. Anticipation and Obviousness

Respondents assert three references as prior art against the '830 and '636 patents: a version of a CDMA standard called IS-95 (RX-0077) ("IS-95"); U.S. Patent No. 5,430,760 to Dent (RX-0248) ("Dent"); and a document titled "Synchronisation Procedure in Up & Down-Link in the CoDIT Testbed" (RX-0250) ("Lucas").

---

[23] Indefiniteness is a question of law. *IGT v. Bally Gaming Int'l, Inc.*, 659 F.3d 1109 (Fed. Cir. 2011).

All three references were considered by the PTO, and the asserted claims of the '830 and '636 patents were determined patentable over each of these references. *See* CX-1524C (Haas RWS) at Q46-49; Lanning Tr. 1098.

a. IS-95-A

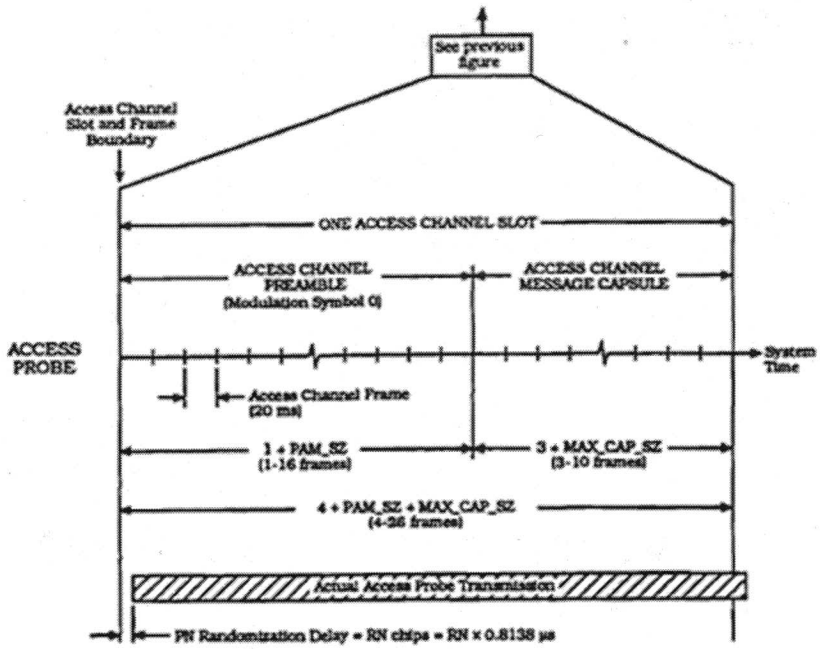
i. Overview

In the 1990s, as the telecommunications industry developed a standard for interoperability of CDMA networks and products, *i.e.*, IS-95, the industry issued interim IS-95 standards, including the TIA-EIA Interim Standard: Mobile Station – Base Station Compatibility Standard for Dual-Mode Wideband Spread Spectrum Cellular System (May 1995) (RX-0077 (IS-95-A)). Though this standard evolved between the originally proposed and the finally adopted standard, the sections relevant here remained substantively constant through IS-95-A.

IS-95-A details a random access procedure for a CDMA system, wherein a mobile transmits access probes at increasing power levels to a base station until acknowledged. RX-0077 at 6-108-110, 6-112:14-20, 6-113:21-25; RX-3526C (Lanning WS) at Q227-230. Once the mobile receives an acknowledgement it may request a traffic channel. RX-0077 at 6-104:31-33, 6-105:11-18, 6-122:30-39, B-1, Appendix B; RX-3526C (Lanning WS) at Q241-242.

An IS-95-A mobile starts a random access procedure by sending access probes over the Access Channel. RX-0077 at 6-105:11-18, 6-111:7-16. Each access probe has a preamble and a message capsule. RX-0077 at 6-109; RX-3526C (Lanning WS) at Q210. The maximum number of frames for a message capsule ranges from 3 to 10. The maximum number of frames is determined based on a constant "MAX_CAP_SZ," which the base station can set from 0 to 7.

RX-0077 at 6-97, 6-109; RX-3526C (Lanning WS) at Q267, 272; CX-1524C (Haas RWS) at Q109. The general structure of an IS-95-A access probe is illustrated below:



IS-95-A Access Probe (RX-0077 at 6-109)

Within an access attempt (*e.g.*, an attempt to register the mobile), access probes are grouped into access probe sequences, as shown below:

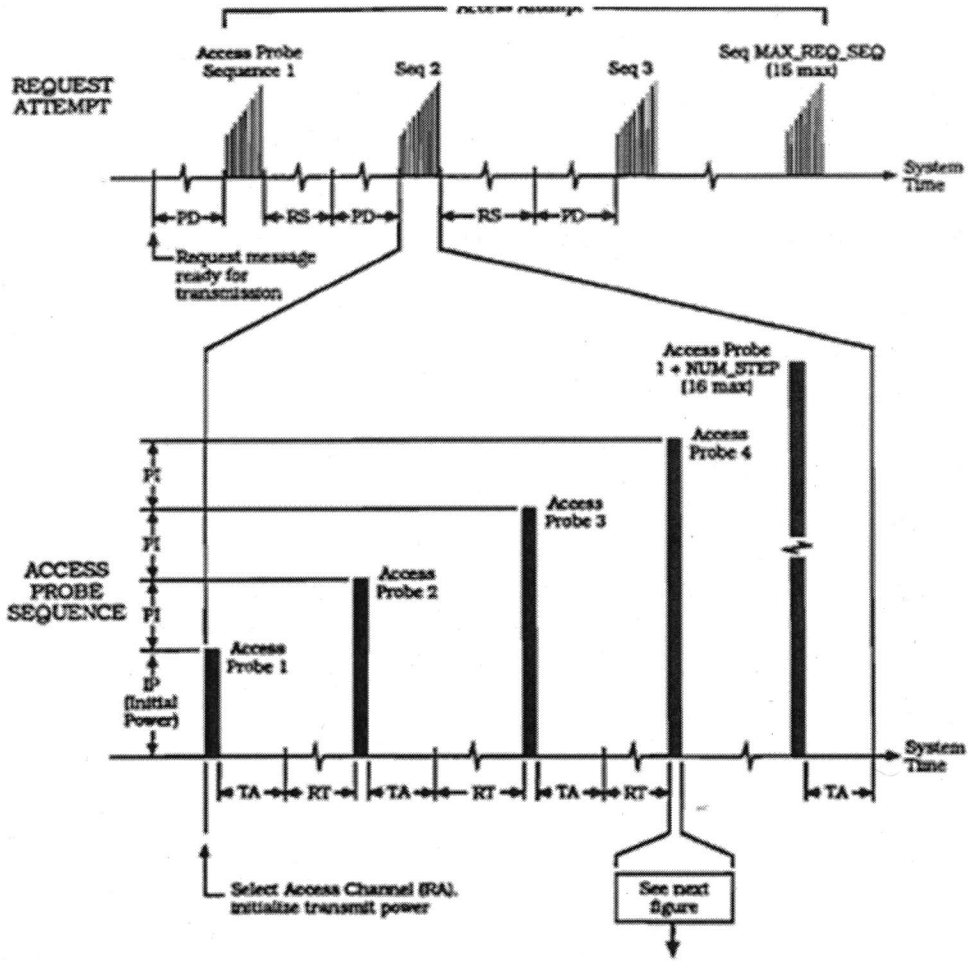


Figure 6.6.3.1.1.1-1A. Access Channel Request and Response Attempts

IS-95-A Access Probes (RX-0077 at 6-108)

Although MAX_CAP_SZ places an upper limit on the maximum possible number of frames in an access channel message capsule, the actual number of frames in a message capsule is based on the calculated number "CAP_SZ." RX-0077 at 6-188; RX-3526C (Lanning WS) at Q267, Q272; CX-1524C (Haas RWS) at Q108-09, Q122). Mobiles calculate CAP_SZ according to the formula below:

1 6.7.1.2 Access Channel Message Structure

2 An Access Channel message capsule consists of an Access Channel message and padding,
3 as shown in Figure 6.7.1.2-1. The length of the Access Channel message capsule shall be
4 an integer number of Access Channel frames given by

5 $$CAP\_SZ = \left\lceil \frac{8 + \text{Message Body Length} + 30}{88} \right\rceil .$$

6 Each Access Channel message shall consist of a length field (MSG_LENGTH), a message
7 body, and a CRC, in that order. The message body size shall be selected so that CAP_SZ
8 does not exceed 3 + MAX_CAP_SZ. The mobile station shall transmit the Access Channel
9 message immediately following the preamble.

10 The mobile station shall transmit padding consisting of zero or more '0' bits immediately
11 following the Access Channel message. The length of the padding shall be such that

12 $$8 + \text{Message Body Length} + 30 + \text{Padding Length} = 88 \times CAP\_SZ.$$

IS-95-A CAP_SZ (RX-0077 at 6-188)

The following explains the arithmetic used by a mobile to calculate CAP_SZ (line 5 on page 6-188). The first step is to sum 8 + Message Body Length + 30, where Message Body Length is the number of bits in the particular message. RX-3526C (Lanning WS) at Q268. This sum is divided by 88, which is the number of information bits in each access channel frame. *Id.* CAP_SZ is finally calculated by rounding the result of this division up to the nearest integer, *e.g.*, 1.81 is rounded to 2, and 2.31 is rounded to 3. *Id.*

The second formula shown above in line 12 is used to calculate the value of "Padding Length," which is the number of '0' bits added to the particular message capsule to complete the last partial frame that contains message information. Padding Length ensures that the total bits in the message capsule, *i.e.*, including the padding bits, equals the number of bits needed to fill CAP_SZ frames. RX-3526C (Lanning WS) at Q271. For example, a CAP_SZ of two (2) frames requires 176 total bits (2 x 88). Padding Length will add enough '0' bits so that the total bits equals 176. The formulas above do not depend on the value of MAX_CAP_SZ because "[t]he message body shall be selected so that CAP_SZ does not exceed 3 + MAX_CAP_SZ."

RX-0077 at 6-188. Thus, MAX_CAP_SZ only affects the maximum transmission length. IS-95-A does not have a minimum transmission length. RX-3526C (Lanning WS) at Q273.

After calculating CAP_SZ and Padding Length, the padded access probes are repeatedly transmitted until the mobile receives an acknowledgement from the base station. RX-0077 at 6-108-110, 6-112:14-20, 6-113:21-25; RX-3526C (Lanning WS) at Q210, Q227. As shown at page 6-108, the access probes are transmitted at increasing power levels, without feedback from a base station. RX-3526C (Lanning WS) at Q210, Q226. Thus, the random access probes are not closed-loop power controlled, but are instead open-loop power controlled. CX-1524C (Haas RWS) at Q42.

For every access probe sequence, the mobile device uses a random number called "RA" as its "Access Channel Number" ("ACN"). RX-0077 at 6-109; 6-111:7-16; RX-3526C (Lanning WS) at Q252. The ACN determines the starting state of the long PN code, which is used to spread the access channel information. RX-0077 at 6-111:7-16; RX-3526C (Lanning WS) at Q254. A different value for ACN will cause the access channel information between successive access probe sequences to be spread with different chips. Inasmuch as there are 32 possible values for RA, there is a 31 out of 32 likelihood that the chips of successive access probe sequences will be different. *See* RX-0077 at 6-109; RX-3526C (Lanning WS) at Q255.

Once the base station detects an access probe, it sends an acknowledgement. RX-0077 at 6-112:14-20, B-1; RX-3526C (Lanning WS) at Q210). In response to the acknowledgement, and depending on the subsequent task, the mobile can transmit one of several possible messages to the base station. Two of these messages are relevant to the issues in this investigation: "Registration" and "Origination."

A Registration Message is used to register the mobile with the network under various circumstances. For example, IS-95-A requires a mobile to register with the network when it first powers up, *i.e.*, is turned on. RX-0077 (IS-95-A) at 6-156:22-34; RX-3526C (Lanning WS) at Q220. The mobile must register on power-up, and the registration must be successfully completed, before the mobile can receive or originate, *i.e.*, make, a call. RX-0077 (IS-95-A) at 6-156:22-34; *see also id.* at 6-104:31-33, 6-105:11-18; RX-3526C (Lanning WS) at Q210. An Origination Message indicates that the subscriber unit wants to establish communications with the base station. RX-0077 (IS-95-A) at 6-104:31:-33, 6-105:11-18; RX-3526C (Lanning WS) at Q222. The base station responds and allocates a voice communication channel. RX-0077 (IS-95-A) at 6-104:31-33, 6-105:11-18; RX-3526C (Lanning WS) at Q222-223.

As described above, CAP_SZ is the actual number of frames transmitted in a particular access channel message capsule, and varies with the message type. A Registration Message results in CAP_SZ of 2 frames, and an Origination Message results in 3 frames. RX-0077 (IS-95-A) at 6-108, 6-199, 6-207-208; RX-3526C (Lanning WS) at Q259-261).

The access probes of Registration and Origination Messages are all spread with the same spreading code, defined in IS-95-A as the "Long Code," and scrambled with the same pilot PN sequences, defined in the IS-95-A as the "Short Code" or short PN scrambling code. RX-0077 (IS-95-A) at 6-8, 6-22-23; RX-3526C (Lanning WS) at Q231-235, Q284.

ii. Anticipation Analysis of the '830 Patent

The "only subsequent to the subscriber unit receiving the indication" Limitation.

IS-95 does not anticipate the asserted claims of the '830 patent, inasmuch as it does not disclose the limitation that the supposed "message" is sent "only subsequent to the subscriber unit receiving the indication." Both parties' construction of this limitation, including the construction adopted above, require a temporal order to these events, *i.e.*, event A occurs before event B. *See* Haas Tr. 1852-1853. This temporal order is not disclosed in IS-95.

As taught by IS-95, when a handset wants to establish a channel to make a call, it transmits an Origination Message. CX-1524C (Haas RWS) at Q88; RX-0077 (IS-95) at 6-122. In contrast, the handset sends a Registration Message to send registration information to a base station when registering on the network. CX-1524C (Haas RWS) at Q84. IS-95-A does not require a separate registration message before a handset can make a call. The handset can send the Origination Message before the Registration Message, after the Registration Message and before the acknowledgement, or after the acknowledgement. *Id.* at 83. Inasmuch as IS-95-A does not disclose that receiving the acknowledgement of a Registration Message and sending the Origination Message are interrelated events, *i.e.*, one must occur before the other, the "only subsequent to" limitation is not disclosed in IS-95. *Id.*

The "each of the successively sent transmissions and the message are produced using portions of a same sequence of chips" Limitation.

Respondents point to the I-channel short PN code disclosed in IS-95, or to the Q-channel short PN code, as being the claimed "same sequence of chips." RX-3526C (Lanning WS) at Q282-283. This argument ignores the requirement that "each of the successively sent transmissions and the message are produced using portions of a same sequence of chips."

JX-0006 ('830 patent) at cl. 1. A handset in IS-95-A produces the Registration and Mobile Origination Message access probes using multiple repetitions of the I and Q-channel short PN codes, *i.e.*, the entirety, and not just portions, of those sequences. CX-1524C (Haas RWS) at Q100. Indeed, Mr. Lanning testified that each sequence is repeated 2.25 times when scrambling the Mobile Origination Message capsule. Lanning Tr. 1106-1107. Assuming that the Registration Message capsule can be two frames long, even the shorter Registration Message capsule requires 1.5 repetitions of the short PN code sequence. CX-1524C (Haas RWS) at Q102. This is because the short PN codes (at 26.667 milliseconds long) are shorter than each access probe message capsule (40 or 60 milliseconds long). *Id.* at Q100, Q102; Lanning Tr. 1103, 1106. Multiple repetitions of a code cannot be considered a "portion" of that code.

The "each of the successively sent transmissions is shorter than the message" Limitation.

IS-95 fails to show, clearly and convincingly, that a person of ordinary skill in the art would have understood the Registration Message access probes to be shorter than the Mobile Origination Message access probes. Respondents' expert Mr. Lanning testified that the capsule for the Registration Message is two frames long, and the capsule for the Mobile Origination Message is three frames long. RX-3526C (Lanning WS) at Q269. This, however, is not the only reasonable interpretation of the disclosures of IS-95 regarding message length. In fact, the experts for both parties, textbook authors, and other inventors came to a different interpretation of what IS-95 discloses regarding the lengths of the Registration and Mobile Origination Message access probes. CX-1524C (Haas RWS) at Q103-122. Under this alternate interpretation, the Registration and Mobile Origination Message access probes are the same length, because the capsules for both messages are the minimum length of three frames long. *Id.*

Inasmuch as person skilled in the art differ as to the message length disclosed in IS-95, the evidence is neither clear nor convincing that one message length is shorter than the other.

iii. Obviousness Analysis of the '830 Patent

Claim 1.

Respondents' theory that IS-95 alone renders obvious '830 Claim 1 fails for three independent reasons. First, this argument was expressly rejected by Judge Luckern in the 613 Investigation. Respondents argue that it would be obvious to separate the IS-95 "preamble from the message capsule . . . result[ing] in the preambles and Registration message being transmitted separately, such that the Registration message would be sent only subsequent to the indication of receipt of a preamble." RX-3526C (Lanning WS) at Q388. This is directly contrary to two explicit holdings of Judge Luckern in the 613 Investigation: (i) "as the IS-95 references specifically state that the preamble and message cannot be sent separately, the [ALJ] finds that the IS-95 references do not make it obvious that the preamble and the message could be sent separately," and (ii) "an additional acknowledgement, which does not exist in IS-95, would be required in the IS-95 system if the access probe preamble and message capsule were separately transmitted." CX-0866C (613 ID) at 148. Respondents' position is therefore merely a restatement of a previously rejected argument.

Second, Respondents' theory ignores the express teachings of IS-95, which are the same teachings on which Judge Luckern relied in finding that "the IS-95 references do not permit the UE to first transmit the access probe preamble, then wait for an 'acknowledgement' or 'indication' from the [base station] before transmitting the access probe message capsule." CX-0866C (613 ID) (citing "[IS-95] at 6.7.1.1 ("The mobile station shall transmit an Access Channel message capsule immediately following the preamble."), 6.7.1.2; [IS-95] at 6, n.16

("'Shall' and 'shall not' identify requirements to be followed strictly to conform to the standard and from which no deviation is permitted.")). Moreover, the system in IS-95 would be inoperable if the preamble and message were split, because the base station uses the preamble initially to detect the access code, and then as a timing reference. CX-1524C (Haas RWS) at Q133-134; *see* RX-0077 (IS-95) at 6.1.3.2.2.1 at 6-28 ("The Access Channel preamble is transmitted to aid the base station in acquiring an Access Channel Transmission."). Respondents' proposed modification contradicts both Judge Luckern's findings in the 613 investigation and the express teachings of IS-95.

Third, Respondents do not point to a single reference that did, in fact, send the preambles separately from the message. Both IS-95 and Dent, discussed below, send the random access message and its preambles together, in a single transmission. Futhermore, Lucas does not even disclose a message.

Claims 2 and 3.

With respect to Respondents' argument that claims 2 and 3 of the '830 patent are obvious, their expert Mr. Lanning testified that:

> [I]t would be obvious to one of skill in the art that the power ramping could continue across two different access probe sequences such that the power of each access probe was constantly increasing. This would have been quite obvious to one of skill in the art at the time of the invention as an alternative scheme, and would require insignificant modification to implement because all of the required functionality is already present in the mobile device.

RX-3526C (Lanning WS) at Q291, Q296.

Mr. Lanning fails to cite to evidence supporting Respondents' position. He also fails to explain why a person of ordinary skill in the art would have thought to modify IS-95 in this way.

Accordingly, Respondents have not met their burden to adduce clear and convincing evidence that claims 2 and 3 are obvious.

Additional claim limitations.

Even if Respondents were correct that it would have been obvious to modify IS-95 as discussed above, IS-95 as modified would still not disclose several claim elements needed for invalidation. First, the Registration Message of IS-95 is not the claimed "message." Claim 1 requires that the message indicates that the handset wants to establish a communication channel with the base station. JX-0006 ('830 patent) at cl. 1. The Registration Message provides no such indication. CX-1524C (Haas RWS) at Q124. In fact, Mr. Lanning agrees that "IS-95-A discloses that a mobile device sends a Mobile Origination Message when the user places a call," and that "[t]he Mobile Origination [M]essage sent in IS-95-A results in the establishment of a two-way voice channel," which "is a channel for communication between a subscriber unit and a base station." RX-3526C (Lanning WS) at Q222-223. Conversely, Mr. Lanning agrees that "IS-95-A states that registration is the process by which the mobile station notifies the base station of its location, status, identification, slot cycle, etc." *Id.* at Q220 (internal citations omitted). Therefore, the Registration Message cannot be the claimed "message."

Second, IS-95 as modified still would not disclose the "portions of a same sequence of chips" limitation because, as discussed above, the I and Q channel short PN codes need to be repeated multiple times to produce the Registration Message. CX-1524C (Haas RWS) at Q102. Therefore, even with their proposed modifications to IS-95, Respondents have not shown that IS-95 renders obvious the asserted claims of the '830 patent.

iv. Anticipation Analysis of the '636 Patent

The "subsequent to the subscriber unit receiving the indication" Limitation.

IS-95 does not disclose a transmission sent "subsequent to the subscriber unit receiving the indication." The Registration Message and the Mobile Origination Message are independent events. CX-1524C (Haas RWS) at Q83. As shown above, a handset in IS-95 may send the Mobile Origination Message before, or independent of, a Registration Message during (i) implicit registration, (ii) aborted registration, and (iii) disabled/delayed power-up registration. IS-95 therefore fails to disclose this limitation of the asserted '636 patent claims.

The "each of the transmissions is derived from a first length of a plurality of chips" and "a subsequent transmission derived from a second length of the plurality of chips" Limitations.

The '636 asserted claims require that each of the successively sent transmissions is "derived from a first length of a plurality of chips," and that the subsequent transmission is "derived from a second length of the plurality of chips." JX-0007 ('636 Patent) at cl. 1. Respondents' arguments regarding the validity of limitations is the same as their theory for the "portions" limitation of the '830 patent, and thus fails for similar reasons. Respondents point to the I or Q-channel short PN code taught in IS-95 as being the "plurality of chips." *See* RX-3526C (Lanning WS) at Q318. As shown above, assuming that the Registration Message capsule can be two frames long, 1.5 and 2.25 repetitions of the I and Q-channel short PN codes would be used to produce the Registration and Mobile Origination Message capsules, respectively. Inasmuch as the claims require that "the first length is less than the second length," they also require that the Registration Messages be derived from a portion of the "plurality of chips" that is shorter than the plurality's entire length. In fact, each Registration Message is

derived from multiple repetitions of the I and Q-channel short PN codes, and IS-95 therefore does not disclose that each of the "successively sent transmissions" is derived from a "first length" of the "plurality of chips" or that the "subsequent transmission" is derived from a "second length" of the "plurality of chips."

The "wherein the first length is less than the second length" Limitation.

Each of the asserted claims of the '636 patent requires "a subsequent transmission derived from a second length of a plurality of chips, wherein the first length is less than the second length." As discussed above, Respondents contend that IS-95 teaches this limitation because the Registration Message capsule is only two frames, whereas the Origination Message capsule is three frames. RX-3526C (Lanning WS) at Q352. Nevertheless, it has not been shown that a person of ordinary skill in the art would have understood these message capsules to be different lengths, inasmuch as the evidence shows disagreement as to the length of these message capsules. *See* CX-1524C (Haas RWS) at Q162.

v. Obviousness Analysis of the '636 Patent

With respect to Respondents' obviousness position for the '636 claims, it is argued that a person of ordinary skill in the art would have found it obvious to split the preamble from the message. *See* RX-3526C (Lanning WS) at Q388. This argument fails for the same reasons it failed with respect to the alleged obviousness of the '830 claims discussed above, *i.e.*, (i) it was rejected by Judge Luckern in the 613 Investigation, (ii) it ignores the express teachings of IS-95, and (iii) the record evidence does not show, clearly and convincingly, that the claims at issue are obvious.

b. Lucas in Combination with IS-95-A

Another reference on which Respondents rely to show invalidity of the '830 asserted claims is an article teaching a random access procedure, "Synchronisation Procedure in Up & Down-Link in the CoDiT Testbed Reference" by P. Lucas, which was presented at the RACE Mobile Telecommunications Workshop in Amsterdam on May 17-19, 1994 (RX-0250) ("Lucas").[24]

Lucas provides a general outline of a synchronization procedure used in a testbed. CX-1524C (Haas RWS) at Q181. Respondents argue that if IS-95 fails to disclose the "only subsequent" and "message" limitations of the '830 asserted claims, it would have been obvious to combine Lucas with IS-95 so that the preambles of Lucas are used for the "successive transmissions," and the "normal IS-95 procedure" of sending the Registration Message is used for the subsequently sent "message." *See* RX-3526C (Lanning WS) at Q527. Respondents' argument fails for several reasons.

First, combining Lucas with IS-95 creates leads to two deficiencies as to claim limitations: (i) the preambles of Lucas are not "produced using different sequences of chips," and (ii) the preambles of Lucas and the Registration Message of IS-95 are not produced using "portions of a same sequence of chips." As determined by Judge Luckern in the 613

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[24] The testimony of Dr. Esa Malkamaki (RX-3525), along with the exhibits discussed in his testimony (RX-0728 (RACE Mobile Workshop, Amsterdam, May 17-19, 1994, Volume 1); RX-3432 (Preparation of Amsterdam RACE Mobile Workshop); RX-3433 (Facsimile Confirmation of Registration at RACE Mobile Workshop); RX-3434 (Entry for RACE Mobile Telecommunications Workshop Publication from Catalog)), demonstrate that the Lucas reference (RX-0250) was publicly available, inasmuch as it was part of RX-0728 (RACE Mobile Workshop, Amsterdam, May 17-19, 1994, Volume 1), which was publicly distributed in May 1994. Moreover, Chief Judge Luckern concluded that the Lucas reference (RX-0250) was prior art to the '004 patent (RX-2951), which is a parent patent to the Power Ramp-up patents. *See* RX-0183 (613 ID) at ZTE800IDC-EXR00005773. No party contests that the Lucas reference is prior art to the Power Ramp-up patents in this investigation.

Investigation, "the Lucas reference discloses a single code sent by the handset during random access." CX-0866C (613 ID) at 135; CX-1524C (Haas RWS) at Q185 (the preambles disclosed in Lucas each use the same Gold code). The Lucas preambles therefore are not produced using different sequences of chips. In addition, Respondents have not shown how the Lucas preambles produced with the Gold code, and the IS-95 Registration Message produced with the I and Q-channel short PN codes, meet the requirement that the "successively sent transmissions" and the "message" be produced from portions of a "same sequence of chips." *See* RX-3526C (Lanning WS) at Q526-527.

Second, the combination of Lucas with IS-95 still does not satisfy the "portions" or "message" limitations. As discussed above, the Registration Message capsules of IS-95 are produced using the entirety of the I and Q-channel short PN codes. Similarly, the Lucas preambles are produced using the entirety, and not just a portion of, the Gold code sequence. RX-0250 (Lucas) at 5-6; CX-1524C (Haas RWS) at Q182-183. Further, as discussed above, the Registration Message of IS-95 does not indicate that the handset wants to establish a communication channel. CX-1524C (Haas RWS) at Q192.

Third, as with their IS-95 obviousness theories, Respondents provide no evidence to show it would have been obvious to a person of ordinary skill in the art to combine IS-95 and Lucas. It is opined that "it would have been obvious to a person of ordinary skill in the art to try the random access procedures developed by Lucas with IS-95-A, as the combinations would have yielded predictable results with reasonable expectations of success," but this assertion does not rise to the level of clear and convincing, which is required for a finding of invalidity. RX-3536C (Lanning WS) at ¶ 526.

c. Dent

Respondents also rely on U.S. Patent No. 5,430,760 to Dent (RX-0248) ("Dent" or "Dent '760") to show obviousness of the asserted Power Ramp-Up patent claims. *See* Resps. Br. at 344-54. Dent was cited by the examiner during the prosecution of the '830 and '636 patents, and the asserted claims were found patentable over Dent. *See* CX-1546 ('830 file history) Notice of Allowance at 3; CX-1547 ('636 file history) Notice of Allowance at 2. Indeed, even in combination with IS-95, Dent discloses the standard prior art approach of sending the preamble along with the message. *See* CX-1524 (Haas WS) at Q61, Q213.

i. Obviousness Analysis of the '830 Patent

The "each of the successively sent transmissions is shorter than the message" Limitation.

The "successively sent transmissions" are not shorter than the "message" because the "call initiation message" and the "uplink acknowledgement message," and in fact, every random access message in Dent, are the same length. RX-0248 (Dent) at col. 8, lns. 38-44; CX-1524C (Haas RWS) at Q221-223. Respondents admit that the random access messages of Dent are the same length, but argue that it would be obvious to vary their lengths. RX-3526C (Lanning WS) at Q459-460. To the contrary, Dent explicitly teaches away from varying the message lengths. RX-0248 (Dent) at col. 8, lns. 38-44; CX-1524C (Haas RWS) at Q221-223. Dent teaches that the messages must all be the same length in order for the messages to match the length of the speech coder frame and to thereby simplify the system. RX-0248 (Dent) at col. 8, lns. 38-44; CX-1524C (Haas RWS) at Q221-223. Respondents point to the codeword "BB" messages that are shorter in length, but these are irrelevant. RX-3526C (Lanning WS) at Q463. Dent discloses that these "BB" messages are used only when transmitting speech traffic after the random access

attempt is complete, not during a random access attempt. RX-0248 (Dent) at col. 8, lns. 41-51; CX-1524C (Haas RWS) at Q228-229.

The "portions of the same sequence of chips" Limitation.

Dent does not disclose that the "call initiation message" and the "uplink acknowledgement message" are produced using "portions of the same sequence of chips," as required by the asserted '830 claims. Dent instead discloses that "each message is scrambled before transmission using a scrambling code," and that different scrambling codes are available. RX-0248 (Dent) at col. 3, lns. 2-5; Fig. 3B. Respondents' argument for why the same scrambling code would be used for both messages is that "[a] person of ordinary skill in the art would understand that once a mobile selects a scrambling code for a random access procedure, the subscriber unit would maintain that scrambling code for all of the associated random access messages." RX-3526C (Lanning WS) at Q481. Notwithstanding the fact that this argument is not supported by the evidence, Respondents have not shown that each random access message is scrambled with only a portion of that same scrambling code. CX-1524C (Haas RWS) at Q254.

ii. Obviousness Analysis of the '636 Patent

As for the '636 patent, Dent does not disclose: (i) that the "successively sent transmissions" are "derived from a first length of a plurality of chips," (ii) that the "subsequent transmission" is "derived from a second length of the plurality of chips," and (iii) that "the first length is less than the second length." The first two limitations are not disclosed for the same reasons, discussed above, that the "portions of a same sequence of chips" limitation of the '830 claims is not disclosed. The remaining limitation is not disclosed for the same reasons that the limitation "each of the successively sent transmissions is shorter than the message" of the '830 claims is not disclosed, as discussed above.

d. Secondary Considerations

With respect to secondary considerations of nonobviousness, InterDigital argues the following:

> Even if Respondents could make out a *prima facie* case of obviousness—and they cannot—Respondents' obviousness defense cannot stand in the face of the overwhelming evidence of secondary considerations of non-obviousness. First, the initial access procedure of asserted claims has been adopted in the 3GPP WCDMA standard, which shows industry acceptance and praise. CX-1524C (Haas) at ¶ 291. Second, there was a "long felt but unsolved need," for the claimed inventions as evidenced by the failed CODIT and ATDMA projects by major telecommunications companies. *Id.* at 294-305. The commercial success of the claimed inventions is evidenced by InterDigital's ability [ ] *Id.* at 306-308. These secondary considerations have gone unrebutted by Respondents. *See generally* RX-3526C (Lanning); Resp. PHB.

Compls. Br. at 127.

The evidence cited by InterDigital fails to establish the requisite nexus between the secondary considerations and the Power Ramp-Up patents. Nevertheless, inasmuch as Respondents have not shown by clear and convincing evidence that the asserted claims are anticipated or rendered obvious in light of the cited prior art references, the secondary considerations play only a minor role in the validity analysis of the '830 and '636 patents.

3. Lack of Written Description

Respondents argue that certain claim limitations of the '830 and '636 patents lack written description support or are outside the scope of the invention. Resps. Br. at 354-73. These disputed claim limitations are addressed in turn below.

a. "successively sent transmissions" and "successively sends transmissions" ('830 and '636 Patents)

Respondents take the position that the claim limitations "successively sent transmissions" and "successively sends transmissions" of claim 1 of the '830 patent and claim 1 of the '636

patent lack written description support "if they are interpreted to cover transmission of a code modulated by data." *See* Resps. Br. at 362-66. As discussed above, the terms "successively sent transmissions" and "successively sent transmissions" were construed to mean "transmits to the base station, one after the other, codes that are shorter than a regular length code." The adopted constructions make clear that the claimed "transmissions" comprise codes which, as discussed above regarding the alleged infringement of these limitations, are not modulated by data. Inasmuch as the terms "successively sent transmissions" and "successively sent transmissions" are not interpreted to cover transmission of a code modulated by data, Respondents' written description arguments are moot.

Nevertheless, if the terms "successively sent transmissions" and "successively sent transmissions" were interpreted to cover transmission of a code modulated by data, it is determined that such an interpretation would not be supported by the specification, for the same reasons discussed above with respect to the construction of the claim terms.

b. "message . . . produced using . . . a same sequence of chips" ('830 Patent) and "subsequent transmission derived from a second length of the plurality of chips" ('636 Patent)

Respondents argue that, inasmuch as the '830 and '636 patents are directed to "initial power ramp-up and synchronization during the establishment of a communication channel," the claim terms "message . . . produced using . . . a same sequence of chips" from the '830 patent and "subsequent transmission derived from a second length of the plurality of chip" from the '636 patent are outside the scope of the invention because the claimed "message" and "subsequent transmission" are not part of the power ramp-up process. *See* Resps. Br. at 366-67 (citing JX-0006 ('830 patent) at col. 4, ln. 67 – col. 5, ln. 3). Respondents also argue that "there is no support in the Power Ramp-up Patents for limitations that are directed to complex

relationships between the chips of a 'message' and the chips of a 'successively sent transmission,'" inasmuch as "The Power Ramp-up Patents . . . provide *no* disclosure regarding a sequence of chips common to a 'successively sent transmission' and 'message.'" *Id.* at 367 (emphasis original).

With respect to Respondents' first argument, that the "message" limitation is outside the scope of the '830 patent, the specification itself makes clear that the claimed invention is directed to "initial power ramp-up and synchronization during the establishment of a communication channel." *See* JX-0006 at col. 4, ln. 63 – col. 5, ln. 3. As disclosed by the specification, the claimed "message" is used during the establishment of a communication channel between the subscriber unit and the base station, and is therefore within the scope of the invention. *See, e.g.*, col. 10, lns. 44-45. Accordingly, Respondents' argument is rejected.

As for Respondents' second argument, the evidence demonstrates that the '830 and '636 patents do in fact disclose using a portion of the access code to product the message. For example, Respondents' expert Mr. Lanning testified that Figure 10 of the patents shows that the access code is modulated by the data of the call setup message. *See* CX-1240C (Lanning Dep. from Inv. No. 337-TA-613) at 204-206; JX-0006 ('830 patent) at col. 10, lns. 8-11 ("The signals output by the data transmitter 88 and the short code and access code transmitter 90 are combined . . . ."). Moreover, InterDigital's experts Drs. Jackson and Haas identified passages from the patents disclosing that the access code and spread call setup message are added together and then transmitted. *See* CX-1309C (Jackson WS) at Q620-621, Q623-686; CX-1524C (Haas RWS) at Q323-357. Accordingly, the record evidence shows that Respondents' written description argument is not persuasive.

V. The Closed-Loop Power Control ('406 and '332) Patents

A. Overview of the Patents and Asserted Claims

1. The '406 Patent

Asserted U.S. Patent No. 7,502,406 ("the '406 patent") is titled, "Automatic Power Control System for a Code Division Multiple Access (CDMA) Communications System." JX-0001 ('406 patent). The '406 issued on March 10, 2009, and the named inventors are Gary Lomp, Fatih Ozluturk, and John Kowalski. *Id.* The '406 patent relates generally to automatic power control for a CDMA system. *Id.* at Abstract. The '406 patent is related to the asserted '332 patent; these two patents together are also referred to as the "Power Control" patents.

InterDigital asserts independent claim 29 of the '406 patent. InterDigital also asserts dependent claims 6, 13, 20, and 26, which depend respectively from independent claims 1, 7, 15, and 21, and dependent claim 22. The relevant claims read as follows:

> **1**. A method for controlling transmission power levels of a code division multiple access (CDMA) subscriber unit, the method comprising:
>
> receiving by the subscriber unit a power control bit on a downlink control channel, the power control bit indicating either an increase or decrease in transmission power level;
>
> transmitting a plurality of channels by the subscriber unit, the plurality of channels including a traffic channel and a reverse control channel;
>
> in response to the received power control bit, adjusting a transmission power level of both the traffic channel and the reverse control channel, wherein the transmission power level of the traffic channel and the reverse control channel are different; and
>
> transmitting the traffic channel and the reverse control channel at their respective adjusted transmit power levels.
>
> **6**. The method of claim 1 wherein the reverse control channel carries at least one power command.

7. A method for controlling transmission power levels of a code division multiple access (CDMA) subscriber unit, the method comprising:

receiving by the subscriber unit a series of power control bits on a downlink channel, each power control bit indicating either an increase or decrease in transmission power level;

transmitting a plurality of channels by the subscriber unit, the plurality of channels including a traffic channel and a reverse control channel;

adjusting a transmission power level of both the traffic channel and the reverse control channel in response to the same bits in the received series of power control bits, wherein the transmission power level of the traffic channel and the reverse control channel are different; and

transmitting the traffic channel and the reverse control channel at their respective adjusted transmit power levels.

13. The method of claim 7 wherein the reverse control channel carries at least one power command.

15. A code division multiple access (CDMA) subscriber unit comprising:

a despreading and demultiplexing device configured to recover a power control bit from a downlink control channel, wherein the power control bit has a value indicating a command to either increase or decrease transmission power level; and

gain devices configured, in response to the received power control bit, to adjust a transmission power level of both a traffic channel and a reverse control channel prior to transmission by the subscriber unit, wherein the transmission power level of the traffic channel and the reverse control channel are different.

20. The CDMA subscriber unit of claim 15 wherein the reverse control channel carries at least one power command.

21. A code division multiple access (CDMA) subscriber unit comprising:

a despreading and demultiplexing device configured to recover a series of power control bits from a downlink channel, wherein each power control bit has a value indicating a command to either increase or decrease transmission power level; and

gain devices configured, in response to the received series of power control bits, to adjust a transmission power level of both a traffic channel and a reverse control channel in response to same bits in the

received series of power control bits prior to transmission by the subscriber unit, wherein the transmission power level of the traffic channel and the reverse control channel are different.

22. The CDMA subscriber unit of claim 21 wherein the downlink channel is a downlink control channel.

26. The CDMA subscriber unit of claim 22 wherein the reverse control channel carries at least one power command.

29. A method for controlling transmission power levels of a code division multiple access (CDMA) subscriber unit, the method comprising:

receiving by the subscriber unit a power control bit on a downlink control channel, the power control bit indicating either an increase or decrease in transmission power level;

transmitting a plurality of channels by the subscriber unit, the plurality of channels including a traffic channel and a reverse control channel;

in response to the received power control bit, adjusting a transmission power level of both the traffic channel and the reverse control channel,

separately adjusting the transmission power level of the traffic channel and the reverse control channel; and

transmitting the traffic channel and the reverse control channel at their respective adjusted transmit power levels.

JX-0001 at col. 14, ln. 58 – col. 15, ln. 8; col. 15, lns. 26-45; col. 15, lns. 66-67; col. 16, lns. 4-16; col. 16, lns. 32-48; col. 16, lns. 63-64; col. 17, lns. 5-22.

2. The '332 Patent

Asserted U.S. Patent No. 7,706,332 ("the '332 patent") is titled, "Method and Subscriber Unit for Performing Power Control." JX-0002 ('322 patent). The '332 patent issued on April 27, 2010, and the named inventors are Fatih Ozluturk and Gary Lomp. *Id.* The '332 patent relates generally to the way subscriber units and base stations communicate to control the power level of transmissions from the base station to a subscriber unit within a cellular CDMA system.

Id. at Abstract. The '332 patent is related to the asserted '406 patent; these two patents together are also referred to as the "Power Control" patents.

InterDigital asserts dependent claims 9, 10, 11, and 14, as well as independent claim 8 from which the claims depend. InterDigital also asserts dependent claims 2, 3, 4, 7, 22, 23, 24, and 27. These claims depend from non-asserted independent claims 1 and 21. The relevant claims read as follows:

> **1**. A code division multiple access subscriber unit comprising:
>
> a circuit, operatively coupled to an antenna, configured to generate power control bits that are included on only one of an in-phase (I) channel or a quadrature (Q) channel; and
>
> the antenna configured to output a radio frequency signal derived at least in part from the I and Q channels.
>
> **2**. A code division multiple access subscriber unit in accordance with claim 1, wherein the circuit is further configured to combine the I and Q channels with a complex sequence.
>
> **3**. A code division multiple access subscriber unit in accordance with claim 2, wherein the combining is by multiplication.
>
> **4**. A code division multiple access subscriber unit in accordance with claim 2, wherein the complex sequence comprises at least two pseudo noise sequences.
>
> **7**. A code division multiple access subscriber unit in accordance with claim 1, wherein the circuit is further configured to generate pilot bits; wherein the radio frequency signal is derived at least in part from the pilot bits.
>
> **8**. A code division multiple access subscriber unit, comprising:
>
> an antenna configured to receive a first radio frequency signal; and
>
> a circuit, operatively coupled to the antenna, configured to generate power control bits in response to the first radio frequency signal, wherein the circuit is further configured to establish an in-phase (I) pre-spread channel and a quadrature (Q) pre-spread channel, such that

the power control bits are included on only one of the I pre-spread channel or the Q pre-spread channel;

wherein a second radio frequency signal output by the code division multiple access subscriber unit is derived at least in part from the I and Q pre-spread channels.

9. A code division multiple access subscriber unit in accordance with claim 8, wherein the circuit is further configured to combine the I and Q pre-spread channels with a complex sequence.

10. A code division multiple access subscriber unit in accordance with claim 9, wherein the combining is by multiplication.

11. A code division multiple access subscriber unit in accordance with claim 9, wherein the complex sequence comprises at least two pseudo noise sequences.

14. A code division multiple access subscriber unit in accordance with claim 8, wherein pilot bits are included on at least one of the I and the Q pre-spread channels.

21. A code division multiple access subscriber unit comprising:

circuitry configured to receive a first radio frequency signal and generate power control bits in response to the first radio frequency signal; wherein the circuitry is further configured to produce an in-phase (I) channel and a quadrature (Q) channel; wherein only one of the I channel or the Q channel includes the power control bits; wherein the circuitry is further configured to produce a second radio frequency signal including an I component and a Q component derived from the I channel and the Q channel; wherein the circuitry is further configured to transmit the second radio frequency signal.

22. A code division multiple access subscriber unit in accordance with claim 21, wherein the circuitry is further configured to combine the I and Q channels with a complex sequence.

23. A code division multiple access subscriber unit in accordance with claim 22, wherein the combining is performed by multiplication.

24. A code division multiple access subscriber unit in accordance with claim 22, wherein the complex sequence comprises at least two pseudo noise sequences.

27. A code division multiple access subscriber unit in accordance with claim 21, wherein the circuitry is further configured to generate pilot bits;

wherein the second radio frequency signal is derived at least in part from the pilot bits.

JX-0002 at col. 101, lns. 6-22; col. 101, lns. 33-60; col. 102, lns. 4-6; col. 102, lns. 39-63; col. 104, lns. 1-4.

B. Claim Construction

1. Level of Ordinary Skill

A person of ordinary skill in the art in the asserted '406 and '332 patents would have at least an undergraduate or postgraduate degree in electrical engineering (or an equivalent subject), together with at least two years of postgraduate experience in CDMA communications, such as academia or industry, or equivalent training. *See* CX-1310C (Prucnal WS) at Q84.[25]

2. Construction of Disputed Claim Terms

a. "power control bit" ('406 and '332 patents)

Claim Term/Phrase	InterDigital's Construction	Respondents' Construction
power control bit	binary information relating to power control	single-bit power control information transmitted at an APC data rate equivalent to the APC update rate

The term "power control bit" appears in all asserted claims of the '406 and '332 patents. *See, e.g.*, JX-0001 ('406 patent) at col. 14, ln. 58 – col. 15, ln. 8 (claim 1); JX-0002 ('332 patent) at col. 101, lns. 6-13 (claim 1).

[25] Respondents contend that a person of ordinary skill in the art of the '406 and '332 patents would have a Ph.D. in electrical engineering or an equivalent degree, with four years of work experience in the design of wireless communications systems. *See* Resps. Br. at 168. The parties have not identified any way in which differences in their proposed definitions of the level of ordinary skill in the art affect issues in this investigation. See Compls. Br. at 129; Resps. Br. at 168.

InterDigital construes this term to mean "binary information relating to power control." *See* Compls. Br. at 129-31. Respondents construe this term to mean "single-bit power control information transmitted at an APC[26] data rate equivalent to the APC update rate." *See* Resps. Br. at 169-74; Compls. Br. at 129.

As proposed by Respondents, the term "power control bit" is construed to mean "single-bit power control information transmitted at an APC data rate equivalent to the APC update rate." This construction is supported by the language of the claims, as well as by the intrinsic evidence.

Although the specifications of the '406 and '332 patents do not contain the specific term "power control bit," they do describe the way in which the claimed invention conveys power control, or APC, information:

> The APC signal is transmitted as one bit signals on the APC channel. The one-bit signal represents a command to increase (signal is logic-high) or decrease (signal is logic-low) the associated transmit power. In the described embodiment, the 64 kbps APC data stream is not encoded or interleaved.

JX-0001 ('406 patent) at col. 6, lns. 47-51.

> APC information is always conveyed as a single bit of information, and the APC Data Rate is equivalent to the APC update rate. The APC update rate is 64 kb/s.

JX-0001 at col. 9, lns. 46-48; JX-0002 at col. 67, lns. 43-45.

> The APC bits are transmitted as one bit up or down signals on the APC channel.

JX-0002 ('332 patent) at col. 64, lns. 11-13.

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[26] "APC" is an acronym for "adaptive power control." *See, e.g.*, JX-0001 at col. 5, lns. 48-50; JX-0002 at col. 3, lns. 26-28.

Moreover, the flow chart depicted in Figure 4 of the '406 patent indicates that "RCS[27] transmits the APC bit to SU[28] in the forward APC channel," "SU modem receives the single APC bit," and "SU increases or decreases its transmit power according to the APC bit received." JX-0001 at Fig. 4. Similarly, Figure 27 of the '332 patent teaches that "SU modem hard limits the combined error signal to form a single APC bit," "SU transmits the APC bit to RCS in the reverse APC channel," and "RCS modem receives the single APC bit." JX-0002 at Fig. 27.

Not only do the specifications of the '406 and '332 patents support Respondents' proposed construction of "power control bit," but their proposed construction is also consistent with the language of the claims. For example, claim 1 of the '406 patent, from which asserted claim 6 depends, requires that the claimed invention adjust the transmission power of the mobile device "in response to *the* received power control bit." JX-0001 at col. 14, ln. 58 – col. 15, ln. 8 (emphasis added). Further, claim 7 of the '406 patent, from which asserted claim 13 depends, claims a method in which a subscriber unit receives "a series of power control bits on a down link channel, each power control bit indicating either an increase or decrease in transmission power level." JX-0001 at col. 15, lns. 28-45.

Accordingly, the claims and specifications of the '406 and '332 patents make clear that the claimed "power control bit" comprises a single bit of power control information, and that this single bit is transmitted at an APC data rate equivalent to the APC update rate.

InterDigital argues that Respondents' proposed construction for "power control bit" improperly imports limitations from the specifications of the '406 and '332 patents, and that InterDigital's proposed construction should be adopted instead. *See* Compls. Br. at 129. It is

---

[27] "RCS" is an acronym for "radio carrier station." JX-0001 at col. 3, lns. 48-51.

[28] "SU" is an acronym for "subscriber unit." JX-0001 at col. 3, lns. 46-47.

argued, *inter alia*, that InterDigital's proposed construction represents the plain and ordinary meaning of "power control bit" as understood by a person of ordinary skill in the art, and that "even Respondents' expert (Dr. Williams) agreed that a bit 'is simply a representation of a piece of information that has two states.'" *Id.* at 129-30 (citing Williams Tr. 1204). It is further argued that Respondents' reliance on portions of the specifications (quoted above) to support their proposed construction is improper, inasmuch as the portions "never even [use] the term power control bit or power control bit 'means.'" *Id.* at 130. InterDigital's arguments are not persuasive, however.

InterDigital's proposed construction seeks to construe the term "bit" to include any type of binary information, even when that information is not a "bit." InterDigital therefore argues that "a single bit of information is not limited to a single bit," but does not explain why the express language in the claim term "power control bit" should be rewritten to include power control information that is not in the form of a bit. *See* Compls. Br. at 131. Moreover, even though Respondents' expert Dr. Williams did state that a bit is "a representation of a piece of information that has two states," the fact that a bit can represent binary information does not mean that any representation of binary information comprises a bit. *See id.* at 130.

Accordingly, the term "power control bit" from the asserted '406 and '332 patents is construed to mean "single-bit power control information transmitted at an APC data rate equivalent to the APC update rate."

b. ". . . separately adjusting . . ." ('406 patent)

Claim Term/Phrase	InterDigital's Construction	Respondents' Construction
in response to the received power control bit, adjusting a transmission power level of both	adjusting a transmission power level of both the traffic channel and the reverse control in	separately adjusting the transmission power level of both the traffic channel

the traffic channel and the reverse control channel, separately adjusting the transmission power level of the traffic channel and the reverse control channel	response to the received power control bit and separately adjusting the transmission power level of the traffic channel and the reverse control channel	and the reverse control channel in response to the received power control bit

Asserted claim 29 of the '406 patent includes the following two paragraphs:

> in response to the received power control bit, adjusting a transmission power level of both the traffic channel and the reverse control channel,
>
> separately adjusting the transmission power level of the traffic channel and the reverse control channel;

See JX-0001 at col. 17, lns. 5-22.

InterDigital construes the "adjusting" and "separately adjusting" limitations of these paragraphs to mean "adjusting a transmission power level of both the traffic channel and the reverse control in response to the received power control bit and separately adjusting the transmission power level of the traffic channel and the reverse control channel." *See* Compls. Br. at 132-35. Respondents take the position that these limitations should be construed to mean "separately adjusting the transmission power level of both the traffic channel and the reverse control channel in response to the received power control bit." Resps. Br. at 174-78. The dispute between the parties centers on whether the phrase "in response to" modifies "separately adjusting" as well as "adjusting."

As proposed by InterDigital, the claim term "in response to the received power control bit, adjusting a transmission power level of both the traffic channel and the reverse control channel, separately adjusting the transmission power level of the traffic channel and the reverse control channel" is construed to mean "adjusting a transmission power level of both the traffic channel and the reverse control in response to the received power control bit and separately

adjusting the transmission power level of the traffic channel and the reverse control channel." This construction is supported by the language of the claim itself, as well as by the intrinsic evidence.

The contested portions of claim 29 comprise two paragraphs: the first requires "in response to the received power control bit, adjusting a transmission power level of both the traffic channel and the reverse control channel," and the second requires "separately adjusting the transmission power level of the traffic channel and the reverse control channel." JX-0001 at col. 17, lns. 15-19. These two paragraphs are separated by a comma, line break, and first line indent, signifying that the two paragraphs describe separate limitations. *See id.* Accordingly, "in response to," which is located in the first paragraph, does not modify "separately adjusting," which is located in the second paragraph. Moreover, in the event that "in response to" were read to modify "separately adjusting," the "adjusting" step would be rendered superfluous, inasmuch as requiring both adjustment and separate adjustment in response to the received power control bit is the same as requiring only the latter. As stated by the Federal Circuit, "claims are interpreted with an eye toward giving effect to all terms in the claim." *Cat Tech LLC v. TubeMaster, Inc.*, 528 F.3d 871, 885 (Fed. Cir. 2008) (citation omitted).

InterDigital's proposed construction is also consistent with the preferred embodiments of the '406 patent described in the specification. In particular, Figure 5B of the '406 patent shows that the reverse traffic and control channels are separately adjusted by amplifiers 555 and 552, respectively. JX-0001 at col. 12, lns. 15-20. These channels are then combined by adder 556 and input to variable gain amplifier ("VGA") 554. *Id.* The VGA adjusts the transmission power level of the combined signal, *i.e.*, the transmission power level of the reverse traffic and control channels, in response to the received power control bit based on the output of integrator 543. *Id.*

at col. 11, lns. 45-49; col. 12, lns. 19-21. By contrast, Respondents' proposed construction does not cover this embodiment of the '406 invention, and Respondents do not contend otherwise. *See* Resps. Br. at 174-78; Resps. Reply at 64-68.

In opposition to InterDigital's proposed construction, Respondents argue that "[g]iven the ['406] patent's exclusive focus on closed loop power control, one of ordinary skill in the art would understand that the claimed separate adjustment of the transmission power level of the traffic channel and the reverse control channel would necessarily be in response to the received power control bit because responding to such feedback is what distinguishes closed loop power control from open loop power control." Resps. Br. at 175. Respondents do not provide, however, any factual or legal basis for construing claim limitations based on the "exclusive focus" of a patent. *See id.*

Respondents also argue that the prosecution history of the '406 patent weighs in favor of adopting their proposed construction rather than InterDigital's proposed construction, inasmuch as "the examiner initially allowed the claims on the basis that the prior art did not show 'in response to the received power control bit, adjusting a transmission power level of both the traffic channel and the reverse control channel, wherein the power level of the traffic channel and the reverse control channel are separately adjusted.'" Resps. Br. at 175-76 (citing JX-0008 ('406 file history) at IDC-ITC-016382366-71) (emphasis omitted). A reading of the prosecution history, however, shows that Respondents' argument is not persuasive.

On January 29, 2007, the applicants amended original claim 15 of the application for the '406 patent as follows:

> in response to the received power control bit, adjusting a transmission power level of both the traffic channel and the reverse control channel, wherein <u>the power level of the traffic channel and the reverse control</u>

> channel are separately adjusted ~~a required signal to interference ration (SIR) for the traffic channel and the reverse control channel differ~~;

JX-0008 ('406 file history) at IDC-ITC-016382354. In the remarks accompanying this amendment, the applicants stated, "With respect to the new language, separate adjustment of the channels is supported, such as by, Figure 5b elements 552-555." JX-0008 at IDC-ITC-016382352. The examiner allowed the amended claim in April 2007, stating as follows:

> The present invention relates to method and apparatus for power controlling in the reversed channel. Particularly, prior art of record, taking individually or collectively, fails to fairly teach such method and apparatus, including "in response to the received power control bit, adjusting a transmission power level of both the traffic channel and the reverse control channel, wherein the power level of the traffic channel and the reverse control channel are separately adjusted", as claimed in independent claim 15 . . . .

Id. at IDC-ITC-016382370. Neither the applicants nor the examiner indicated that the claim element required separate adjustment to the traffic channel and the reverse control channel in response to the received power control bit.

After the allowance described above, but before the '406 patent issued, the applicants amended the pending claims. First, the "separately adjusted" language was removed from pending claim 15, which was later renumbered as issued claim 1. JX-0008 at IDC-ITC-016383499. Second, new claim 29 was added, and included the two paragraphs at issue in this claim construction dispute. *Id.* at IDC-ITC-016383505. The examiner allowed these claims in January 2008, again without indicating that the claims required separate adjustment to the traffic channel and the reverse control channel in response to the received power control bit. *Id.* at IDC-ITC-016385109.

Accordingly, the claim term "in response to the received power control bit, adjusting a transmission power level of both the traffic channel and the reverse control channel, separately adjusting the transmission power level of the traffic channel and the reverse control channel" is construed to mean "adjusting a transmission power level of both the traffic channel and the reverse control in response to the received power control bit and separately adjusting the transmission power level of the traffic channel and the reverse control channel."

c. "in response to . . . wherein the transmission power level of the traffic channel and the reverse control channel are different" ('406 patent)

Claim Term/Phrase	InterDigital's Construction	Respondents' Construction
in response to . . . wherein the transmission power level of the traffic channel and the reverse control channel are different (claims 6, 13, 20, 26)	These claims do not require different transmission power levels in response to the received power control bit.	These limitations require setting different transmission power levels for the traffic channel and the reverse control channel in response to the received power control bit(s).

The independent claims from which asserted claims 6, 13, 20, and 26 of the '406 patent depend include limitations specifying that "the transmission power level of the traffic channel and the reverse control channel are different." The relevant claim limitations are as follows:

Claim 1 (from which claim 6 depends):

> in response to the received power control bit, adjusting a transmission power level of both the traffic channel and the reverse control channel, wherein the transmission power level of the traffic channel and the reverse control channel are different;

Claim 7 (from which claim 13 depends):

> adjusting a transmission power level of both the traffic channel and the reverse control channel in response to the same bits in the received series of power control bits, wherein the transmission power level of the traffic channel and the reverse control channel are different;

Claim 15 (from which claim 20 depends):

> gain devices configured, in response to the received power control bit, to adjust a transmission power level of both a traffic channel and a reverse control channel prior to transmission by the subscriber unit, wherein the transmission power level of the traffic channel and the reverse control channel are different.

Claim 21 (from which claim 26 depends):

> gain devices configured, in response to the received series of power control bits, to adjust a transmission power level of both a traffic channel and a reverse control channel in response to same bits in the received series of power control bits prior to transmission by the subscriber unit, wherein the transmission power level of the traffic channel and the reverse control channel are different.

See JX-0001 at col. 14, ln. 58 – col. 15, ln. 8; col. 15, lns. 28-45; col. 16, lns. 4-16; col. 16, lns. 34-48.

The parties dispute whether the difference in the transmission power level of the traffic and control channels must be "in response to" the claimed power control bits. InterDigital takes the position that "[the] claims do not require different transmission power levels *in response to* the received power control bit." *See* Compls. Br. at 136-37 (emphasis original). Respondents take the position that "these limitations require setting *different* transmission power levels for the traffic channel and the reverse control channel *in response to the received power control bit(s)*." *See* Resps. Br. at 178-80 (emphasis original).

The parties' arguments with respect to these disputed limitations mirror their arguments with respect to the ". . . separately adjusting . . ." limitation discussed above. *See* Compls. Br. at 136-37; Resps. Br. at 178-80. Accordingly, for the same reasons set forth in the section discussing the ". . . separately adjusting . . ." limitation, these disputed limitations are construed in accordance with InterDigital's proposed construction, *i.e.*, they do not require different transmission power levels in response to the received power control bit(s).

d. "gain devices configured . . . to adjust a transmission power level of both a traffic channel and a reverse control channel" ('406 patent)

Claim Term/Phrase	InterDigital's Construction	Respondents' Construction
gain devices configured . . . to adjust a transmission power level of both a traffic channel and a reverse control channel (claims 20, 26)	These claims do not require that the transmission power levels be adjusted separately.	To the extent the parties dispute the construction of these limitations, these limitations require setting transmission power levels for the traffic channel and the reverse control channel separately.

Claims 15 and 21 of the '406 patent, from which asserted claims 20 and 26 depend, recite the following limitations:

> Claim 15 (from which claim 20 depends):
>
> > gain devices configured, in response to the received power control bit, to adjust a transmission power level of both a traffic channel and a reverse control channel . . .
>
> Claim 21 (from which claim 26 depends):
>
> > gain devices configured, in response to the received series of power control bits, to adjust a transmission power level of both a traffic channel and a reverse control channel . . .

See JX-0001 at col. 16, lns. 4-16; col. 16, lns. 34-48.

With respect to these limitations, InterDigital argues:

> Claims 20 and 26 do not require that the gain devices adjust the transmission power level of the reverse traffic and control channels individually in response to one or more received power control bits. Respondents incorrectly import the word 'individually' into the claims. But nothing in the claims requires the gain devices to adjust the transmission power level of the channels individually. To the contrary the claims say 'gain devices configured, in response to the received [series of] power control bit[s], to adjust a transmission power level of both a traffic channel and a reverse control channel.'"

Compls. Br. at 138.

Respondents disagree that these limitations need construction: "Neither party has proposed a construction of 'gain devices', and to the extent the parties dispute the meaning of the 'gain devices' limitations as they relate to Respondents' non-infringement arguments, the dispute is fully addressed above as part of the 'in response to' limitations." Resps. Br. at 180.

Inasmuch as the parties' arguments with respect to these limitations mirror their arguments with respect to the ". . . separately adjusting . . ." and "in response to . . ." limitations discussed above, these disputed limitations are construed in accordance with InterDigital's proposed construction, *i.e.*, they do not require that the transmission power levels of the traffic and control channels be adjusted separately.

C. Infringement

1. The '406 and '332 Accused Products

InterDigital argues that all accused products in this investigation infringe asserted claims of the '406 and '332 patents. *See* Compls. Br. at 139-41. The accused products can be divided into two groups based on the 3G standard they support, *i.e.*, WCDMA or CDMA2000. *See id.* at 139. InterDigital accuses the WCDMA products of infringing claims 13 and 26 of the '406 patent, and accuses the CDMA2000 products of infringing claims 6, 20, and 29 of the '406 patent. *Id.* InterDigital further accuses all products of infringing claims 2-4, 7-11, 14, 22-24, and 27 of the '332 patent. *Id.*

The accused WCDMA products comply with technical specifications set forth by the Third Generation Partnership Project ("3GPP"), and include Qualcomm-based WCDMA products, Huawei HiSilicon products, Nokia RapuYama products, Nokia Rapido Yawe Products, and Nokia RAP3G products. *See* Compls. Br. at 139 (citing CX-1310C (Prucnal WS) at Q450

(RapuYama), Q763 (RapidoYawe), Q1083 (RAP3G), Q1400, Q1645, Q1655 (Qualcomm), Q1672 (HiSilicon)).

The specific model numbers of the Nokia WCDMA products accused of infringing the '406 and '332 patents are as follows: Vertu (RM-389V), Vertu (RM-582V), 6350 (RM-455), C5-03 (RM-697; RM-719), C5-04 (RM-720), E6 (RM-609), 500 (RM-750; RM-751), C6-01 (RM-601; RM-718), 701 (RM-774), n9-00 (RM-696; RM-716), X3-02 (RM-639), E73 (RM-658), C3-01 (RM-640), N900 (RX-51), E72 (RM-515; RM-529; RM-530), Vertu (RM-681V), X7-00 (RM-659; RM-707), E7 (RM-626; RM-664), Astound C7 (RM-675), Astound C7 (RM-691), Vertu (RM-589V), N8 (RM-596), E5 (RM-634), 700 (RM-670), 6700 Slide (RM-577), Pureview 808 (RM-807), X6 (RM-559; RM-551), N97 (RM-505; RM-507), 6790 Slide (RM-492), 6790 Slide (RM-599), E71 (RM-346; RM-357), N97 mini (RM-555; RM-553), 5230 (RM-594), 5230 (RM-593), E63-2 (RM-437; RM-449), C6-00 (RM-624; RM-612), C2-01 (RM-721; RM-722), Vertu (RM-266V), 2730 (RM-579; RM-578), 710 Lumia (RM-809), 800 Lumia (RM-801; RM-819), 900 Lumia (RM-808; RM-823), 7230 (RM-598), 3710 (RM-509; RM-510), Lumia 810 (RM-878), Lumia 820 (RM-824), Lumia 822 (RM-845), Lumia 920 (RM-820), and Booklet 3G (RX-75). Compls. Br. at 139-40 (citing CX-1310C (Prucnal WS) at Q15-16).

The specific model numbers of the WCDMA Huawei products accused of infringing the '406 and '332 patents are as follows: U9000, U9000-81 (IDEOS X6, Ascend X), Elom, MU509, U2800A, U3200, U3200-9, M865, E366, E368, EM820U, EM820W, B683, EM770U, EM770W, Ernie (UMTS), B890-66, Gobi3000, (UMTS), E392, MediaPAD (S7-303u), MediaPAD (S7-Pro), U8800, U8800-51, UMG587 (E587u-5), U8680 (MyTouch), U8730 (U8730+), U8651T (Prism), U8652 (Fusion), Ascend Y200 (U8655), Ascend Y201 (U8666), Y210 (U8686), U8500, U8500-3, W1 (U8835), MediaPad 10 FHD (S10-102u), S7 (S7-104), S7-

Slim (S7-202U), MediaPad 7 Lite (S7-932u), U8651s (Summit), and the U8665 (Fiji). Compls. Br. at 140 (citing CX-1310C (Prucnal WS) at Q20-21).

The specific model numbers of the WCDMA ZTE products accused of infringing the '406 and '332 patents are as follows: AC30 (Fivespot), F160 (P622F2), F555/P671A91 (Wombat), MF683, P671B30 (Z331) (Morgan), P671B40 (Z221) (Michael), P736T (Avail), Z431 (Spider), WF720, MF61 (4G Hotspot), and Z990 (Merit). Compls. Br. at 140 (citing CX-1310C (Prucnal WS) at Q25-26).

The accused CDMA2000 products comply with technical specifications set forth by the Third Generation Partnership Project 2 ("3GPP2"), and all include Qualcomm baseband and radio frequency ("RF") chips. *See* Compls. Br. at 140 (citing CX-1310C (Prucnal WS) at Q2240, Q2510).

The specific model numbers of the CDMA2000 Nokia products accused of infringing the '406 and '332 patents are as follows: 7705 Twist (RM-526), Lumia 719 (RM-817), and Lumia 800C (RM-802). Compls. Br. at 141 (citing CX-1310C (Prucnal WS) at Q15-16).

The specific model numbers of the CDMA2000 Huawei products accused of infringing the '406 and '332 patents are as follows: M865, M920 (Huawei Activa), M650 (Express), M660, Y210 (C8686), MediaPAD (S7-303u), MediaPAD (S7-Pro), E397u-53, E397Bu-502, C6070 (M615; Pillar), C6071 (M635), F256, F259, FT2260 (Verizon HomePhoneConnect), M735, EC5072, EC5805, M886 (C8860), EC1705, EM660, MC509, MC323, Ernie (CDMA), Gobi3000 (CDMA), F253, M835, M931 (sunshine), and Y300C. Compls. Br. at 140-41 (citing CX-1310C (Prucnal WS) at Q20-21).

The specific model numbers of the CDMA2000 ZTE products accused of infringing the '406 and '332 patents are as follows: A210 (CAPTR II), A310 (MSGM8 II), A410 (TXTM8

3G), A415 (Memo), A605, AC30 (Fivespot), AC3781 (Cradlepoint), D930 (Chorus), EuFi890 (Jetpack EuFi890), F350 (Salute), F450 (Adamant), MC2261 (Wombat), MC2718 (Wombat), N850 (Fury), N859 (Render (aka "Tania")), N860 (Warp), N910 (Anthem (LTE)), V55 (Optik), X500 (Score (aka "Score M")), N861 (Warp II), V66 (Turbine 7.0), V8000 (Engage), N9500 (Flash), and X501 (Groove). Compls. Br. at 141 (citing CX-1310C (Prucnal WS) at Q25-26).

2. Operation of the WCDMA Products

[

]. *See* CX-0023 (3GPP TS 25.213) at § 3.2; CX-0234 (3GPP TS 25.214) at § 5.1.2.1 (["

"]). [

]." CX-0327 (3GPP TR 21.801) at § 3.1, Annex E.

[

]. CX-0232 (3GPP TS 25.211) at §§ 5.2.1, 5.3.2; Bims Tr. at 1295; RX-3998C (Bims WS) at Q102-105, 109, Q112-114. [

]. CX-0232 (3GPP TS 25.211) at § 5.3.2. Any channel transmitted by subscriber units is an uplink channel. *Id.* at § 5.2.1. [

]

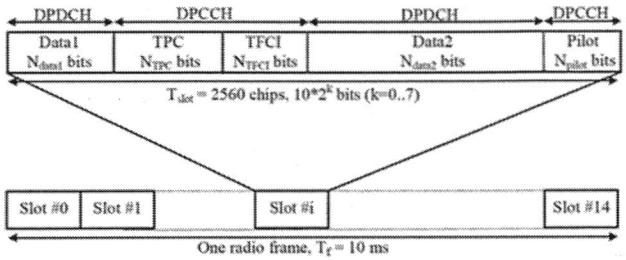

Figure 9: Frame structure for downlink DPCH

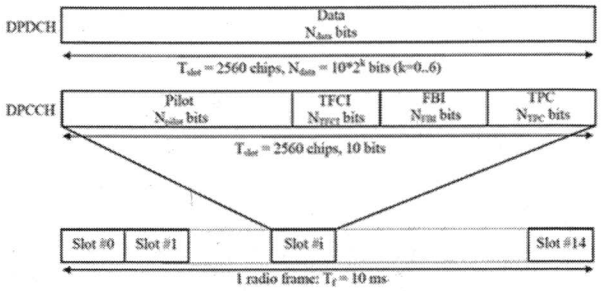

Figure 1: Frame structure for uplink DPDCH/DPCCH

Id. at §§ 5.3.2, 5.2.1. [

]. *Id.* at §§ 3.2, 5.3.2. [

]:

Table 13: TPC Bit Pattern

TPC Bit Pattern			Transmitter power control command
N_{TPC} = 2	N_{TPC} = 4	N_{TPC} = 8	
11	1111	11111111	1
00	0000	00000000	0

Id. at § 5.3.2. [

].

CX-0234 (3GPP TS 25.214) at §§ 5.1.2.2.1-.3. [

]. *Id.* at § 5.1.2.2.2. [

]. *Id.* at § 5.1.2.2.3.

[

]. *Id.* at §§ 5.1.2.2.1, 5.1.2.5.1. [

]. *Id.*

[

]. *Id.* at § 5.2.1.2.1

[

]:

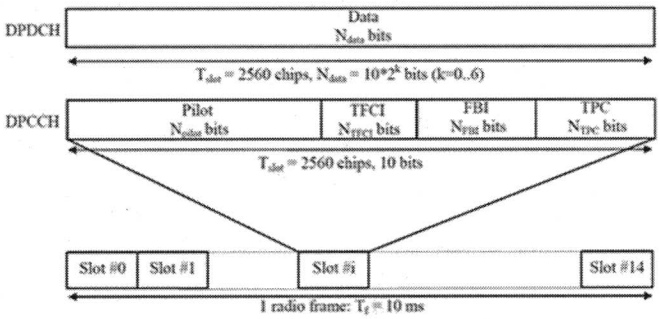

Figure 1: Frame structure for uplink DPDCH/DPCCH

Table 5: TPC Bit Pattern

TPC Bit Pattern		Transmitter power control command
N_{TPC} = 1	N_{TPC} = 2	
1	11	1
0	00	0

CX-0232 (3GPP TS 25.211) at § 5.2.1 (NTPC = 2). [

]:

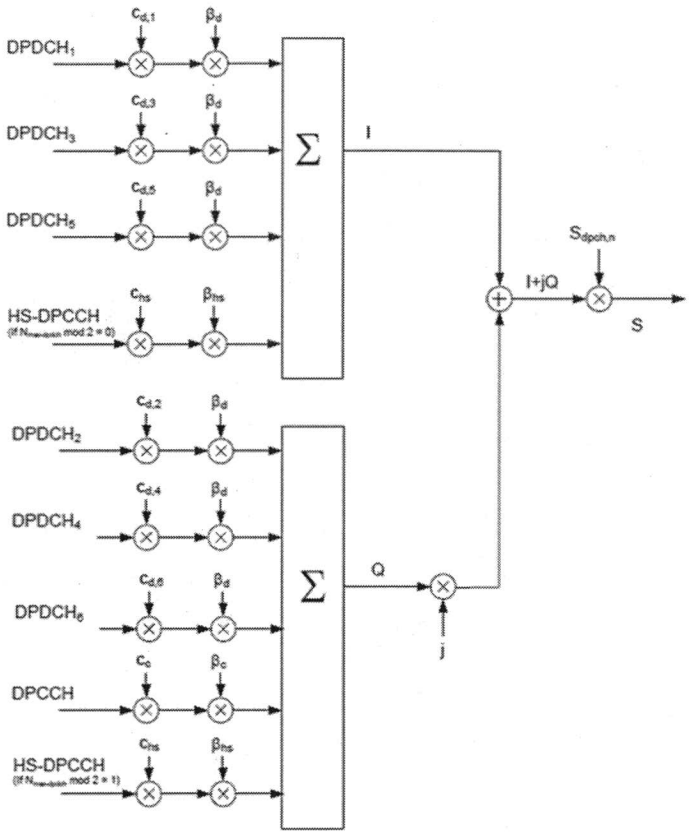

Figure 1: Spreading for uplink DPCCH, DPDCHs and HS-DPCCH

CX-0023 (3GPP TS 25.213) at § 4.2.1. [

]. *Id.* at §§ 4.1, 4.2.1. [

]. *Id.*

[

]. CX-0023 (3GPP TS 25.213) at §§ 4.1, 4.2.1; *see* RX-3529C (Williams WS) at Q100. [

]. *Id.* at § 4.2.1; CX-0232 (3GPP TS 25.211) at §5.3.2. [

]. CX-0234 (3GPP TS 25.214) at §§ 5.1.2.1, 5.1.2.5.

[

]. CX-0234 (3GPP TS 25.214) at §§ 5.1.2.1, 5.1.2.5.

[

]. CX-0023 (3GPP TS 25.213) at §§ 4.1, 4.2.1, 4.3.2. [

] *Id.* at §§ 4.2.1, 4.4.2. [

] *Id.* at §§ 4.1, 4.2.1; *see* RX-3994C (Williams RWS) at Q68-69. [

] CX-0023 (3GPP TS 25.213) at §§ 4.1, 4.2.1; *see* RX-3994C (Williams RWS) at Q68-69.

[

]

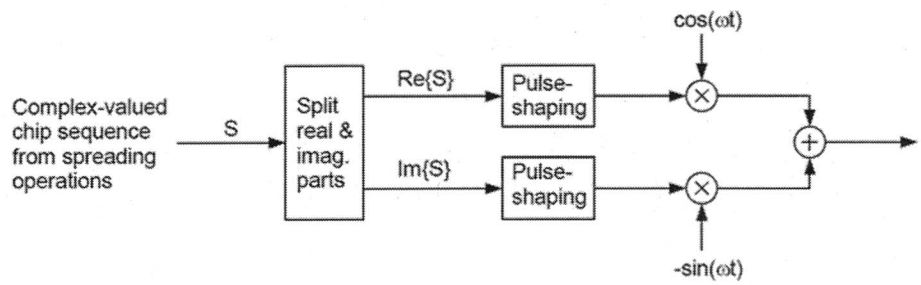

Figure 7: Uplink modulation

CX-0023 (3GPP TS 25.213) at § 4.4.2. [

] *See* CX-1310C (Prucnal WS) at Q292.

[

] *See* CX-1310C (Prucnal WS) at Q2517-2522; CX-1068C (Supp. Ex. A to Nokia's Resp. to InterDigital's 1st Interrogs.); CX-1112C (Ex. C to Huawei Supp. Resp. to InterDigital's 1st Interrogs.); CX-1138C (Corrected Ex. A to ZTE's Amended Supp. Resp. to InterDigital's 1st Interrogs.); CX-0101 (3GPP TS 34.121-1) at §§ 5.4.2, 7.8. [

]

3. Operation of the CDMA2000 Products

[

] *See* CX-0017 (3GPP2 C.S0002) at §§ 1.1, 2.1.2.3 [ ]

[

] *Id.* at xl.

[

] CX-0017 (3GPP2 C.S0002) at § 1.1. [

] *Id.* at § 1.1. [

]

[ ] CX-0017

(3GPP2 C.S0002) at § 1.1 [

] [

]

Id. at § 3.1.3.1.10. [

] *Id.* at

§ 2.1.2.3.2 (Closed Loop Output Power). [

]

Id. at § 2.1.2.3.1.5. [

] *Id.* at § 2.1.2.3.3.2. [

]

Id. at § 2.1.2.3.3.2. [

] *See, e.g.*,

CX-1310C (Prucnal WS) at Q2056. [

] *Id.*

[

] CX-0017 (3GPP2 C.S0002) at §§ 1.1, 2.1.3.1.10 [

] *Id.* at § 2.1.3.1.10 [

]

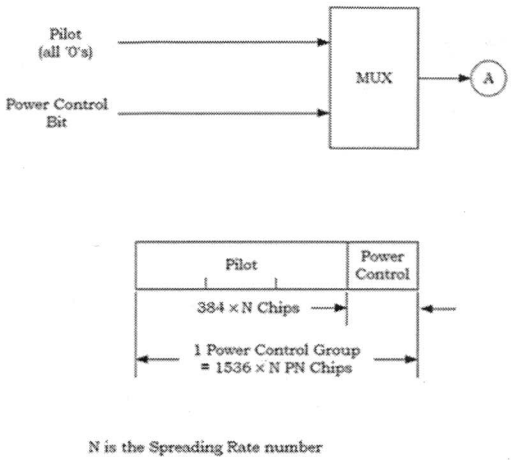

Figure 2.1.3.1.10.1-1. Reverse Pilot Channel Showing the Power Control Subchannel Structure

Id. at fig.2.1.3.1.10.1-1, §§ 2.1.3.1.10.1, 2.1.3.2.2. [

]

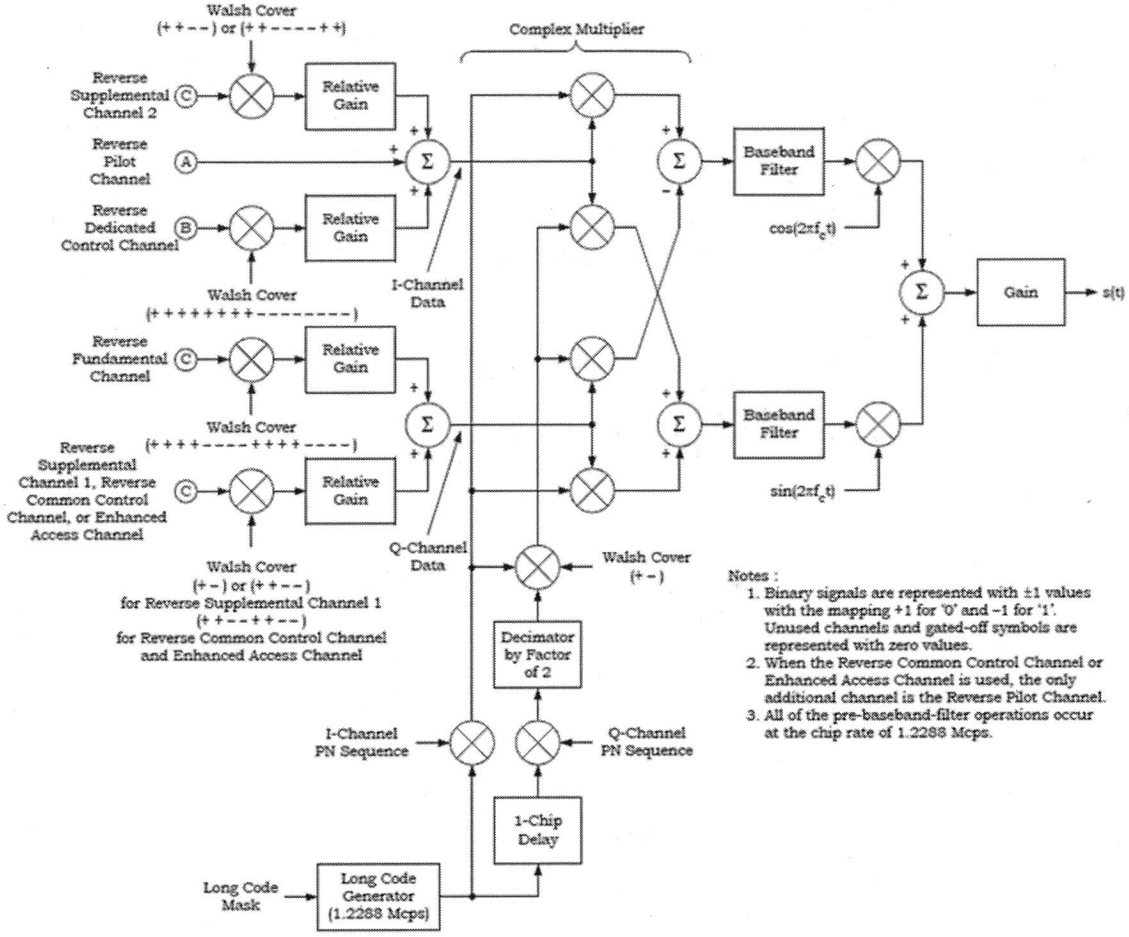

Figure 2.1.3.1.1.1-10. I and Q Mapping for Reverse Pilot Channel, Enhanced Access Channel, Reverse Common Control Channel, and Reverse Traffic Channel with Radio Configurations 3 and 4

Id. at fig.2.1.3.1.1.1-10. [

] *Id.* at fig.2.1.3.1.1.1-10.

[

] *Id.* at fig.2.1.3.1.1.1-10. [

] *Id.* at

fig.2.1.3.1.1.1-10.

[

] *See* RX-3529C (Williams WS) at Q100, Q109. [

] *See* RX-3994C (Williams RWS) at Q75; CX-0017 (3GPP2 C.S0002) at § 2.1.3.1.10, fig.2.1.3.1.1.1-10. [

] *See, e.g.*, CX-1310C (Prucnal WS) at Q2059-2061, Q2124-2127 (discussing, *e.g.*, CX-0017 (3GPP2 C.S0002) at §§ 2.1.2.3, figs.2.1.3.1.1.1-10, 2.1.3.1.1.2-7).

[

] CX-0017 (3GPP2 C.S0002) at fig. 2.1.3.1.1.1-10. [

] *Id.* at fig.2.1.3.1.1.1-10; *see* RX-3529C (Williams WS) at Q100, Q109. [

] *See* RX-3994C (Williams RWS) at Q75-76; CX-0017 (3GPP2 C.S0002) at fig.2.1.3.1.1.1-10. [

] *See* RX-3994C (Williams RWS) at Q75-76; CX-0017 (3GPP2 C.S0002) at fig.2.1.3.1.1.1-10.

[

] *See, e.g.*, CX-1310C (Prucnal WS) at Q2056. [

] CX-0017 (3GPP2 C.S0002) at §§ 2.1.2.3.1.5, 2.1.2.3.3.2. [

] *See* CX-1310C (Prucnal WS) at Q2140-2142.

[

] CX-1310C (Prucnal WS) at Q2517-2520, Q2523-2524; CX-1068C (Supp. Ex. A to Nokia's Resp. to InterDigital's 1st Interrogs.); CX-1112C (Huawei Supp. Resp. to InterDigital's 1st Interrogs.); CX-1138C (ZTE's Amended Supp. Resp. to InterDigital's 1st Interrogs.); CX-0018C (3GPP2 C.S0011-B) at §§ 3.4.4, 3.4.5, 3.4.7, 3.4.9, 4.4.4. [

]

4. Global Infringement Issues

In their infringement analyses, the parties address several issues that apply to multiple claims and/or both the '406 and '332 patents. These global issues will be addressed first, followed by a claim-by-claim infringement analysis.

a. The "power control bit" ('406 and '332 Patents) Limitations

All the asserted claims of the '406 patent require receiving a "power control bit" "indicating either an increase or decrease in transmission power level." *See, e.g.*, JX-0001 ('406

patent) at col. 14, ln. 58 – col. 15, ln. 8 (claim 1). All the asserted claims of the '332 patent require the generation of "power control bits" by the subscriber unit. *See, e.g.*, JX-0002 ('332 patent) at col. 101, lns. 6-13. As explained above, the term "power control bit" is construed to mean "single-bit power control information transmitted at an APC data rate equivalent to the APC update rate." Applying this adopted construction,[

See

RX-3994C (

RX-3994C *see* RX-3531

] Goldberg Tr. 249.

[

] *Id.* 318-320.[29]

[

] *See* CX-0017

(3GPP2 C.S0002) § 2.1.3.1.10.1. [

] *See* Prucnal Tr. 320; RX-3994C (Williams RWS) at Q24-25;

CX-0017 (3GPP2 C.S0002) § 3.1.3.1.10. [

] *See* RX-3994C (Williams RWS) at

Q210-213, Q216.

Inasmuch as power is not adjusted more than once every two bits in WCDMA and CDMA2000 compliant devices, "each power control bit" does not "indicat[e] either an increase or decrease in transmission power level," as required by the adopted claim construction. RX-3994C (Williams RWS) at Q14, Q19, Q23-25.

In addition, [

] Prucnal Tr. 320-321; RX-3994C (Williams RWS)

[29] The TPC Bit Pattern transmitted by WCDMA-compliant handsets to the base station also includes two bits. *See* CX-1310C (Prucnal WS) at Q189; Prucnal Tr. 319.

at Q11, Q15-17, Q20, Q22, Q25-27; *see* RX-3531 (3GPP TS 25.211) at Fig. 13; CX-0017 (3GPP2 C.S0002) § 3.1.3.1.10.

InterDigital argues that the accused devices satisfy the "power control bit" limitations of the asserted '406 claims even under the adopted construction proposed by Respondents. *See* Compls. Br. at 157-58. The evidence adduced by InterDigital, however, [

] Accordingly, it is determined that InterDigital has not met its burden to show that the "power control bit" limitations are satisfied, as that term is properly construed.

InterDigital further argues that the WCDMA products "at a minimum practice this limitation under the doctrine of equivalents because [

] Compls. Br. at 158. It is argued that [

] *Id.*

InterDigital's doctrine of equivalents argument is not persuasive, however, inasmuch as InterDigital disavowed multi-bit power control commands, [

] in both the '406 and '332 specifications by stating "APC information is *always* conveyed as a single bit of information." *See* JX-0002 ('332 patent) at col. 67, lns. 43-45 (emphasis added). Given the clear disavowal of "power control bit," InterDigital is precluded from extending the '332 and '406 patent claims to capture [

]

Furthermore, the evidence demonstrates that the differences between the claims of the '332 and '406 patents and the accused products are substantial. One of the main goals for both the '332 and '406 patents was to maximize the speed at which the system could update power in response to power control requests. RX-3529C (Williams WS) at Q131, Q546. The claims for both patents thus disclose using single-bit power control commands that allow for rapid adjustment of transmission power and minimize the required bandwidth overhead for transmitting the power control commands. *Id.* By contrast, [

] RX-3994C (Williams RWS) at Q554-546. [

] *Id.*

Therefore, InterDigital has not shown that the accused products satisfy the "power control bit" limitation under the doctrine of equivalents.

Analysis under alternate claim constructions.

In the event that InterDigital's proposed construction of "power control bit," *i.e.*, "binary information relating to power control" were adopted, the record evidence demonstrates that the accused products would satisfy this claim limitation of the '406 patent.

[

] *See, e.g.*, CX-1310C (Prucnal WS) at

Q2045-2050 (standard), Q2256-2266 (Qualcomm); CX-0017 (3GPP2 C.S0002) at § 3.1.3.1.10. [

] *See, e.g.*, CX-1310C (Prucnal WS) at Q132-145, Q163 (standard), Q484-488 (RapuYama), Q790-792 (RapidoYawe), Q1107-1109 (RAP3G), [

] CX-1307C (Goldberg WS) at Q212 (RAP3G/RapidoYawe/RapuYama), [ ] CX-0232 (3GPP TS 25.211) at § 5.3.2; CX-0234 (3GPP TS 25.214) at §§ 5.1.2.2.1 – .3.

Therefore, it is determined that the accused WCDMA and CDMA2000 products would satisfy these claim limitations under InterDigital's proposed construction.

b. The "in response to . . . wherein the transmission power level of the traffic channel and the reverse control channel are different" ('406 Patent) Limitations

The independent claims from which asserted claims 6, 13, 20, and 26 of the '406 patent depend contain the limitation "in response to . . . wherein the transmission power level of the traffic channel and the reverse control channel are different." As discussed above, this limitation is construed to mean that the different transmission power levels of the traffic channel and reverse control channel do not have to be in response to the received power control bit(s).

Under this adopted construction, the WCDMA and CDMA2000 products satisfy this claim limitation. [

] *See, e.g.*, CX-1310C (Prucnal WS) at Q146-152; CX-0232 (3GPP TS 25.211) at § 5.2.1; RX-3994C (Williams RWS) at Q28. [

] *See, e.g.*, CX-1310C (Prucnal WS) at Q2116-2118; CX-0017 (3GPP2 C.S0002) at §§ 2.1.3.1.1, 2.1.3.1.10; RX-3994C (Williams RWS) at Q28.

[

] *See* Resps. Br. at 186; RX-3994C (Williams RWS) at Q28 [

] CX-1310C (Prucnal WS) at Q166-185 (WCDMA), Q2059-2064 (CDMA2000); CX-0023 (3GPP TS 25.213) at § 4.2.1; CX-0017 (3GPP2 C.S0002) at fig.2.1.3.1.1.1-10. [

] CX-0234 (3GPP TS 25.214) at § 5.1.2.5.1; CX-0017 (3GPP2 C.S0002) at §§ 2.1.2.3.1.5, 2.1.2.3.3.2. [

]

Accordingly, it is determined that the WCDMA Products practice this limitation because [ ] It is further determined that the CDMA2000 Products practice this limitation because [

]

Analysis under alternate claim constructions.

Respondents' proposed construction of these claim limitations requires that the transmission power level of the traffic channel and the reverse control channel be different in

response to the received power control bits. *See* Resps. Br. at 186. Under Respondents' proposed construction, the accused WCDMA and CDMA2000 products do not satisfy these limitations.

[

] *See* Resps. Br. at 186. [

] Prucnal Tr. 324-325; RX-3994C (Williams RWS) at Q28.

For instance, in the WCDMA standard, power control commands received by the subscriber device result in the overall gain of the transmitted signal by the mobile being adjusted (Prucnal Tr. 324:16 – 325:7; RX-3994C (Williams RWS WS) at Q. 30-31. Thus, the power control bits have no impact on whether the separate power levels of the reverse control channel and traffic channels are different or not.

As for the CDMA2000 standard, the power commands received from the base station result in power adjustments applied at a gain device appearing after all of the channels have been summed together, and thus do not affect the individual gains of the individual channels or cause the power level of one channel to be different from another. *See* CX-1310C (Prucnal WS) at Q2056.

Therefore, the accused WCDMA and CDMA2000 products would not satisfy these claim limitations under Respondents' proposed constructions.

c. The "gain devices configured . . . to adjust a transmission power level of both a traffic channel and a reverse control channel" ('406 Patent) Limitations

Independent claims 15 and 21 of the '406 patent, from which asserted claims 20 and 26 depend, recite "gain devices configured, in response to the received [series of] power control bit[s], to adjust a transmission power level of both a traffic channel and a reverse control channel." JX-0001 at col. 16, lns. 11-13 (power control bit); col. 16, lns. 41-44 (series of power control bits). As discussed above, this limitation is construed to mean that the transmission power levels of the traffic and control channels do not have to be adjusted separately. Applying this construction, the record evidence demonstrates that the accused WCDMA and CDMA2000 devices satisfy this claim limitation.

[

] *See, e.g.*, RX-3994C (Williams RWS) at Q30, Q35. [

] *Id.*

Analysis under alternate claim constructions.

In the event that Respondents' proposed construction of this claim limitation were adopted, such that the transmission power levels of the traffic and control channels must be adjusted separately in response to the received power control bits, the accused WCDMA and CDMA2000 products would not satisfy this claim limitation. [

] *See, e.g.*, RX-3994C (Williams RWS) at Q30, Q35. [

]

d. The ". . . separately adjusting . . ." ('406 Patent) Limitation

Claim 29 of the '406 patent includes the following two paragraphs:

> in response to the received power control bit, adjusting a transmission power level of both the traffic channel and the reverse control channel,
>
> separately adjusting the transmission power level of the traffic channel and the reverse control channel;

JX-0001 ('406 Patent) at col. 17, lns. 15-19. As discussed above, this claim language is construed to mean "adjusting a transmission power level of both the traffic channel and the reverse control in response to the received power control bit and separately adjusting the transmission power level of the traffic channel and the reverse control channel." Applying this adopted construction, the record evidence shows that the CDMA2000 products satisfy these limitations.

[

] CX-1310C (Prucnal WS) at Q2124-2127 (standard), [ ] CX-0017 (3GPP2 C.S0002) at fig. 2.1.3.1.1.1-10; CX-0136C [ ] at 4-491 to 4-494.

Analysis under alternate claim constructions.

In the event that Respondents' proposed construction of this claim limitation were adopted, such that infringement would require "separately adjusting the transmission power level of both the traffic channel and the reverse control channel in response to the received power control bit," the accused WCDMA and CDMA2000 products would not satisfy this claim

limitation. [

] *See, e.g.*, RX-3994C (Williams RWS) at Q30, Q35. [

]

e. The "only one of an in-phase (I) channel or a quadrature (Q) channel" ('332 Patent) Limitations

Independent claims 1 and 21 of the '332 patent, from which multiple asserted claims depend, require including power control bits on only one of an in-phase (I) channel or a quadrature (Q) channel.

The relevant passage of claim 1 reads as follows:

> a circuit, operatively coupled to an antenna, configured to generate power control bits that are included on only one of an in-phase (I) channel or a quadrature (Q) channel;

JX-0002 at col. 101, lns. 8-11.

The relevant passage of claim 21 reads as follows:

> circuitry configured to receive a first radio frequency signal and generate power control bits in response to the first radio frequency signal; wherein the circuitry is further configured to produce an in-phase (I) channel and a quadrature (Q) channel; wherein only one of the I channel or the Q channel includes the power control bits;

JX-0002 at col. 102, lns. 41-48.

As discussed above, the power control information generated by the WCDMA and CDMA2000 products does not satisfy the "power control bit" limitation of these claims under

the construction adopted above.[30] If, however, the limitation "power control bit" were understood to mean power control information, then the record evidence demonstrates that the WCDMA and CDMA2000 products would satisfy the "only one of an in-phase (I) channel or a quadrature (Q) channel" limitations.

[

]

See, e.g., CX-1310C (Prucnal WS) at Q300, Q2146; Williams Tr. 1213-1214 (referring to WCDMA uplink spreading fig.1); CX-0023 (3GPP TS 25.213) at §§ 4.1, 4.2.1; CX-0017 (3GPP2 C.S0002) at fig. 2.1.3.1.1.1-10. [

] *See* CX-1310C (Prucnal WS) at Q300, Q2146; RX-3529C (Williams WS) at Q100. [

] *See* CX-1310C (Prucnal WS) at Q285-294, Q2134-2139; RX-3994C (Williams RWS) at Q67-69, Q75-76. [

] *See* Compls. Br. at 161-67. [

[30] As further explained above, the WCDMA and CDMA20000 products would satisfy the "power control bit" limitation of these claims under InterDigital's proposed construction of the limitation.

] *See* Resps. Br. 202-11; RX-3994C (Williams RWS) at Q65. The evidence supports InterDigital's position.

[

] *See, e.g.*, CX-1310C (Prucnal WS) at Q285-294 (standard), Q580-592 (RapuYama), Q880-892 (RapidoYawe), Q1192-1203 (RAP3G), [

] CX-1307C (Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama), [ ] This proposition is supported by the WCDMA standard, including the following Figure 1:

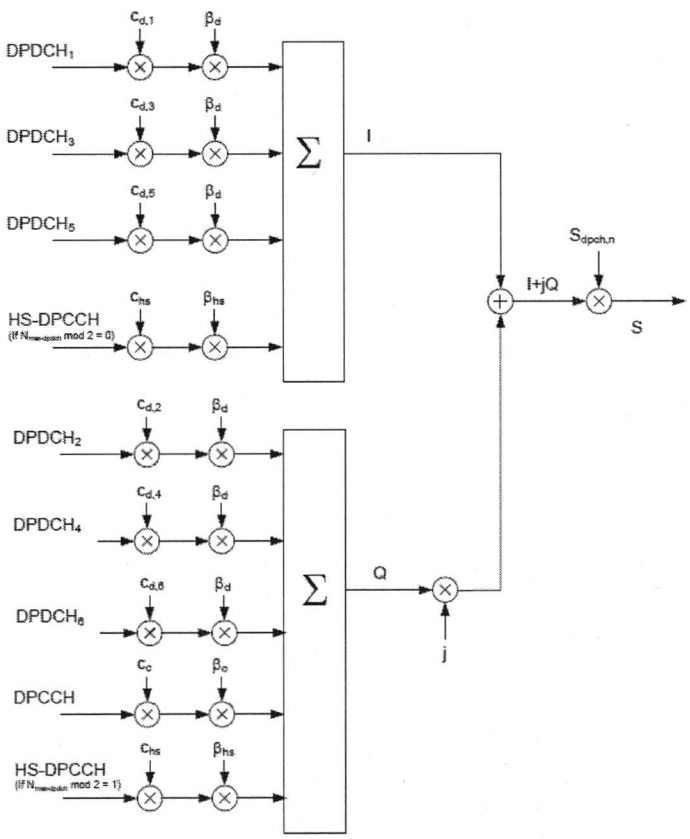

Figure 1: Spreading for uplink DPCCH, DPDCHs and HS-DPCCH

CX-0023 (3GPP TS 25.213) at § 4.2.1.

The WCDMA standard itself labels these inputs to complex multiplication I and Q, and the TPC Bits and TPC Bit Patterns are included only on the Q input. CX-0023 (3GPP TS 25.213) at fig. 1; CX-0232 (3GPP TS 25.211) at fig. 1, table 5. Moreover, only the Q input includes quadrature (Q) channels such as DPCCH. CX-0023 (3GPP TS 25.213) at fig. 1. [

]

See, e.g., CX-1310C (Prucnal WS) at Q580-592 (RapuYama), Q880-892 (RapidoYawe), Q1192-1203 (RAP3G), [ ] CX-1307C (Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama), [ ] CX-0311C (WCDMA TX_r2 Module Spec.) at 72-74, 80-83 (RapuYama); CX-0312C (YAWE TX Module Spec.) at 13-15, 63-65, 70-71 (RapidoYawe); CX-0010C (VooDoo Rel. 3 TX Spec.) at 33-35, 71-74, 80-81 (RapidoYawe/RAP3G); CX-0925C [ ] at 7-28 to 7-32; [CX-0131C

CX-0318C

CX-1307C (

CX-1307C CX-1310C

RX-4029C CX-0318C

]

The CDMA2000 products also practice this limitation, inasmuch as [

]

See, e.g., CX-1310C (Prucnal WS) at Q2134-39 (standard), [ ] This proposition is supported by the CDMA standard:

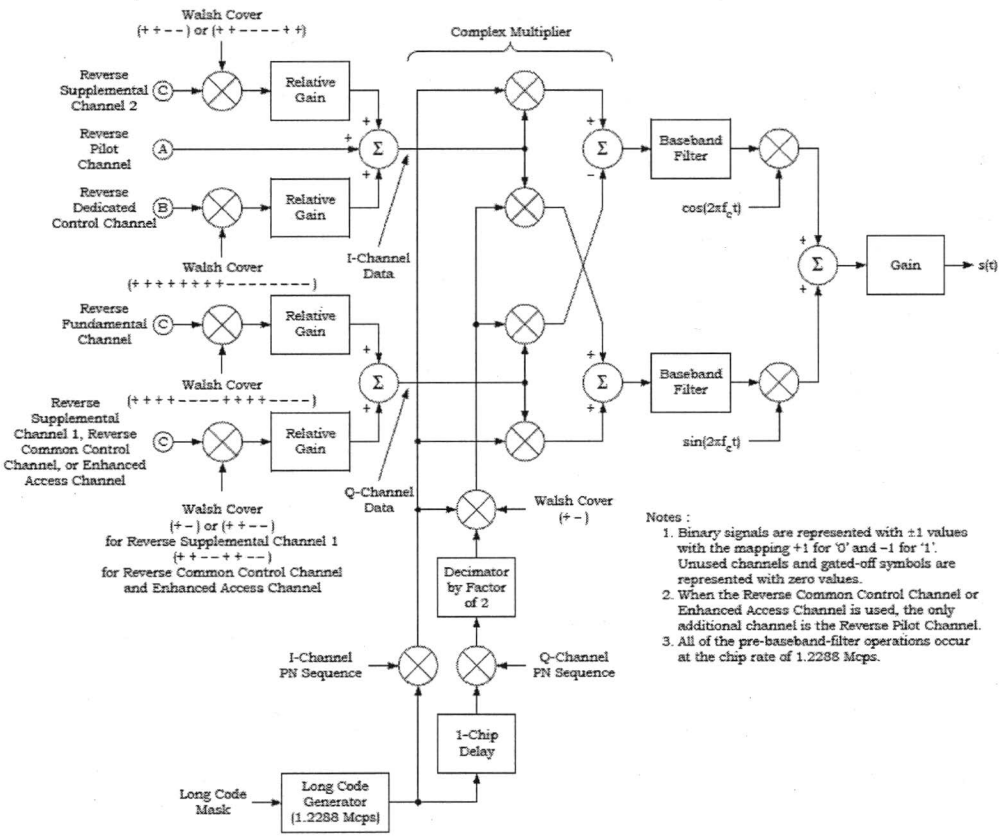

Figure 2.1.3.1.1.1-10. I and Q Mapping for Reverse Pilot Channel, Enhanced Access Channel, Reverse Common Control Channel, and Reverse Traffic Channel with Radio Configurations 3 and 4

CX-0017 (3GPP2 C.S0002) at fig. 2.1.3.1.1.1-10.

The CDMA2000 standard labels the inputs to complex multiplication I-Channel Data and Q-Channel Data, and power control information is included only on the I-Channel Data input, which includes in-phase channels such as the Reverse Power Control Subchannel. CX-0017

(3GPP2 C.S0002) at figs. 2.1.3.1.1.1-10, 2.1.3.1.10.1-1. [

] *See, e.g.*, CX-1310C (Prucnal WS) at Q2355-2363; CX-1307C (Goldberg WS) at Q496; CX-0134C [ ] at 9-2; CX-0136C [ ] at 4-491 to 4-494. [

CX-1307C

]

Accordingly, it is determined that the WCDMA and CDMA2000 products include power control information on only one of an in-phase (I) or quadrature (Q) channel as required by '332 patent claims.

f. The "only one of the I pre-spread channel or the Q pre-spread channel" ('332 Patent) Limitation

Independent claim 8 of the '332 patent, from which multiple asserted claims depend, requires including power control bits on only one of an in-phase (I) pre-spread channel or a quadrature (Q) pre-spread channel. As discussed above, the power control information generated by the WCDMA and CDMA2000 products does not satisfy the "power control bit" limitation of these claims under the construction adopted above. If however, the limitation "power control bit" were understood to mean power control information, then the record evidence demonstrates that the WCDMA and CDMA2000 products would satisfy the "only one of the I pre-spread channel or the Q pre-spread channel" limitation.

The evidence shows that WCDMA products practice this limitation because [

] *See, e.g.*, CX-1310C (Prucnal WS) at Q335-342 (standard), Q653-662 (RapuYama), Q961-970 (RapidoYawe), Q1268-1276 (RAP3G), [ ] CX-1307C (Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama), [ ] CX-0023 (3GPP TS 25.213) at fig.1; CX-0232 (3GPP TS 25.211) at fig.1, tbl.5. [

]

The CDMA2000 Products practice this limitation because [

] *See, e.g.*, CX-1310C (Prucnal WS) at Q2174-2177 (standard), [ ] CX-1307C (Goldberg WS) at Q496; CX-0017 (3GPP2 C.S0002) at fig.2.1.3.1.10.1-1, §§ 2.1.3.1.10.1, 2.1.3.2.2. [

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5. '406 Patent – (Nonasserted) Claim 1

Claim 1 of the '406 patent is not asserted in this investigation, but is the parent claim to asserted dependent claim 6. The record evidence demonstrates that the accused CDMA2000 products do not satisfy all elements of claim 1.

a. A method for controlling transmission power levels of a code division multiple access (CDMA) subscriber unit, the method comprising:

The parties do not dispute that [

] *See* Compls. Br. at 169 (citing CX-1310C (Prucnal WS) at Q2043-2044 (Standard),

[ ] CX-0017 (3GPP2 C.S0002) at § 1.1; CX-0017 (3GPP2 C.S0002) at

§§ 2.1.2.3.2, 3.1.3.1.10); Resps. Br. at 180-98.

b. receiving by the subscriber unit a power control bit on a downlink control channel, the power control bit indicating either an increase or decrease in transmission power level;

As discussed above, the power control information received by the CDMA2000 products does not satisfy the "power control bit" limitation of this claim. It is not disputed, however, that

[

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See CX-1310C (Prucnal WS) at ¶ 2045-2050 (Standard), Q2256-2266 (Qualcomm); CX-0017

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[31] Five method claims from the '406 patent are at issue in this investigation. Asserted claims 6 and 13 are dependent claims that depend from nonasserted independent claims 1 and 7, respectively. Claim 29 is an asserted independent claim.

Respondents allege that InterDigital has failed to show direct infringement of asserted method claims 6, 13, and 29 because, *inter alia*, "a respondent does not directly infringe a patented method in violation of Section 337 merely by importing devices capable of performing the claimed method," and "InterDigital provides no evidence that 'the act of importation is [] an act that practices the steps of the asserted method claim.'" *See* Resps. Br. at 180-81 (citing *Electronic Devices* at 12, 17).

In response, InterDigital does not contest that *Electronic Devices* would bar a finding of direct infringement if there were no record evidence showing that the accused devices practice the claimed method at the time of importation. *See* Compls. Reply at 74. InterDigital does argue that, inasmuch as "Respondents do not dispute that that the WCDMA and CDMA2000 Products are actually used in the United States after importation," "Respondents are at least liable for *indirect* infringement that constitutes a violation of Section 337." *Id.* (emphasis original). The issue of indirect infringement will be addressed below.

(3GPP2 C.S0002) at §§ 1.1, 3.1.3.1.10; CX-0136C [ ] at 4-242; CX-0132C [ ] at 12-4 to 12-5, [ ]

c. transmitting a plurality of channels by the subscriber unit, the plurality of channels including a traffic channel and a reverse control channel;

The parties do not dispute that the accused CDMA2000 products satisfy the claim element "transmitting a plurality of channels by the subscriber unit, the plurality of channels including a traffic channel and a reverse control channel." *See* Compls. Br. at 169 (citing CX-1310C (Prucnal WS) at Q2051-2053 (Standard), [CX-1307C ( ] CX-0017 (3GPP2 C.S0002) at §§ 2.1.3.1.1, 2.1.3.1.10); Resps. Br. at 180-98.

d. in response to the received power control bit, adjusting a transmission power level of both the traffic channel and the reverse control channel, wherein the transmission power level of the traffic channel and the reverse control channel are different; and

For the reasons discussed above in the section addressing global infringement issues with respect to the "in response to . . . wherein the transmission power level of the traffic channel and the reverse control channel are different" claim limitation, InterDigital has shown that the CDMA2000 products practice this claim element.

e. transmitting the traffic channel and the reverse control channel at their respective adjusted transmit power levels.

The evidence adduced at the hearing demonstrates that this claim limitation is satisfied by the CDMA2000 products. In particular, the CDMA2000 products [ ] *See, e.g.*, CX-1310C (Prucnal WS) at Q2062-2064 (Standard), [ ] CX-0017 (3GPP2 C.S0002) at § 2.1.2.3.2; CX-0132C [ ] at 12-4 to 12-5.

6. '406 Patent – Claim 6

a. The method of claim 1

Inasmuch as the CDMA2000 products do not infringe independent claim 1, they also do not infringe dependent claim 6.

b. wherein the reverse control channel carries at least one power command.

The parties do not dispute that the accused CDMA2000 products satisfy the additional claim 6 element "wherein the reverse control channel carries at least one power command." *See* Compls. Br. at 170 (citing CX-1310C (Prucnal WS) at Q2065-2067 (Standard), [

CX-1307C] CX-0017 (3GPP2 C.S0002) at § 2.1.3.1.10.1); Resps. Br. at 180-98.

7. '406 Patent – (Nonasserted) Claim 7

Claim 7 of the '406 patent is not asserted in this investigation, but is the parent claim to asserted dependent claim 13. The record evidence demonstrates that the accused WCDMA products do not satisfy all elements of claim 7.

a. A method for controlling transmission power levels of a code division multiple access (CDMA) subscriber unit, the method comprising:

The parties do not dispute that [

] *See* Compls. Br. at 170 (citing CX-1310C (Prucnal WS) at Q130-131 (Standard), Q471-473 (RapuYama), Q780-782 (RapidoYawe), Q1098-1099 (RAP3G), [

] CX-0232 (3GPP TS 25.211) at § 3.2; CX-0234 (3GPP TS 25.214) at §§ 5.1.2.1, 5.1.2.2); Resps. Br. at 180-98.

b. receiving by the subscriber unit a series of power control bits on a downlink channel, each power control bit indicating either an increase or decrease in transmission power level;

As discussed above, the TPC Bits received by the WCDMA products do not satisfy the "power control bits" limitation of this claim. It is not disputed, however, that [

] *See, e.g.*, CX-1310C (Prucnal WS) at Q132-145, Q163 (standard), Q474-488 (RapuYama), Q783-792 (RapidoYawe), Q1100-1109 (RAP3G), [ ] CX-1307C (Goldberg WS) at Q159 (RAP3G/RapidoYawe), Q195 (RapuYama), Q212 (RAP3G/RapidoYawe/ RapuYama), [

] CX-0232 (3GPP TS 25.211) at § 5.3.2; CX-0234 (3GPP TS 25.214) at §§ 5.1.2.2.1, 5.1.2.2.2, 5.1.2.2.3.

c. transmitting a plurality of channels by the subscriber unit, the plurality of channels including a traffic channel and a reverse control channel;

The parties do not dispute that the accused WCDMA products satisfy the claim element "transmitting a plurality of channels by the subscriber unit, the plurality of channels including a traffic channel and a reverse control channel." *See* Compls. Br. at 171 (citing CX-1310C (Prucnal WS) at Q146-152 (Standard), Q489-497 (RapuYama), Q793-800 (RapidoYawe), Q1110-1116 (RAP3G), [ ] CX-1307C (Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama), [

] CX-0232 (3GPP TS 25.211) at § 5.2.1); Resps. Br. at 180-98.

d. adjusting a transmission power level of both the traffic channel and the reverse control channel in response to the same bits in the received series of power control bits, wherein the transmission power level of the traffic channel and the reverse control channel are different; and

For the reasons discussed above with respect to the "in response to . . . wherein the transmission power level of the traffic channel and the reverse control channel are different" claim limitation, InterDigital has shown that the WCDMA products practice this claim element.

e. transmitting the traffic channel and the reverse control channel at their respective adjusted transmit power levels.

The evidence shows that the accused WCDMA products satisfy the claim limitation "transmitting the traffic channel and the reverse control channel at their respective adjusted transmit power levels." *See, e.g.*, CX-1310C (Prucnal WS) at Q146-152 (Standard), Q489-497 (RapuYama), Q793-800 (RapidoYawe), Q1110-1116 (RAP3G), [ ] CX-1307C (Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama), Q358 (HiSilicon), [ ] CX-0232 (3GPP TS 25.211) at § 5.2.1.

8. '406 Patent – Claim 13

a. The method of claim 7

Inasmuch as the WCDMA products do not infringe independent claim 7, they also do not infringe dependent claim 13.

b. wherein the reverse control channel carries at least one power command.

The parties do not dispute that the accused WCDMA products satisfy the claim limitation "wherein the reverse control channel carries at least one power command." *See* Compls. Br. at 171-72 (citing CX-1310C (Prucnal WS) at Q186-191 (Standard), Q520-526 (RapuYama),

Q824-829 (RapidoYawe), Q1139-1144 (RAP3G), [

] CX-1307C (Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama), [ ] CX-0232 (3GPP TS 25.211) at § 5.2.1); Resps. Br. at 180-98.

9. '406 Patent – (Nonasserted) Claim 15

Claim 15 of the '406 patent is not asserted in this investigation, but is the parent claim to asserted dependent claim 20. The record evidence demonstrates that the accused CDMA2000 products do not satisfy all elements of claim 15.

a. A code division multiple access (CDMA) subscriber unit comprising:

The parties do not dispute that the accused CDMA2000 products satisfy the claim limitation "[a] code division multiple access (CDMA) subscriber unit." *See* Compls. Br. at 172 (citing CX-1310C (Prucnal WS) at Q2043-2044 (Standard), [ ] CX-0017 (3GPP2 C.S0002) at § 1.1); Resps. Br. at 180-98.

b. a despreading and demultiplexing device configured to recover a power control bit from a downlink control channel, wherein the power control bit has a value indicating a command to either increase or decrease transmission power level; and

As discussed above, the power control information received by the CDMA2000 products do not satisfy the "power control bits" limitation of this claim. The record evidence does show, however, that [

] *See, e.g.*, CX-1310C (Prucnal WS) at Q2088-2094 (standard), [ ] CX-1307C (Goldberg WS) at Q582; CX-0017 (3GPP2 C.S0002) at § 3.1.3.1.10, figs. 3.1.3.1.1.1-16, 3.1.3.1.1.1-17, 3.1.3.1.1.1-18; CX-0136C [ ] at 4-242; CX-0132C [

] at [ ] [

] *See, e.g.*,

CX-1310C (Prucnal WS) at Q2088-2094 (standard), [ ] CX-1307C

(Goldberg WS) at Q623-624; CX-0017 (3GPP2 C.S0002) at § 3.1.3.1.10.

c. gain devices configured, in response to the received power control bit, to adjust a transmission power level of both a traffic channel and a reverse control channel prior to transmission by the subscriber unit, wherein the transmission power level of the traffic channel and the reverse control channel are different.

For the reasons discussed above in the section addressing global infringement issues with respect to the "gain devices configured . . . to adjust a transmission power level of both a traffic channel and a reverse control channel" claim limitation, InterDigital has shown that the CDMA2000 products practice this claim element.

10. '406 Patent – Claim 20

a. The CDMA subscriber unit of claim 15

Inasmuch as the CDMA2000 products do not infringe independent claim 15, they also do not infringe dependent claim 20.

b. wherein the reverse control channel carries at least one power command.

The parties do not dispute that the accused CDMA2000 products satisfy the claim limitation "wherein the reverse control channel carries at least one power command." *See* Compls. Br. at 173 (citing CX-1310C (Prucnal WS) at Q2103-2105 (Standard), [

CX-1307C] CX-0017 (3GPP2 C.S0002) at

§ 2.1.3.1.10.1); Resps. Br. at 180-98.

11. '406 Patent – (Nonasserted) Claim 21

Claim 21 of the '406 patent is not asserted in this investigation, but is the parent claim to asserted dependent claim 26. The record evidence demonstrates that the accused WCDMA products do not satisfy all elements of claim 21.

a. A code division multiple access (CDMA) subscriber unit comprising:

The parties do not dispute that the accused WCDMA products satisfy the claim limitation "[a] code division multiple access (CDMA) subscriber unit." *See* Compls. Br. at 173 (citing CX-1310C (Prucnal WS) at Q130-131 (Standard), Q471-473 (RapuYama), Q780-782 (RapidoYawe), Q1098-1099 (RAP3G), [ ] CX-0232 (3GPP TS 25.211) at § 3.2); Resps. Br. at 180-98.

b. a despreading and demultiplexing device configured to recover a series of power control bits from a downlink channel, wherein each power control bit has a value indicating a command to either increase or decrease transmission power level; and

As discussed above, the TPC Bits received by the WCDMA products do not satisfy the "power control bits" limitation of this claim. It is not disputed, however, that [

] *See, e.g.*, CX-1310C (Prucnal WS) at Q239-247 (Standard), Q530-540 (RapuYama), Q833-842 (RapidoYawe), Q1148-1157 (RAP3G), [ ] CX-1307C (Goldberg WS) at Q159 (RAP3G/RapidoYawe), Q195 (RapuYama), [ ] CX-0232 (3GPP TS 25.211) at § 5.3.2; CX-0023 (3GPP TS 25.213) at § 5.1.

c. gain devices configured, in response to the received series of power control bits, to adjust a transmission power level of both a traffic channel and a reverse control channel in response to same bits in the received series of power control bits prior to transmission by the subscriber unit, wherein the transmission power level of the traffic channel and the reverse control channel are different.

As discussed above, the WCDMA accused products satisfy this claim limitation under the adopted constructions proposed by InterDigital. *See, e.g.*, CX-1310C (Prucnal WS) at Q248-270 (Standard), Q541-556 (RapuYama), Q843-860 (RapidoYawe), Q1158-1171 (RAP3G), [ ] CX-1307C (Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama), Q212 (RAP3G/RapidoYawe/ RapuYama), [ ] CX-0023 (3GPP TS 25.213) at § 4.2.1; CX-0234 (3GPP TS 25.214) at §§ 5.1.2.1, 5.1.2.2, 5.1.2.5, 5.1.2.5.1.

12. '406 Patent – (Nonasserted) Claim 22

a. The CDMA subscriber unit of claim 21

Inasmuch as the WCDMA products do not infringe independent claim 21, they also do not infringe dependent claim 22.

b. wherein the downlink channel is a downlink control channel.

The record evidence demonstrates that the accused WCDMA products satisfy this additional limitation of claim 22. *See, e.g.*, CX-1310C (Prucnal WS) at Q271-273 (Standard), Q560-566 (RapuYama), Q864-867 (RapidoYawe), Q1175-1179 (RAP3G), [ ] CX-0232 (3GPP TS 25.211) at § 5.3.2.

13. '406 Patent – Claim 26

a. The CDMA subscriber unit of claim 22

Inasmuch as the WCDMA products do not infringe claim 22, they also do not infringe dependent claim 26.

b. wherein the reverse control channel carries at least one power command.

The parties do not dispute that the accused WCDMA products satisfy the claim limitation "wherein the reverse control channel carries at least one power command." *See* Compls. Br. at 174 (citing CX-1310C (Prucnal WS) at Q274-279 (Standard), Q570-576 (RapuYama), Q871-876 (RapidoYawe), Q1183-1188 (RAP3G), [ ] CX-1307C (Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama), [ ] CX-0232 (3GPP TS 25.211) at § 5.2.1); Resps. Br. at 180-98.

14. '406 Patent – Claim 29

a. A method for controlling transmission power levels of a code division multiple access (CDMA) subscriber unit, the method comprising:

The parties do not dispute that the accused CDMA2000 products are capable of controlling transmission power levels of a code division multiple access (CDMA) subscriber unit. *See* Compls. Br. at 169 (citing CX-1310C (Prucnal WS) at Q2043-2044 (Standard), [ ] CX-0017 (3GPP2 C.S0002) at § 1.1; CX-0017 (3GPP2 C.S0002) at §§ 2.1.2.3.2, 3.1.3.1.10), 174; Resps. Br. at 180-98.

b. receiving by the subscriber unit a power control bit on a downlink control channel, the power control bit indicating either an increase or decrease in transmission power level;

As discussed above, the power control information received by the CDMA2000 products does not satisfy the "power control bit" limitation of this claim. It is not disputed, however, that [

]

See CX-1310C (Prucnal WS) at ¶ 2045-2050 (Standard), [ ] CX-0017 (3GPP2 C.S0002) at §§ 1.1, 3.1.3.1.10; [CX-0136C CX-0132C

]

c. transmitting a plurality of channels by the subscriber unit, the plurality of channels including a traffic channel and a reverse control channel;

The parties do not dispute that the accused CDMA2000 products satisfy the claim limitation "transmitting a plurality of channel by the subscriber unit, the plurality of channels including a traffic channel and a reverse control channel." *See* Compls. Br. at 175 (citing CX-1310C (Prucnal WS) at Q2116-2118 (Standard), [

] CX-0017 (3GPP2 C.S0002) at §§ 2.1.3.1.1, 2.1.3.1.10); Resps. Br. at 180-98.

d. in response to the received power control bit, adjusting a transmission power level of both the traffic channel and the reverse control channel,

For the reasons discussed above with respect to the "in response to . . . wherein the transmission power level of the traffic channel and the reverse control channel are different" claim limitation, InterDigital has shown that the CDMA2000 products practice this claim element.

e. separately adjusting the transmission power level of the traffic channel and the reverse control channel; and

For the reasons discussed above with respect to the ". . . separately adjusting . . ." claim limitation, InterDigital has shown that the CDMA2000 products practice this claim element.

f. transmitting the traffic channel and the reverse control channel at their respective adjusted transmit power levels.

The accused CDMA2000 products satisfy the claim limitation "transmitting the traffic channel and the reverse control channel at their respective adjusted transmit power levels." *See* CX-1310C (Prucnal WS) at Q2128-2130 (Standard), [ ] CX-0017 (3GPP2 C.S0002) at § 2.1.2.3.2; [CX-0132C]

15. '332 Patent – (Nonasserted) Claim 1

Claim 1 of the '332 patent is not asserted in this investigation, but is the parent claim to asserted dependent claims 2, 3, 4, and 7. The record evidence demonstrates that the accused WCDMA and CDMA2000 products do not satisfy all elements of claim 1.

a. A code division multiple access subscriber unit comprising:

The record evidence demonstrates that the accused WCDMA and CDMA2000 products satisfy the claim limitation "[a] code division multiple access subscriber unit." *See, e.g.*, CX-1310C (Prucnal WS) at Q283-284 (WCDMA), Q578-579 (RapuYama), Q878-879 (RapidoYawe), Q1190-1191 (RAP3G), [ ] Q2132-2133 (CDMA2000), [ ] CX-0232 (3GPP TS 25.211) at § 3.2 (WCDMA); CX-0017 (3GPP2 C.S0002) at § 1.1 (CDMA2000).

b. a circuit, operatively coupled to an antenna, configured to generate power control bits that are included on only one of an in-phase (I) channel or a quadrature (Q) channel; and

As discussed above, the power control information received by the WCDMA and CDMA2000 products does not satisfy the "power control bits" limitation of this claim.

For the reasons discussed above with respect to the "only one of an in-phase (I) channel or a quadrature (Q) channel" claim limitation, InterDigital has shown that the WCDMA and CDMA2000 products practice this claim element if the claimed "power control bits" were understood to mean power control information.

c. the antenna configured to output a radio frequency signal derived at least in part from the I and Q channels.

The record demonstrates that the WCDMA and CDMA2000 products practice the claim limitation "the antenna configured to output a radio frequency signal derived at least in part from the I and Q channels." *See, e.g.*, CX-1310C (Prucnal WS) at Q295-297 (WCDMA), Q593-598 (RapuYama), Q893-900 (RapidoYawe), Q1204-1210 (RAP3G), [

] Q2140-2142 (CDMA2000), [

] CX-1307C (Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama), [

] CX-0023 (3GPP TS 25.213) at §§ 4.2.1, 4.4.2; CX-0265 (3GPP TS 25.101) at § 6.1 (WCDMA); CX-0017 (3GPP2 C.S0002) at fig. 2.1.3.1.1.1-10, §§ 1.1, 2.1.2 (CDMA2000).

16. '332 Patent – Claim 2

a. A code division multiple access subscriber unit in accordance with claim 1,

Inasmuch as the WCDMA and CDMA2000 products do not infringe independent claim 1, they also do not infringe dependent claim 2.

b. wherein the circuit is further configured to combine the I and Q channels with a complex sequence.

The record evidence shows that the WCDMA and CDMA2000 products satisfy the additional claim 2 limitation "wherein the circuit is further configured to combine the I and Q channels with a complex sequence." *See, e.g.*, CX-1310C (Prucnal WS) at Q298-300 (WCDMA), Q602-606 (RapuYama), Q904-909 (RapidoYawe), Q1214-1218 (RAP3G), [ ] Q2144-2146 (CDMA2000); [ ] CX-1307C (Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama), [ ] CX-0023 (3GPP TS 25.213) at §§ 4.1, 4.2.1, 4.3.2.1 (WCDMA); CX-0017 (3GPP2 C.S0002) at 2-64, 2-68, § 2.1.3.1.12 (CDMA2000).

17. '332 Patent – Claim 3

a. A code division multiple access subscriber unit in accordance with claim 2,

Inasmuch as the WCDMA and CDMA2000 products do not infringe claim 2, they also do not infringe dependent claim 3.

b. wherein the combining is by multiplication.

The evidence adduced by InterDigital shows that the WCDMA and CDMA2000 products satisfy the additional claim 3 limitation "wherein the combining is by multiplication." *See, e.g.*, CX-1310C (Prucnal WS) at Q302-304 (WCDMA), Q610-615 (RapuYama), Q913-919 (RapidoYawe), Q1222-1226 (RAP3G), [ ] CX-1307C (Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama), [ ]

[ ] CX-0023 (3GPP TS 25.213) at §§ 4.1, 4.2.1 (WCDMA); CX-0017 (3GPP2 C.S0002) at 2-64, 2-68 (CDMA2000).

18. '332 Patent – Claim 4

a. A code division multiple access subscriber unit in accordance with claim 2,

Inasmuch as the WCDMA and CDMA2000 products do not infringe claim 2, they also do not infringe dependent claim 4.

b. wherein the complex sequence comprises at least two pseudo noise sequences.

The evidence adduced by InterDigital shows that the WCDMA and CDMA2000 products satisfy the additional claim 4 limitation "wherein the complex sequence comprises at least two pseudo noise sequences." *See, e.g.*, CX-1310C (Prucnal WS) at Q305-311 (WCDMA), Q619-622 (RapuYama), Q923-928 (RapidoYawe), Q1230-1234 (RAP3G), [ ] Q2151-2154 (CDMA2000), [ ] CX-1307C (Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama), [ ] CX-0023 (3GPP TS 25.213) at §§ 4.2.1, 4.3.2 (WCDMA); CX-0017 (3GPP2 C.S0002) at 2-64, 2-68, § 2.1.3.1.12 (CDMA2000).

19. '332 Patent – Claim 7

a. A code division multiple access subscriber unit in accordance with claim 1,

Inasmuch as the WCDMA and CDMA2000 products do not infringe independent claim 1, they also do not infringe dependent claim 7.

b. wherein the circuit is further configured to generate pilot bits; wherein the radio frequency signal is derived at least in part from the pilot bits.

The record evidence demonstrates that the WCDMA and CDMA2000 products practice the claim limitation "wherein the circuit is further configured to generate pilot bits." *See, e.g.*, CX-1310C (Prucnal WS) at Q315-317 (WCDMA), Q626-629 (RapuYama), Q932-936 (RapidoYawe), Q1238-1242 (RAP3G), [ ] Q2158-2160 (CDMA2000), [ ] CX-1307C (Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama), [ ] CX-0232 (3GPP TS 25.211) at § 5.2.1 (WCDMA); CX-0017 (3GPP2 C.S0002) at 2-64, 2-68, 2-119 (CDMA2000).

The WCDMA and CDMA2000 products also practice the claim limitation "wherein the radio frequency signal is derived at least in part from the pilot bits." *See, e.g.*, CX-1310C (Prucnal WS) at Q318-320 (WCDMA), Q630-633 (RapuYama), Q937-941 (RapidoYawe), Q1243-1248 (RAP3G), [ ] Q2161-2163 (CDMA2000), [ ] CX-1307C (Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama), [ ] CX-0023 (3GPP TS 25.213) at §§ 4.2.1, 4.4.2 (WCDMA); CX-0017 (3GPP2 C.S0002) at 2-64, 2-68 (CDMA2000).

20. '332 Patent – Claim 8

a. A code division multiple access subscriber unit, comprising:

The record evidence demonstrates that the accused WCDMA and CDMA2000 products satisfy the claim limitation "[a] code division multiple access subscriber unit." *See, e.g.*, CX-1310C (Prucnal WS) at Q283-284 (WCDMA), Q578-579 (RapuYama), Q878-879

(RapidoYawe), Q1190-1191 (RAP3G), [

] Q2132-2133 (CDMA2000), [ ] CX-0232

(3GPP TS 25.211) at § 3.2 (WCDMA); CX-0017 (3GPP2 C.S0002) at § 1.1 (CDMA2000).

b. an antenna configured to receive a first radio frequency signal; and

The evidence adduced by InterDigital shows that the WCDMA and CDMA2000 products have "an antenna configured to receive a first radio frequency signal." *See, e.g.*, CX-1310C (Prucnal WS) at Q324-326 (WCDMA), Q637-642 (RapuYama), Q945-950 (RapidoYawe), Q1252-1257 (RAP3G), [ ] Q2167-2169 (CDMA2000), [ ] CX-0232 (3GPP TS 25.211) at § 5.3.2; CX-0265 (3GPP TS 25.101) at § 7.1 (WCDMA); CX-0017 (3GPP2 C.S0002) at §§ 1.1, 3.1.3.1 (CDMA2000).

c. a circuit, operatively coupled to the antenna, configured to generate power control bits in response to the first radio frequency signal, wherein the circuit is further configured to establish an in-phase (I) pre-spread channel and a quadrature (Q) pre-spread channel, such that the power control bits are included on only one of the I pre-spread channel or the Q pre-spread channel;

As discussed above, the power control information received by the WCDMA and CDMA2000 products does not satisfy the "power control bits" limitation of this claim. The evidence does show, however, that [

] *See, e.g.*, CX-1310C (Prucnal WS) at Q327-334 (WCDMA), Q643-652 (RapuYama), Q951-960 (RapidoYawe), Q1258-1267 (RAP3G), [

] Q2170-2173 (CDMA2000), [

] CX-1307C (Goldberg WS) at Q204 (RapuYama/RapidoYawe/RAP3G), [

]

[

] *See, e.g.*, CX-1310C (Prucnal WS) at Q335-342 (WCDMA), Q653-662 (RapuYama), Q961-670 (RapidoYawe), Q1268-1276 (RAP3G), [ ] Q2174-2177 (CDMA2000), [ ] CX-1307C (Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama), [

] CX-0023 (3GPP TS 25.213) at fig. 1; CX-0232 (3GPP TS 25.211) at fig. 1, table 5 (WCDMA); CX-0017 (3GPP2 C.S0002) at fig. 2.1.3.1.10.1-1, §§ 2.1.3.1.10.1, 2.1.3.2.2 (CDMA2000).

d. wherein a second radio frequency signal output by the code division multiple access subscriber unit is derived at least in part from the I and Q pre-spread channels.

The evidence adduced by InterDigital shows that the WCDMA and CDMA2000 products practice the claim limitation "wherein a second radio frequency signal output by the code division multiple access subscriber unit is derived at least in part from the I and Q pre-spread channels." *See, e.g.*, CX-1310C (Prucnal WS) at Q343-345 (WCDMA), Q663-668 (RapuYama), Q971-977 (RapidoYawe), Q1277-1286 (RAP3G), [

] Q2178-2180 (CDMA2000), [ ] CX-

1307C (Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama),

[ ]

21. '332 Patent – Claim 9

a. A code division multiple access subscriber unit in accordance with claim 8,

Inasmuch as the WCDMA and CDMA2000 products do not infringe independent claim 8, they also do not infringe dependent claim 9.

b. wherein the circuit is further configured to combine the I and Q pre-spread channels with a complex sequence.

The record evidence shows that the WCDMA and CDMA2000 products satisfy the additional claim 9 limitation "wherein the circuit is further configured to combine the I and Q channels with a complex sequence." *See, e.g.*, CX-1310C (Prucnal WS) at Q346-349 (WCDMA), Q672-675 (RapuYama), Q981-985 (RapidoYawe), Q1287-1291 (RAP3G), [ ] Q2181-2184 (CDMA2000), [ ] CX-1307C (Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama), [ ] CX-0023 (3GPP TS 25.213) at §§ 4.1, 4.2.1, 4.3.2.1 (WCDMA); CX-0017 (3GPP2 C.S0002) at 2-64, 2-68, § 2.1.3.1.12 (CDMA2000).

22. '332 Patent – Claim 10

a. A code division multiple access subscriber unit in accordance with claim 9,

Inasmuch as the WCDMA and CDMA2000 products do not infringe claim 9, they also do not infringe dependent claim 10.

b. wherein the combining is by multiplication.

The evidence adduced by InterDigital shows that the WCDMA and CDMA2000 products satisfy the additional claim 10 limitation "wherein the combining is by multiplication." *See, e.g.*, CX-1310C (Prucnal WS) at Q350-353 (WCDMA), Q679-683 (RapuYama), Q989-993 (RapidoYawe), Q1295-1299 (RAP3G), [ ] Q2185-2188 (CDMA2000), [ ] CX-1307C (Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama),]] CX-0023 (3GPP TS 25.213) at §§ 4.1, 4.2.1 (WCDMA); CX-0017 (3GPP2 C.S0002) at 2-64, 2-68 (CDMA2000).

23. '332 Patent – Claim 11

a. A code division multiple access subscriber unit in accordance with claim 9,

Inasmuch as the WCDMA and CDMA2000 products do not infringe claim 9, they also do not infringe dependent claim 11.

b. wherein the complex sequence comprises at least two pseudo noise sequences.

The evidence adduced by InterDigital shows that the WCDMA and CDMA2000 products satisfy the additional claim 11 limitation "wherein the complex sequence comprises at least two pseudo noise sequences." *See, e.g.*, CX-1310C (Prucnal WS) at Q354-360 (WCDMA), Q687-690 (RapuYama), Q997-1001 (RapidoYawe), Q1303-1307 (RAP3G), [ ] Q2189-2192 (CDMA2000), Q2441-2444 (Qualcomm CDMA2000); CX-1307C (Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama), [

[ ] CX-0023 (3GPP TS 25.213) at §§ 4.2.1, 4.3.2 (WCDMA); CX-0017 (3GPP2 C.S0002) at 2-64, 2-68, § 2.1.3.1.12 (CDMA2000).

24. '332 Patent – Claim 14

a. A code division multiple access subscriber unit in accordance with claim 8,

Inasmuch as the WCDMA and CDMA2000 products do not infringe independent claim 8, they also do not infringe dependent claim 14.

b. wherein pilot bits are included on at least one of the I and the Q pre-spread channels.

The record evidence demonstrates that the WCDMA and CDMA2000 products practice the claim limitation "wherein pilot bits are included on at least one of the I and the Q pre-spread channels." *See, e.g.*, CX-1310C (Prucnal WS) at Q364-367 (WCDMA), Q694-697 (RapuYama), Q1005-1009 (RapidoYawe), Q1311-1315 (RAP3G), [ ] Q2193-2196 (CDMA2000), Q2448-2451 (Qualcomm CDMA2000); CX-1307C (Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama), [ ] CX-0232 (3GPP TS 25.211) at § 5.2.1; CX-0023 (3GPP TS 25.213) at § 4.2.1 (WCDMA); CX-0017 (3GPP2 C.S0002) at 2-64, 2-68, 2-119 (CDMA2000).

25. '332 Patent – (Nonasserted) Claim 21

Claim 21 of the '332 patent is not asserted in this investigation, but is the parent claim to asserted dependent claims 22, 23, 24, and 27. The record evidence demonstrates that the accused WCDMA and CDMA2000 products do not satisfy all elements of claim 21.

a. A code division multiple access subscriber unit comprising:

The record evidence demonstrates that the accused WCDMA and CDMA2000 products satisfy the claim limitation "[a] code division multiple access subscriber unit." *See, e.g.*, CX-1310C (Prucnal WS) at Q283-284 (WCDMA), Q578-579 (RapuYama), Q878-879 (RapidoYawe), Q1190-1191 (RAP3G), [ ] Q2132-2133 (CDMA2000), [ ] CX-0232 (3GPP TS 25.211) at § 3.2 (WCDMA); CX-0017 (3GPP2 C.S0002) at § 1.1 (CDMA2000).

b. circuitry configured to receive a first radio frequency signal and generate power control bits in response to the first radio frequency signal; wherein the circuitry is further configured to produce an in-phase (I) channel and a quadrature (Q) channel; wherein only one of the I channel or the Q channel includes the power control bits; wherein the circuitry is further configured to produce a second radio frequency signal including an I component and a Q component derived from the I channel and the Q channel; wherein the circuitry is further configured to transmit the second radio frequency signal.

As discussed above, the power control information received by the WCDMA and CDMA2000 products does not satisfy the "power control bits" limitation of this claim. The evidence does show, however, that [ ] *See, e.g.*, CX-1310C (Prucnal WS) at Q371-378 (WCDMA), Q701-710 (RapuYama), Q1013-1022 (RapidoYawe), Q1319-1328 (RAP3G), [ ] Q2200-2203 (CDMA2000), [ ] CX-1307C (Goldberg WS) at Q204 (RapuYama/RapidoYawe/RAP3G), [

] CX-0234 (3GPP TS 25.214) at § 5.2.1.2.1, Annex B.2 (WCDMA); CX-0017 (3GPP2 C.S0002) at § 2.1.3.1.10 (CDMA2000).

As discussed above, the WCDMA and CDMA2000 products satisfy the claim limitation "wherein the circuitry is further configured to produce an in-phase (I) channel and a quadrature (Q) channel." *See, e.g.*, CX-1310C (Prucnal WS) at Q379-83 (WCDMA), Q711-714 (RapuYama), Q1023-1026 (RapidoYawe), Q1329-1333 (RAP3G), [

] Q2204-2206 (CDMA2000), [

] CX-1307C (Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama), [

] CX-0023 (3GPP TS 25.213) at fig.1 (WCDMA); CX-0017 (3GPP2 C.S0002) at fig. 2.1.3.1.1.1-10 (CDMA2000).

[

] *See, e.g.*, CX-1310C (Prucnal WS) at Q384-87 (WCDMA), Q715-719 (RapuYama), Q1027-1032 (RapidoYawe), Q1334-1340 (RAP3G), [

] Q2207-2210 [ ] CX-1307C (Goldberg WS) at Q21 (RAP3G/ RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama), [

] CX-0232 (3GPP TS 25.211) at fig.1, table 5 (WCDMA); CX-0017 (3GPP2 C.S0002) at fig. 2.1.3.1.10.1-1 (CDMA2000).

The WCDMA and CDMA2000 products further satisfy the claim limitation "wherein the circuitry is further configured to produce a second radio frequency signal including an I component and a Q component derived from the I channel and the Q channel." *See, e.g.*,

CX-1310C (Prucnal WS) at Q388-390 (WCDMA), Q720-725 (RapuYama), Q1033-1039 (RapidoYawe), Q1341-1347 (RAP3G), [ ] Q2211-2213 (CDMA2000), [ ] CX-1307C (Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama), [ ] CX-0023 (3GPP TS 25.213) at figs.1, 7 (WCDMA); CX-0017 (3GPP2 C.S0002) at fig. 2.1.3.1.1.1-10 (CDMA2000).

Finally, the WCDMA and CDMA2000 products satisfy the claim limitation "wherein the circuitry is further configured to transmit the second radio frequency signal." *See, e.g.*, CX-1310C (Prucnal WS) at Q391-393 (WCDMA), Q726-729 (RapuYama), Q1040-1045 (RapidoYawe), Q1348-1353 (RAP3G), [ ] Q2214-2216 (CDMA2000), [ ] CX-0023 (3GPP TS 25.213) at §§ 4.2.1, 4.4.2 (WCDMA); CX-0017 (3GPP2 C.S0002) at 2-64, 2-68 (CDMA2000).

26. '332 Patent – Claim 22

a. A code division multiple access subscriber unit in accordance with claim 21,

Inasmuch as the WCDMA and CDMA2000 products do not infringe independent claim 21, they also do not infringe dependent claim 22.

b. wherein the circuitry is further configured to combine the I and Q channels with a complex sequence.

The record evidence shows that the WCDMA and CDMA2000 products satisfy the additional claim 22 limitation "wherein the circuit is further configured to combine the I and Q channels with a complex sequence." *See, e.g.*, CX-1310C (Prucnal WS) at Q394-396 (WCDMA), Q733-736 (RapuYama), Q1049-1053 (RapidoYawe), Q1357-1361 (RAP3G),

[ ] Q2217-2220 (CDMA2000),

[ ] CX-1307C (Goldberg WS) at Q21

(RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama), [

] CX-0023 (3GPP TS 25.213) at §§ 4.1,

4.2.1, 4.3.2.1 (WCDMA); CX-0017 (3GPP2 C.S0002) at 2-64, 2-68, § 2.1.3.1.12

(CDMA2000).

27. '332 Patent – Claim 23

a. A code division multiple access subscriber unit in accordance with claim 22,

Inasmuch as the WCDMA and CDMA2000 products do not infringe claim 22, they also do not infringe dependent claim 23.

b. wherein the combining is performed by multiplication.

The evidence adduced by InterDigital shows that the WCDMA and CDMA2000 products satisfy the additional claim 23 limitation "wherein the combining is by multiplication." *See, e.g.*, CX-1310C (Prucnal WS) at Q397-400 (WCDMA), Q740-743 (RapuYama), Q1057-1061 (RapidoYawe), Q1365-1369 (RAP3G), [

] Q2221-2224 (CDMA2000), [ ] CX-1307C

(Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama), [

] CX-0023 (3GPP TS

25.213) at §§ 4.1, 4.2.1 (WCDMA); CX-0017 (3GPP2 C.S0002) at 2-64, 2-68 (CDMA2000).

28. '332 Patent – Claim 24

a. A code division multiple access subscriber unit in accordance with claim 22,

Inasmuch as the WCDMA and CDMA2000 products do not infringe claim 22, they also do not infringe dependent claim 24.

b. wherein the complex sequence comprises at least two pseudo noise sequences.

The evidence adduced by InterDigital shows that the WCDMA and CDMA2000 products satisfy the additional claim 24 limitation "wherein the complex sequence comprises at least two pseudo noise sequences." *See, e.g.*, CX-1310C (Prucnal WS) at Q401-407 (WCDMA), Q747-750 (RapuYama), Q1065-1069 (RapidoYawe), Q1373-1377 (RAP3G), [

] Q2225-2228 (CDMA2000), [

] CX-1307C (Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama), [

] CX-0023 (3GPP TS 25.213) at §§ 4.2.1, 4.3.2 (WCDMA); CX-0017 (3GPP2 C.S0002) at 2-64, 2-68, § 2.1.3.1.12 (CDMA2000).

29. '332 Patent – Claim 27

a. A code division multiple access subscriber unit in accordance with claim 21,

Inasmuch as the WCDMA and CDMA2000 products do not infringe independent claim 21, they also do not infringe dependent claim 27.

b. wherein the circuitry is further configured to generate pilot bits; wherein the second radio frequency signal is derived at least in part from the pilot bits.

The record evidence demonstrates that the WCDMA and CDMA2000 products practice the claim limitation "wherein the circuit is further configured to generate pilot bits." *See, e.g.*,

CX-1310C (Prucnal WS) at Q435-437 (WCDMA), Q754-757 (RapuYama), Q1073-1077 (RapidoYawe), Q1381-1385 (RAP3G), [ ] Q2232-2234 (CDMA2000), [ ] CX-1307C (Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama), [ ] CX-0232 (3GPP TS 25.211) at § 5.2.1 (WCDMA); CX-0017 (3GPP2 C.S0002) at 2-64, 2-68, 2-119 (CDMA2000).

The WCDMA and CDMA2000 products also practice the claim limitation "wherein the second radio frequency signal is derived at least in part from the pilot bits." *See, e.g.*, CX-1310C (Prucnal WS) at Q438-440 (WCDMA), Q758-761 (RapuYama), Q1078-1082 (RapidoYawe), Q1386-1390 [ ] Q2235-2236 (CDMA2000), [ ] CX-1307C (Goldberg WS) at Q21 (RAP3G/RapidoYawe), Q79 (RapidoYawe), Q117 (RapuYama), [ ] CX-0023 (3GPP TS 25.213) at §§ 4.2.1, 4.4.2 (WCDMA); CX-0017 (3GPP2 C.S0002) at 2-64, 2-68 (CDMA2000).

30. Indirect Infringement ('406 Patent)

InterDigital also alleges that Respondents have violated section 337 by inducing and contributing to the infringement of the '406 patent. Compls. Br. at 184-93; Compls. Reply at 74. Respondents oppose the allegations. Resps. Br. at 227-28; Resps. Reply at 193.

a. Induced Infringement

As an initial matter, it was determined above that there is no direct infringement of any of the asserted claims of the '406 patent, which is a prerequisite to a finding that Respondents are liable for induced infringement. If, however, it were determined that the accused WCDMA and

CDMA2000 products directly infringe the '406 patent, then the record evidence shows that Respondents would be liable for induced infringement.

i. Nokia

InterDigital argues that Nokia had constructive knowledge of the '406 patent by April 8, 2004, when InterDigital disclosed to ETSI the application that matured into the '406 patent. *See* Compls. Br. at 185. InterDigital also argues that Nokia has actual knowledge of the '406 patent no later than July 26, 2011, which InterDigital filed the complaint in this investigation and provided infringement claim charts to Nokia. *Id.* at 185-86. InterDigital further argues that, "[w]ith knowledge of its infringement of the '406 patent, Nokia continues to import, offer for sale, and sell of each of the Nokia Products and conduct field tests in the United States on those products," that "Nokia intends for end-user consumers to use its WCDMA products on WCDMA networks and CDMA2000 products on CDMA2000 networks in the United States," and that "[t]hus Nokia had knowledge that its testing and/or sale of the Nokia Products for use by end-user customers in the United States constituted patent infringement and actively induces infringement of the '406 patent." *Id.* at 186 (citations omitted).

The evidence adduced by InterDigital shows by a preponderance of the evidence that Nokia would be liable for induced infringement of the '406 patent in the event that direct infringement is found. In particular, the evidence shows that Nokia either had knowledge that the induced acts constitute patent infringement, or took deliberate actions to avoid confirming a high probability of wrongdoing. *See Global-Tech Appliances*, 131 S. Ct. at 2068-71. While it has not been shown how the disclosure of a related patent application to ETSI informed Nokia of potential infringement by purchasers of the accused devices, the same cannot be said of the filing of the complaint in this investigation. If the Commission were to reverse the finding of the

undersigned that Nokia does not infringe the '406 patent, then it would be hard to avoid the conclusion that the detailed complaint provided knowledge of actual infringement by purchasers of the accused devices, a kind of knowledge that meets even the heightened standard set forth in the *Global-Tech* opinion.

ii. Huawei

The arguments and evidence InterDigital presents in support of its claim that Huawei is liable for induced infringement of the '406 patent parallel the arguments and evidence presented with respect to Nokia. *Compare* Compls. Br. at 185-86, *with id.* at 186-88. Respondents' answer to those allegations is also the same. *See* Resps. Br. at 227-28; Resps. Reply at 19. It is determined that InterDigital has adduced evidence showing by a preponderance of the evidence that Huawei is liable for induced infringement of the '406 patent in the event that direct infringement is found.

iii. ZTE

The arguments and evidence InterDigital presents in support of its claim that ZTE is liable for induced infringement of the '406 patent parallel the arguments and evidence presented with respect to Nokia. *Compare* Compls. Br. at 185-86, *with id.* at 188-90. Respondents' answer to those allegations is also the same. *See* Resps. Br. at 227-28; Resps. Reply at 19. It is determined that InterDigital has adduced evidence showing by a preponderance of the evidence that ZTE is liable for induced infringement of the '406 patent in the event that direct infringement is found.

b. Contributory Infringement

As an initial matter, it was determined above that there is no direct infringement of any of the asserted claims of the '406 patent, which is a prerequisite to a finding that Respondents are

liable for contributory infringement. If, however, it were determined that the accused WCDMA and CDMA2000 products directly infringe the '406 patent, then the record evidence shows that Respondents would be liable for contributory infringement.

The record evidence shows that the accused products at issue in this investigation are components of an apparatus for use in practicing the claimed method in the '406 patent, and constitute material parts of the claimed invention. *See* CX-1310C (Prucnal WS) at Q2542-2546.

The Nokia products are especially made or adapted for use in practicing the claimed methods of the '406 patent, as indicated by their compliance with the WCDMA and CDMA2000 standards as described above. *See, e.g.*, CX-1054C (July 10, 2012 Nokia's Supp. Resps. to InterDigital's 1st Set of Interrogs. (Nos. 8, 38 and 61) at 6-110; Exhibit CX-0289C (Chart Showing Nokia WCDMA Devices Using Qualcomm Baseband Processors); CX-1068C (Supp. Exhibit A to Nokia's Response to Interrog. No. 11, 8/17/2012); CX-0293C (Chart Showing Nokia WCDMA Devices Using Nokia/TI Processors); see also, e.g., CX-0151C (Nokia Booklet 3G User Guide); CX-0152C (Nokia Lumina 900 Detailed Specifications); CX-0153C (Device Details Nokia Lumina 810); CX-0154C (Device Details Nokia Lumina 820); CX-0155C (Device Details Nokia Lumina 822); CX-0158C (Nokia Academy Product Data Sheet Nokia Lumina 710); CX-0159C (Nokia Care Academy, Product Data Sheet Nokia Lumina 800); CX-0160C (Test Plan for RM-817); CX-0161C (Nokia RM-817 Product Certification Plan); CX-0290C (Device Details Nokia Lumia 920).

Based on the record evidence, it is determined that there are no substantial non-infringing uses for the Nokia accused products with respect to the '406 patent. Any use of the Nokia

accused products without WCDMA/CDMA2000 functionality enabled would deprive users of the benefit that the products were intended to provide.[32]

Similarly, the Huawei products are also especially made or adapted for use in practicing the claimed methods of the '406 patent. *See, e.g.*, [CX-1111C

CX-1112C

CX-1113C

]

As for ZTE, their accused products are also especially made or adapted for use in practicing the claimed methods of the '406 patent.[33] *See, e.g.*, CX-1138C (ZTE's Corrected Amended Supp. Resps. to InterDigital's Interrog. No. 11); CX-1140C (ZTE's Supp. Resps. and Objections to InterDigital's Interrog. No. 38); CX-1152C (ZTE's Objections and Resps. to InterDigital's 2nd Set of Requests for Admission (Nos. 103-610)).

Moreover, as discussed above, Respondents have known since at least July 26, 2011, when InterDigital filed the complaint in this investigation, that their products are alleged to infringe the '406 patent.

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[32] Nevertheless, Respondents argue that some, but not all, of Nokia's products are sold with WLAN disabled. *See* Resps. Reply at 193 & n.53 (citing RX-3998C (Bims WS) at Q443, Q545) (concerning the Nokia Pureview 808 products). In the event that the Commission were to reverse the decision of the administrative law judge so as to find infringement by Nokia products, the Commission may still find that indirect infringement has not occurred with respect to Nokia's Pureview 800 products.

[33] Respondents argue that some, but not all, of ZTE's products are sold with WLAN disabled. *See* Resps. Reply at 193 & n.53 (citing RX-3998C (Bims WS) at Q443, Q545) (concerning the ZTE's Warp products). In the event that the Commission were to reverse the decision of the administrative law judge so as to find infringement by ZTE products, the Commission may still find that indirect infringement has not occurred with respect to ZTE's Warp products.

Therefore, in the event that the accused products are found to infringe the '406 patent, it is determined that Respondents' importation and sale of the accused products contribute to the direct infringement of the infringed claims.

D. Validity

1. Priority Date

The '406 and '332 patents claim priority to U.S. Provisional Patent Application No. 60/000,775 ("the '775 Provisional"), which was filed on June 30, 1995. JX-0001 ('406 patent) at col. 1, lns. 8-16; JX-0002 ('332 patent) at col. 1, lns. 7-16; JX-0026 ('775 Provisional). For the reasons explained below, the '775 Provisional discloses the asserted claims of the '406 and '332 patents in a manner consistent with the requirements of 35 U.S.C. § 112, ¶ 1. Accordingly, the '406 and '332 patents have an effective filing date of June 30, 1995 under 35 U.S.C. § 120.

The effective filing date of the '406 and '332 patents is a key issue in this investigation, inasmuch as Respondents have argued that two post-provisional references (Odenwalder '230 and '500) invalidate the asserted claims. InterDigital therefore bears the burden of coming forward with evidence supporting an effective filing date of June 30, 1995. *See Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1327-28 (Fed. Cir. 2008).

The parties dispute whether the '775 Provisional discloses one element in each of the asserted claims. The four implicated claim elements are: (i) wherein the transmission power level of the traffic channel and the reverse control channel are different, (ii) separately adjusting the transmission power level of the traffic channel and the reverse control channel, (iii) power control bits that are included on only one of an in-phase (I) channel or a quadrature (Q) channel, and (iv) power control bits are included on only one of the I pre-spread channel or the Q

pre-spread channel. The following discussion addresses these limitations first, then turns to showing support in the '775 Provisional for the remaining limitations of the asserted claims.

a. Disputed Elements of the Asserted Claims

The '775 Provisional refers to base stations as radio carrier stations (RCSs) and to subscriber units as FSUs (or, less frequently, as MSUs). *See* JX-0026 ('775 Provisional) at 2, 6, 8. Figure 15 of the '775 Provisional describes the transmitter section of an enhanced modem (E-Modem) in the modem interface unit (MIU) of a base station (RCS). JX-0026 ('775 Provisional) at 42, NK800IDC07356894; Williams Tr. 1228-1229. Figure 16 is the receiver portion of the same E-Modem. JX-0026 ('775 Provisional) at 42, NK800IDC07356895. Dr. Prucnal testified that the '775 Provisional teaches in at least two places that the same E-Modem is used in subscriber units (SUs). Prucnal Tr. 2020-2025, 2027-2029, 2064-2065; *see also* CX-1525C (Prucnal RWS) at Q117 (discussing CDX-0008.0001 and JX-0026 ('775 Provisional) at 42, 131). More specifically, in the section providing a detailed structural description of the subscriber unit, the '775 Provisional states that the subscriber unit "includes . . . a modem section (as described as the modem in the MIU of the RCS)." JX-0026 ('775 Provisional) at 131. Moreover, under the heading "Enhanced Modem Overview" in the section titled "The CDMA Modem," the '775 Provisional states that "[t]he e-modem has a common interface to support all types of FSUs 106 as well as the MIU 1218." JX-0026 at 42. Accordingly, as a person of ordinary skill in the art at the time of the inventions would have understood, the '775 Provisional describes that the E-Modem transmitter and receiver sections illustrated in Figures 15 and 16, and described elsewhere in the '775 Provisional, are included in both subscriber units and base stations. Prucnal Tr. 2020-2025, 2027-2029, 2064-2065; CX-1525C (Prucnal RWS) at Q117.

i. The "wherein the transmission power level of the traffic channel and the reverse control channel are different" Limitation ('406 Patent)

The '775 Provisional supports the limitation "wherein the transmission power level of the traffic channel and the reverse control channel are different" of claims 6, 13, 20, and 26 of the '406 patent. CX-1525C (Prucnal RWS) at Q126-131, Q476-485 (referencing CDX-0008.0023). Respondents argue that the '775 Provisional does not support this limitation for two reasons: (i) power levels of the channels do not differ in response to a power control bit and (ii) the supporting figures and corresponding text identified by InterDigital relate to a base station instead of a subscriber unit. *See* RX-3529C (Williams WS) at Q199. The evidence is to the contrary.

First, as explained above with respect to the discussion regarding the construction of this limitation, this limitation does not require different transmission power levels in response to a power control bit. Second, Figure 15 of the '775 Provisional shows an E-Modem transmitter that transmits traffic channels (B1 and B2) and a control channel (D channel multiplexed with power control information RAPC). *See* JX-0026 ('775 Provisional) at 42-43, NK800IDC07356894. The '775 Provisional describes that each channel is combined at a programmable weight, such as in Combiner 1524 of Figure 15. *Id.* at 43. The '775 Provisional also describes that the control channel can be sent at a lower transmission power level compared to the traffic channels because the power control information is overhead and, unlike traffic data, can be received in error occasionally (referred to as a higher bit error rate). *Id.* at 21, 79.

ii. The "separately adjusting the transmission power level of the traffic channel and the reverse control channel" Limitation ('406 Patent)

The '775 Provisional supports the limitation "separately adjusting the transmission power level of the traffic channel and the reverse control channel" from claim 29 of the '406 patent. CX-1525C (Prucnal RWS) at Q268-275, Q502-505 (referencing CDX-0008.0024). Respondents argue that the '775 Provisional does not support this limitation largely for the same two reasons as the different power level limitation: (i) there is no separate power adjustment of the channels in response to a power control bit and (ii) the supporting figures and corresponding text identified by InterDigital relate to a base station instead of a subscriber unit. *See* RX-3529C (Williams WS) at Q210. These arguments are not supported by the evidence. First, as explained above with respect to the claim construction of the asserted claims, this limitation does not require separate adjustment in response to a power control bit. Second, it is undisputed that the E-Modem Combiner in Figure 15 separately adjusts the transmission power level of the traffic and control channels by weighing these channels with respective programmable weights and then combining them. *See* JX-0026 ('775 Provisional) at 43; CX-1525C (Prucnal RWS) at Q502, Q504; RX-3529C (Williams WS) at Q199. As explained at the beginning of the discussion regarding priority, Figure 15 and corresponding text in the '775 Provisional describe the E-Modem transmitter in both subscriber units and base stations.

iii. The "power control bits that are included on only one of an in-phase (I) channel or a quadrature (Q) channel" Limitation ('332 Patent)

The '775 Provisional supports the limitation "power control bits that are included on only one of an in-phase (I) channel or a quadrature (Q) channel" found in claims 2-4 and 7 of the '332 patent, as well as and analogous limitation in claims 22-24 and 27. CX-1525C (Prucnal RWS) at

Q5195-32 (including demonstratives), Q299-304, Q437-438. The '775 Provisional discloses two embodiments of this limitation in the context of a *subscriber unit* e-modem in or relating to Figure 15 and corresponding text. CX-1525C (Prucnal RWS) at Q527-528 (describing time and code multiplexed embodiments); CX-1525.1C (Prucnal RWS Errata) at 3; CDX-0008.0017. Respondents argue that the '775 Provisional does not support this limitation for three reasons: (i) the supporting figures and corresponding text identified by InterDigital relate to a base station instead of a subscriber unit, (ii) there are no I and Q channels to the left of Combiner 1524 in Figure 15, and (ii) assuming that the outputs of multiplexer 1520 are I and Q channels, the power control bits would not necessarily be included on only one of those outputs. *See* RX-3529C (Williams WS) at Q155-181. The evidence demonstrates otherwise.

First, Figure 15 and corresponding text describe the E-Modem transmitter in both subscriber units and base stations as explained above.

Second, as discussed above regarding the construction of the disputed claim terms for this patent, Respondents misconstrue the terms I and Q channels as referring only to components of a transmitted analog radiofrequency ("RF") QPSK signal or, at most, the digital signals that get upconverted to analog RF components. *See, e.g.*, RX-3529C (Williams WS) at Q100. There is no indication in the '775 Provisional that the terms I and Q channels are so limited, particularly given that the outputs of Combiner 1524 in Figure 15 are labeled I and Q, but are not RF components. *See* JX-0026 ('775 Provisional) at NK800IDC07356894. As InterDigital's expert Dr. Prucnal explained in his witness statement and at the hearing, the '332 patent consistently refers to I and Q channels more broadly. For example, claim 21 distinguishes I and Q components of the transmitted RF signal from I and Q channels in the digital domain. Prucnal Tr. 345; JX-0002 ('332 patent) at col. 102, lns. 45-51. Figure 14 includes ½-rate convolutional

encoders, the output of which the specification describes, and Figure 16 shows, as in-phase (I) and quadrature (Q) channels. *See, e.g.*, Prucnal Tr. 356-359; JX-0002 ('332 patent) at Fig.16; col. 45, lns. 13-21; CX-1525C (Prucnal RWS) at Q518; CX-1525.1C (Prucnal RWS Errata) at 3. In addition, Dr. Prucnal explained that the following language from the specification describes the inputs to complex spreading (known also as complex multiplication or scrambling) in Figure 14 as QPSK signals comprised of in-phase (I) and quadrature (Q) channels:

> The logical channels are initially converted to QPSK signals, which are mapped as constellation points as is well known in the art. The in-phase and quadrature channels of each QPSK signal form the real and imaginary parts of the complex data value. Similarly, two spreading codes are used to form complex spreading chip values. The complex data are spread by being multiplied by the complex spreading code.

Prucnal Tr. 346-349, 352; *see* JX-0002 ('332 patent) at col. 23, lns. 61-67. The evidence shows that power control bits (labeled APC) are included on a single spreader input in Figure 14 and thus included on only one of an in-phase or quadrature channel of the QPSK signal. *See, e.g.*, CX-1525C (Prucnal RWS) at Q514, Q518; CX-1525.1C (Errata) at 3. The specification even explicitly describes an embodiment having "APC information on, for example, the in-phase channel and the OW information on the quadrature channel of the QPSK signal." JX-0002 ('332 patent) at col. 67, lns. 61-64; Williams Tr. 1225. Thus there is overwhelming evidence regarding the broad meaning of I and Q channels in the context of the '332 patent claims, and specifically as these terms concern inputs to complex spreading (*i.e.*, complex multiplication or scrambling).

Third, Respondents argue that the power control information (labeled RAPC) in Figure 15 is not necessarily included on only one of the multiplexor outputs. *See* RX-3529C (Williams WS) at Q171. This argument, however, is contradicted by Dr. Prucnal's explanation as to why and how the power control information would be included on only one of the multiplexor

outputs. *See* CX-1525C (Prucnal RWS) at Q519-527; CX-1525.1C (Prucnal RWS Errata) at 3. Dr. Prucnal discussed a person of ordinary skill in the art's understanding that multiplexors combine multiple inputs to form a single output, as well as engineering textbooks that support his opinion. *See id.* (discussing RX-3453 (Introduction to Electronics), RX-3452 (Fundamentals of Digital Logic), and RX-0924 (Digital Communications)); CX-1525.1C (Errata) at 3; Prucnal Tr. 2030, 2035-2038 (discussing CDX-0008.0007 to .0009). According to Dr. Prucnal, the power control information would necessarily be included on only one of the multiplexor outputs and thus on only one of an in-phase (I) or quadrature (Q) channel. *See* CX-1525C (Prucnal RWS) at Q519-527; CX-1525.1C (Prucnal RWS Errata) at 3. A contrary result, Dr. Prucnal explained, would require demultiplexing or creating copies of the power control information. *See, e.g.*, Prucnal Tr. at 2040, 2041, 2043, 2048-2049.

Furthermore, Dr. Prucnal described a second (preferred) embodiment in the '775 Provisional for which power control bits are included on only one of an in-phase (I) or quadrature (Q) channel. *See* CX-1525C (Prucnal RWS) at Q528-532 (discussing CDX-0008.0011 to .0016). The '775 Provisional states that "the preferred way is to put [power control] on a code multiplexed channel because it allows you to eliminate the latency or the delay that's involved in time multiplexing." JX-0026 ('775 Provisional) at 114. Referring to this "code multiplexing approach," the '775 Provisional also states that "putting the power control on its own code is unique." JX-0026 ('775 Provisional) at 21. Both Drs. Prucnal and Williams testified that this description refers to putting power control on its own spreading code. *See* CX-1525C (Prucnal RWS) at Q528; RX-3529C (Williams WS) at Q157-158. In other words, Figure 15 would be modified to show RAPC input to its own spreader rather than to multiplexor 1520. *See, e.g.*, CX-1525C (Prucnal RWS) at Q528. In this embodiment, the power

control information would be included on a single input to a spreader, and thus on only one of an I or Q channel, as shown in CDX-0008.0015 and compared with Figure 14 of the '332 patent in CDX-0008.0016. *See* CX-1525C (Prucnal RWS) at Q528.

iv. The "power control bits are included on only one of the I pre-spread channel or the Q pre-spread channel" Limitation ('332 Patent)

The '775 Provisional supports the limitation "power control bits are included on only one of the I pre-spread channel or the Q pre-spread channel" found in claims 8–11 and 14 of the '332 patent. CX-1525C (Prucnal RWS) at Q537-546. Respondents argue that the '775 Provisional does not support this limitation by cross-referencing their arguments made regarding the other '332 patent asserted claims and arguing specifically that none of the channels prior to the spreaders in Figure 15 are I or Q channels. *See* RX-3529C (Williams WS) at Q187. These arguments fail for all of the reasons discussed above in the context of these other '332 patent asserted claims. Moreover, as Dr. Prucnal explained, the '775 Provisional describes that the spreading codes applied by Spreaders 1522 to the traffic and control channels can be complex or real sequences. CX-1525C (Prucnal RWS) at Q542-546; *see* JX-0026 ('775 Provisional) at 81-82, Fig.15, NK800IDC07356894, NK800IDC07357590. This fact is significant because, as Dr. Prucnal explained, the Spreader outputs must be I and Q channels in order for the Combiner outputs to be I and Q channels, and they are labeled as such. CX-1525C (Prucnal RWS) at Q546 ("A combiner combines, and in this case weights signals, but a combine[r] does not create I and Q channels."). "The only way to obtain I and Q outputs from multiplying a real sequence is to have a complex-valued input. Therefore the two inputs into the spreaders are I and Q pre-spread channels." *Id.* In short, starting from the ½-rate convolutional encoders and moving right or

starting from the combiner outputs and moving left, a person of ordinary skill in the art would understand that the intermediate arrows in Figure 15 are in-phase (I) or quadrature (Q) channels.

b. Undisputed Elements of the Asserted Claims

The parties do not dispute that the '775 Provisional supports the remaining elements of the asserted claims of the '406 and '332 patents. The parties also do not dispute that the '775 Provisional discloses the claimed "power control bits" under either both parties' proposed construction, including the construction adopted above. JX-0026 ('775 Provisional) at 79; CX-1525C (Prucnal RWS) at Q89-92.

i. '406 Patent – Claim 6

The '775 Provisional discloses claim 6 of the '406 patent. CX-1525C (Prucnal RWS) at Q93-143. The '775 Provisional discloses "[a] method for controlling transmission power levels of a code division multiple access (CDMA) subscriber unit." JX-0026 ('775 Provisional) at 80-81; CX-1525C (Prucnal RWS) at Q94-103. The '775 Provisional discloses "receiving by the subscriber unit a power control bit on a downlink control channel, the power control bit indicating either an increase or decrease in transmission power level." JX-0026 ('775 Provisional) at 79; CX-1525C (Prucnal RWS) at Q104-111. The '775 Provisional discloses "transmitting a plurality of channels by the subscriber unit, the plurality of channels including a traffic channel and a reverse control channel." JX-0026 ('775 Provisional) at NK800IDC07357102; CX-1525C (Prucnal RWS) at Q112-117. The '775 Provisional discloses "in response to the received power control bit, adjusting a transmission power level of both the traffic channel and the reverse control channel." JX-0026 ('775 Provisional) at 33, 127, and NK800IDC07356891; CX-1525C (Prucnal RWS) at Q118-125. The next element from claim 6, "wherein the transmission power level of the traffic channel and the reverse control channel are

different" is disputed and is disclosed by the '775 Provisional as explained previously. The '775 Provisional discloses "transmitting the traffic channel and the reverse control channel at their respective adjusted transmit power levels." JX-0026 ('775 Provisional) at 42, 43, 131, and NK800IDC07356894; CX-1525C (Prucnal RWS) at Q132-135. The '775 Provisional discloses "wherein the reverse control channel carries at least one power command." JX-0026 ('775 Provisional) at 42, 43, 131 and NK800IDC07356894; CX-1525C (Prucnal RWS) at Q138-143.

ii. '406 Patent – Claim 13

The '775 Provisional discloses claim 13 of the '406 patent. CX-1525C (Prucnal RWS) at Q144-180. The '775 Provisional discloses "A method for controlling transmission power levels of a code division multiple access (CDMA) subscriber unit." JX-0026 ('775 Provisional) at 80-81; CX-1525C (Prucnal RWS) at Q145, Q94-103. The '775 Provisional discloses "receiving by the subscriber unit a series of power control bits on a downlink channel, each power control bit indicating either an increase or decrease in transmission power level." JX-0026 ('775 Provisional) at 77; CX-1525C (Prucnal RWS) at Q147-156. The '775 Provisional discloses "transmitting a plurality of channels by the subscriber unit, the plurality of channels including a traffic channel and a reverse control channel." JX-0026 ('775 Provisional) at NK800IDC07357102; CX-1525C (Prucnal RWS) at Q157-158, Q112-117. The '775 Provisional discloses "adjusting a transmission power level of both the traffic channel and the reverse control channel in response to the same bits in the received series of power control bits." JX-0026 ('775 Provisional) at 74-75, 77, NK800IDC07356915; CX-1525C (Prucnal RWS) at Q159-172. The next element from claim 13, "wherein the transmission power level of the traffic channel and the reverse control channel are different" is disputed and is disclosed by the '775 Provisional as explained previously. The '775 Provisional discloses "transmitting the traffic channel and the

reverse control channel at their respective adjusted transmit power levels." JX-0026 ('775 Provisional) at 42, 43, 131, and NK800IDC07356894; CX-1525C (Prucnal RWS) at Q175-176, Q132-135. The '775 Provisional discloses "wherein the reverse control channel carries at least one power command." JX-0026 ('775 Provisional) at 42, 43, 131 and NK800IDC07356894; CX-1525C (Prucnal RWS) at Q179-180, Q138-142.

iii. '406 Patent – Claim 20

The '775 Provisional discloses claim 20 of the '406 patent. CX-1525C (Prucnal RWS) at Q181-224. The '775 Provisional discloses "[a] code division multiple access (CDMA) subscriber unit." JX-0026 ('775 Provisional) at 6, 16, NK800IDC07356861-862; CX-1525C (Prucnal RWS) at Q182-185. The '775 Provisional discloses "a despreading and demultiplexing device configured to recover a power control bit from a downlink control channel, wherein the power control bit has a value indicating a command to either increase or decrease transmission power level." JX-0026 ('775 Provisional) at 74-75, NK800IDC07356915; CX-1525C (Prucnal RWS) at Q186-199. The '775 Provisional discloses "gain devices configured, in response to the received power control bit, to adjust a transmission power level of both a traffic channel and a reverse control channel prior to transmission by the subscriber unit." JX-0026 ('775 Provisional) at 33, 127, or NK800IDC07356891; Williams Tr. 1221-1222; CX-1525C (Prucnal RWS) at Q200-218, Q506-513; CX-1525.1C (Prucnal RWS Errata) at 2-3; CX-1401 (CGY120 Description); Williams Tr. 1222, 1223; CX-1456 (Williams Multiple Stage Amplifier Drawing); CX-1405 (HP GaAs MMIC Amplifiers), CX-1404 (Agilent GaAs MMIC Amplifiers), CX-1403 (Technical and Commercial Aspects of GaAs MMICs), CX-1406 (RF Amplifier Design). The next element from claim 20, "wherein the transmission power level of the traffic channel and the reverse control channel are different" is disputed and is disclosed by the '775 Provisional as

explained previously. The '775 Provisional discloses "wherein the reverse control channel carries at least one power command." JX-0026 ('775 Provisional) at 42, 43, 131, and NK800IDC07356894; CX-1525C (Prucnal RWS) at Q223-224, Q138-142.

iv. '406 Patent – Claim 26

The '775 Provisional discloses claim 26 of the '406 patent. CX-1525C (Prucnal RWS) at Q225-258. The '775 Provisional discloses "[a] code division multiple access (CDMA) subscriber unit." JX-0026 ('775 Provisional) at 6, 16, NK800IDC07356861-862; CX-1525C (Prucnal RWS) at Q225, Q182-185. The '775 Provisional discloses "a despreading and demultiplexing device configured to recover a series of power control bits from a downlink channel, wherein each power control bit has a value indicating a command to either increase or decrease transmission power level." JX-0026 ('775 Provisional) at 74-75, NK800IDC07356915; CX-1525C (Prucnal RWS) at Q226-241. The '775 Provisional discloses "gain devices configured, in response to the received series of power control bits, to adjust a transmission power level of both a traffic channel and a reverse control channel in response to same bits in the received series of power control bits prior to transmission by the subscriber unit." JX-0026 ('775 Provisional) at 33, 127, or NK800IDC07356891; Williams Tr. 1221-1222; CX-1525C (Prucnal RWS) at Q242-243, Q200-218, Q506-513; CX-1525.1C (Prucnal RWS Errata) at 2-3; CX-1401 (CGY120 Description); Williams Tr. 1222, 1223; CX-1456 (Williams Multiple Stage Amplifier Drawing); CX-1405 (HP GaAs MMIC Amplifiers); CX-1404 (Agilent GaAs MMIC Amplifiers); CX-1403 (Technical and Commercial Aspects of GaAs MMICs); CX-1406 (RF Amplifier Design). The next element from claim 26, "wherein the transmission power level of the traffic channel and the reverse control channel are different" is disputed and is disclosed by the '775 Provisional as explained previously. The '775 Provisional discloses "wherein the downlink

channel is a downlink control channel." JX-0026 ('775 Provisional) at 74-75, 80-81; CX-1525C (Prucnal RWS) at Q249-254, Q186-199. The '775 Provisional discloses "wherein the reverse control channel carries at least one power command." JX-0026 ('775 Provisional) at 42, 43, 131 and NK800IDC07356894; CX-1525C (Prucnal RWS) at Q257-258, Q138-142.

v. '406 Patent – Claim 29

The '775 Provisional discloses claim 29 of the '406 patent. CX-1525C (Prucnal RWS) at Q259-277. The '775 Provisional discloses "A method for controlling transmission power levels of a code division multiple access (CDMA) subscriber unit." JX-0026 ('775 Provisional) at 80-81; CX-1525C (Prucnal RWS) at Q260-261, Q94-103. The '775 Provisional discloses "receiving by the subscriber unit a power control bit on a downlink control channel, the power control bit indicating either an increase or decrease in transmission power level." JX-0026 ('775 Provisional) at 77; CX-1525C (Prucnal RWS) at Q262-263, Q147-156. The '775 Provisional discloses "transmitting a plurality of channels by the subscriber unit, the plurality of channels including a traffic channel and a reverse control channel." JX-0026 ('775 Provisional) at NK800IDC07357102; CX-1525C (Prucnal RWS) at Q264-65, Q112-117. The '775 Provisional discloses "in response to the received power control bit, adjusting a transmission power level of both the traffic channel and the reverse control channel." JX-0026 ('775 Provisional) at 33, 127, NK800IDC07356891; CX-1525C (Prucnal RWS) at Q266-267, Q200-218; CX-1525.1C (Prucnal RWS Errata) at 2. The next element from claim 29, "separately adjusting the transmission power level of the traffic channel and the reverse control channel" is disputed and is disclosed by the '775 Provisional as explained above. The '775 Provisional discloses "transmitting the traffic channel and the reverse control channel at their respective adjusted

transmit power levels." JX-0026 ('775 Provisional) at 42, 43, 131, and NK800IDC07356894; CX-1525C (Prucnal RWS) at Q276-277, Q132-135.

vi. '332 Patent – Claim 2

The '775 Provisional discloses claim 2 of the '332 patent. CX-1525C (Prucnal RWS) at Q283-317. The '775 Provisional discloses "[a] code division multiple access subscriber unit." JX-0026 ('775 Provisional) at 6, 16, NK800ITC07356861-862; CX-1525C (Prucnal RWS) at Q283-287. The '775 Provisional discloses "a circuit, operatively coupled to the antenna, configured to generate power control bits." JX-0026 ('775 Provisional) at 43, 131, NK800IDC07356895; CX-1525C (Prucnal RWS) at Q288-298. As explained above, the disputed limitation from claim 2, power control bits that "are included on only one of an in-phase (I) channel or a quadrature (Q) channel" is disclosed by the '775 Provisional. The '775 Provisional discloses "the antenna configured to output a radio frequency signal derived at least in part from the I and Q channels." JX-0026 ('775 Provisional) at 42-43, 131, NK800IDC07356894; CX-1525C (Prucnal RWS) at Q305-307. The '775 Provisional discloses "wherein the circuit is further configured to combine the I and Q channels with a complex sequence." JX-0026 ('775 Provisional) at 42-43, 81-82, 131, NK800IDC07356894, NK800IDC07357590; CX-1525C (Prucnal RWS) at Q311-317.

vii. '332 Patent – Claim 3

Claim 3 of the '332 patent depends from claim 2, disclosed as stated previously. CX-1525C (Prucnal RWS) at Q318-320. The '775 Provisional discloses "wherein the combining is by multiplication." JX-0026 ('775 Provisional) at 81-82, NK800IDC07356894, NK800IDC07357590; CX-1525C (Prucnal RWS) at Q321-327.

viii. '332 Patent – Claim 4

Claim 4 of the '332 patent depends from claim 2, disclosed as shown above. CX-1525C (Prucnal RWS) at Q328-330. The '775 Provisional discloses "wherein the complex sequence comprises at least two pseudo noise sequences." JX-0026 ('775 Provisional) at 44, 46, NK800IDC07356897; CX-1525C (Prucnal RWS) at Q331-337.

ix. '332 Patent – Claim 7

Claim 7 of the '332 patent depends from claim 1, disclosed as shown above. CX-1525C (Prucnal RWS) at Q338-340. The '775 Provisional discloses "wherein the circuit is further configured to generate pilot bits; wherein the radio frequency signal is derived at least in part from the pilot bits." JX-0026 ('775 Provisional) at 42-43, 131, NK800IDC07356894; CX-1525C (Prucnal RWS) at Q341-347; CX-1525.1C (Prucnal RWS Errata) at 2-3.

x. '332 Patent – Claim 8

The '775 Provisional discloses claim 8 of the '332 patent. CX-1525C (Prucnal RWS) at Q348-380. The '775 Provisional discloses "[a] code division multiple access subscriber unit." JX-0026 ('775 Provisional) at 6, 16, NK800ITC07356861-862; CX-1525C (Prucnal RWS) at Q349-350, Q283-287. The '775 Provisional discloses "an antenna configured to receive a first radio frequency signal." JX-0026 ('775 Provisional) at 131, NK800IDC07356941; CX-1525C (Prucnal RWS) at Q351-357. The '775 Provisional discloses "a circuit, operatively coupled to the antenna, configured to generate power control bits in response to the first radio frequency signal." JX-0026 ('775 Provisional) at 43, 131, NK800IDC07356895; CX-1525C (Prucnal RWS) at Q358-366. The '775 Provisional discloses "wherein the circuit is further configured to establish an in-phase (I) pre-spread channel and a quadrature (Q) pre-spread channel." JX-0026 ('775 Provisional) at 42-43, 131, NK800IDC07356895; JX-0002 ('332 patent) col. 45, lns.

13-22; CX-1525C (Prucnal RWS) at Q367-377, 518; CX-1525.1C (Prucnal RWS Errata) at 3. The remainder of this element, "such that the power control bits are included on only one of the I pre-spread channel or the Q pre-spread channel," is disputed and is disclosed as explained above. The '775 Provisional discloses "wherein a second radio frequency signal output by the code division multiple access subscriber unit is derived at least in part from the I and Q pre-spread channels." JX-0026 ('775 Provisional) at 42, 43, 131, NK800IDC07356894; CX-1525C (Prucnal RWS) at Q 378-380.

xi. '332 Patent – Claim 9

Claim 9 of the '332 patent depends from claim 8, which is disclosed as stated above. CX-1525C (Prucnal RWS) at Q381-383. The '775 Provisional discloses "wherein the circuit is further configured to combine the I and Q pre-spread channels with a complex sequence." JX-0026 ('775 Provisional) at 42-43, 81-82, 131, NK800IDC07356894, NK800IDC07357590; CX-1525C (Prucnal RWS) at Q384-390.

xii. '332 Patent – Claim 10

Claim 10 of the '332 patent depends from claim 9, which is disclosed as stated previously. CX-1525C (Prucnal RWS) at Q391-393. The '775 Provisional discloses "wherein the combining is by multiplication." JX-0026 ('775 Provisional) at 81-82, NK800IDC07356894, NK800IDC07357590; CX-1525C (Prucnal RWS) at Q394-400.

xiii. '332 Patent – Claim 11

Claim 11 of the '332 patent depends from claim 9, which is disclosed as shown above. CX-1525C (Prucnal RWS) at Q401-403. The '775 Provisional discloses "wherein the complex sequence comprises at least two pseudo noise sequences." JX-0026 ('775 Provisional) at 44, 46, NK800IDC07356897; CX-1525C (Prucnal RWS) at Q404-410.

xiv. '332 Patent – Claim 14

Claim 14 of the '332 patent depends from claim 8, which is disclosed as shown above. CX-1525C (Prucnal RWS) at Q411-413. The '775 Provisional discloses "wherein pilot bits are included on at least one of the I and the Q pre-spread channels." JX-0026 ('775 Provisional) at 42-43, 131, NK800IDC07356894; CX-1525C (Prucnal RWS) at Q414-420.

xv. '332 Patent – Claim 22

The '775 Provisional discloses claim 22 of the '332 patent. CX-1525C (Prucnal RWS) at Q421-445. The '775 Provisional discloses "[a] code division multiple access subscriber unit." JX-0026 ('775 Provisional) at 6, 16, NK800ITC07356861-862; CX-1525C (Prucnal RWS) at Q422-423, Q283-287. The '775 Provisional discloses "circuitry configured to receive a first radio frequency signal and generate power control bits in response to the first radio frequency signal." JX-0026 ('775 Provisional) at 43, 131, NK800IDC07356895; CX-1525C (Prucnal RWS) at Q424-436. The '775 Provisional discloses "wherein the circuit is further configured to establish an in-phase (I) channel and a quadrature (Q) channel." JX-0026 ('775 Provisional) at 42-43, 131, NK800IDC07356895; JX-0002 ('332 patent) at col. 45, lns. 13-22; CX-1525C (Prucnal RWS) at Q437-438, Q367-377. The remainder of this element, "wherein one of the I or the Q channel includes the power control bits" is disputed and is disclosed by the '775 Provisional as explained above. The '775 Provisional discloses "wherein the circuitry is further configured to produce a second radio frequency signal including an I component and a Q component derived from the I channel and the Q channel." JX-0026 ('775 Provisional) at 42, 43, 131, NK800IDC07356894; CX-1525C (Prucnal RWS) at Q439-440, Q378-380. The '775 Provisional discloses "wherein the circuitry is further configured to transmit the second radio frequency signal." JX-0026 ('775 Provisional) at 42-43, 131, NK800IDC07356894; CX-1525C

(Prucnal RWS) at Q305-307. The '775 Provisional discloses "wherein the circuitry is further configured to combine the I and Q channels with a complex sequence." JX-0026 ('775 Provisional) at 42-43, 81-82, 131, NK800IDC07356894, NK800IDC07357590; CX-1525C (Prucnal RWS) at Q446-447, Q311-317.

xvi. '332 Patent – Claim 23

Claim 23 of the '332 patent depends from claim 22, disclosed as stated above. CX-1525C (Prucnal RWS) at Q448-450. The '775 Provisional discloses "wherein the combining is performed by multiplication." JX-0026 ('775 Provisional) at 80-81, NK800IDC07356894, NK800IDC07357590; CX-1525C (Prucnal RWS) at Q451-452, Q321-327.

xvii. '332 Patent – Claim 24

Claim 24 of the '332 patent depends from claim 22, disclosed as shown above. CX-1525C (Prucnal RWS) at Q453-455. The '775 Provisional discloses "wherein the complex sequence comprises at least two pseudo noise sequences." JX-0026 ('775 Provisional) at 44, 46, NK800IDC07356897; CX-1525C (Prucnal RWS) at Q456-457, Q331-337.

xviii. '332 Patent – Claim 27

Claim 27 of the '332 patent depends from claim 21, disclosed above. CX-1525C (Prucnal RWS) at Q458-460. The '775 Provisional discloses "wherein the circuitry is further configured to generate pilot bits; wherein the second radio frequency signal is derived at least in part from the pilot bits." JX-0026 ('775 Provisional) at 42-43, 131, NK800IDC07356894; CX-1525C (Prucnal RWS) at Q461-462, Q341-347; CX-1525.1C (Prucnal RWS Errata) at 2.

2. Anticipation and Obviousness

Respondents argue that the asserted claims of the '406 patent are invalid based on three primary references (Andermo-Brismark,[34] Andermo-Ewerbring,[35] and Tiedemann[36]) alone or each in combination with a Dent[37] or Salmasi[38] reference. *See* GR12 Filing at 7, 8. Respondents have failed to show clearly and convincingly that the asserted claims are invalid because, at a minimum, none of these references discloses or renders obvious the limitations (i) "the reverse control channel carries at least one power command" or (ii) "separately adjusting the transmission power level of the traffic channel and the reverse control channel." As an initial matter, all of these references were disclosed during prosecution of the '406 patent, and the Tiedemann reference was cited by the examiner in an office action rejecting claims.[39] JX-0008 ('406 file history) at IDC-ITC-016382231. Respondents do not contend that the primary

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[34] RX-0717 ("Andermo-Brismark") is titled, "CODIT, a Testbed Project Evaluating DS-CDMA for UMTS/FPLMTS," was written by PG Andermo and Gustav Brismark, and was available in 1994 through IEEE. *See* RX-3529C (Williams WS) at Q1486-1488. Since the article was publicly available in 1994, the Andermo-Brismark reference qualifies as prior art under at least 35 U.S.C. § 102(a).

[35] RX-0721 ("Andermo-Ewerbring") is titled, "A CDMA-Based Radio Access Design for UMTS," was written by PG Andermo and Lars-Magnus Ewerbring, and was available in the February 1995 issue of *IEEE Personal Communications*. RX-3529C (Williams WS) at Q1605-1607. The Andermo-Ewerbring reference is therefore prior art under 35 U.S.C. § 102(a).

[36] U.S. Patent No. 5,604,730 to Tiedmann (RX-0731) ("the Tiedemann '730 patent" or "Tiedemann") was filed July 25, 1994.

[37] U.S. Patent No. 5,377,183 (RX-0730) ("Dent" or "Dent 183") is titled, "Calling Channel in CDMA Communications Systems," and was filed by Paul Dent on April 11, 1994.

[38] RX-0718 ("Salmasi") is an article written by Allen Salmasi and Klein Gilhousen titled, "On the System Design Aspects of Code Division Multiple Access (CDMA) Applied to Digital Cellular And Personal Communication Networks," and was published in 1991.

[39] The clear and convincing 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).

references disclose the first of these two limitations, relying instead on Dent or Salmasi to fill in the missing piece. Williams Tr. 1232.

Respondents also argue that the asserted claims of the '332 patent are invalid based on two primary references (Lucas[40] and Walton[41]) alone or in combination with each other or Salmasi. Respondents have failed to show clearly and convincingly that the asserted claims are invalid because none of these references discloses or renders obvious the following limitations: (i) including power control bits on only one of an uplink in-phase (I) or quadrature (Q) channel, (ii) including power control bits on only one of a pre-spread in-phase (I) or quadrature (Q) channel, or (iii) combining these channels with a complex sequence. As an initial matter, Walton and Salmasi were disclosed during prosecution of the '332 patent. Walton in particular was made of record in the examiner's first rejection and mentioned explicitly in the examiner's first statement of reasons for allowance in April 2009, which the examiner cross-referenced in every subsequent Notice of Allowability. JX-0009 ('332 file history) at IDC-ITC-016399573, IDC-ITC-016400782, IDC-ITC-016401480. Furthermore, Respondents rely on Lucas for allegedly disclosing the limitation of combining the I and Q [pre-spread] channels with a complex sequence, even though Lucas teaches away from this limitation by advocating replacing complex sequences with real ones. For these reasons, the asserted '332 patent claims are not invalid.

Respondents further argue that asserted claims of both the '406 and '332 patents are invalid based on two Odenwalder patent references that were filed almost a year after the '775

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[40] U.S. Patent 5,544,167 (RX-0696) to Lucas ("Lucas") was filed on August 12, 1994, and is therefore prior art to the '332 patent under 35 U.S.C. § 102(e).

[41] U.S. Patent 5,621,723 (RX-0694) to Walton ("Walton") was filed on June 5, 1995, and is therefore prior art to the '332 patent under 35 U.S.C. § 102(e).

Provisional was filed on June 30, 1995. Odenwalder '230 was filed on May 28, 1996, and Odenwalder '500 was filed on June 7, 1996. *See* RX-0695 (Odenwalder '230); RX-0729 (Odenwalder '500). As determined above, the asserted claims are entitled to an effective filing date of June 30, 1995 based on priority to the '775 Provisional. Therefore, the Odenwalder references are not prior art to the '406 and '332 patents and do not invalidate the asserted claims.

The following discussion first explains why claims 6, 13, 20, and 26 of the '406 patent are not invalid over the prior art, inasmuch as the asserted references do not disclose or render obvious the claim limitation "the reverse control channel carries at least one power command." The discussion then turns to Respondents' obviousness combinations for the asserted claims of the '406 and '332 patents, and explores secondary considerations of nonobviousness.

a. The "reverse control channel carries at least one power command" ('406 Patent) Limitation

Experts for the parties testified that Andermo-Brismark, Andermo-Ewerbring, and Tiedemann do not disclose the limitation "the reverse control channel carries at least one power command" as required by claims 6, 13, 20, and 26 of the '406 patent. *See, e.g.*, Williams Tr. 1232; CX-1525C (Prucnal RWS) at Q627-646, Q655-666, Q720-727; RX-3529C (Williams WS) at Q1525, Q1643, Q1825. Respondents argue that this limitation would have been obvious based on each of these primary references in combination with Dent or Salmasi. *See* Resps. Br. at 234-51. As Dr. Prucnal explained, however, Dent and Salmasi do not disclose this limitation, and this limitation would not have been obvious at the time of the '406 invention based on Dent or Salmasi in combination with Andermo-Brismark, Andermo-Ewerbring, or Tiedemann. *See, e.g.*, CX-1525C (Prucnal WS) at Q627-639, Q655-666, Q681-687.

Respondents argue that this limitation would have been obvious based on U.S. Patent No. 5,377,183 to Dent (RX-0730) ("Dent '183") because Dent incorporates by reference an application that issued as U.S. Patent No. 5,345,598 (RX-1680) ("Dent '598") that allegedly teaches a different "dynamic power control system." *See* RX-3529C (Williams WS) at Q1105-1107, Q1525; RX-3529.1C (Williams WS Errata) at 2. As an initial matter, Dent '183 discloses only an open loop (or duplex) power control system in which power is adjusted based on received signal strength rather than a closed loop power control system. *See, e.g.*, CX-1525C (Prucnal RWS) at Q573, Q675, Q692; CX-1525.1C (Prucnal RWS Errata) at 3; RX-0730 (Dent '183) at col. 4, ln. 63 – col. 5, ln. 5. Respondents' argument that Dent '183 incorporates the dynamic power control system of Dent '598 is misguided, inasmuch as Dent '183 states the following:

> A duplex power control system is disclosed in "Duplex Power Control", U.S. patent application Ser. No. 07/866,554, filed Apr. 10, 1992, and is incorporated herein by reference.

See RX-0730 (Dent '183) at col. 5, lns. 2-5; RX-3529C (Williams WS) at Q1107.

The statement of incorporation set forth in Dent '183 shows that only the "duplex power control system" from Dent '598 is incorporated, and not a "dynamic power control system." *See, e.g.*, CX-1525C (Prucnal RWS) at Q573; CX-1525.1C (Prucnal RWS Errata) at 3; *see also Adv. Display Sys., Inc. v. Kent State Univ.*, 212 F.3d 1272, 1282 (Fed. Cir. 2000) ("[T]he host document must identify with detailed particularity what specific material it incorporates and clearly indicate where that material is found in the various documents.").

Moreover, Dent '598 does not disclose the claim limitation "the reverse control channel carries at least one power command," and instead teaches away from a dynamic power control system. Dent '598, in discussing dynamic power control, discloses sending "a message to the

base station including a measurement of signal strength" rather than a power command, even though Dent '598 describes sending a command on the forward link. *See* RX-1680 (Dent '598) at col. 2, lns. 22-41; CX-1525C (Prucnal RWS) at Q694, Q724, Q760. Dent '598 also does not disclose sending this message on a reverse control channel. RX-1680 (Dent '598) at col. 2, lns. 22-41. Furthermore, Dent '598 discourages the use of closed loop power control bidirectional messages:

> The Dynamic Power Control technique has the disadvantage that it is *slow* to react because of the cumbersome, bi-directional messages needed between the base station and the mobile. The bi-directional signaling also reduces the capacity or quality of the traffic channel.

RX-1680 (Dent '598) at col. 2, lns. 35-41.

Dent '598 then states that "it would be desirable" to control power "without the need for bidirectional power control messages between the base station and mobiles." *See* RX-1680 (Dent '598) at col. 2, lns. 45-51; Williams Tr. 1233. The remainder of Dent '598 discloses an alternative system that uses only open loop power control, where power commands and power control bits are not sent in either direction. *See, e.g.*, CX-1525C (Prucnal RWS) at Q695. Accordingly, Dent '598 teaches away from a reverse control channel that carries at least one power command, and there would have been no motivation to combine Dent, and specifically the dynamic power control system, with any of the primary references, and any such combination would not render the claim limitation obvious. *See, e.g.*, *id.* at Q573, Q695-696, Q631, Q659, Q727; CX-1525.1C (PrucnalRWS Errata) at 3.

Respondents also argue that this limitation would have been obvious based on an article authored by Allen Salmasi. RX-0718 (Salmasi); *see, e.g.*, RX-3529C (Williams WS) at Q1108. Salmasi, however, does not disclose a power command or sending a power command on a

reverse control channel. *See, e.g.*, CX-1525C (Prucnal RWS) at Q577, Q632-639. Salmasi, for example, expressly distinguishes between a command and a request by describing a power adjustment command on the forward link, but only a power adjustment request on the reverse link. *See* RX-0718 (Salmasi) at 58, 60. In addition, Figure 1 of Salmasi shows forward Traffic Channels comprised of Traffic Data and a Mobile Power Control Subchannel, whereas Figure 2 shows only Reverse Traffic Channels without any mention of power control, a reverse control channel, a reverse power control channel, or a Mobile Power Control Subchannel. *See id.* at 58. In other words, the presence of the Mobile Power Control Subchannel in Figure 1 and its absence in Figure 2 shows that Salmasi never recognized the value of putting its power control requests onto a reverse control channel. *See, e.g.*, CX-1525C (Prucnal RWS) at Q577, Q634. Salmasi teaches that, inasmuch as the power adjustment requests are transmitted only "once per vocoder frame" on a reverse traffic channel, there is no need for a reverse control channel. *See id.* Lastly, as detailed below in the context of each primary reference, even if Salmasi transmitted power adjustment requests on a reverse control channel, Salmasi would not meet the other claim limitations because (i) Salmasi describes power control information on a subchannel of the downlink traffic channel and (ii) even if the power control requests were transmitted on a subchannel of the reverse traffic channel, the transmission power level of the reverse traffic and control channels would not be different. *See, e.g., id.* at Q578, Q635.

In addition, many of the primary references expressly limited power control commands to the downlink. *See, e.g.*, CX-1525C (Prucnal RWS) at Q565. Drs. Williams and Prucnal testified that it is desirable for base stations to adjust their transmission power level to adapt to environmental changes, such as for mobile stations to send a power command, and that is why the accused products implement the claimed functionality. *See* RX-3529C (Williams WS) at

Q1100; CX-1525C (Prucnal RWS) at Q566. Dr. Williams concluded that it therefore "would be obvious for one of ordinary skill in the art to combine the teaching of [Dent and Salmasi] in the CODIT system as described by any of the CODIT references," *i.e.*, Andermo-Brismark and Andermo-Ewerbring. *See* RX-3529C (Williams WS) at Q1100. This conclusion is unfounded, however, because the fact that these CODIT references expressly limited their systems to sending power control information on the downlink despite the advantages of including power control information on the uplink supports Dr. Prucnal's position that the claim limitation would not have been obvious. *See, e.g.*, CX-1525C (Prucnal RWS) at Q566.

b. ('406 Patent) Andermo-Brismark Alone or in Combination with Dent or Salmasi

The asserted claims of the '406 patent are not invalid based on Andermo-Brismark alone or in combination with Dent or Salmasi at least for the reasons explained by Dr. Prucnal in his Rebuttal Witness Statement. *See* CX-1525C (Prucnal RWS) at Q621-648.

As summarized above, Andermo-Brismark, Salmasi, and Dent are all missing at least one limitation from each asserted claim of the '406 patent. It is undisputed that Andermo-Brismark does not disclose that "the reverse control channel carries at least one power command" as required by claims 6, 13, 20, and 26. Williams Tr. 1232; CX-1525C (Prucnal RWS) at Q627-639. Andermo-Brismark expressly includes power commands only on the forward/downlink despite acknowledging that "[i]n both the up- and down link, the radiated power per user should be minimised, to minimise interference to others while maintaining an acceptable link quality." CX-1525C (Prucnal RWS) at Q628 (quoting RX-0717 (Andermo-Brismark) at 23-24). Base station transmission power level, by contrast, "uses quality measurements of the MSs" instead of power commands. RX-0717 (Andermo-Brismark) at 24.

Thus this limitation would not have been obvious based on Andermo-Brismark alone or, as explained above, in combination with Dent or Salmasi.

Andermo-Brismark also does not disclose or render obvious "separately adjusting the transmission power level of the traffic channel and the reverse control channel." CX-1525C (Prucnal RWS) at Q644-648. Respondents argue that Andermo-Brismark discloses this limitation because a traffic channel and control channel can have varying bit rates or spreading factors. *See* RX-3529C (Williams WS) at Q1599-1602. As Dr. Prucnal explained, however, the fact that two channels have different spreading factors and bit rates does not mean that their transmission power levels are separately adjusted. CX-1525C (Prucnal RWS) at Q645. Moreover, the control channel in Andermo-Brismark, called PCCH, has a fixed spreading factor and data rate (2kb/s) and thus cannot be separately adjusted, even under Dr. Williams's own reasoning. *Id.* at ¶ 646 (citing RX-0717 (Andermo-Brismark) at 23).

Lastly, Andermo-Brismark also does not disclose or render obvious a "power control bit" under the adopted construction. *See* CX-1525C (Prucnal RWS) at Q640-643.

c. ('406 Patent) Andermo-Ewerbring Alone or in Combination with Dent or Salmasi

The asserted claims of the '406 patent are not invalid based on Andermo-Ewerbring alone or in combination with Dent or Salmasi at least for the reasons explained by Dr. Prucnal in his Rebuttal Witness Statement. *See* CX-1525C (Prucnal RWS) at Q649-73. As an initial matter, Andermo-Ewerbring is very similar to Andermo-Brismark.

As summarized above, Andermo-Ewerbring, Salmasi, and Dent are all missing at least one limitation from each asserted claim of the ''406 patent. It is undisputed that Andermo-Ewerbring does not disclose the claim limitation "the reverse control channel carries at least one

power command" as required by claims 6, 13, 20, and 26. Williams Tr. 1232; CX-1525C (Prucnal RWS) at Q655-666. Andermo-Ewerbring expressly includes power commands only on the forward/downlink despite acknowledging that "[i]n both the up- and down-link, the radiated power per user should be minimized, to minimize interference to others while maintaining an acceptable link quality." CX-1525C (Prucnal RWS) at Q656 (quoting RX-0721 (Andermo-Ewerbring) at 52). Thus, this limitation would not have been obvious based on Andermo-Ewerbring alone or, as explained above, in combination with Dent or Salmasi.

Andermo-Ewerbring also does not disclose or render obvious the claim limitation "separately adjusting the transmission power level of the traffic channel and the reverse control channel." CX-1525C (Prucnal RWS) at Q669-673. Respondents argue that Andermo-Ewerbring discloses this limitation because a traffic channel and control channel can have varying bit rates or spreading factors. *See* RX-3529C (Williams WS) at Q1714-1722. As Dr. Prucnal explained, however, the fact that two channels have different spreading factors and bit rates does not mean that their transmission power levels are separately adjusted. CX-1525C (Prucnal RWS) at Q670. Moreover, the Andermo-Ewerbring control channel, called PCCH, has a fixed spreading factor and bit rate and thus cannot be separately adjusted even under Dr. Williams's own reasoning. *Id.* at Q671 (citing RX-0721 (Andermo-Ewerbring) at 52).

Lastly, Andermo-Ewerbring also does not disclose or render obvious a "power control bit" under the adopted construction. *See* CX-1525C (Prucnal RWS) at Q667-668.

d. ('406 Patent) Tiedemann Alone or in Combination with Dent or Salmasi

The asserted claims of the '406 patent are not invalid based on Tiedemann alone or in combination with Dent or Salmasi at least for the reasons explained by Dr. Prucnal in his

Rebuttal Witness Statement. *See* CX-1525C (Prucnal RWS) at Q712-743; CX-1525.1C (Prucnal RWS Errata) at 3.

As an initial matter, each asserted claim of the '406 patent requires a subscriber unit transmitting or configured to transmit a plurality of channels including a traffic channel and a reverse control channel. The evidence does not show that the access channel taught by Tiedemann is the claimed "control channel," or that Tiedemann transmits the access channel at the same time as a traffic channel (or a packet channel). *See* CX-1525C (Prucnal RWS) at Q730-734; CX-1525.1C (Prucnal RWS Errata) at 3. Rather, Tiedemann sends an access channel on the reverse link to initiate a call, followed by transmission of a traffic channel. CX-1525C (Prucnal RWS) at Q732-734. Thus Tiedemann does not disclose this limitation, or that the transmission power level of the traffic channel and the reverse control channel are different. *See id.* at Q740-742.

As summarized above, Tiedemann, Dent, and Salmasi are all missing at least one limitation from each asserted claim of the '406 patent. It is undisputed that Tiedemann does not disclose the claim limitation "the reverse control channel carries at least one power command" as required by claims 6, 13, 20, and 26 of the '406 patent. *See* Williams Tr. 1232; CX-1525C (Prucnal RWS) at Q720-727; CX-1525.1C (Prucnal RWS Errata) at 3. The evidence shows that this limitation would not have been obvious based on Tiedemann alone or in combination with Dent or Salmasi. Each of these references ignores, for example, "the value of placing a power control command on a reverse control channel because it allowed the subscriber unit to transmit power control information at a lower power than the reverse traffic channel." CX-1525C (Prucnal RWS) at Q576.

Tiedemann also does not disclose or render obvious the claim limitation "separately adjusting the transmission power level of the traffic channel and the reverse control channel." CX-1525C (Prucnal RWS) at Q735-739. Tiedemann does not disclose transmission of a traffic and reverse control channel at all. *See, e.g.*, *id.* at Q730-734; CX-1525.1C (Prucnal RWS Errata) at 2. Dr. Prucnal further explained that Tiedemann "does not disclose adjustment of power" or that "this bit rate is changed independent of other channels." *See, e.g.*, CX-1525C (Prucnal RWS) at Q738.

Moreover, Tidedemann does not invalidate the '406 patent claims because it does not disclose or render obvious a "power control bit" under the adopted construction. *See* CX-1525C (Prucnal RWS) at Q728-729.

e. ('332 Patent) Lucas Alone or in Combination with Salmasi

The asserted claims of the '332 patent are not invalid based on Lucas (RX-0696) alone or in combination with Salmasi at least for the reasons explained by Dr. Prucnal in his Rebuttal Witness Statement. *See* CX-1525C (Prucnal RWS) at Q797-817. As an initial matter, "Lucas has very limited disclosure of power control" and "does not even disclose the use of power control bits to control any transmission power level." *Id.* at Q802, Q809.

Lucas does not disclose or render obvious a CDMA subscriber unit comprising a circuit configured to generate power control bits. CX-1525C (Prucnal RWS) at Q801-807. Lucas's disclosure of power control is limited to controlling subscriber unit transmission power, and does not teach subscriber units generating power control information to control base station transmission power, which is a requirement of the asserted '332 claims. *Id.* at Q802.

Lucas also does not disclose "power control bits" as that term is used in each asserted claim of the '332 patent. CX-1525C (Prucnal RWS) at Q808-809. Lucas describes power

control as follows: "As usual in CDMA systems the amplifier 207 [in the mobile station] has an adjustable gain, to allow for controlling the power of the signal transmitted by the mobile station." *See* RX-0696 (Lucas) at col. 10, lns. 35-38; CX-1525C (Prucnal RWS) at Q809. Lucas neither discloses how the amplifier controls the mobile station's transmission power, nor discloses using power control bits to control any transmission power level. According to Respondents' expert Dr. Williams, Lucas discloses a logical service channel DS(t) that would inherently include power control commands because "power control commands" are a "critical aspect of CDMA systems." *See* RX-3529C (Williams WS) at Q450. This argument, however, is based on hindsight. Although the closed loop power control functionality claimed in the '332 patent, including generation of power control bits by a subscriber unit, is key to modern CDMA systems, that fact does not mean the functionality was inherent before or at the time of the '332 invention. *See* CX-1525C (Prucnal RWS) at Q810. Moreover, Dr. Williams's inherency validity argument contradicts his opinion that the accused CDMA products do not generate power control bits. *See id.*; RX-3994C (Williams RWS) at Q51.

Asserted claims 2-4 and 22-24 of the '332 patent require that "the circuit is further configured to combine the I and Q channels with a complex sequence," and claims 9-11 require that "the circuit is further configured to combine the I and Q pre-spread channels with a complex sequence." Respondents have not shown that this limitation is disclosed by Lucas or would have been obvious based on Lucas alone or in combination with Salmasi. *See* CX-1525C (Prucnal RWS) at Q815-816. Lucas teaches away from combining the I and Q channels with a complex sequence, inasmuch as using real sequences instead of complex sequences is the main point of Lucas. *See id.* at Q816; RX-0696 (Lucas) at col. 2, lns. 64-65; col. 3, lns. 4-8; col. 3, ln. 66 – col. 4, ln. 1; col. 4, lns. 35-38; col. 9, lns. 33-35. Respondents' expert Dr. Williams has argued that

these statements nevertheless disclose using complex sequences even if they are less preferred options, but merely mentioning the phrase "complex sequence" does not support use of complex sequences as required by the asserted claims of the '332 patent. *See* RX-3529C (Williams WS) at Q512. This is particularly true where Lucas actively discourages using complex sequences. CX-1525C (Prucnal WS) at Q816. For at least this reason, a person of ordinary skill in the art would not have combined Lucas with any reference that teaches combining the I and Q channels with a complex sequence to arrive at this limitation of '332 patent claims 2-4, 9-11, and 22-24. *Id.*

In addition to teaching away from combining the I and Q channels with a complex sequence, a person of ordinary skill in the art would not have been motivated to combine Lucas with the references identified by Respondents as discussing power control. CX-1525C (Prucnal WS) at Q817. Lucas focuses not on power control, but on combining and modulating signals. *Id.*; *see, e.g.*, RX-0696 (Lucas) at col. 3, ln. 66 – col. 4, ln.1 (object of the invention is to "allow for the use of real spreading sequences"). Therefore, there would not have been any motivation to combine Lucas with the other references. CX-1525C (Prucnal RWS) at Q817.

Accordingly, the asserted claims of the '332 patent are not invalid based on Lucas alone or in combination with Salmasi. *See* CX-1525C (Prucnal RWS) Q797-817.

f. ('332 Patent) Walton Alone or in Combination with Lucas or Salmasi

The asserted claims of the '332 patent are not invalid based on Walton (RX-0694) alone or in combination with Lucas or Salmasi at least for the reasons explained by Dr. Prucnal in his Rebuttal Witness Statement. *See, e.g.*, CX-1525C (Prucnal RWS) at Q818-844. As an initial matter, the parties agree that Walton does not anticipate asserted claims 2-4, 8-11, 14, and 22-24.

See RX-3529C (Williams WS) at Q620; CX-1525C (Prucnal RWS) at Q820; CX-1525.1C (Prucnal RWS Errata) at 3. Respondents have also failed to show that the limitations missing from Walton would have been obvious, are disclosed by Lucas or Salmasi, or that one of ordinary skill would have had any reason to combine Walton with relevant portions of Lucas and Salmasi. CX-1525C (Prucnal RWS) at Q820, Q852; CX-1525.1C (Prucnal RWS Errata) at 3.

Walton and Salmasi were both disclosed during prosecution of the '332 patent. Walton in particular was of record in the examiner's first rejection, and was mentioned explicitly in the examiner's first statement of reasons for allowance in April 2009. This paper was later cross-referenced by the examiner in every subsequent Notice of Allowability. JX-0009 ('332 file history) at IDC-ITC-016399573, IDC-ITC-016400782, IDC-ITC-016401480.

Walton discloses a base station generating power control information, but does not disclose or render obvious a CDMA subscriber unit comprising a circuit configured to generate power control bits. *See, e.g.*, CX-1525C (Prucnal RWS) at Q823-827; *see also* RX-3529C (Williams WS) at Q621; JX-0009 ('332 file history) at IDC-ITC-016399573, IDC-ITC-016400782; RX-0694 (Walton) at Abstract ("A means of power control on the reverse link of a CDMA network is disclosed."). Walton describes reverse and forward packet data channels, but the only control channel that includes power control information is the forward packet data control channel. *See* RX-0694 (Walton) at col. 2, lns. 53-63; col. 3, ln. 1 – col. 5, ln. 67; col. 6, lns. 57-58; CX-1525C (Prucnal RWS) at Q824. Walton does not describe a reverse packet data control channel, and thus is not directed to the control of base station transmission power. CX-1525C (Prucnal RWS) at Q825. To the extent that Respondents rely on Salmasi in combination with Walton, Salmasi discloses commands only on the forward link and describes requests on the reverse link. *See, e.g.*, *id.* at Q854. Although it is argued that, inasmuch as the

subscriber unit and base station transmitters are designed as duals, one skilled in the art reviewing the architecture of a base station transmitter would find it obvious to use a similar architecture in a subscriber unit, this argument does not succeed for the same reasons described above with respect to Lucas. *See, e.g.*, RX-3529C (Williams WS) at Q637; CX-1525C (Prucnal RWS) at Q827. For these reasons, it would not have been obvious to modify Walton to have the subscriber unit generate power control bits, and Respondents do not explain how such a system would work. CX-1525C (Prucnal RWS) at Q825.

The asserted claims also require "power control bits that are included on only one of an in-phase (I) channel or a quadrature (Q) channel" in claims 2-4 and 7, that "the power control bits are included on only one of the I pre-spread channel or the Q pre-spread channel" in claims 8-11 and 14, and that "only one of the I channel or the Q channel includes the power control bits" in claims 22-24 and 27. The evidence shows that Salmasi does not disclose including power control bits on only one of an I or Q [pre-spread] channel. RX-3529C (Williams WS) at Q809; CX-1525C (Prucnal RWS) at Q855. Respondents' expert Dr. Williams argues that Salmasi "does not explicitly disclose the concept of placing power control bits [on] only one of the in-phase or quadrature channel," but that "this nuance in CDMA transmission was well known in the art." *See* RX-3529C (Williams WS) at Q809. This argument, however, uses hindsight to piece together aspects of the asserted '332 claims from disparate references, *i.e.*, the requirements that the power control bits are generated by a subscriber unit and that the power control bits are included on only one of an I or Q channel. Inclusion of power control bits only one of the I or Q channels is not a "nuance in CDMA transmissions," but rather provides significant advantages to the system by reducing transmission overhead and allowing flexibility in transmission. *See* CX-1525C (Prucnal RWS) at Q57, Q856. As for Lucas, this reference does

not disclose the transmission of power control bits, and cannot render this claim limitation obvious in combination with Walton. *See id.* at Q808-814.

Asserted claims 2-4 and 22-24 of the '332 patent require that "the circuit is further configured to combine the I and Q channels with a complex sequence," and claims 9-11 require that "the circuit is further configured to combine the I and Q pre-spread channels with a complex sequence." Neither Walton nor Salmasi discloses this limitation. *See, e.g.*, RX-3529C (Williams WS) at Q675, Q682; CX-1525C (Prucnal RWS) at Q858. Respondents argue that this limitation would have been obvious to one of ordinary skill in the art because Walton "itself discloses the use of complex valued pilot code in IS-95," and because the concept of combining with a complex sequence existed at the time, but this argument is wrong for several reasons. *See, e.g.*, RX-3529C (Williams WS) at Q676–678; CX-1525C (Prucnal RWS) at Q830-831. First, Dr. Williams does not explain the relationship between the use of a complex value pilot code in IS-95 and combining I and Q channels, or I and Q pre-spread channels, with a complex sequence. CX-1525C (Prucnal RWS) at Q831. Nothing about the simple identification of a complex valued pilot code in IS-95 renders obvious the claimed combining with a complex sequence. *Id.* Second, Dr. Williams identifies no motivation for one of ordinary skill to combine Walton with any CDMA system that combined channels, let alone I and Q [pre-spread] channels, with a complex sequence. *Id.* Moreover, Dr. Williams does not explain how Walton could have been modified to combine I and Q [pre-spread] channels with a complex sequence. *Id.* Walton discloses a complete system using Walsh codes, and it would not have been trivial to simply add a complex sequence as Dr. Williams suggests. *Id.*

As for Lucas, it does not disclose complex combining, and as explained above, affirmatively teaches away from combining with a complex sequence. Even if a person of

ordinary skill were motivated to combine Walton and Lucas, the result would use real spreading sequences. *See* RX-0696 (Lucas) at col. 2, lns. 64-65; col. 3, ln. 66 – col. 4, ln. 1. Despite the specific teachings in Lucas against using complex sequences, Respondents' expert Dr. Williams claims that a person of ordinary skill would have been motivated to combine Walton and Lucas because both references attempted to maximize capacity of a CDMA system through the use of power control bits in a closed loop power control implementation. *See* CX-1525C (Prucnal RWS) at Q833; RX-3529C (Williams WS) at Q682. These general statements are insufficient to show a motivation to combine. CX-1525C (Prucnal RWS) at Q833. For the reasons explained earlier, Lucas does not describe power control bits used for closed loop power control, and is instead directed to the use of real spreading sequences. *Id.* at Q808-809, Q817. Therefore, it would not have been obvious to combine Walton with Lucas. *Id.* at Q835.

Asserted claims 3, 10, and 23 of the '332 patent require that "the combining is by multiplication." Walton does not disclose this claim limitation, and neither does Salmasi. *See, e.g.*, RX-3529C (Williams WS) at Q685; CX-1525C (Prucnal RWS) at Q836, Q860. Respondents argue that this limitation would have been obvious to one of ordinary skill in the art because "[u]sing hardware multipliers was a common tool used to combine two signals at the time of the 723 and 332 Patents," but do not identify any motivation to combine Walton with any hardware multiplier or explain whether or how such a combination would work. *See, e.g.*, RX-3529C (Williams WS) at Q686; CX-1525C (Prucnal RWS) at Q838. Moreover, as explained above, there would not have been a motivation to combine Walton with Lucas to achieve this claim limitation.

Asserted claims 4, 11, and 24 of the '332 patent require that "the complex sequence compris[e] at least two pseudo noise sequences," but Walton does not disclose this limitation.

See, e.g., RX-3529C (Williams WS) at Q691; CX-1525C (Prucnal RWS) at Q839. Salmasi does not disclose this limitation either, but Respondents' expert Dr. Williams argues that that this limitation is disclosed in Lucas, and that it would have been obvious to combine this aspect of Lucas with Walton. *See* CX-1525C (Prucnal RWS) at Q861. This limitation would not have been obvious based on Walton alone or in combination with other references, however, because a person of ordinary skill in the art would not have been motivated to combine Lucas and Walton. CX-1525C (Prucnal RWS) at Q840-841.

g. Secondary Considerations

Considered in their totality, the evidence of secondary considerations adduced by InterDigital does not weigh heavily for or against a finding that the asserted '406 and '332 patents are obvious. *See* Compls. Br. at 232-36.

InterDigital alleges that commercial success, long-felt need, and failure of others are secondary considerations of nonobviousness with respect to the '406 and '332 patent. *See* Compls. Br. at 232-36. InterDigital has failed, however, to establish the requisite nexus between the secondary considerations and the asserted patents. Nevertheless, inasmuch as Respondents have not shown by clear and convincing evidence that the asserted claims are anticipated or rendered obvious in light of the cited prior art references, the secondary considerations play only a minor role in the validity analysis of the '406 and '332 patents.

VI. The UE ID ('127 and '013) Patents

A. Overview of the Patents and Asserted Claims

1. The '127 Patent

Asserted U.S. Patent No. 7,970,127 ("the '127 patent") is titled, "User Equipment Identification Specific Scrambling." JX-0004 ('127 patent). The '127 patent issued on June 28,

2011, and the named inventors are Stephen G. Dick, Nader Bolourchi, and Sung-Hyuk Shin. *Id.* The '127 patent relates generally to aspects of the High Speed Downlink Packet Access (HSDPA) used in 3G WCDMA systems. *See id.* at Abstract. The '127 patent is related to the asserted '013 patent; these two patents together are also referred to as the "UE ID" [42] patents.

InterDigital asserts independent claim 1 and dependent claims 2, 3, 4, 5, 6, and 7 of the '127 patent. These claims read as follows:

> **1**. A wideband code division multiple access (WCDMA) user equipment (UE) comprising:
>
> circuitry in the WCDMA UE configured to process a high speed shared control channel (HS-SCCH); and
>
> circuitry in the WCDMA UE configured to recover payload data from a high speed physical downlink shared channel (HS-PDSCH) associated with the HS-SCCH in response to the HS-SCCH including bits; wherein the bits are a result of a combining of a user specific scrambling sequence associated with the UE with control information; and wherein the user specific scrambling sequence is a result of a ½ rate convolutional encoding of a UE identification (ID).
>
> **2**. The WCDMA UE of claim 1 wherein the control information includes channelization and modulation information of the HS-PDSCH.
>
> **3**. The WCDMA UE of claim 1 wherein the user specific scrambling sequence is a result of rate matching the ½ rate convolutional encoded UE ID.
>
> **4**. The WCDMA UE of claim 1 wherein the control information is convolutionally encoded.
>
> **5**. The WCDMA UE of claim 1 wherein the payload data of the associated HS-PDSCH is not recovered if the bits were not a result of combining the user specific scrambling sequence associated with the UE with the control information.
>
> **6**. The WCDMA UE of claim 1 comprising circuitry in the WCDMA UE configured to produce the user specific scrambling sequence.

[42] "UE ID" is an acronym for user equipment identification.

> **7**. The WCDMA UE of claim 6 wherein the circuitry in the WCDMA UE configured to produce the user specific scrambling sequence comprises a ½ rate convolutional encoder.

JX-0004 at col. 3, ln. 18 – col. 4, ln. 9.

2. The '013 Patent

Asserted U.S. Patent No. 7,536,013 ("the '013 patent") is titled, "User Equipment Identification Specific Scrambling." JX-0003 ('013 patent). The '013 patent issued on May 19, 2009, and the named inventors are Stephen G. Dick, Nader Bolourchi, and Sung-Hyuk Shin. *Id.* The '013 patent relates generally to aspects of the High Speed Downlink Packet Access (HSDPA) used in 3G WCDMA systems. *See id.* at Abstract. The '013 patent is related to the asserted '127 patent; these two patents together are also referred to as the "UE ID" patents.

InterDigital asserts independent claim 16 and dependent claims 17, 18, and 19 of the '013 patent. These claims read as follows:

> **16**. A user equipment comprising:
>
> an input configured to accept a 16 bit user identification; and
>
> a ½ rate convolutional encoder for processing the 16 bit user identification code with eight appended zero bits to produce a 48 bit code wherein the 48 bit code is used to determine control information carried over a high speed shared control channel (HS-SCCH).
>
> **17**. The user equipment of claim 16 further comprising a rate matching block for puncturing eight bits after the production of the 48 bit code.
>
> **18**. The user equipment of claim 16 wherein the control information is used for decoding a high speed physical downlink shared channel (HS-PDSCH).
>
> **19**. The user equipment of claim 18 wherein the HS-PDSCH is associated with the HS-SCCH.

JX-0003 at col. 4, lns. 33-48.

3. Overview of the Technology

The inventions claimed in the '127 and '013 patents relate to aspects of the High Speed Downlink Packet Access ("HSDPA") used in 3G WCDMA systems. CX-1309C (Jackson WS) at Q89. Contemporary 3G WCDMA systems in the United States operate in accordance with the UMTS standard developed by the 3GPP. *Id.* at Q41. Release 5 of the standard added HSDPA. *Id.* at Q44, Q156. HSDPA allows for faster "downlink" (*i.e.*, transmissions from the base station to UEs) data rates for cellular devices such as 3G capable smartphones. *Id.* at Q44, Q157. HSDPA was added to the UMTS standard to meet the rising demand for high-speed data applications, such as web browsing and audio/video streaming on mobile devices. *Id.* at Q44. HSDPA uses a variety of techniques to make high-speed data applications feasible in 3G WCDMA systems. *Id.*

To support HSDPA, the standard defines two different types of channels that a cellular base station uses to communicate with each UE that is within range of the base station: (i) control channels, called "high speed shared control channels" or "HS-SCCHs," and (ii) data channels, called "high speed physical downlink shared control channels" or "HS-PDSCHs." CX-1309C (Jackson WS) at Q163.

The data channels ("HS-PDSCHs") carry the payload data (*e.g.*, voice signals, web pages, pictures, video, or music) intended for the user equipment. CX-1309C (Jackson WS) at Q163 The control channels ("HS-SCCHs") carry control information generated by the base station that is used to tell a UE (i) which specific data channel(s) will be carrying the payload data intended for it, (ii) when the payload data will be carried on the specific data channel(s), and (iii) what type of modulation will be used to modulate the data. *Id.* at Q164. Accordingly, each UE does not have to continuously monitor all of the data channels. Instead, the UE only needs to

monitor the control channels, which will direct it to the appropriate data channels at the appropriate times. *Id.* at Q163-64. This approach requires a methodology for efficiently communicating to each UE when any of control channels carries control information intended for that UE. *Id.* at Q168.

In the '127 and '013 patents, InterDigital claimed aspects of such a methodology. *See* CX-1309C (Jackson WS) at Q90. As described in an embodiment therein, a UE ID based specific scrambling sequence is generated by encoding the 16-bit UE ID for a particular UE with a ½ rate convolutional encoder and, subsequently, rate matching (by puncturing) the output to the desired length (*e.g.*, 40 bits). *Id.* at Q91. The UE ID specific scrambling sequence is then mixed or combined with the control information intended for the UE. *Id.* at Q67; JX-0003 ('013 patent) at col. 3, lns. 13-15. This mixing or combining is accomplished, for example, with an exclusive-OR gate, which is an electronic device that accepts two inputs, applies a mathematical operation, and outputs the result. *See* CX-1309C (Jackson WS) at Q67. The result is transmitted by the base station and received by the UE on the control channels. JX-0003 at col. 3, lns. 15-16.

When the UE ID specific scrambling sequence used by the base station and the UE match one another, the UE can detect that it is the intended recipient of the control information carried on a given control channel. JX-0003 at col. 1, lns. 38-41; CX-1309C (Jackson WS) at Q194-195. This control information includes the channelization code set and modulation type used by data channels that carry the HSDPA payload to the UE. JX-0003 at col. 1, lns. 33-36. The control information is vital to support HSDPA because HSDPA uses adaptive modulation and coding, *i.e.*, the UE needs the information to decode the data channels. JX-0003 at col. 1, lns. 36-37; CX-1523C (Jackson RWS) at Q140.

B. Claim Construction

1. Level of Ordinary Skill

A person of ordinary skill in the art of the '013 and '127 patents would have at least a bachelor's degree in electrical engineering, computer science, mathematics or a related field, and some work experience in the area of wireless communications, including issues related to coding. *See* RX-3520C (Madisetti WS) at Q64. The amount of work experience possessed by a person of ordinary skill in the art would vary depending on that person's degree, *i.e.*, a person of ordinary skill in the art holding a bachelor's degree would have approximately four years of work experience, whereas a person of ordinary skill in the art with a Ph.D. would have approximately one year of work experience.[43] *See id.*

2. Construction of Disputed Claim Terms

a. "to process a high speed control channel (HS-SCCH)" ('127 patent)

Claim Term/Phrase	InterDigital's Construction	Respondents' Construction	Staff's Construction
to process a high speed shared control channel (HS-SCCH)	No construction is necessary, but to the extent it would be helpful, InterDigital has proposed that the plain meaning of the term is "to perform one or more operations on a received HS-SCCH to derive control information."	to descramble the high speed shared control channel (HS-SCCH) using a user specific scrambling sequence produced by a ½ rate convolutional encoder	Staff adopts Respondents' proposed construction.

[43] Complainants take the position that a person of ordinary skill in the art of the '013 and '127 patents would have an undergraduate degree or master's degree in electrical engineering (or an equivalent subject), together with three to five years of experience in cellular communications, or comparable and/or equivalent training. *See* CX-1309C (Jackson WS) at Q29-32. The parties have not identified any way in which differences in their proposed definitions of the level of ordinary skill in the art affect issues in this investigation. *See* Compls. Br. at 356; Resps. Br. at 64.

The claim term "to process a high speed shared control channel" appears in asserted claim 1 of the '127 patent. JX-0004 at col. 3, lns. 18-30.

InterDigital takes the position that this term does not need construction, but has proposed that the plain meaning of the term is "to perform one or more operations on a received HS-SCCH to derive control information." Compls. Br. at 375-79. Respondents construe this term to mean "to descramble the high speed shared control channel (HS-SCCH) using a user specific scrambling sequence produced by a ½ rate convolutional encoder." Resps. Br. at 66-74. The Staff adopts Respondents' proposed construction. Staff Br. at 26-34.

As proposed by Respondents and the Staff, the claim term "to process a high speed shared control channel (HS-SCCH)" is construed to mean "to descramble the high speed shared control channel (HS-SCCH) using a user specific scrambling sequence produced by a ½ rate convolutional encoder," a construction that is supported by the intrinsic evidence.

The intrinsic evidence demonstrates that the claimed invention of the '127 patent is directed to the user specific scrambling sequence produced by a ½ rate convolutional encoder for scrambling or descrambling a high speed shared control channel. *See* JX-0004 at col. 1, lns. 22-25 ("the present invention . . . relates to user equipment identification specific scrambling sequences for high speed shared control channels"). For instance, the "Summary" section of the '127 patent describes the invention as comprising "circuitry configured to process a user equipment identification (UE ID) by ½ rate convolutionally encoding the UE ID to produce a code." JX-0004 at col. 2, lns. 7-9. This code is then used "for scrambling a high speed shared control channel (HS-SCCH)." *Id.* at col. 2, lns. 10-11. Inasmuch as claim 1 is directed to a UE, the sequence produced by ½ rate convolutional encoding must be used for descrambling by the

UE because the '127 patent does not disclose any other options for "processing of the HS-SCCH," and the '127 patent describes only one solution for generating a user specific scrambling sequence, that of using a ½ rate convolutional encoder.

InterDigital's expert does not dispute that the claimed invention of the '127 patent involves creating a scrambling sequence that is used to process a control signal sent via a high speed shared control channel. *See* CX-1309C (Jackson WS) at Q90 ("The inventions claimed in the '013 and '127 Patents relate to generating UE ID specific scrambling sequences for use in what are called high speed shared control channels (HS-SCCHs)."). Both the figures and the specification of the '127 patent depict these scrambling sequences as being used for scrambling data at the base station before it is transmitted via the HS-SCCH to the user equipment, and for processing the HS-SCCH by descrambling the information received by the user equipment to recover the original, pre-scrambled data. JX-0004 at Figs. 3, 4; col. 3, lns. 6-16. The specification of the '127 patent further makes clear that the processing in the user equipment must be descrambling. The '127 patent specification states: "[t]he UE processes each monitored HS-SCCH with its UE ID specific scrambling sequence to detect the HS-SCCH intended for the UE. . . . The UE descrambles the data carried on Part-1 of its HS-SCCH using its scrambling sequence." *Id.* at col. 1, lns. 43-49. Thus, the intrinsic evidence makes clear that the invention of the '127 patent was a method of producing a user specific scrambling sequence by a ½ rate convolutional encoder that could be used for both scrambling and descrambling.

The prosecution history of U.S. Patent No. 6,973,579 ("the '579 patent"), a parent patent to the '127 patent, provides additional support for construing "processing" as descrambling. In U.S. Patent Application No. 10/187,640, which later issued as the '579 patent, the applicants responded to a rejection based on a prior art patent issued to Moon. RX-0503 ('579 file history)

at NK800IDC06445022. To overcome the rejection, the applicants made two relevant arguments. *Id.*

First, the applicants argued that "the bits of the user identification are processed by a half rate convolutional encoder to produce a code used for scrambling or descrambling a high speed shared control channel (HS-SCCH). . . . Moon does not disclose scrambling or descrambling of a high speed shared control channel." RX-0503 ('579 file history) at NK800IDC06445022. These statements describe the "broad technological basis" of the applicant's invention, and thus inform an understanding of the proper scope of the '127 patent. *See Inpro II Licensing, S.A.R.L. v. T-Mobile USA, Inc.*, 450 F.3d 1350, 1357 (Fed. Cir. 2006) (construing terms based on the description in the specification and statements made to PTO during prosecution of parent application). By making these statements to the PTO during the prosecution of the parent '579 patent, the patentee distinguished the prior art by stating that the alleged invention requires a process utilizing a half rate convolutional encoder to scramble or descramble an HS-SCCH.

Second, the '579 applicants distinguished the Moon prior art with additional statements expressly limiting the scope of the invention to a user specific scrambling sequence produced by a ½ rate convolutional encoder. The applicants described the invention as having:

> . . . an input which accepts an L bit user identification, such as a 16 bit user identification. At least the bits of the user identification are processed by a half rate convolutional encoder to produce a code used for scrambling or descrambling a high speed shared control channel (HS-SCCH).

RX-0503 ('579 file history) at NK800IDC06445022. The applicants distinguished the Moon prior art on the ground that it did not disclose the use of a ½ rate convolutional encoder; rather, the applicants argued that Moon used a "long code mask" to generate the scrambling sequence. *Id.* The applicants described this approach in Moon as "an entirely different arrangement than

the present invention, where first, a user identification is used and, second . . . the output of the half convolutional encoder is used to produce the scrambling code." *Id.* The evidence shows that the '579 applicants represented to the PTO that the claimed invention required that the user specific scrambling sequence be produced by ½ rate convolutionally encoding a UEID, and it was on this basis that they distinguished the prior art. *Id.* Accordingly, these statements regarding the parent '579 patent demonstrate that the claimed invention of the '127 patent includes the use of a ½ rate convolutional encoder.

The intrinsic evidence also demonstrates that "processing a[n] . . . HS-SCCH" requires that the user specific scrambling sequence be used for scrambling or descrambling. JX-0004 at col. 1, lns. 43-49; col. 3, lns. 6-15; Figs. 3, 4. In particular, the only disclosure in the specification of the '127 patent related to handset "processing" is the descrambling of the received information. *Id.* at Fig. 4; col. 3, lns. 6-10; col. 1, lns. 43-49. The "Background" section of the '127 patent explains that the UE must descramble using the scrambling sequence: "The UE processes each monitored HS-SCCH with its UE ID specific scrambling sequence to detect the HS-SCCH intended for the UE . . . The UE descrambles the data carried on Part-1 of its HS-SCCH using its scrambling sequence." *Id.* at col. 1, lns. 43-46; col. 1, lns. 48-49. This descrambling by the UE is not merely a preferred embodiment of the claimed invention, but it is the only disclosed embodiment of the claimed "processing."

InterDigital argues that, while no construction of the term "to process a high speed shared control channel" is necessary, it should nevertheless be construed to mean "to perform one or more operations on a received HS-SCCH to derive control information." *See* Compls. Br. at 375-79. InterDigital's arguments primarily rely on extrinsic evidence, which is not as persuasive as Respondents' claim construction arguments based on the intrinsic evidence. *See id.* at 375-76.

InterDigital further argues that the construction proposed by Respondents and the Staff violates the doctrine of claim differentiation. *See* Compls. Br. at 378-79. Specifically, InterDigital argues that "the '½ rate convolutional encoder' requirement that Respondents want to read into claim 1 is added by dependent claim 7." *Id.* at 378. Notwithstanding InterDigital's argument, the doctrine of claim differentiation cannot overcome the fact that the '127 specification fails to teach any approach to generating the claimed scrambling sequence aside from using a ½ rate convolutional encoder.

Accordingly, the claim term "to process a high speed shared control channel (HS-SCCH)" is construed to mean "to descramble the high speed shared control channel (HS-SCCH) using a user specific scrambling sequence produced by a ½ rate convolutional encoder."

b. "in response to the HS-SCCH including bits; wherein the bits are a result of a combining of a user specific scrambling sequence associated with the UE with control information"

Claim Term/Phrase	InterDigital's Construction	Respondents' Construction	Staff's Construction
in response to the HS-SCCH including bits; wherein the bits are a result of a combining of a user specific scrambling sequence associated with the UE with control information	It is not necessary to construe either this entire phrase or the phrase "in response to."	in reaction to processing Part 1 of the HS-SCCH to determine that Part 1 is a result of a combining of a user specific Scrambling sequence associated with the UE with control information	Plain and ordinary meaning should apply for "in response to."

The claim term "in response to the HS-SCCH including bits; wherein the bits are a result of a combining of a user specific scrambling sequence associated with the UE with control information" appears in asserted claim 1 of the '127 patent. JX-0004 at col. 1, lns. 18-30.

InterDigital takes the position that "no construction is necessary, either for the entire phrase or the sub-phrase 'in response to.'" Compls. Br. at 379-81. Respondents construe this claim term to mean "in reaction to processing Part 1 of the HS-SCCH to determine that Part 1 is a result of a combining of a user specific Scrambling sequence associated with the UE with control information." Resps. Br. at 74-76. The Staff generally agrees with InterDigital's position, arguing that "no construction is necessary for the phrase and that the plain and ordinary meaning, in the context of the asserted claims, should apply for the sub-phrase 'in response to.'" Staff Br. at 34-37.

As proposed by InterDigital and the Staff, it is determined that the claim term "in response to the HS-SCCH including bits; wherein the bits are a result of a combining of a user specific scrambling sequence associated with the UE with control information" does not need construction. In addition, a plain and ordinary cause-and-effect relationship will be applied to the sub-phrase "in response to." *See* Staff Br. at 34.

Respondents' proposed construction is not adopted for the phrase "in response to the HS-SCCH including bits; wherein the bits are a result of a combining of a user specific scrambling sequence associated with the UE with control information," inasmuch as a person of ordinary skill in the art would have found the phrase clear and not in need of additional interpretation. *See* CX-1309C (Jackson WS) at Q108. In addition, there is no intrinsic support for replacing "response" in the claim term with "react" or "reaction." *See id.* at Q110. A further reason for declining to adopt Respondents' proposed construction is that it restricts the claimed "HS-SCCH including bits" to only "Part 1 of the HS-SCCH." Nothing in the '127 patent indicates that the claim language should be so restricted. *See id.* at Q111-112.

c. "associated with" ('127 and '013 patents)

Claim Term/Phrase	InterDigital's Construction	Respondents' Construction	Staff's Construction
associated with	associated with	unique to	having a particular relationship with

The claim term "associated with" is recited in asserted claim 1 of the '127 patent. *See* JX-0004 at col. 3, lns. 18-30. The claim term is also recited in asserted claim 19 of the '013 patent. *See* JX-0003 at col. 4, lns. 47-48.

InterDigital takes the position that this term does not need to be construed. *See* Compls. Br. at 360-62, 383. Respondents construe this claim term to mean "unique to." Resps. Br. at 76-79. The Staff contend that this term should be construed to mean "having a particular relationship with." Staff Br. at 37-38.[44]

As proposed by InterDigital, it is determined that the claim term "associated with" does not need construction, inasmuch as a person having ordinary skill in the art would understand the meaning of the term "associated with." *See* CX-1309C (Jackson WS) at Q113. This position is supported by the fact that, during the relevant time frame, the drafters of the 3GPP technical specifications used the term "associated with" to describe the relationship between the HS-PDSCH and the HS-SCCH. *Id.* at Q114.

d. "user specific scrambling sequence" ('127 patent)

Claim Term/Phrase	InterDigital's Construction	Respondents' Construction	Staff's Construction
user specific	a sequence of bits based	user specific	a sequence of bits based

[44] The Staff notes that, "based on the arguments made by InterDigital and Respondents . . . applying any one of the three proposed constructions does not result in any practical difference with respect to the infringement and validity analyses." Staff Br. at 38.

scrambling sequence	on a user equipment identification	scrambling sequence	on a user equipment identification

The claim term "user specific scrambling sequence" appears in asserted claims 1, 3, 5, 6, and 7 of the '127 patent. JX-0004 at col. 3, lns. 18-30; col. 3, lns. 34-36; col. 3, ln. 39 – col. 4, ln. 9.

InterDigital and the Staff propose that this term should be construed to mean "a sequence of bits based on a user equipment identification." Compls. Br. at 383; Staff Br. at 79. Respondents take the position that no construction for this term is needed, but do not disagree with the construction proposed by InterDigital and the Staff, inasmuch as "use of InterDigital's or the Staff's proposed construction would not alter Respondents' position on any material issue." Resps. Br. 79.

As proposed by InterDigital and the Staff, the claim term "user specific scrambling sequence" shall be construed to mean "a sequence of bits based on a user equipment identification."

e. "control information" ('127 and '013 patents)

Claim Term/Phrase	InterDigital's Construction	Respondents' Construction	Staff's Construction
control information	control information	Plain and ordinary meaning.	Plain and ordinary meaning.

The claim term "control information" is recited in asserted claims 1, 2, 4, and 5 of the '127 patent. JX-0004 at col. 3, lns. 18-33; col. 3, ln. 37 – col. 4 ln. 3. The term is also recited in asserted claims 16 and 18 of the '013 patent. JX-0003 at col. 4, lns. 33-40; col. 4, lns. 44-46.

InterDigital contends that no construction for this term is necessary. *See* Compls. Br. at 356-60, 382-83. Respondents and the Staff take the position that the phrase should be given its plain and ordinary meaning in the context of the asserted claims. Resps. Br. at 79-81; Staff Br. at 39-41.

It is argued that the claimed "control information" comprises information that is scrambled and carried over the HS-SCCH. *See* Staff Br. at 39-40 (citing RX-3520C (Madisetti WS) at Q1163-1165; Q1168-1170). Indeed, claim 1 of the '127 patent contains a limitation requiring "bits [that] are a result of a combining of a user specific scrambling sequence associated with the UE with control information." JX-0004 at col. 3, lns. 18-30. It is argued that the only control information that is combined with a user specific scrambling sequence in the '127 patent is the encoded HS-SCCH data, which is typically 40-bits. Staff Br. at 40 (citing RX-3520C (Madisetti WS) at Q1172). Similarly, claim 16 of the '013 patent refers to "control information carried over a high speed shared control channel (HS-SCCH)." JX-0003 at col. 4, lns. 33-40. In fact, the only control information that is carried over a HS-SCCH in the '013 patent is the 40-bit encoded sequence that has been scrambled. RX-3520C (Madisetti WS) at Q1167.

Accordingly, as proposed by Respondents and the Staff, the plain and ordinary meaning of the term "control information" discussed above shall be adopted.

C. Infringement

1. The UE ID Accused Products

All of the devices accused of infringing the '127 and '013 patents comprise WCDMA user equipment and support HSDPA. Madisetti Tr. 894; CX-1309C (Jackson WS) at Q155-156. The devices include baseband chipsets manufactured by [ ] [

[[

]

Grouping by Baseband Manufacturer	Subgrouping by Baseband Model	Claims Asserted
[[45]	Group 1[46]	
	Group 2[47]	
[48]		]
[49]		

The Huawei devices accused of infringing the UE ID patents are:

[	
	]

[45] [CX-0150C CX-0162C CX-0168C]

[46] [

CX-1309C]

[47] [

CX-1309C]

[48] [CX-0184C]

[49] [CX-0220C]

[	
	]

See Staff Br. at 18 (citing CX-0162C; CX-0220C). [

.]

The Nokia devices accused of infringing the UE ID patents are:

[Device name	
	]

See Staff Br. at 18-19 (citing CX-0150C; CX-0184C). [

]

The ZTE devices accused of infringing the UE ID patents are:

]

See Staff Br. at 19 (citing CX-0168C). [

]

The actual operation of the accused devices is largely undisputed. Within each of the above categories, all of the devices operate in materially the same way with respect to the functionality relevant to the '127 and '013 patents. CX-1309C (Jackson WS) at Q228-229, Q330-311. Three main functional areas are relevant to infringement of the '127 and '013 patents: (a) generation of the user specific scrambling sequence, (b) decoding the HS-SCCH, and (c) recovery of the HS-PDSCH.

a. Generation of the User Specific Scrambling Sequence

[

CX-1309C

specify the mapping between a UE ID and its corresponding user specific scrambling sequence.

Id. at Q206-207.

i. [ ] Devices

]

ii. Nokia/TI Devices

[

RX-3990C]

iii. [ ] Devices

[

RX-3990C

CX-1309C

]

b. Decoding the HS-SCCH

[

CX-1309C

RX-3990C

CX-1309C

]

[

CX-1309C

[

CX-1309C

RX-3990C .]

[

CX-1523C RX-3990C

]

[

CX-1309C

CX-1309C

RX-3990C

CX-1309C

]

c. Recovery of the HS-PDSCH

[

]

[

RX-3990C

]

2. Global Infringement Issues

With respect to the infringement analysis of the accused products, several issues apply generally to multiple groups of accused products and more than one asserted claim. [

(c)

[

] These global issues will be addressed first, followed by a claim-by-claim infringement analysis.

a. The Matrix Solution

[

RX-3990C

RX-

]

[

RX-3684C [50]

[50] The confidential version of the Final Initial Determination from the 613 Investigation ("613 Final ID") was produced in this investigation and accepted into the record as exhibit RX-3684C. Inasmuch as this Initial Determination cites to confidential portions of the 613 Final ID, citations will be made to the exhibit number.

RX-3990C

CX-1309C

RX-3990C

RX-3990C (

RX-3990C

RX-3990C RX-3992C

RX-3990C

] *Id.*

[

(citing CX-1309C

]

[

] *Id.*

Id.

[

RX-3990C

RX-3990C

]

b. The Zhang Method

[

RX-3990C

RX-

RX-3891C

RX-3990C

RX-3990C

]52

---

51 [ ]

52 [

]

c. Brute Force Decoders

[

RX-3990C]

i. Descrambling the HS-SCCH ('127 Patent)

The record evidence demonstrates that the [

]53

The [

RX-

CX-1309C

RX-3991C

53 In a previous investigation, the claim term "descrambling a high speed shared control channel (HS-SCCH)" was construed to mean "applying a scrambling sequence to process the scrambled data received on an HS-SCCH to reproduce (recover) the data scrambled prior to transmission." *Certain 3G Mobile Handsets & Components Thereof*, Inv. No. 337-TA-613, ID at 191. That same construction is hereby adopted in this investigation.

RX-3990C]

[

RX-3684C

]

[

]

ii. Deriving Control Information ('127 Patent)

The record evidence demonstrates that the [

] do not [

]

RX-3990C (Madisetti RWS) at Q528. Claim 1 of the '127 patent refers to bits that are the result of "a combining of a user specific scrambling sequence associated with the UE with control information." JX-0004 at col. 3, lns. 18-30; RX-3520C (Madisetti WS) at Q1168. [

] RX-3520C (Madisetti WS) at Q1168-1169; CX-1309C

(Jackson WS) at Q204. [

RX-3990C (

] Accordingly, it is determined that the [ ] do not "derive control information" under the adopted claim constructions.

iii. Determining Control Information Carried Over an HS-SCCH ('013 Patent)

The evidence shows that the [

] do not "determine control information carried over a high speed shared control channel" as recited in asserted claim 16 of the '013 patent.[54] As mentioned previously, the [

] RX-3990C (Madisetti RWS) at Q734.

[

RX-3990C]

d. Viterbi Decoders

[

RX-3990C]

i. Descrambling the HS-SCCH ('127 Patent)

The record evidence demonstrates that the [ ] do not "descramble the high speed shared control channel (HS-SCCH)" as required by the adopted construction of the

[54] Only the [ ] are alleged to infringe the asserted claims of the '013 patent. *See* Compls. Br. at 363.

claim limitation "circuitry in the WCDMA UE configured to process a high speed shared control channel (HS-SCCH)."

[

] RX-3990C (Madisetti RWS) at Q536-543. [

] *Id.*

[

RX-3990C CX1309C

RX-3990C

RX-3990C

RX-3990C

]

Therefore, it is determined that the [ ] accused of infringing the UE ID patents do not descramble the HS-SCCH.

ii. Deriving Control Information ('127 Patent)

The record evidence demonstrates that the [Viterbi decoders in the [

] not "derive control information" as required by asserted claims 1-7 of

the '127 patent under the constructions adopted above. *See* RX-3990C (Madisetti RWS) at Q559-560. Claim 1 of the '127 patent refers to bits that are the result of "a combining of a user specific scrambling sequence associated with the UE with control information." JX-0004 at col. 3, lns. 18-30; RX-3520C (Madisetti WS) at Q1168. [

] RX-3520C (Madisetti WS) at Q1168-1169; CX-1309C (Jackson WS) at Q204. [

RX-3990C] Accordingly, it is determined that the Viterbi decoders do not "derive control information" under the adopted claim constructions.

iii. Determining Control Information Carried Over an HS-SCCH ('013 Patent)

Similarly, the [ ] devices does not [

][55] RX-3990C (Madisetti RWS) at Q562. [

] *Id.* at Q562-564.

[55] Only the [ ] are accused of infringing the '013 patent. *See* Compls. Br. at 363.

3. '127 Patent – Claim 1

As discussed below, it is determined that the '127 accused products do not infringe asserted independent claim 1 of the '127 patent.

a. A wideband code division multiple access (WCDMA) user equipment (UE) comprising:

The preamble of asserted claim 1 of the '127 patent recites: "[a] wideband code division multiple access (WCDMA) user equipment (UE)." It is undisputed that the devices accused of infringing the '127 patent support HSDPA and are WCDMA user equipment. CX-1309C (Jackson WS) at Q156-158; Resps. Br. at 106-19; Staff Br. at 63-75.

b. circuitry in the WCDMA UE configured to process a high speed shared control channel (HS-SCCH); and

Claim 1 of the '127 patent recites: "circuitry in the WCDMA UE configured to process a high speed shared control channel (HS-SCCH)." The parties dispute whether the '127 accused products satisfy this claim limitation.

As discussed above, the claim term "to process a high speed shared control channel (HS-SCCH)" is construed to mean "to descramble the high speed shared control channel (HS-SCCH) using a user specific scrambling sequence produced by a ½ rate convolutional encoder."

Respondents and the Staff contend that the [

] do not satisfy this claim limitation because [

]. [56] *See*

---

[56] [

] *See* Madisetti Tr. 895-896.

Resps. Br. at 106; Staff Br. at 64-66. Respondents and the Staff also contend that none of the '127 accused devices descramble the HS-SCCH as required by the claim because [

] *See* Resps. Br. at 106; Staff Br. at 64-66.

[

RX-3990C] Therefore, it is determined that the [ ] accused of infringing the '127 patent do not produce the claimed user specific scrambling sequence by a ½ rate convolutional encoder.

As for the question of whether the '127 accused products' [

] is "descrambl[ing] the high speed shared control channel (HS-SCCH)" as required by the adopted construction of the claim limitation "circuitry in the WCDMA UE configured to process a high speed shared control channel (HS-SCCH)," the evidence demonstrates that it is not. [

] RX-3990C (Madisetti RWS) at Q477. [

] RX-3990C (Madisetti RWS) at Q536-543.

[

]

Analysis under alternate claim constructions.

InterDigital's proposed construction for the claim term "to process a high speed shared control channel (HS-SCCH)," *i.e.*, "to perform one or more operations on a received HS-SCCH to derive control information," was not adopted. If this construction were adopted, however, the evidence shows that the '127 accused devices would satisfy this claim limitation under InterDigital's interpretation of "control information."[57] Evidence specific to each category of '127 accused devices is discussed separately below.

[

CX-1309C

[57] As discussed above, InterDigital takes the position that the claim term "control information" does not need construction. Respondents and the Staff argued that the plain meaning of "control information" should be used, and that the plain meaning of the term in the context of the UE ID patents means the 40-bit encoded sequence carried on the HS-SCCH. The plain meaning of "control information" proposed by Respondents and the Staff was adopted above.

Under the plain meaning construction of "control information," the '127 accused devices would not "perform one or more operations on a received HS-SCCH to derive control information," as required by InterDigital's construction of the claim limitation "to process a high speed shared control channel (HS-SCCH)." As set forth above, [

]

]

[

]

Id. [CX-0258C

CX-1351C

CX-1309C

CX-1309C

CX-1309.1

CX-1316C

CX-1317C

CX-0252C

CX-0240C

[

CX-1309C

RX-3990C

CX-1317C

CX-1309C (

RX-3990C

CX-1337C

CX-1309C

CX-1317C

CX-1309C

CX-1337C]

[

CX-1352C

CX-1309C

]

In summary, it is determined that the '127 accused products satisfy the claim limitations "circuitry in the WCDMA UE configured to process a high speed shared control channel (HS-SCCH)" and "control information" under InterDigital's proposed constructions of the terms.

c. circuitry in the WCDMA UE configured to recover payload data from a high speed physical downlink shared channel (HS-PDSCH) associated with the HS-SCCH in response to the HS-SCCH including bits; wherein the bits are a result of a combining of a user specific scrambling sequence associated with the UE with control information;

Claim 1 recites, "circuitry in the WCDMA UE configured to recover payload data from a high speed physical downlink shared channel (HS-PDSCH) associated with the HS-SCCH in response to the HS-SCCH including bits." JX-0004 at col. 3, lns. 22-25. The "bits" referred to in this clause are later defined in the claim such that "the bits are a result of a combining of a

user specific scrambling sequence associated with the UE with control information." *Id.* at col. 3, lns. 25-28.

As set forth above, it was determined that the claim term "in response to the HS-SCCH including bits; wherein the bits are a result of a combining of a user specific scrambling sequence associated with the UE with control information" does not need construction. In addition, it was determined that a plain and ordinary cause-and-effect relationship would be applied to the sub-phrase "in response to." It was further determined that the claim term "associated with" does not need construction.

Applying these constructions, the '127 accused products do not satisfy this claim limitation. Specifically, under the plain and ordinary meaning of "in response to," a cause-and-effect relationship is required. Therefore, this claim limitation is met only if the accused products recover payload data from an HS-PDSCH in response to the UE processing bits in a HS-SCCH that has particular relationship to said HS-PDSCH, wherein the bits in said HS-SCCH result from a combination of a user specific scrambling sequence associated with the UE and control information. The cause-and-effect relationship must be maintained in order to satisfy this limitation. If recovery of payload data from an HS-PDSCH occurs independently of the results of processing the bits of the HS-SCCH that has the particular relationship with said HS-PDSCH, this claim limitation is not met. [

[RX-3771C; RX-3777C; RX-3778C

RX-3783C; RX-3826C

RX-3834C

RX-3862C RX-3864C

RX-3865C

RX-3897 RX-3898

]

Therefore, all of the '127 accused devices [

] and do not practice this limitation of claim 1.

Analysis under alternate claim constructions.

In the event that Respondents' proposed construction of the claim term "in response to the HS-SCCH including bits; wherein the bits are a result of a combining of a user specific scrambling sequence associated with the UE with control information," *i.e.*, "in reaction to processing Part 1 of the HS-SCCH to determine that Part 1 is a result of a combining of a user specific Scrambling sequence associated with the UE with control information" were adopted, the '127 accused products would still not practice this limitation of claim 1, inasmuch as [

]

d. and wherein the user specific scrambling sequence is a result of a ½ rate convolutional encoding of a UE identification (ID).

The final limitation of claim 1 reads, "and wherein the user specific scrambling sequence is a result of a ½ rate convolutional encoding of a UE identification (ID)." JX-0004 at col. 3, lns. 28-30. As set forth in the above section regarding claim construction, it was determined that the claim term "user specific scrambling sequence" is construed to mean "a sequence of bits based on a user equipment identification."[58]

According to claim 1, the user specific scrambling sequence described in this claim element is combined with control information. JX-0004 at col. 3, lns. 18-30. The step of combining control information with a user specific scrambling sequence necessarily takes place at a base station, which scrambles the encoded Part 1 data using a user specific scrambling sequence. RX-3990C (Madisetti RWS) at Q679, Q689-690; Jackson Tr. 558. Inasmuch as the UE does not generate the claimed combined bits, InterDigital bears the burden of showing that that the scrambling sequence used by the base stations results from ½ rate convolutionally encoding a UEID.

The evidence adduced by InterDigital does not show how the scrambling sequences received by the '127 accused products are generated. InterDigital argues that [

]

[58] Respondents do not disagree with this construction. *See* Resps. Br. 79.

data that has been convolutionally encoded, also proves that the control information is convolutionally encoded." *See* Compls. Br. at 402 (citing CX-1309C (Jackson WS) at Q179, Q204; CX-1523C (Jackson RWS) at Q149-150; Madisetti Tr. 930). The evidence indicates that the signal received by the '127 accused devices could have been generated using a ½ rate convolutional encoder, but does not establish that they actually were so generated.

In particular, base stations are not required by the 3GPP conformance tests to generate a scrambling sequence using a ½ rate convolutional encoder. RX-3990C (Madisetti RWS) at Q692-693. As a result, base stations can generate the scrambling sequence [

] which are not ½ rate convolutional encoders. *Id.* at Q694. Indeed,

[

] [RX-3717C

RX-3825C RX-

]

Accordingly, InterDigital has not shown that this claim limitation is satisfied.

4. '127 Patent – Claim 2

a. The WCDMA UE of claim 1

Inasmuch as the '127 accused products do not infringe independent claim 1, they also do not infringe dependent claim 2.

b. wherein the control information includes channelization and modulation information of the HS-PDSCH.

The record evidence demonstrates [

] Madisetti Tr. 830-831, 832, 833. Accordingly, the

'127 accused products satisfy the limitation "wherein the control information includes channelization and modulation information of the HS-PDSCH." The parties do not dispute that this additional limitation of claim 2 is satisfied. *See* Resps. Br. at 105-19; Staff Br. at 63-76.

5. '127 Patent – Claim 3

a. The WCDMA UE of claim 1

Inasmuch as the '127 accused products do not infringe independent claim 1, they also do not infringe dependent claim 3.

b. wherein the user specific scrambling sequence is a result of rate matching the ½ rate convolutional encoded UE ID.

For all the '127 accused devices, [

] *See* CX-1309C (Jackson WS) at Q268, Q269, Q273. The parties do not dispute that this additional limitation of claim 3 is satisfied. *See* Resps. Br. at 105-19; Staff Br. at 63-76.

6. '127 Patent – Claim 4

a. The WCDMA UE of claim 1

Inasmuch as the '127 accused products do not infringe independent claim 1, they also do not infringe dependent claim 4.

b. wherein the control information is convolutionally encoded.

It is determined that the '127 accused products also do not satisfy the claim limitation "wherein the control information is convolutionally encoded." As discussed above with respect to the claim 1 limitation "wherein the user specific scrambling sequence is a result of a ½ rate convolutional encoding of a UE identification (ID)," InterDigital has not adduced evidence showing that the claimed control information is convolutionally encoded. Therefore, this additional limitation of claim 4 is not satisfied.

7. '127 Patent – Claim 5

a. The WCDMA UE of claim 1

Inasmuch as the '127 accused products do not infringe independent claim 1, they also do not infringe dependent claim 5.

b. wherein the payload data of the associated HS-PDSCH is not recovered if the bits were not a result of combining the user specific scrambling sequence associated with the UE with the control information.

The record evidence indicates that [

] RX-3990C (Madisetti RWS) at Q711-712. Accordingly, the '127 accused products do not satisfy this additional limitation of claim 5.

8. '127 Patent – Claim 6

a. The WCDMA UE of claim 1

Inasmuch as the '127 accused products do not infringe independent claim 1, they also do not infringe dependent claim 6.

b. comprising circuitry in the WCDMA UE configured to produce the user specific scrambling sequence.

As discussed above with respect to claim 1, the "user specific scrambling sequence" of claim 6 "is a result of a ½ rate convolutional encoding of a UE identification (ID)." [

]

See RX-3990C (Madisetti RWS) at Q419; Jackson Tr. 602-603; 605. Therefore, the [

] do not satisfy this additional limitation of claim 6.

[

]

9. '127 Patent – Claim 7

a. The WCDMA UE of claim 6

Inasmuch as the '127 accused products do not infringe claim 6, they also do not infringe dependent claim 7.

b. wherein the circuitry in the WCDMA UE configured to produce the user specific scrambling sequence comprises a ½ rate convolutional encoder.

It is determined that, [inasmuch as

] they do not satisfy this additional limitation of claim 7. *See* RX-3990C (Madisetti RWS) at Q419; Jackson Tr. 602-603; 605. As for [

] *See* Madisetti Tr. 893-897.

10. '013 Patent – Claim 16

[[59]

]

[59] [

]

a. A user equipment comprising:

The preamble of 16 recites, "[a] user equipment." JX-0003 at col. 4, lns. 33-40. It is undisputed that the [ ] accused of infringing the '127 patent support HSDPA and are WCDMA user equipment. *See* CX-1309C (Jackson WS) at Q156-158; Resps. Br. at 106-19; Staff Br. at 63-75.

b. an input configured to accept a 16 bit user identification; and

[

]

c. a ½ rate convolutional encoder for processing the 16 bit user identification code with eight appended zero bits to produce a 48 bit code wherein the 48 bit code is used to determine control information carried over a high speed shared control channel (HS-SCCH).

[

]

11. '013 Patent – Claim 17

a. The user equipment of claim 16 further comprising

[

]

b. a rate matching block for puncturing eight bits after the production of the 48 bit code.

[

CX-1309C]

12. '013 Patent – Claim 18

a. The user equipment of claim 16

[

]

b. wherein the control information is used for decoding a high speed physical downlink shared channel (HS-PDSCH).

[

]

[

] *See id.* at Q196-97.

13. '013 Patent – Claim 19

a. The user equipment of claim 18

[

]

b. wherein the HS-PDSCH is associated with the HS-SCCH.

As discussed previously, it was determined that the claim term "associated with" does not need construction. The record evidence, including the 3GPP technical specifications detailing the architecture of HSDPA, demonstrates that the HS-PDSCH is associated with the HS-SCCH, and that the accused [ ] therefore satisfy this additional claim limitation:

] *See* CX-1309C (Jackson WS) at Q191-193; CX-0232 (3GPP TS 25.211 v5.8.0) at § 7.8. A diagram provided in the 3GPP technical specifications shows the association:

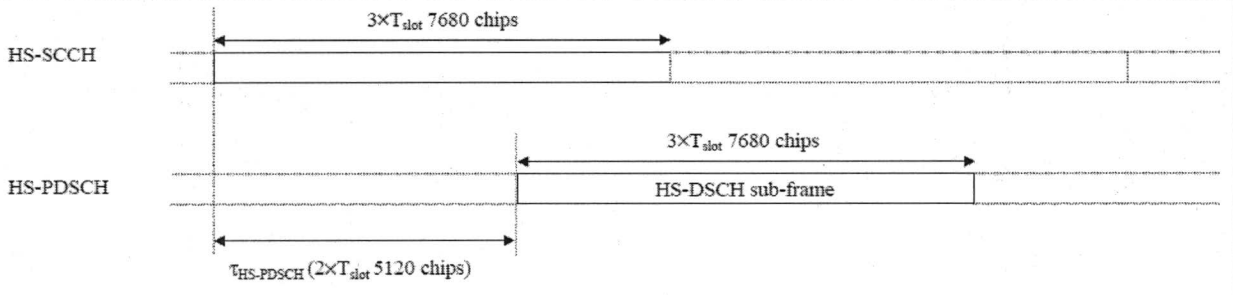

Figure 35: Timing relation between the HS-SCCH and the associated HS-PDSCH.

CX-0232 (3GPP TS 25.211 v5.8.0) at § 7.8 (underlining added). Moreover, each HS-SCCH message specifies (i) a set of one or more HS-PDSCH channels that carries information intended for a particular UE, and (ii) the modulation type used on each HS-PDSCH channel. CX-1309C

(Jackson WS) at Q164-166. This association also constitutes "a particular relationship" and satisfies this additional claim limitation under the Staff's proposed construction of "associated with."

This claim limitation is also satisfied under Respondents' proposed construction of "unique to." The evidence shows that, within a particular time period, there is a [

] CX-1309C (Jackson WS) at Q201.

The [

] *Id.* at

Q191-193.

14. Infringement of the Accused Products Upon Importation

Respondents argue that the products accused of infringing the UE ID patents do not infringe the '127 of '013 patents because they do not directly infringe upon importation into the United States, and therefore do not satisfy the importation requirement of section 337. *See* Resps. Br. at 121-22 (citing *Electronic Devices* at 13-14 ("[I]nfringement, direct or indirect, must be based on the articles as imported to satisfy the requirements of section 337.")). Specifically, Respondents argue that "none of the Accused Devices are configured to use the HSDPA protocol (*e.g.,* 'process' an HS-SCCH) as required by claims at the time of importation." *Id.* (citing RX-3990C (Madisetti RWS) at Q760-762). It is argued that "each cellular network operator providing HSDPA service in the U.S. requires a handset to have an International Mobile Subscriber Identity ('IMSI') before it can even use an HSDPA service," and that "InterDigital did not even attempt to show that any of the Accused Devices are activated prior to importation into the U.S. or that the Accused Devices are able to use an HSDPA service at the time of importation into the U.S. in the manner required by the asserted claims of the '013 and '127

patents." *Id.* at 122 (citing RX-3682 (3GPP 23.003 V7.10.0) at NK800IDC07731483; RX-3868 (3GPP 23.018 V6.4.0) at Section 8.1.21; RX-3990C (Madisetti RWS) at Q760-762).

InterDigital does not deny that the accused UE ID devices must be assigned an IMSI number, but argues that the assignment of an IMSI number is irrelevant to whether the accused devices satisfy the importation requirement under *Electronic Devices*. *See* Compls. Br. at 408-09. InterDigital argues that "[t]he accused devices do not have to be assigned an IMSI number to infringe the apparatus claims," inasmuch as "the accused devices infringe if they have the structures called out in the claims," and that "[n]one of those structures is an IMSI number." *Id.* InterDigital's argument is persuasive.[60]

Notwithstanding the evidence proffered by Respondents regarding assignment of an IMSI number, the record evidence demonstrates that the accused products are complete when they are imported, *i.e.*, the components accused of infringing the '127 and '013 patents are present at the time of importation. Therefore, it is determined that the products accused of infringing the '127 and '013 patents do satisfy the importation requirement of section 337.

D. Validity

1. Priority Date ('127 and '013 Patents)

The '127 and '013 patents descend, through a chain of continuation applications, from U.S. Patent Application No. 10/187,640 ("the '640 application") filed on July 1, 2002, and which later issued as U.S. Patent No. 6,973,579 ("the '579 patent"). *See* JX-0003; JX-0004. Another

[60] InterDigital provides an instructive analogy: "The [accused] devices also cannot be used until their batteries are charged. But no one other than Respondents would make the . . . argument that an imported device covered by the claims is, nevertheless, non-infringing because its battery needs charging." Compls. Br. at 409.

ancestor application in the UE ID patent family issued as U.S. Patent No. 7,349,540 ("the '540 patent"). JX-0003 at 5/19/2009 Certificate of Correction; JX-0004.

Respondents argue that the '127 and '013 patent are not entitled to claim priority to the '579 patent because InterDigital allegedly added new matter to the '540 patent that affects the validity of the priority claim. *See* Resps. Br. at 161-63. Respondents' argument is based on two sentences in the '540 specification: (i) "[t]he user equipment comprises circuitry configured to receive payload data over a high speed physical downlink shared channel (HS-PDSCH)," and (ii) "a high speed physical downlink shared channel (HS-PDSCH) associated with the HS-SCCH." RX-3520C (Madisetti) at Q1019. The evidence does not support Respondents' position.

First, InterDigital's expert Dr. Jackson testified that these two sentences are not new matter. CX-1523C (Jackson RWS) at Q145-146. They merely restate in slightly different words the substance of other passages of the original specification recited elsewhere, and they convey the same meaning to a person of ordinary skill in the art as those passages appearing in the original specification. *Id.* at Q146; *see Yingbin-Nature (Guangdong) Wood Indus. Co. v. ITC*, 535 F.3d 1322, 1329 (Fed. Cir. 2008) (affirming Commission's determination that "the use of a new term by the patentee to describe what was already disclosed does not constitute new matter").

Even if the two sentences do constitute new matter, Respondents' argument would nevertheless fail if it were determined that the original specification, without regard to the supposed new matter, supports the claims. *See Yingbin,* 535 F.3d 1322, 1337 (Fed. Cir. 2008) (noting that the inquiry is whether the later-claimed subject matter is "supported by adequate written description in the originally-filed disclosure"). In this investigation, Respondents do not contend that any asserted '013 claim is invalid for lack of written description, and therefore have

no basis to dispute the '013 patent's claim of priority to the '579 patent. As for the '127 patent, Respondents do argue that certain asserted claims lack written description support. *See* Resps. Br. at 157-61. These arguments will be addressed further below, but based on the record evidence, it is determined that the disputed claims of the '127 patent are supported by the specification, and therefore claim priority to the '579 patent.

2. Anticipation and Obviousness ('127 and '013 Patents)

a. Historical Background

The UE ID patents are directed to a method for producing a sequence for scrambling and descrambling information transmitted from a base station to a handset using a protocol known as High Speed Downlink Packet Access ("HSDPA"). The Third Generation Partnership Project ("3GPP") developed HSDPA to increase data transfer rates from the base station to a handset, *i.e.*, on the downlink. RX-3520C (Madisetti WS) at Q37, Q199-210. 3GPP formed a group called "Working Group 1" to analyze potential implementations and to draft the HSDPA-related technical specifications beginning in 2001. *See id.* at Q212-214.

By early 2002, Working Group 1 had decided to transmit data from the base station to the handset via data channels shared by multiple users. RX-3520C (Madisetti WS) at Q215-216. These channels were named High Speed Physical Downlink Shared Channels ("HS-PDSCH"). *Id.* Inasmuch as the data channels were shared, it was necessary to develop a technique that would allow a given handset to determine whether data being transmitted on a HS-PDSCH was intended for it. *Id.* at Q219-220. Working Group 1 introduced the High Speed Shared Control Channel ("HS-SCCH") for this purpose; the HS-SCCH was intended to provide the information necessary for the handset to obtain data intended for it on a particular HS-PDSCH. RX-3520C (Madisetti WS) at Q222-Q223; CX-1523C (Jackson RWS) at Q21.

In early 2002, Working Group 1 debated how to structure the HS-SCCH. RX-3520C (Madisetti WS) at Q225. To reduce battery consumption, Working Group 1 discussed using the HS-SCCH to inform the handset, in advance, that data was arriving for it on the HS-PDSCH. *Id.* at Q227-230. Working Group 1 decided that the advance warning should arrive in the first part of the HS-SCCH, referred to as Part 1, and should contain information sufficient for a handset to determine whether data was arriving for it. *Id.*

i. The Motorola "Way Forward"

In February 2002, Working Group 1 agreed on an HS-SCCH structure and approved a proposal from Motorola detailing that structure ("Motorola Way Forward"). RX-0116; RX-3520C (Madisetti WS) at Q231-249; RX-0479 (Mtg. #24 Minutes) at IDC_ITCCOMP_00103845-47, 57. The Motorola Way Forward discloses that the HS-SCCH is divided into two parts. RX-3520C (Madisetti WS) at Q252; RDX-1232 (RX-0116 at IDC_ITCCOMP_00105962). The first part, "Part 1," is transmitted entirely in the first slot of the HS-SCCH, and contains information identifying the channelization code set and modulation scheme for the HS-PDSCH. *See* RX-3520C (Madisetti WS) at Q252. The second part, "Part 2," is transmitted in the second and third time slots, and includes additional information needed to recover the HS-PDSCH payload data. *Id.* at Q252, Q258-260; RX-0116 (Motorola Way Forward) at IDC_ITCCOMP_00105962; RDX-1232 (RX-0116 at IDC_ITCCOMP_00105962).

At the base station, the Part 1 information comprises 8 bits: 7 bits for the channelization code set plus one bit for the modulation scheme. RX-3520C (Madisetti WS) at Q253-257; RDX-1226 (RX-0116 (Motorola Way Forward) at IDC_ITCCOMP_00105962, Fig. 1). Prior to transmission, these 8 bits are input to a ½ rate convolutional encoder to produce a 32-bit encoded sequence, which is then rate-matched to generate a 40-bit encoded sequence. RX-3520C

(Madisetti WS) at Q261-262, Q268-274; RDX-1226 (RX-0116 (Motorola Way Forward) at IDC_ITCCOMP_00105962, Fig. 1). The ½ rate convolutional encoder described in the Motorola Way Forward is from a prior version of WCDMA, referred to as Release 99. RX-3520C (Madisetti WS) at Q264-266; RX-0116 (Motorola Way Forward) at IDC_ITCCOMP_00105962.

Motorola Way Forward also discloses the way in which the base station signals a handset to receive and process incoming HS-PDSCH data. RX-3520C (Madisetti WS) at Q276-281, Q297-306; RX-0116 (Motorola Way Forward) at IDC_ITCCOMP_00105962-63. Motorola proposed scrambling the 40-bit encoded Part 1 sequence with a 40-bit user specific scrambling sequence generated from the handset's unique identification number, or "UE ID." *See* RX-3520C (Madisetti WS) at Q276-281, Q297-306; RX-0116 (Motorola Way Forward) at IDC_ITCCOMP_00105962-63. The base station performed the scrambling operation by applying the 40-bit UE ID scrambling sequence to the 40-bit encoded Part 1 sequence using an exclusive-OR operation. *See* RX-3520C (Madisetti WS) at Q276-281, Q297-306; RX-0116 (Motorola Way Forward) at IDC_ITCCOMP_00105962-63; *see also* RX-3520C (Madisetti WS) at Q281-288. Inasmuch as the Part 1 sequence was scrambled by using the scrambling sequence for a specific handset, a handset could use specific metrics calculated during the decoding process to determine whether the HS-SCCH containing that Part 1 was intended for it. RX-3520C (Madisetti WS) at Q289-296, Q297-306; RX-0116 (Motorola Way Forward) at IDC_ITCCOMP_00105962. The Motorola Way Forward left open, however, design details of how to generate a 40-bit scrambling sequence from a UE ID having a shorter length. RX-3520C (Madisetti WS) at Q307; CX-1523C (Jackson RWS) at Q23.

ii. The Siemens Proposal

The day after the Motorola circulated the Motorola Way Forward, Siemens proposed using a forward error correction encoder to generate a 40-bit scrambling sequence from a shorter-length UE ID. RX-0462 (Siemens Proposal); RX-1347 (Mtg. #24 Minutes) at 23, 25; CX-1523C (Jackson RWS) at Q24. This forward error correction encoder was already part of the 3GPP technical specifications. RX-0462 (Siemens Proposal); RX-1347 (Mtg. #24 Minutes) at 23, 25; CX-1523C (Jackson RWS) at Q24. Working Group 1 immediately adopted Siemens' proposal without any performance testing. RX-3520C (Madisetti WS) at Q310-316; RX-0462 (Siemens Proposal); RX-0479 (Mtg. #24 Minutes) at 13, 25. The particular encoder proposed by Siemens was the Release 99 (32,10) Reed Muller block encoder, which could accept the 10-bit (the size contemplated at the time) UE ID, and was known to generate good separation due to its earlier use for forward error correction. RX-3520C (Madisetti WS) at Q322-324; RX-0462 (Siemens Proposal) at NK800IDC23070031. Inasmuch as the block encoder generated only a 32-bit sequence, Siemens proposed using a rate matching block to increase the length of the scrambling sequence to 40 bits. *See* RX-3520C (Madisetti WS) at Q322-324.

iii. The 3GPP Release 5 Specification

Shortly after the February 2002 meeting, 3GPP published the "Release 5" HSDPA technical specifications. RX-3520C (Madisetti WS) at Q332-335, Q357-358, Q361-362; RX-0127 (25.212 Release 5); RX-0126 (25.214 Release 5); RX-0435 (25.858 Release 5). The Release 5 specifications included 3GPP TS 25.212 ("25.212 Release 5"), 3GPP TS 25.214 ("25.214 Release 5"), and 3GPP TS 25.858 ("25.858 Release 5") (collectively, "Release 5 Specifications"). The Release 5 Specifications incorporated certain functionality that had been included in the Motorola Way Forward and the Siemens Proposal: (i) encoding of the HS-SCCH,

(ii) scrambling Part 1 of the HS-SCCH with a user specific scrambling sequence generated using the (32,10) Reed Muller block encoder and rate matching, and (iii) determining the validity of the HS-SCCH. *See, e.g.*, RX-3520C (Madisetti WS) at Q332-365; CX-1523C (Jackson RWS) at Q24; RX-0127 (25.212 Release 5) at NK800IDC07593143-47; RX-0126 (25.214 Release 5) at NK800IDC06490941-42; RX-0435 (25.858 Release 5) at ZTE800IDC02144786-89.

iv. The Motorola 610 Submission

At the next meeting in April 2002, Working Group 1 received a Motorola submission ("Motorola 610 Submission") that (i) included a complete description of the encoding and scrambling of the HS-SCCH described in the Siemens Proposal and Release 5 Specifications, and (ii) evaluated the performance of the scrambling sequence produced by the Reed Muller block encoder. *See, e.g.*, RX-3520C (Madisetti WS) at Q366-397; CX-1523C (Jackson RWS) at Q75-76; RX-0496 (Motorola 610 Submission); RX-0125 (Mtg. #25 Minutes) at 6, 10. The performance evaluation verified Working Group 1's expectations that the good separation properties of the Reed Muller block encoder produced a scrambling sequence that performed well for its intended purpose, *i.e.*, allowing a handset to determine whether Part 1 of the HS-SCCH was scrambled with that handset's scrambling sequence by checking certain metrics generated during the Viterbi decoding process. *See, e.g.*, RX-3520C (Madisetti WS) at Q379-384, Q388-391; RX-0496 (Motorola 610 Submission) at IDC_ITCCOMP_00006123. The Motorola 610 Submission further established that a handset could make this determination before the handset received the HS-PDSCH data. RX-3520C (Madisetti WS) at Q379-384, Q388-391.

v. Changing to a 16-bit UE ID

Following the Motorola 610 Submission, Working Group 1 realized that another working group, Working Group 2, might be using a 16-bit UE ID instead of a 10-bit UE ID. RX-0125

(Mtg. #25 Minutes) at 9. Working Group 1 discussed whether it would be preferable to reuse an existing 16-bit UE ID instead of using a 10-bit UE ID. RX-3520C (Madisetti WS) at Q388-391; RDX-1255 (RX-0125 (Meeting #25 Minutes) at IDC_ITCCOMP_00103939). The decision whether or not to change to a 16-bit UE ID, however, was tabled until the next meeting to allow for discussion and confirmation with Working Group 2. Dick Tr. 2077-2078; RX-0125 (Mtg. #25 Minutes) at 9. While the decision to move to 16 bits was deferred to the next meeting, it was nonetheless apparent to Working Group 1 that the method for generating the Part 1 scrambling sequence would have to change if a 16-bit UE ID was adopted, inasmuch as the Reed Muller encoder accepted only a 10-bit input. RX-3520C (Madisetti WS) at Q403-405; RDX-1257; CX-1523C (Jackson RWS) at Q25-26.

vi. InterDigital's Contributions

Several InterDigital representatives attended the Working Group 1 meeting at which the possible change from a 10-bit to 16-bit UE ID was discussed. RX-3520C (Madisetti WS) at Q434-441. [

] *Id.*; Dick Tr. 2080, 2081; CX-4075C

(4/17/02 Email from Dr. Dick) [

] CX-1523C (Jackson RWS) at Q53

] Dick Tr. 2080-2081

[

]

Shortly before the next meeting of Working Group 1, InterDigital filed the provisional application nos. 60/378,509 ("509 Prov. App.") and 60/378,170 ("170 Prov. App."). RX-3520C (Madisetti WS) at Q442-447; RX-0432 (509 Prov. App.); RX-0115 (170 Prov. App.). The provisional applications described the structure of the HS-SCCH developed by Working Group 1, including the possibility of a change to use a 16-bit UE ID, and acknowledged that Working Group 1 (i) required that the scrambling sequence have good separation properties and (ii) placed a "high priority on introducing the new, required functionality by straightforward extensions of existing functionality." RX-3520C (Madisetti WS) at Q448-465; RDX-1264 (RX-0432 (509 Prov. App.) at ZTE800IDC02162427); RDX-1265 (RX-0432 (509 Prov. App.) at ZTE800IDC02162427). In total, the applicants disclosed 11 different methods for generating a UEID-based scrambling sequence from a 16-bit UE ID. RX-3520C (Madisetti WS) at Q448-465, Q470-472; RDX-1264 (RX-0432 (509 Prov. App.) at ZTE800IDC02162427); RDX-1265 (RX-0432 (509 Prov. App.) at ZTE800IDC02162427).

At the next meeting in May 2002, Working Group 1 changed the UE ID length from 10 bits to 16 bits, and InterDigital immediately submitted its proposal listing 6 of the 11 alternatives it had developed for generating a UE ID based scrambling sequence, as well as the separation characteristics, *i.e.*, minimum or Hamming distance, for each. RX-3520C (Madisetti WS) at Q473-489; RX-0117 (InterDigital Proposal); RX-1348 (Mtg. #26 Minutes) at IDC_ITCCOMP_00006316-17. Inasmuch as one of the two options with the greatest Hamming distance included the reuse of a ½ rate convolutional encoder previously used for forward error correction in the earlier Release 99 and the Release 5 specifications, Working Group 1 adopted that solution. *See* RX-3520C (Madisetti WS) at Q473-489; RX-0117 (InterDigital Proposal); RX-1348 (Mtg. #26 Minutes) at IDC_ITCCOMP_00006316, IDC_ITCCOMP_00006317

("Chairman stated that we should stick to something simple and something that is already existing in R99 specifications unless there is a really really good reason to use new schemes.").

After Working Group 1 accepted InterDigital's proposal, InterDigital filed non-provisional patent application no. 10/187,640, which issued as U.S. Patent No. 6,973,579 ("the '579 patent"). The '579 patent and its subsequent continuations describe generation of the scrambling sequence based in part on using the ½ rate convolutional encoder from Release 99, and preferably a rate-matching step. InterDigital's proposed solution, however, did not alter any other aspect of the encoding and scrambling scheme for Part 1. *See* JX-0034 ('579 patent); RX-3520C (Madisetti WS) at Q532.

b. Overview of the Asserted Prior Art

Respondents argue that the asserted claims of the '127 and '013 patents are anticipated and/or rendered obvious in light of the Motorola 610 Submission, the Release 5 Specifications, and U.S. Patent Nos. 6,012,160 ("the '160 patent"), 6,081,597 ("the '597 patent"), and 6,170,076 ("the '076 patent"). *See* Resps. Br. at 131-56, 161-62. Respondents' invalidity positions under 35 U.S.C. §§ 102 and 103 are summarized as follows:

- The Motorola 610 Submission alone or in combination with one or more of either RX-0484 ('160 patent), RX-0486 ('597 patent), or RX-0497 ('076 patent) renders claims 16-19 of the '013 patent and claims 1-7 of the '127 patent obvious under any of the proposed constructions. The Motorola 610 Submission also anticipates claims 1-6 of the '127 patent to the extent InterDigital's interpretation of the claims is adopted;
- The Release 5 Specifications alone or in combination with one or more of either RX-0484 ('160 patent), RX-0486 ('597 patent), or RX-0497 ('076 patent) render

claims 16-19 of the '013 patent and claims 1-7 of the '127 patent obvious under any of the proposed constructions. The Release 5 Specifications also anticipate claims 1-6 of the '127 patent to the extent InterDigital's interpretation of the claims is adopted; and

- The '579 patent anticipates and/or renders obvious claim 19 of the '013 patent and claims 1-7 of the '127 patent under each of the proposed constructions if the '013 and '127 patents are not entitled to claim priority to the '579 patent.[61]

Resps. Br. at 131.

The Staff also argues that the asserted claims of the '127 and '013 patents are invalid over the prior art. *See* Staff Br. at 86-109. The Staff's positions are summarized as follows:

- The Motorola 610 Submission (RX-0496) alone or in combination with one or more of U.S. Patent No. 6,012,160 (RX-0484) or U.S. Patent No. 6,081,597 (RX-0486) anticipates and/or renders obvious claims 16-19 of the '013 patent.
- The Release 5 Specifications alone or in combination with one or more of U.S. Patent No. 6,012,160 (RX-0484) or U.S. Patent No. 6,081,597 (RX-0486) anticipate and/or render obvious claims 16-19 of the '013 patent.
- The Motorola 610 Submission (RX-0496) alone or in combination with one or more of U.S. Patent No. 6,012,160 (RX-0484) or U.S. Patent No. 6,081,597 (RX-0486) renders obvious claims 1-7 of the '127 patent under the Respondents' claim

[61] Inasmuch as it was determined above that the '127 and '013 patents are entitled to claim priority to the '579 patent, this Initial Determination will not analyze the validity of the '127 and '013 patents in light of the '579 patent alone.

constructions and anticipates claims 1-7 of the '127 patent under InterDigital's constructions.

- The Release 5 Specifications alone or in combination with one or more of U.S. Patent No. 6,012,160 (RX-0484) or U.S. Patent No. 6,081,597 (RX-0486) render obvious claims 1-7 of the '127 patent under the Respondents' claim constructions and anticipate claims 1-7 of the '127 patent under InterDigital's constructions.

Staff Br. at 86.

c. The Motorola 610 Submission and Release 5 Specifications

The Motorola 610 Submission is prior art under § 102(a) because it was published and presented at the April Meeting of Working Group 1 prior to the alleged date of conception of the purported invention claimed in the '013 and '127 patents. *See* RX-3520C (Madisetti WS) at Q366-369, Q397. The Release 5 Specifications are prior art under § 102(a) because they were published prior to the alleged date of conception of the purported invention claimed in the '013 and '127 patents. *See id.* at Q365.

InterDigital's expert Dr. Jackson testified that most of the claim elements of the '013 and '127 patents were known in the art and were disclosed in both the Motorola 610 Submission and the Release 5 Specification. *See* CX-1523C (Jackson RWS) at Q77, Q89; Jackson Tr. 2181-2183, 2184-2190, 2191-2195. The only disputes are whether the prior art anticipates or renders obvious the following claim requirements: (i) an encoder capable of accepting a 16-bit UE ID for use in generating a scrambling sequence (claims 16-19 of the '013 patent), and (ii) a ½ rate convolutional encoder used, with or without rate-matching, to generate the scrambling sequence (all asserted claims). *See* CX-1523C (Jackson RWS) at Q77, Q89; Jackson Tr. 2195. The record evidence demonstrates that these elements were known and obvious to those of

ordinary skill in the art at the time of the UE ID patent inventions. A claim-by-claim analysis of the validity of the '127 and '013 patents in light of the Motorola 610 Submission and Release 5 Specifications will follow the discussion of disputed elements below.

i. Disputed Elements

Use of a 16-bit UE ID.

The use of a 16-bit UE ID was inherent and obvious in the context of the problem to be solved at the time of the '127 and '013 inventions. *See* RX-3520C (Madisetti WS) at Q552-558, Q634-638. The state of the art as described in the Motorola 610 Submission and the Release 5 Specifications required generating a 40-bit scrambling sequence using Reed Muller block encoding and rate matching. *Id.* A person of ordinary skill in the art would have understood that Working Group 1 had proposed to change the length of the UE ID from 10 bits to 16 bits. *Id.*; CX-1523C (Jackson RWS) at Q27. As InterDigital's expert Dr. Jackson testified at the hearing, the disclosure of an input that accepts a 16-bit UE ID was inherent and obvious from the problem being addressed. Jackson Tr. 2191-2192; RX-3520C (Madisetti WS) at Q554, Q556, Q736, Q738; RX-0125 (Mtg. #25 Minutes) at 9. The Motorola 610 Submission and the Release 5 Specifications also each disclose a ½ rate convolutional encoder that accepts a 16-bit input consisting of an 8-bit Part 1 sequence and 8 tail bits. RX-3520C (Madisetti WS) at Q555, Q737. Inasmuch as InterDigital did not conceive of using a 16-bit UE ID, use of a 16-bit UE ID in the context of the '127 and '013 patents is not novel. *See* Dick Tr. 2078 (testifying that the inventors did not conceive of the idea of moving from a 10-bit to a 16-bit UE ID).

½ rate convolutionally encoding a UE ID.

The record shows that employing a ½ rate convolutional encoder to generate a user specific scrambling sequence is obvious in light of either the Motorola 610 Submission or the

Release 5 Specifications. RX-3520C (Madisetti WS) at Q560, Q740. The motivation to use the ½ rate convolutional encoder stems from the nature of the problem presented by Working Group 1, which would have prompted a person of ordinary skill to search for a method of generating a scrambling sequence that could accept a 16-bit input, produce a longer output sequence with good separation properties, and reuse existing technology. *Id.* Q561, Q741; Jackson Tr. 525-526; RDX-1258C (RX-0475 (Dick 800 Dep.) at 117-118.

The Motorola 610 Submission and the Release 5 Specifications each disclose (i) the reuse of a forward error correction encoder (*i.e.*, the Reed Muller block encoder) to generate a user specific scrambling sequence, and (ii) that the ½ rate convolutional encoding and rate matching used for forward error correction generates a 40-bit sequence from a 16-bit sequence. RX-3520C (Madisetti WS) at Q561, Q568, Q741, Q745; RDX-1275 (RX-0496 (Motorola 610 Submission) at IDC_ITCCOMP_00006123, FIG. 3); RX-0127 (25.212 Release 5) at §§ 4.6.1, 4.6.5, 4.6.6. Inasmuch as the Reed Muller block encoder was a forward error correcting encoder, and forward error correcting encoders were known to generate sequences with good separation, it would have been obvious to a person of ordinary skill in the art to try other known forward error correction encoders such as a ½ convolutional encoder. *See* RX-3520C (Madisetti WS) at Q561, Q568, Q741, Q745; Jackson Tr. 2198, 2210-2211.

The ½ rate convolutional encoder used for forward error correction in the prior art was the obvious and logical choice for generating the scrambling sequence, inasmuch as it satisfied both criteria identified by Working Group 1 and known to the skilled artisan. Choosing the ½ rate convolutional encoder allowed reuse of existing functionality. Specifically, the Release 5 Specifications and Motorola 610 Submission both disclosed use of a ½ rate convolutional encoder alongside the Reed Muller block encoder as possible forward error correction encoders.

RX-0496 (Motorola 610 Submission) at 1 (both encoders on same page); RX-0127 (25.212 Release 5) at § 4.6.5 (both encoders in the same section); RX-3520C (Madisetti WS) at Q606, Q759; Jackson Tr. 2197:16-20. Further, the disclosed ½ rate convolutional encoder was already being used to encode 16 bits (8 bits of Part 1 information plus 8 tail bits) into output sequences with good separation. Jackson Tr. at 2199-2200; 2197; Dick Tr. 2100-2101; RX-3520C (Madisetti WS) at Q579). Additionally, substituting the ½ rate convolutional encoder would have been obvious for at least the following seven reasons.

First, it would have been obvious to a person of ordinary skill in the art to try other forward error correction encoders known to produce sequences with good separation. RX-3520C (Madisetti WS) at Q584-586, Q753. As InterDigital's expert Dr. Jackson testified, a person of ordinary skill would have understood that good separation was a desirable characteristic of forward error correction encoders and scrambling sequence generators. Jackson Tr. 2198. Dr. Jackson also testified that the separation properties of an encoder are the same whether that encoder is used for forward error correction or generation of a scrambling sequence, and that there is no characteristic of a forward error correction encoder that would prevent a person of ordinary skill in the art from considering that encoder for use as a scrambling sequence generator or from implementing that encoder. Jackson Tr. 2209; 2210; 2190-2191. Indeed, Dr. Jackson testified that a person of ordinary skill would have considered other forward error correction encoders rather than looking to encryption or privacy systems when searching for ways to generate a scrambling sequence:

> Q. And, in fact, it's your opinion that a person of ordinary skill in the art would be more likely to look at articles describing forward error correction encoders over articles related to encryption to identify a scrambling sequence used for the purpose described in the '013 and '127 Patents, right?

> A. Yes, yes. Error correcting codes are devoted to a very – in part to the problem of finding sequences with good separation. Privacy systems are devoted to finding sequences that are hard to undo or understand.

Jackson Tr. 2210-2211; *see* RX-3520C (Madisetti WS) at Q585.

Second, a person of ordinary skill in the art would have expected that the ½ rate convolutional encoder used for forward error correction would function well as a scrambling sequence generator because the purpose of a ½ rate convolutional encoder is to generate sequences with good separation. RX-3520C (Madisetti WS) at Q569, Q581-582, 7Q46; *see* Dick Tr. 2100-2101 (acknowledging known separation properties of convolutional encoders). Specifically, the Release 99 ½ rate convolutional encoder included in the Motorola 610 Submission and Release 5 Specifications was well-known and well-documented as generating codes having good separation properties. RX-3520C (Madisetti WS) at Q169-198, Q569, Q581, Q746; RX-0457 (Lin & Costello) at IDC_ITCCOMP_00105543 (containing tables of convolutional codes with maximal separation properties that identify the ½ rate convolutional encoder in 25.212 Release 5); RX-455 (Short Convolutional Codes article) (containing the same table as disclosed in Lin & Costello); RX-0492 (Digital Communications) (same); RDX-1219 (RX-0457 (Lin & Costello) at IDC_ITCCOMP_00105543); RDX-1220 (RX-0455 (Short Convolutional Codes article) at NK800IDC06484233). Dr. Jackson testified that a person of ordinary skill could have determined the separation properties of the ½ rate convolutional encoder using a textbook such as Lin & Costello. *See* Jackson Tr. 2208-2209, 2256-2257. Thus, the result of using a ½ rate convolutional encoder was entirely predictable and expected to a person of ordinary skill.

Third, a person of ordinary skill in the art would have understood that the ½ rate convolutional encoder of Release 99 was one of a finite and very low number of preexisting

options in Release 99 that could generate a scrambling sequence from a 16 bit input and, as discussed previously, would yield predictable results. RX-3520C (Madisetti WS) at Q572-574; RX-0127 (25.212 Release 5); Jackson Tr. 2243 (testifying there are about 10 to 12 encoders disclosed in the prior art specifications).

Fourth, a person of ordinary skill in the art would have understood that a convolutional encoder that only receives a finite input, such as 16 bits, generates a code that is referred to as a terminated convolutional code. RX-3520C (Madisetti WS) at Q154, Q583, Q757. It was well known that this code could be generated by either a convolutional encoder or a block encoder. RX-3520C (Madisetti WS) at Q155-168, Q583, Q757; Jackson Tr. 2196; RDX-1214 (RX-0452 (Rate-Compatible Punctured Convolutional Codes) at NK800IDC05153287); RDX-1215 (RX-0445(Malkamaki Dissertation) at NK800IDC06505283); RDX-1216 (RX-0445 (Malkamaki Dissertation) at NK800IDC06505268). In fact, Dr. Jackson testified that a convolutional encoder that accepts a 16-bit input and generates a fixed output is a type of block encoder. Jackson Tr. 2196. Thus, it would have been obvious to a person of ordinary skill to substitute a convolutional encoder that receives a 16-bit input for a block encoder. RX-3520C (Madisetti WS) at Q583.

Fifth, a person of ordinary skill in the art would have understood that ½ rate convolutional encoders and block encoders are often interchangeable for inputs with a finite length, as in the context of forward error correction and other applications, such as space applications in which separation between the code words is important. RX-3520C (Madisetti WS) at Q587-596, Q758; RX-0474 (R1-01-1030) at ITC_COMP_00099870 ("[I]n principle, both convolutional codes as well as block codes come into question for this issue."); RX-0473 (Siemens R1-01-1131) at 2-8 (discussing convolutional codes, Reed Muller codes, and Reed

Solomon codes as possible channel encoders for the HS-SCCH); RX-0442 (Applications of Error-Control Coding) at 2531, 2533-36 (noting that convolutional encoders became the preferred choice in most practical applications)

Sixth, a person of ordinary skill in the art would have expected that a convolutional encoder could be used as a scrambling sequence generator because it was understood that the mathematical operation of convolution could be used to generate a scrambling code. RX-3520C (Madisetti WS) at Q602-605; RX-0438 (Altera App. Note) at 6, FIG. 4 (teaching that one can design a "scrambling code generator using the same LPM functions used for the convolutional encoder").

Seventh, a person of ordinary skill in the art would be motivated to substitute a convolutional encoder for a Reed Muller block encoder because it was well known that a convolutional code could be generated from Reed Muller code such that both codes have the same separation properties. RX-3520C (Madisetti WS) at Q598-601; RX-0460 (A Link Between Quasi-Cyclic Codes and Convolutional Codes) at NK800IDC05153304-05 (describing how to generate a convolutional code from a Reed Muller code, while maintaining the separation property of the code).

For all of these reasons, substituting the preexisting ½ rate convolutional encoder for the Reed Muller encoder to arrive at the '127 and '013 claimed inventions would have been obvious to one skilled in the art.[62]

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[62] Judge Luckern previously found that the "½ rate convolutional encoder" limitation from the '579 patent, an ancestor patent to the asserted '127 and '013 patents, valid over the prior art. *Certain 3G Mobile Handsets and Components*, Inv. No. 337-TA-613, Initial Determination at 222-23 (Aug. 14, 2009). The Commission reviewed Judge Luckern's determination as to the validity of the '579 patent. Notice of Commission Determination to Review in Part a Final Determination Finding No Violation of Section 337 and On Review to Affirm the Administrative

ii. '127 Patent – Claim 1

Analysis under InterDigital's proposed construction of the claim 1 limitations.

The Motorola 610 Submission and the Release 5 Specifications each disclose a WCDMA UE. RX-3520C (Madisetti WS) at Q645-647, Q730-733; RX-0496 (Motorola 610 Submission) at NK800IDC06385227-28; RX-0127 (25.212 Release 5) at § 3; RX-0126 (25.214 Release 5) at § 7.1. The Motorola 610 Submission and Release 5 Specifications also each disclose and render obvious circuitry in the WCDMA UE configured to process an HS-SCCH under InterDigital's proposed construction. RX-3520C (Madisetti WS) at Q649-663, Q817-822; RX-0496 (Motorola 610 Submission) at NK800IDC06385227-28; RX-0127 (25.212 Release 5) at §§ 4.6.1, 4.6.7; RX-0126 (25.214 Release 5) at § 7.1; RX-0435 (25.858 Release 5) at §8.1.2.

The Motorola 610 Submission and Release 5 Specifications each disclose and render obvious circuitry in the WCDMA UE configured to recover payload data from a high speed physical downlink shared channel (HS-PDSCH) under all proposed constructions of the limitation, including the construction adopted above. RX-3520C (Madisetti WS) at Q670-672, Q824-827; RX-0496 (Motorola 610 Submission) at NK800IDC06385227-28; RX-0127 (25.212 Release 5) at §§ 4.5, 4.6; RX-0126 (25.214 Release 5) at § 7.1. The Motorola 610 Submission and Release 5 Specifications each disclose and render obvious the fact that the HS-PDSCH is associated with the HS-SCCH under each proposed construction of "associated with."

Law Judge's Determination of No Violation, at 2 (Oct. 16, 2009). Upon review, the Commission took no position with regard to validity. *Id.*

The findings with respect to the validity of the '127 and '013 patents set forth in this Initial Determination do not contradict Judge Luckern's previous determination, inasmuch as the invalidity record is more developed in this investigation than was the case in the 613 Investigation, and the combinations of prior art examined in this investigation were not previously before Judge Luckern.

RX-3520C (Madisetti WS) at Q633-642, Q673-675, Q828-830. Further, the Motorola 610 Submission and Release 5 Specifications each disclose and render obvious the following element under all proposed constructions: "in response to the HS-SCCH including bits; wherein the bits are a result of a combining of a user specific scrambling sequence associated with the UE with control information." RX-3520C (Madisetti WS) at Q673-693, Q831-844; RX-0496 (Motorola 610 Submission) at NK800IDC06385227-28, NK800IDC06385232; RX-0127 (25.212 Release 5) at §§ 4.6.1, 4.6.7; RX-0126 (25.214 Release 5) at § 7.1; RX-0435 (25.858 Release 5) at §8.1.2.

Under InterDigital's interpretation of claim 1, there is no requirement that the user specific scrambling sequence be generated by a ½ rate convolutional encoder. *See* RX-3520C (Madisetti WS) at Q700, Q847, Q851-852. InterDigital's expert Dr. Jackson argues that neither the base station nor a handset must use a ½ rate convolutional encoder to generate the scrambling sequence. Jackson Tr. 529. InterDigital and Dr. Jackson therefore argue that claim 1 extends to a user specific scrambling sequence that could have been generated by a block encoder. *Id.*

Given this testimony and InterDigital's broad interpretation, the Motorola 610 Submission and Release 5 Specifications each disclose the element of "wherein the bits are a result of a combining of a user specific scrambling sequence associated with the UE with control information." RX-3520C (Madisetti WS) at Q702-703, Q854. Inasmuch as claim 1 as construed by InterDigital covers scrambling sequences generated by block encoders, the Motorola 610 Submission and Release 5 Specifications anticipate claim 1 under that interpretation.

Analysis under the adopted construction of the claim 1 limitations.

The only disputed limitation under adopted constructions is the requirement that the handset use a user specific scrambling sequence that is a result of a ½ rate convolutional

encoding of a UE ID. For the reasons stated above, the Motorola 610 Submission and Release 5 Specifications each render this element obvious inasmuch as it would have been obvious to substitute the Release 99 ½ rate convolutional encoder for the Release 99 Reed Muller block encoder. *See* RX-3520C (Madisetti WS) at Q694-698, Q802-816. Further, the Motorola 610 Submission and Release 5 Specifications each disclose descrambling the HS-SCCH. *See id.* at Q652-656, Q803-809.

iii. '127 Patent – Claim 2

The Motorola 610 Submission and Release 5 Specifications each disclose and render obvious the additional requirement that control information include channelization and modulation information of the HS-PDSCH. RX-3520C (Madisetti WS) at Q704-706, Q855-857; RX-0496 (Motorola 610 Submission) at NK800IDC06385227-28; RX-0127 (25.212 Release 5) at §§ 4.6, 4.6.1.

iv. '127 Patent – Claim 3

The Motorola 610 Submission and Release 5 Specifications each disclose and render obvious the additional requirement that a user specific scrambling sequence is a result of rate matching the ½ rate convolutionally encoded UE ID. RX-3520C (Madisetti WS) at Q707-711, Q858-864; RX-0496 (Motorola 610 Submission) at NK800IDC06385227-28; RX-0127 (25.212 Release 5) at §§ 4.2.7, 4.2.7.5, 4.6.1., 4.6.6, 4.6.7.

v. '127 Patent – Claim 4

The Motorola 610 Submission and Release 5 Specifications each disclose and render obvious the additional requirement that control information is convolutionally encoded. RX-3520C (Madisetti WS) at Q712-714, Q865-867; RX-0496 (Motorola 610 Submission) at NK800IDC06385227-28; RX-0127 (25.212 Release 5) §§ 4.6.1., 4.6.5.

vi. '127 Patent – Claim 5

The Motorola 610 Submission and Release 5 Specifications each disclose and render obvious the additional requirement added by claim 5, inasmuch as they contain more detail regarding the HS-PDSCH than does the '127 patent. *See* RX-3520C (Madisetti WS) at Q716-717, Q868-870; RX-0496 (Motorola 610 Submission) at NK800IDC06385227-28; RX-0126 (25.214 Release 5) at § 7.1; RX-0435 (25.858 Release 5) at §8.1.2.

vii. '127 Patent – Claim 6

The Motorola 610 Submission and Release 5 Specifications each disclose and render obvious the requirement of circuitry configured to produce the user specific scrambling sequence. RX-3520C (Madisetti WS) at Q718-719, Q865-867; RX-0496 (Motorola 610 Submission) at NK800IDC06385227-28; RX-0127 (25.212 Release 5) §§ 4.6.1., 4.6.5.

viii. '127 Patent – Claim 7

For the reasons stated above, the Motorola 610 Submission and Release 5 Specifications each render obvious circuitry in the WCDMA UE configured to produce the user specific scrambling sequence that comprises a ½ rate convolutional encoder, inasmuch as it would have been obvious to substitute the Release 99 ½ rate convolutional encoder for the Release 99 block encoder. RX-3520C (Madisetti WS) at Q712-714, Q874-877; RX-0496 (Motorola 610 Submission) at NK800IDC06385227-28; RX-0127 (25.212 Release 5) §§ 4.6.7.

ix. '013 Patent – Claim 16

The Motorola 610 Submission and Release 5 Specifications each disclose "user equipment." RX-3520C (Madisetti WS) at Q549-551, Q730-733; RX-0496 (Motorola 610 Submission) at NK800IDC06385227-28; RX-0127 (25.212 Release 5) § 3; RX-0126 (25.214 Release 5) § 7.1. As discussed above, the Motorola 610 Submission and Release 5

Specifications each disclose and/or render obvious an input configured to accept a 16-bit user identification. *See* RX-3520C (Madisetti WS) at Q552-558; RX-0496 (Motorola 610 Submission) at NK800IDC06385227-28; RX-3520C (Madisetti WS) at Q734-738; RX-0127 (25.212 Release 5) at §§ 4.6.1., 4.6.5, 4.6.7. Further, as discussed above, the Motorola 610 Submission and Release 5 Specifications each render obvious use of a ½ rate convolutional encoder to produce a code. *See, e.g.*, RX-3520C (Madisetti WS) at Q559-610, Q739-761. The Motorola 610 Submission and Release 5 Specification each also disclose adding tail bits to information input into a convolutional encoder and, thus, disclose a 16-bit user identification code with eight appended zero bits. *See, e.g.*, RX-3520C (Madisetti WS) at Q563-565, Q743-744; RX-0496 (Motorola 610 Submission) at FIG. 3; RX-0127 (25.212 Release 5) at § 4.2.3.1. Thus, the Motorola 610 Submission and Release 5 Specifications each render obvious a ½ rate convolutional encoder for processing the 16-bit user identification code with eight zero bits to produce a 48-bit code.

The Motorola 610 Submission and Release 5 Specifications each disclose and render obvious the use of a 48-bit code to determine control information (under any proposed construction) carried over an HS-SCCH. *See, e.g.*, RX-3520C (Madisetti WS) at Q611-619, Q762-770; RX-0496 (Motorola 610 Submission) at IDC_ITCCOMP_00006123; RX-0127 (25.212 Release 5) at § 4.6.1; RX-0126 (25.214 Release 5) at § 7.1.

x. '013 Patent – Claim 17

The Motorola 610 Submission and Release 5 Specifications each disclose and render obvious the requirement of a rate matching block for puncturing eight bits after the production of the 48-bit code. RX-3520C (Madisetti WS) at Q621-626, Q771-778; RX-0496 (Motorola 610

Submission) at NK800IDC06385227-28, FIGS. 1, 3; RX-0127 (25.212 Release 5) at §§ 4.6.1, 4.6.6, 4.6.7, 4.2.7, 4.2.7.5.

xi. '013 Patent – Claim 18

The Motorola 610 Submission and Release 5 Specifications each disclose and render obvious the requirement of control information used for decoding the HS-PDSCH. RX-3520C (Madisetti WS) at Q627-631, Q779-783; RX-0496 (Motorola 610 Submission) at NK800IDC06385227-28; RX-0127 (25.212 Release 5) at §4.6; RX-0126 (25.214 Release 5) at § 7.1.

xii. '013 Patent – Claim 19

The Motorola 610 Submission and Release 5 Specifications each disclose and render obvious the requirement that the HS-PDSCH is associated with (under each proposed construction) the HS-SCCH. RX-3520C (Madisetti WS) at Q633-642, Q784-794; RX-0496 (Motorola 610 Submission) at NK800IDC06385227-28; RX-0127 (25.212 Release 5).

d. The Motorola 610 Submission or the Release 5 Specifications in Combination with the ''160 patent, '579 Patent, or '076 patent

InterDigital's validity case hinges on the use of a ½ rate convolutional encoder to generate a scrambling sequence being the point of novelty of the claimed invention. As discussed above, it would have been obvious to use a ½ rate convolutional encoder based solely on the Motorola 610 Submission or the Release 5 Specifications and the motivation to reuse preexisting functionality. Numerous other motivations for making this design choice are also described above. The motivation to use the preexisting ½ rate convolutional encoder over other encoder options was particularly strong because convolutional encoders were used to generate scrambling sequences in other contexts in the prior art. Specifically, both U.S. Patent Nos.

6,012,160 ("the '160 patent") and 6,081,597 ("the '597 patent") explicitly disclose the use of a convolutional encoder to generate scrambling sequences as explained below. U.S. Patent No. 6,170,076 ("the '076 patent") states that a ½ rate convolutional encoder is equivalent to a block encoder, and provides further motivation for substituting the preexisting convolutional encoder for the preexisting block encoder.

i. The '160 Patent

The '160 patent issued on January 4, 2000, and thus constitutes prior art to the UE ID patents. RX-0484 ('160 patent). The patent is directed to a method of protecting important data bits during transmission, and discloses the use of a convolutional encoder to generate a scrambling sequence. RX-3520C (Madisetti WS) at Q891-931; RX-0484 ('160 patent) at col. 4, lns. 1-51; Fig. 1; Fig. 2. In particular, Figure 2 of the '160 patent is a scrambling mask generator that accepts a 16-bit input and uses the mathematical operation of convolution to generate the scrambling mask. RX-3520C (Madisetti WS) at Q901-903; RX-0484 ('160 patent) at col. 4, lns. 1-51 (disclosing generation of a scrambling sequence using a linear feedback shift register); Jackson Tr. 2216 (testifying that a linear feedback shift register uses the mathematical operation of convolution). It is undisputed that an encoder using the mathematical operation of convolution constitutes a convolutional encoder under the parties' agreed construction, and the '160 patent therefore teaches a ½ rate convolutional encoder.

One skilled in the art would have been motivated to combine the '160 patent with either the Motorola 610 Submission or the Release 5 Specifications because the '160 patent discloses how to generate a scrambling sequence in the context of wireless communications, and also to apply that scrambling sequence to data that has been encoded using a ½ rate convolutional encoder. RX-3520C (Madisetti WS) at Q887-890. Thus, all three references address the same

problem, and one skilled in the art would have been aware of the '160 patent when considering options for generating a scrambling sequence for the HS-SCCH. *Id.* Given the nature of the problem, this combination would have further motivated one skilled in the art to use a convolutional encoder to generate a scrambling sequence, and would have guided the skilled artisan to the convolutional encoder in the prior art Release 99 specifications.

ii. The '597 Patent

The '597 patent was filed on June 27, 2000, and is thus prior art to the UE ID patents. RX-0486 ('597 patent). The patent is directed to a public key cryptography system used to encrypt, *i.e.*, scramble, messages. RX-3520C (Madisetti WS) at Q939, Q958-960; RX-0486 ('597 patent) at col. 7, lns. 1-57. In this patent, the public key scrambling sequence is generated using a convolutional encoder that provides a cyclic convolution product of two inputs. RX-3520C (Madisetti WS) at Q939, Q958-960; RX-0486 ('597 patent) at col. 7, lns. 1-57. A person of ordinary skill in the art would have understood that linear convolution is typically implemented using cyclic convolution. RX-3520C (Madisetti WS) at Q973-979. Even InterDigital's expert Dr. Jackson testified that cyclic convolution and linear convolution generate the same sequences from the same input as long as appropriate padding is used. Jackson Tr. 2241.

A person skilled in art would have been motivated to combine the '597 patent with the Motorola 610 Submission or the Release 5 Specifications because both relate to methods of generating scrambling sequences. RX-3520C (Madisetti WS) at Q951-953. In fact, the PTO, when searching for relevant art, looked exclusively in the cryptography field to which the '597 patent belongs. *Id.* at Q949-950.

iii. The '076 Patent

The '076 patent issued on January 2, 2001, and therefore constitutes prior art to the UE ID patents. RX-0497 ('076 patent). The '076 patent discloses that a "rate-1/2 convolutional code can be interpreted as equivalent to an interleaved linear block code." RX-0497 ('076 patent) at col. 3, lns. 28-30; RX-3520C (Madisetti WS) at Q999-Q1001. Inasmuch as the Motorola 610 Submission and Release 5 Specifications disclose the use of a block encoder to generate a scrambling sequence, a person of ordinary skill would have understood that some block codes are equivalent to convolutional codes, and, thus, would have tried a convolutional code in place of the block code. RX-3520C (Madisetti WS) at Q999-Q1001. It would have been obvious for one skilled in the art to consider the '076 patent in combination with the Motorola 610 Submission and Release 5 Specifications because Working Group 1 was searching for a different scrambling sequence generator to replace the block encoder.

e. Secondary Considerations

No showing of secondary considerations can overcome the *prima facie* case of obviousness detailed above. InterDigital relies on three secondary considerations, *i.e.*, alleged long-felt but unsolved need, failure of others, and commercial success, but none overcomes the evidence showing obviousness of the '127 and '013 patents. *See* Compls. Br. at 419-21.

InterDigital argues that a long-felt but unsolved need for generating a 40-bit scrambling sequence from a 16-bit UE ID existed because a month elapsed between the alleged decision to use a 16-bit UE ID in April and InterDigital's submission in May. *See* Compls. Br. at 420-21. InterDigital's argument is not supported by the evidence, inasmuch Working Group 1 did not decide to change to a 16-bit UE ID until the May meeting, which is after InterDigital filed the provisional applications that later matured into the '127 and '013 patents. The inventors'

conceptions of the claimed inventions were therefore in anticipation of the Working Group's actions, and not the result of a long-felt need. InterDigital's long-felt need theory is also weakened due to the fact that multiple companies succeeded in developing a solution for generating a 40-bit sequence from a 16 bit UE ID.

With respect to InterDigital's argument that others failed to conceive of the invention claimed in the '127 and '013 patents, the evidence demonstrates that other companies did, in fact, devise methods for generating a scrambling sequence from a 16-bit UE ID. Specifically, the evidence shows that at least LG and Siemens succeeded in solving the same problem purportedly solved by '013 and '127 inventions, that of generating a scrambling sequence from a 16-bit UE ID. *See, e.g.*, CX-1523C (Jackson RWS) at Q30-31; RX-1362 (Siemens Proposal) at IDC_ICCOMP_00006571 (proposing a BCH encoder with a minimum distance of 8, which is the same as the ½ rate convolutional encoder proposed by InterDigital); *see also* RX-0475C (Dick 800 Dep.) at 343-344 (testifying that "[t]here were several other proposals at roughly the same time frame"). For example, LG proposed using the long scrambling sequence generator described in the prior art version of 25.213 to generate a scrambling sequence from a 16-bit UE ID. RX-1202 (R1-02-0541); RX-1348 (Mtg. #26 Minutes) at IDC_ITCCOMP_00006317. Notably, InterDigital's expert Dr. Jackson testified that the long scrambling sequence generator used the mathematical operation of convolution to generate the scrambling sequence, and is thus a convolutional encoder under the parties' agreed construction. *See* Jackson Tr. 2219. Thus, among the proposals for generating a scrambling sequence from a 16-bit UE ID, InterDigital was not the only Working Group 1 participant to propose the use of a convolutional encoder to generate a scrambling sequence. *Id.*; CX-1523C (Jackson RWS) at Q30-31. The record indicates that InterDigital's proposal was chosen over LG's proposal because Working Group 1

found InterDigital's approach simpler than LG's, and not because LG's approach failed to solve the problem presented by extending the UE ID to 16 bits. RX-1348 (Mtg. #26 Minutes) at IDC_ITCCOMP_00006316-17 (adopting the InterDigital proposal over the "concern" that the LG submission "could cause UE complexity," inasmuch as "[the] Chairman stated that we should stick to something simple and something that is already existing in R99 specifications unless there is a really really good reason to use new schemes").

The record evidence also does not support InterDigital's alleged secondary consideration of commercial success. InterDigital argues that the inventions of the '127 and '013 patents achieved commercial success because the claimed invention was incorporated into 3GPP HSDPA specifications. *See* Compls. Br. at 419-20. HSDPA-compliance, however, is determined by a handset's ability to pass certain conformance tests and does not require the use of a convolutional encoder to generate a scrambling sequence. *See* RX-3990C (Madisetti RWS) at Q745-759. Therefore, incorporation of the '127 and '013 inventions into the HSDPA specifications is irrelevant. *See id.* Furthermore, even if HSDPA compliance required devices to perform the precise steps described in the 3GPP specifications, there is no evidence that the commercial success of HSDPA devices is attributable to the inventions claimed in the '127 and '013 patents. InterDigital has failed to show the existence of a nexus between the claimed invention of using a ½ rate convolutional encoder to generate a UE ID scrambling sequence and any commercial success of HSDPA-compliant handsets.

3. Lack of Written Description ('127 Patent)

Respondents contend that claim 1 of the '127 patent lacks written description for the claim limitations (i) "circuitry configured to recover payload data from a HS-PDSCH . . . in response to the HS-SCCH including bits . . . [that] are a result of a combining of a user specific

scrambling sequence associated with the UE with control information," and (ii) "circuitry in the WCDMA UE configured to process a high speed shared control channel (HS-SCCH)." *See* Resps. Br. at 158-61; RX-3520C (Madisetti WS) at Q1032. The evidence does not support Respondents' arguments.

First, with respect to "circuitry configured to recover payload data from a HS-PDSCH," the '127 patent, as well as its ancestor the '579 patent, disclose the following:

> To support HSDPA, high speed shared control channels (HS-SCCHs) are used. The HS-SCCHs are used to signal vital control information to the user equipments (UEs). Each HS-SCCH has two parts, referred to as Part-1 and Part-2. Part-1 carries time critical information needed by the UE. This information includes the channelization code set and the modulation type used by the high speed physical downlink shared control channel (HS-PDSCH) which carries the HSDPA payload. This information is vital to support HSDPA, since HSDPA uses adaptive modulation and coding (AMC).

JX-0004 ('127 patent) at col. 1, lns. 30-39; JX-0034 ('579 patent) at col. 1, lns. 20-30.

InterDigital's expert Dr. Jackson explained that a person of ordinary skill in the art would understand this passage to describe the association between the HS-SCCH and the HS-PDSCH, including that the HS-PDSCH carries payload data and the particular information carried on the HS-SCCH that is used to recover that payload data. CX-1523C (Jackson RWS) at Q139.

Moreover, Dr. Jackson explained that persons of ordinary skill in the art would not only understand that the control information is used to recover payload data from the HS-PDSCH, but that they would also understand how to use the control information in a wireless system employing adaptive modulation and coding. CX-1523C (Jackson RWS) at Q138-142, Q154. More specifically, Dr. Jackson explained that adaptive modulation and coding was a well-known technique in wireless communications as of the time of the filing of the application that led to the '579 patent and the provisional applications filed shortly before. *Id.* at Q140-141; CX-1424

(Multiuser OFDM with Adaptive Subcarrier, Bit, and Power Allocation (10/1999); CX-1425 (Adaptive Communications over Fading Satellite Channels (2001)); CX-1420 (TSGR1#12, R1-556, Feasibility Study of Advanced Techniques for HSDPA). A person of ordinary skill in the art would certainly have understood how to use channelization code set and modulation information to recover payload data carried on a channel in a wireless system using adaptive modulation and coding. CX-1523C (Jackson RWS) at Q140. In particular, it would have been well understood that the channelization code set would be used to identify from which HS-PDSCH channels to recover data, and that the modulation type would be used to determine the modulation type to use in demodulating those channels. *Id.* at Q142, Q154. A person of ordinary skill in the art would readily know what circuitry could be used to perform those operations, and would not have expected or needed the inventors of the '127 patent to include such well-known information in the specification. *Id.* at Q139-142.

The testimony of Respondents' expert Dr. Madisetti also supports the validity of the asserted claims. Dr. Madisetti testified that as of March 2002, the 3GPP Release 5 Specifications disclosed the element "wherein the control information is used for decoding a high speed physical downlink shared channel (HS-SCCH)" in connection with the '013 patent. RX-3520C (Madisetti WS) at Q781. He further testified that in the design of HSDPA, it was contemplated that a user equipment would use the channelization code set as well as the modulation type, *i.e.*, the control information, to recover the payload data from the HS-PDSCH. Madisetti Tr. 985-986. Dr. Madisetti also testified that the intention was for a user equipment to use the channelization code set information to identify the HS-PDSCHs from which the user equipment would keep data to pass to the next layer. Madisetti Tr. 986. Inasmuch as there is no dispute that the details in the 3GPP Release 5 technical specification from March 2002 were already

well-known to persons of ordinary skill in the art as of March 2002, the claims of the '127 patent are not invalid for lack of written description. *See, e.g.*, Madisetti Tr. 989.

Second, with respect to recovering payload data "in response to the HS-SCCH including [certain] bits," the '127 patent, as well as its ancestor the '579 patent, disclose as follows:

> To obtain its Part-1 information, each HSDPA UE monitors up to four HS-SCCHs for its information. The information for a particular UE is distinguished from other UEs by its UE identification (UE ID) specific scrambling sequence. The UE processes each monitored HS-SCCH with its UE ID specific scrambling sequence to detect the HS-SCCH intended for the UE. After processing, the UE determines on which HS-SCCH, if any, information was carried using its scrambling sequence. The UE descrambles the data carried on Part-1 of its HS-SCCH using its scrambling sequence.

JX-0004 ('127 patent) at col. 1, lns. 40-49; JX-0034 ('579 patent) at col. 1, lns. 31-41.

This excerpt confirms that the UE uses its UE ID specific scrambling sequence to determine if control information is intended for it. As discussed above, that control information is then used to recover the payload data from the HS-PDSCH. InterDigital's expert Dr. Jackson explained that a person of ordinary skill in the art would understand that the purpose of this determination is to allow the UE to recover payload data designated by a particular HS-SCCH in response to detecting that the particular HS-SCCH carries control information combined with that UE's user-specific scrambling sequence. CX-1523C (Jackson RWS) at Q143-144.[63]

Third, with respect to "circuitry in the WCDMA UE configured to process a high speed shared control channel (HS-SCCH)," Respondents' expert Dr. Madisetti testified that the '127 patent contains written description support for this limitation under all parties' proposed

[63] For the same reasons discussed with respect to "circuitry configured to recover payload data from a HS-PDSCH," Respondents argue that similar language in claim 5 of the '127 patent lacks written description support. *See* RX-3520C (Madisetti WS) at Q1046. As explained above with respect to claim 1 of the '127 patent, it is determined that the relevant language in claim 5 does, indeed, have written description support.

constructions. *See* RX-3520C (Madisetti WS) at Q1048. The evidence demonstrates that Dr. Madisetti's opinion that the claim lacks written description support is true only if portions of the specification supporting the limitation are disregarded. *See id.* at Q1048 ("The 127 Patent's specification describes the processing of the HS-SCCH in the user equipment. . . . One of ordinary skill in the art at the time of the invention would not have understood the inventors to have had in their possession any invention comprising circuitry in the WCDMA UE to perform 'one or more operations on a received HS-SCCH to derive control information' *other than the disclosed operation* . . . .") (emphasis added). In addition, Dr. Madisetti does not offer any testimony explaining what additional disclosure he believes a person of ordinary skill in the art would expect to see under his interpretation of the written description requirement. *See* RX-3520C (Madisetti WS) at Q1047-1048.

In light of the arguments and evidence set forth above, it is determined that the disputed limitations of the '127 patent are supported by the written description of the specification and are therefore not invalid.

4. Indefiniteness ('127 Patent)

Respondents allege that dependent claim 3 of the '127 patent is invalid for indefiniteness. Resps. Br. at 161.

Independent claim 1, from which claim 3 depends, reads as follows:

> **1**. A wideband code division multiple access (WCDMA) user equipment (UE) comprising:
>
> circuitry in the WCDMA UE configured to process a high speed shared control channel (HS-SCCH); and
>
> circuitry in the WCDMA UE configured to recover payload data from a high speed physical downlink shared channel (HS-PDSCH) associated with the HS-SCCH in response to the HS-SCCH including bits; wherein the bits are a result of a combining of a user specific

> scrambling sequence associated with the UE with control information; and wherein the user specific scrambling sequence is a result of a ½ rate convolutional encoding of a UE identification (ID).

JX-0004 at col. 3, lns. 18-30.

Claim 3 recites:

> **3**. The WCDMA UE of claim 1 wherein the user specific scrambling sequence is a result of rate matching the ½ rate convolutional encoded UE ID.

JX-0004 at col. 3, lns. 34-36.

Respondents argue that the additional limitation of claim 3, "wherein the user specific scrambling sequence is a result of rate matching the ½ rate convolutional encoded UE ID," renders claim 3 indefinite. Resps. Br. at 161. Specifically, Respondents argue that the "rate matching" requirement of claim 3 renders the claim indefinite. *Id.*

Respondents' argument is as follows:

> Rate matching refers to increasing or decreasing the number of bits in a sequence (RX-3520C (Madisetti WS) at Q1052, 1139). The user specific scrambling sequence of claim 3 (which is a result of rate matching the ½ rate convolutionally encoded UE ID) thus must be larger or smaller than the user specific scrambling sequence of claim 1 (which is the result of ½ rate convolutionally encoding the UE ID) (*id.* at 1051-52). Because claim 1 and claim 3 both refer to the same user specific scrambling sequence and a sequence cannot be larger or smaller than itself, the term "wherein the user specific scrambling sequence is a result of rate matching the ½ rate convolutionally encoded UE ID" is insolubly indefinite. *See, e.g.*, *Allen Eng'g Corp. v. Bartell Indus., Inc.*, 299 F.3d 1336, 1349 (Fed. Cir. 2002) (claims indefinite where the claim covered subject matter that was contrary to a description in the specification).

Resps. Br. at 161.

Although claim 1 of the '127 patent requires that the "user specific scrambling sequence is a result of a ½ rate convolutional encoding of a UE identification," the claim is silent regarding whether the sequence also may be a result of rate matching. The rate matching

limitation is added by dependent claim 3. Inasmuch as claim 3 depends from claim 1, this necessarily means that claim 1 is broad enough to include, but not require, rate matching. Such an interpretation is in accord with the principles of claim interpretation, and is consistent with the way in which a person of ordinary skill in the art would understand claims 1 and 3 in light of the specification. *See SanDisk Corp. v. Kingston Tech. Co.*, 695 F.3d 1348, 1361 (Fed. Cir. 2012) ("Where . . . the sole difference between the independent claim and the dependent claims is the limitation that one party is trying to read into the independent claim, the doctrine of claim differentiation is at its strongest."); CX-1523C (Jackson RWS) at Q156-157; Madisetti Tr. 872-873.

In particular, the specification for the '127 patent states, "[a]fter encoding, based on the length of the output string, a rate matching stage 12 *may* be added to puncture bits to obtain a desired string length." JX-0004 at col. 2, lns. 56-58 (emphasis added). Similarly, in discussing an embodiment of the invention, the specification also states, "[t]o reduce the length of the code to a preferred length of 40 bits, eight bits are *preferably* punctured." *Id.* at col. 3, lns. 1-2 (emphasis added). Therefore, it would be clear to a person of ordinary skill in the art that claim 1 refers to a category of user specific scrambling sequences, and that claim 3 describes a particular member of that category. *See* CX-1523C (Jackson RWS) at Q157.

For these reasons, Respondents have not shown by clear and convincing evidence that claim 3 is "insolubly ambiguous." It is therefore determined that claim 3 of the '127 patent is not invalid for indefiniteness.

VII. The Dual Mode Subscriber Unit ('970) Patent

A. Overview of the '970 Patent and Asserted Claims

Asserted U.S. Patent No. 7,616,970 ("the '970 patent") is titled, "Dual Mode Unit for Short Range, High Rate and Long Range, Lower Rate Data Communications." JX-0005 ('970 patent). The '970 patent issued on November 10, 2009, and the named inventor is Thomas E. Gorsuch. *Id.* The '970 patent relates generally to short-range, higher speed and long-range, lower speed wireless communications. *Id.* at Abstract. The '970 patent is also referred to as the "Dual Mode Subscriber" patent.

InterDigital asserts independent claims 1 and 10, and dependent claims 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17, and 18 of the '970 patent. These claims read as follows:

> **1**. A subscriber unit comprising:
>
> a cellular transceiver configured to communicate with a cellular network via a cellular layered communication protocol;
>
> an IEEE 802 transceiver configured to communicate with a wireless local area network (WLAN) via an IEEE 802 layered communication protocol;
>
> a detector configured to detect a signal from the WLAN; and
>
> a circuit coupled to the cellular transceiver and the IEEE 802 transceiver and configured to communicate using the IEEE 802 transceiver in response to the signal;
>
> wherein the cellular layered communication protocol includes a plurality of layers above a physical layer, and a plurality of physical layer channels are available for assignment for communication with the cellular network and a communication session above the physical layer is maintained when all assigned physical layer channels have been released.
>
> **2**. The subscriber unit of claim 1, wherein the IEEE 802 transceiver is configured to transmit TCP/IP data when the communication session is maintained and all assigned physical layer channels have been released.

3. The subscriber unit of claim 1, wherein at least one of the plurality of layers above the physical layer is any one of a TCP layer, a IP layer, or a network layer.

4. The subscriber unit of claim 1, wherein the cellular transceiver and the IEEE 802 transceiver are provided in a single unit.

5. The subscriber unit of claim 1, wherein the subscriber unit is configured in a mobile telephone or personal digital assistant.

6. The subscriber unit of claim 1, wherein the signal is a beacon frame or probe response frame.

7. The subscriber unit of claim 1, wherein at least one of the plurality of physical layer channels is a data channel.

8. The subscriber unit of claim 1, wherein the cellular network is a licensed code division multiple access network and the WLAN is an unlicensed 802.11 network.

9. The subscriber unit of claim 1, wherein the cellular transceiver is a code division multiple access transceiver and the IEEE 802 transceiver is an 802.11 transceiver.

10. A subscriber unit comprising:

a first transceiver configured to communicate with a first wireless network;

a second transceiver configured to communicate with an IEEE 802 compliant wireless network; and

a processor coupled to the first transceiver and the second transceiver, and configured to operate a first protocol stack for the first wireless network and a second protocol stack for the IEEE 802 compliant wireless network, wherein a plurality of physical layer channels are available for assignment for communication with the first wireless network, and to maintain a communication session above a physical layer of the first protocol stack when none of the plurality of physical layer channels are assigned.

11. The subscriber unit of claim 10, further comprising:

a detector configured to detect the IEEE 802 compliant wireless network; and

a circuit configured to select the second transceiver in response to detection of the IEEE 802 compliant wireless network.

12. The subscriber unit of claim 11, wherein detection of the IEEE 802 compliant wireless network is based on receipt of a beacon frame or probe response frame.

13. The subscriber unit of claim 10, wherein the second transceiver is configured to transmit TCP/IP data when the communication session is maintained when none of the plurality of physical layer channels are assigned.

14. The subscriber unit of claim 10, wherein at least one of the plurality of layers above the physical layer is any one of a TCP layer, a IP layer, or a network layer.

15. The subscriber unit of claim 10, wherein at least one of the plurality of physical layer channels is a data channel.

16. The subscriber unit of claim 10, wherein the first wireless network is a licensed code division multiple access network and the IEEE 802 compliant wireless network is an unlicensed IEEE 802.11 network.

17. The subscriber unit of claim 10, wherein the first transceiver is a code division multiple access transceiver and the second transceiver is an 802.11 transceiver.

18. The subscriber unit of claim 10, wherein the first transceiver is a cellular transceiver.

JX-0005 at col. 11, ln. 5 – col. 12, ln. 43.

B. The '970 Accused Products

The Nokia products accused of infringing the '970 patent include: C3-01, C5-03, C6-01, C7, E5, E6-00, E7-00, E72, E73, N500, N700, N701, N8-00, X3-02, X7-00, 808 Pureview, Vertu Constellation, Vertu Constellation Quest, Lumia 710, Lumia 719, Lumia 800, Lumia 810,

Lumia 820, Lumia 822, Lumia 900, and Lumia 920. *See* Compls. Br. at 262 (citing CX-0381C (Stark Nokia Infringement Chart)).[64]

The Huawei products accused of infringing the '970 patent include: M650, M660, M835, M860, M865, M886 (C8860), M920, M931, MediaPad (S7-Pro, S7-303u), MediaPad 10 FHD (S10-102u), S7-104, S7-202u, U8665, U8680/U8730, U8800, U8800-51, U9000, U9000-81, W1/U8835, Y210/C8686, and Y300C. *See* Compls. Br. at 262-63 (citing CX-0380C (Stark Huawei Infringement Chart)).

The ZTE products accused of infringing the '970 patent include: D930, N850, N859, N860, N861, N9500, P736T, V55, V66, V8000, X500, X501, and Z990. *See* Compls. Br. at 263 (citing CX-0382C (Stark ZTE Infringement Chart)).

With respect to the '970 accused products, InterDigital's expert Dr. Stark analyzed physical samples, design documents, user guides and manuals, deposition testimony from representatives of Nokia, Huawei, ZTE, Microsoft, HiSilicon, and Qualcomm, Respondents' discovery responses, and the source code analysis conducted by Drs. Walker and Goldberg. CX-1306C (Stark WS) at Q619-627; CX-0377 (Stark Materials Considered). Based on his analysis, Dr. Stark concluded that the Lumia 710 and 800, as well as the 808 Pureview, are representative of Nokia's accused products, that the N860 is representative of the ZTE accused products, and that the U8800-51, U8680/U8730 and M865 products are representative of the accused Huawei products. CX-1306C (Stark WS) at Q813-814, Q2265-2266, Q3121-3122.

In general, Respondents' expert Dr. Bims admitted that he did not identify any relevant differences between the '970 representative products analyzed by Dr. Stark analyzed and any

[64] InterDigital no longer asserts that the Nokia N900 or N9-00 products infringe any claim of the '970 patent. Compls. Br. at 262 n.35.

other '970 accused products. Bims Tr. at 1264-1265. Dr. Bims further admitted that for purposes of non-infringement, there are no differences between the Qualcomm chips in this Investigation. Bims Tr. at 1264. Dr. Bims therefore opines on infringement by Respondents' products collectively. *See* Resps. Br. at 398-420.

C. Claim Construction

1. Level of Ordinary Skill

A person of ordinary skill in the art of the '970 patent would have at least a bachelor's degree in electrical engineering, computer science, computer engineering or a related field, and two to three years' experience in the area of wireless communications. CX-1306 (Stark WS) at Q17. Alternatively, a person of ordinary skill would have a master's degree in electrical engineering, computer science, computer engineering or a related field with an emphasis on communications.[65] *Id.*

2. Construction of Disputed Claims

a. "IEEE 802 transceiver configured to communicate with a wireless local area network"

Claim Term/Phrase	InterDigital's Construction	Respondents' Construction
IEEE 802 transceiver	hardware and/or software operable to transmit information to and receive information from an IEEE 802 wireless local area network	n/a
configured to communicate with a wireless local area network		configured to automatically connect directly to a W-LAN[66] when such a connection is possible

[65] Respondents propose that a person of ordinary skill in the art of the '970 patent would have a master's degree or the equivalent in electrical engineering, and three or more years of work experience relating to data communications over wireless networks. RX-3519C (Bims WS) at Q73-Q75. The parties have not identified any way in which differences in their proposed definitions of the level of ordinary skill in the art affect issues in this investigation. *See* Compls. Reply at 98.

[66] "W-LAN" is an acronym for wireless local area network.

The claim term "IEEE 802 transceiver configured to communicate with a wireless local area network" appears in asserted independent claim 1. JX-0005 at col. 11, lns. 5-23.

InterDigital construes this term to mean "hardware and/or software operable to transmit information to and receive information from an IEEE 802 wireless local area network." Compls. Br. at 239-43. Respondents contend that "IEEE 802 transceiver" needs no construction, and construe "configured to communicate with a wireless local area network" to mean "configured to automatically connect directly to a W-LAN when such a connection is possible." Resps. Br. at 396-97.

As proposed by InterDigital, the claim term "IEEE 802 transceiver configured to communicate with a wireless local area network" is construed to mean "hardware and/or software configured to transmit information to and receive information from an IEEE 802 wireless local area network." This construction represents the plain meaning of the term as understood by a person of ordinary skill in the art, and is supported by the intrinsic evidence.

Persons having skill in the art recognize that a "transceiver" is a combination of a transmitter and a receiver. CX-1306C (Stark WS) at Q666. The '970 patent specification provides that functions of the claimed invention, including that of a transceiver, may be implemented in hardware and/or software:

> Note that the path switches 211A, 211B may be implemented in software or hardware, or a combination of hardware and software. Other functions may also be implemented in hardware and/or software which may further be shared by the W-LAN and CDMA sections where appropriate.

JX-0005 at col. 10, lns. 54-59.

The plain meaning of "IEEE 802 transceiver" is therefore a transceiver that can communicate with a wireless local area network operating according to any IEEE 802 standard. *See* CX-1306C (Stark WS) at Q669. Moreover, the plain language of the term "configured to communicate with" means "operable to transmit information to and receive information from." *See id.* at Q670.

In response to the arguments supporting InterDigital's proposed construction, Respondents argue that InterDigital's position is incorrect because, *inter alia*, the claimed "transceiver" cannot be implemented purely in software. Resps. Br. at 397 (citing RX-3519C (Bims WS) at Q381). Respondents' argument is not persuasive, however, because it ignores the express teaching of the '970 specification, excerpted above, that functions of the claimed invention, including that of a transceiver, may be implemented in hardware and/or software. JX-0005 at col. 10, lns. 54-59.

Respondents also argue that "the 970 Patent is clear that the invention was designed to solve the problem of manual selection of networks in prior art dual-mode devices and the specification disclaims solutions that do not automatically connect to a WLAN when possible," and that "[a]ccordingly, all the claims of the 970 Patent must be so limited." *See* Resps. Br. at 397 (citing RX-3519C (Bims WS) at Q468-Q473); *id.* at 394-95. As support for this position, Respondents cite to the '970 specification, which recites, in part:

> It would therefore be desirable to have a device which can automatically select the cheaper and faster W-LAN when possible, e.g., when within its range, and to resort to the long range cellular network when access to the W-LAN is not possible or practical. Previously, two devices would have been required, one for accessing the W-LAN and one for accessing the long range network. At best, these two devices could fit into two slots in, for example, a laptop computer, requiring the user to select, either through software or hardware, which device, and hence, which network to access.

> The present invention, on the other hand, is a single device which connects directly to a W-LAN using a protocol such as IEEE 802.11 when such a connection is possible, and automatically reverts to connecting to the long range network only when out of range of the W-LAN base stations.
>
> Thus, the same equipment can be used without any reconfiguration and even without knowledge of the user.

JX-0005 at col. 2, ln. 50 – col. 3, ln.2 (Summary of the Invention).

The cited passage, however, provides that the claimed invention "connects directly to a W-LAN," and says nothing about that connection being automatic. Use of the permissive word "can" in the statement, "the same equipment can be used without any reconfiguration and even without knowledge of the user," demonstrates that such "automatic" behavior is merely desirable in the claimed invention, and not mandatory. Moreover, even though the '970 specification states that "[i]t would therefore be desirable to have a device which can automatically select the cheaper and faster W-LAN when possible," saying that a feature is "desirable" is not the explicit disavowal of the use of manual selection argued by Respondents. *Cf.* Resps. Br. at 395.

Respondents further argue that InterDigital's proposed construction is incorrect because it improperly equates the claim language "configured to" with "operable to." Resps. Br. at 395-96. It is argued that "InterDigital's proposed construction is inconsistent with the claim language, introduces ambiguity, and lacks support in the intrinsic evidence." *Id.* at 395 (citing RX-3519C (Bims WS) at Q472). It is further argued that "the claims themselves require that the circuit be 'configured' to perform functionality 'in response to' certain events," and that "'[i]n response to' connotes that the second event occur in reaction to the first event." *Id.* (citation omitted).

In response to this argument, InterDigital states that it "believes that ['configured to' and 'operable to'] are synonyms, and is agreeable to leaving the term 'configured to' unconstrued." *See* Compls. Reply at 109.

Therefore, the claim term "IEEE 802 transceiver configured to communicate with a wireless local area network" is construed to mean "hardware and/or software configured to transmit information to and receive information from an IEEE 802 wireless local area network."

b. "IEEE 802 layered communication protocol"

Claim Term/Phrase	InterDigital's Construction	Respondents' Construction
IEEE 802 layered communication protocol	plain meaning, *i.e.*, structured procedures for communicating with an IEEE 802 network	n/a

The claim term "IEEE 802 layered communication protocol" appears in asserted independent claim 1. JX-0005 at col. 11, lns. 5-23.

InterDigital construes this term to take its plain meaning to one of ordinary skill in the art, *i.e.*, "structured procedures for communicating with an IEEE 802 network." Compls. Br. at 243-44. Respondents do not contest InterDigital's proposed construction. *See* Resps. Br. at 376-98; Compls. Br. at 240 n.32.

As proposed by InterDigital, the claim term "IEEE 802 layered communication protocol" is construed to mean "structured procedures for communicating with an IEEE 802 network." This construction represents the plain meaning of the term as understood by a person of ordinary skill in the art. *See* CX-1306C (Stark WS) at Q676, Q759.

c. "a circuit coupled to the cellular transceiver and the IEEE 802 transceiver and configured to communicate using the IEEE 802 transceiver in response to the signal"

Claim Term/Phrase	InterDigital's Construction	Respondents' Construction
a circuit coupled to the cellular transceiver and the IEEE 802 transceiver and configured to communicate using the IEEE 802	hardware and/or software coupled to the cellular and IEEE 802 transceivers and operable to use the IEEE 802 transceiver to communicate with the wireless	a circuit coupled to the cellular transceiver and the IEEE 802 transceiver and configured to automatically connect directly to a W-LAN when such a

transceiver in response to the signal	local area network when such a connection is possible	connection is possible in response to the signal

The claim term "a circuit coupled to the cellular transceiver and the IEEE 802 transceiver and configured to communicate using the IEEE 802 transceiver in response to the signal" appears in asserted independent claim 1. JX-0005 at col. 11, lns. 5-23.

InterDigital construes this term to mean "hardware and/or software coupled to the cellular and IEEE 802 transceivers and operable to use the IEEE 802 transceiver to communicate with the wireless local area network when such a connection is possible." Compls. Br. at 244-46. Respondents construe this term to mean "a circuit coupled to the cellular transceiver and the IEEE 802 transceiver and configured to automatically connect directly to a W-LAN when such a connection is possible in response to the signal." Resps. Br. at 393-96.

As proposed by InterDigital, the claim term "a circuit coupled to the cellular transceiver and the IEEE 802 transceiver and configured to communicate using the IEEE 802 transceiver in response to the signal" is construed to mean "hardware and/or software coupled to the cellular and IEEE 802 transceivers and configured to use the IEEE 802 transceiver to communicate with the wireless local area network when such a connection is possible."

As discussed above with respect to the claim term "IEEE 802 transceiver configured to communicate with a wireless local area network," the '970 specification teaches that the "circuit" coupled to the IEEE 802 transceivers consists of hardware and/or software:

> Note that the path switches 211A, 211B may be implemented in software or hardware, or a combination of hardware and software. Other functions may also be implemented in hardware and/or software which may further be shared by the W-LAN and CDMA sections where appropriate.

JX-0005 at col. 10, lns. 54-59.

As further discussed above with respect to the claim term "IEEE 802 transceiver configured to communicate with a wireless local area network," the claimed invention is not limited to a device that automatically connects to a W-LAN when one is available. *See* JX-0005 at col. 2, ln. 50 – col. 3, ln.2 (Summary of the Invention).

d. "a plurality of physical layer channels are available for assignment for communication"

Claim Term/Phrase	InterDigital's Construction	Respondents' Construction
a plurality of physical layer channels are available for assignment for communication	two or more physical layer channels allocable by the subscriber unit for data communication	two or more physical layer channels are available for assignment for communication

The claim term "a plurality of physical layer channels are available for assignment for communications" appears in asserted independent claims 1 and 10. JX-0005 at col. 11, lns. 5-23; col. 12, lns. 1-16.

InterDigital construes this term to mean "two or more physical layer channels allocable by the subscriber unit for data communication." Compls. Br. at 246-53. Respondents construe this term to mean "two or more physical layer channels are available for assignment for communication." Resps. Br. at 376-85.

As proposed by InterDigital, the claim term "a plurality of physical layer channels are available for assignment for communication" is construed to mean "two or more physical layer channels allocable by the subscriber unit for data communication," a construction that is supported by the intrinsic evidence.

Figure 6 of the '970 patent "shows a terminal 615 which includes a subscriber unit 101 incorporating the features of the present invention." JX-0005 at col. 9, lns. 27-28. Regarding subscriber unit 101, the specification provides:

> The subscriber unit 101 itself preferably consists of an interface 120, a CDMA protocol converter 130 that performs various functions including spoofing 132 and bandwidth management 134 as described earlier, a CDMA transceiver 140, a W-LAN protocol converter 230, a W-LAN transceiver 240, a W-LAN detection circuit 201, path selection switches 211A, 211B, and a subscriber unit antenna 150.

Id. at col. 9, lns. 36-41. The specification also teaches that "[t]he bandwidth management function 134 is responsible for allocating and deallocating CDMA radio channels 160 as required," but that "wireless bandwidth is allocated only when there is actual data present from the terminal equipment to the CDMA transceiver." *Id.* at col. 9, lns. 64-66; col. 10, lns. 33-35. The specification therefore demonstrates that the assignment or allocation of radio channels, as well as deallocation or release of those channels, is performed by the subscriber unit, and that the assignment occurs when the subscriber unit has data to transmit.

Respondents argue, *inter alia*, that InterDigital's proposed construction is incorrect, inasmuch as "[t]he specification of another patent for which Mr. Gorsuch[67] was the inventor . . . shows that base stations assign channels in either patent regardless of who transmits on the channel." *See* Resps. Br. at 378. Respondents' argument rests on a false comparison between the '970 patent and U.S. Patent 6,081,536 ("the '536 patent"), a patent for which Mr. Gorsuch is a named inventor, but that is not related to the '970 patent. *See id.* at 378-380; RX-4065 ('536 patent). Notwithstanding Respondents' argument, the teachings of the '536 patent do not affect the claim construction analysis of the '970 patent.

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[67] Thomas E. Gorsuch is the sole named inventor of the '970 patent. JX-0005.

Respondents further argue in opposition to InterDigital's proposed construction that it is improper to equate "assignment," which is used in the claim language, with "allocation," which is used in InterDigital's proposed construction. *See* Resps. Br. at 382-84. Respondents' argument lacks persuasive force, however, inasmuch as InterDigital established at the hearing that the terms "assignment" and "allocation" are understood by person of ordinary skill in the art to be synonyms. *See* CX-1526C (Stark RWS) at Q300-302; RX-3998C (Bims RWS) at Q60; Bims Tr. 1290-1292.

Respondents argue that their proposed claim construction should be adopted because, "[b]y expressing the claim limitation in the passive voice, the patentee did not limit channel assignment to a particular actor." Resps. Br. at 380. Respondents also argue that, "[i]n the prevailing cellular systems at the time of the 970 Patent's claimed invention, it was the base station or network, not the subscriber unit, that assigned physical layer channels." *Id.* at 380-81 (citation omitted). Respondents further argue that their proposed construction must be correct because "the specification describes a preferred embodiment 'in which the channels are *allocated centrally*,'" and that "[a] person of ordinary skill understands 'allocated centrally' means allocated by the base station or network, not the subscriber unit." *Id.* at 381 (citing JX-0005 at col. 3, lns. 42-44) (emphasis added by Respondents). These arguments by Respondents are not persuasive, however, inasmuch as they ignore the central fact that the '970 claims are directed to "a subscriber unit," and that any allocation of channels must therefore be performed by the subscriber unit, not the base station.

Respondents further argue that the prosecution history "shows that the specification includes the central allocation of physical layer channels used by the subscriber unit," and that their proposed construction should therefore be adopted. Resps. Br. at 381. Respondents rely on

their interpretation of originally submitted claim 19 to show that the specification discloses such an embodiment. *See id.* This argument is inapposite, however, because original claim 19 was not directed to a subscriber unit, but rather to a "wireless data communication interface." *See* JX-0012 ('970 file history) at IDC-ITC-016389797-800. Consequently, original claim 19 sheds little light as to the construction of asserted claims 1 and 10, which are directed to "[a] subscriber unit."

Accordingly, the claim term "a plurality of physical layer channels are available for assignment for communication" is construed to mean "two or more physical layer channels allocable by the subscriber unit for data communication."

e. "a communication session above the physical layer is maintained when all assigned physical layer channels have been released"

Claim Term/Phrase	InterDigital's Construction	Respondents' Construction
a communication session above the physical layer is maintained when all assigned physical layer channels have been released	a connection above the physical layer is maintained when the assigned physical layer channels are no longer in use by the subscriber unit	the appearance to higher layers in the cellular layered communication protocol of an active physical layer connection is maintained when all physical layer channels have been released

The claim term "a communication session above the physical layer is maintained when all assigned physical layer channels have been released" is recited in asserted claim 1 of the '970 patent. JX-0005 at col. 11, lns. 5-23.

InterDigital construes this term to mean "a connection above the physical layer is maintained when the assigned physical layer channels are no longer in use by the subscriber unit." Compls. Br. at 254-60. Respondents construe this term to mean "the appearance to higher

layers in the cellular layered communication protocol of an active physical layer connection is maintained when all physical layer channels have been released." Resps. Br. at 386-93.

As proposed by InterDigital, the claim term "a communication session above the physical layer is maintained when all assigned physical layer channels have been released" is construed to mean "a connection above the physical layer is maintained when the assigned physical layer channels are no longer in use by the subscriber unit."

The '970 specification teaches that the claimed "communication session above the physical layer" is a "connection above the physical layer." In particular, the specification describes the bandwidth management function maintaining both "physical layer and network layer connections." JX-0005 at col. 6, lns. 30-39. When there is no data to transmit, the physical layers are released, or deallocated, thereby making wireless bandwidth available to other subscriber units. *See id.* at col. 4, lns. 14-18; col. 10, lns. 37-42. When the physical layers are released, a logical connection in the form of the communication session is nevertheless maintained above the physical layer. *Id.* at col. 4, lns. 6-14. Maintaining this communication session when the underlying physical layer channels are released avoids "the overhead associated with having to set up an end-to-end connection each time that data needs to be transferred." *See id.* at col. 4, lns. 19-26. Accordingly, the claimed "communication session" is a connection.

The '970 specification also teaches that the claimed "release[]" of the physical layer channels occurs when the assigned channels are "no longer in use by the subscriber unit." Specifically, the physical layer is "released" when it is no longer in use, and wireless channel bandwidth is consequently made available to other subscriber units. *See* JX-0005 at col. 4, lns. 19-26. In other words, deallocating, releasing, or no longer using "initially assigned radio

channel bandwidth" makes that bandwidth "available for another transceiver and another subscriber unit." *Id.* at col. 10, lns. 38-43.

In support of their proposed construction, Respondents argue that "'[m]aintaining a communication session' was defined as maintaining the appearance of a connection during prosecution of a related application." *See* Resps. Br. at 388-89. In support of this argument, Respondents cite to the prosecution of U.S. Patent Application No. 12/615,098, which is a child of the application that ultimately issued as the '970 patent. *See id.*; RX-0031. This argument is not persuasive, however, inasmuch as Respondents have not shown that the prosecution history of a patent application descended from the asserted patent should take precedence over the teachings of the asserted patent itself with respect to the construction of the asserted claims.[68]

Respondents also contend that the '970 specification "teaches one of ordinary skill in the art that '[maintaining] a communication session above the physical layer . . . when all assigned physical layer channels have been released' has a specific and unique meaning of 'maintaining the appearance of an active physical layer connection.'" *See* Resps. Br. at 389-90. Specifically, Respondents argue that "nothing in the specification suggests that 'maintaining a communication session' means anything other than 'maintaining the appearance of an active physical layer connection.'" *Id.* at 390 (citing, *inter alia*, JX-0005 at col. 3, ln. 56 – col. 4, ln. 5; col. 4, lns. 29-33; col. 9, lns. 58-63; col. 10, lns. 28-42). The portions of the '970 specification cited by Respondents relate to "spoofing," which is described as "stripping off the lower layers of the protocol while reformatting higher layer messages for transmission using a more efficient

[68] Respondents further argue that "[t]he personal notes and deposition testimony of the 970 Patent, Robert Leonard, also support Respondents' proposed construction." Resps. Br. at 390-91. This extrinsic evidence, however, does not override the teachings of the '970 specification, discussed above, that support InterDigital's proposed construction.

CDMA based encapsulated protocol." JX-0005 at col. 4, lns. 29-33. Another description of spoofing is "insuring that the subscriber unit 101 appears, to the terminal equipment 110, to be connected to the public network 619 (FIG. 5) on the other side of the base station 605 at all times." *Id.* at col. 9, lns. 58-63. Spoofing is further described as a "function 132 involv[ing] having the CDMA transceiver 140 loop back synchronous data bits to spoof the terminal equipment 110 into believing that a sufficiently wide wireless communication link 160 is continuously available." *Id.* at col. 10, lns. 28-33.

Spoofing, as set forth in these descriptions from the '970 specification, does not require providing the appearance of an active physical layer connection. For instance, the first description is silent as to how the maintained upper layers are to appear. *See* JX-0005 at col. 4, lns. 29-33. The second description cited above states that the subscriber unit presents the appearance of an available connection, with no mention of activity or inactivity. *See id.* at col. 9, lns. 59-63. The third description has the stated goal of presenting the appearance "that a sufficiently wide wireless communication link 160 is continuously available," and not of presenting the appearance of an "active physical layer connection." *See id.* at col. 10, lns. 28-33. These descriptions of spoofing teach that the appearance of a connection *above* the physical layer should be maintained, and are silent as to the appearance of a connection *at* the physical layer. Accordingly, the requirement of Respondents' proposed construction that "the appearance . . . of an active physical layer" be maintained is incorrect.

Respondents also argue that "the plain language of the limitation requires that '*all* physical layer channels have been released.'" *See* Resps. Br. at 391 (emphasis original). This argument, however, reads out the word "assigned" from the claim language. Respondents' position also contradicts the '970 specification, which explains that the subscriber unit's

"bandwidth management function 134 deallocates initially assigned radio channel bandwidth 160 and makes it available for another transceiver and another subscriber unit 100." JX-0005 at col. 10, lns. 37-42. Accordingly, the claimed invention requires that all "assigned physical layer channels" be released, and not "all physical layer channels," assigned or unsigned.

An additional argument Respondents make in opposition to InterDigital's proposed construction is that "release" of a channel is not the same as a subscriber unit no longer using the channel: "One of ordinary skill in the art would recognize the difference in meaning between a channel being 'assigned'/'released' and merely being 'used'/'no longer in use.'" *See* Resps. Br. at 391-93. Based on their argument, addressed above, that "assignment" and "allocation" have different meanings, Respondents argue that a channel can be "assigned," yet not be "in use." *See id.* Dr. Stark testified, however, that an assigned channel released from a first subscriber unit cannot be used by a second subscriber unit, inasmuch as a channel includes a time dimension. *See* Stark Tr. at 502. That is, only the bandwidth freed from a released channel can be used by another subscriber unit. *See id.* Accordingly, Respondents' position, that release of a channel requires that the channel can be used by another subscriber unit, contradicts the teachings of the '970 patent.

Therefore, the claim term "a communication session above the physical layer is maintained when all assigned physical layer channels have been released" is construed to mean "a connection above the physical layer is maintained when the assigned physical layer channels are no longer in use by the subscriber unit."

f. "second transceiver configured to communicate with an IEEE 802 compliant wireless network"

Claim Term/Phrase	InterDigital's Construction	Respondents' Construction
second transceiver	hardware and/or software	transceiver configured to

configured to communicate with an IEEE 802 compliant wireless network	operable to transmit information to and receive information from an IEEE 802 compliant wireless network	automatically connect directly to an IEEE 802 compliant wireless network when such a connection is possible

The claim term "second transceiver configured to communicate with an IEEE 802 compliant wireless network" appears in asserted independent claim 10. JX-0005 at col. 12, lns. 1-16.

InterDigital construes this term to mean "hardware and/or software operable to transmit information to and receive information from an IEEE 802 compliant wireless network." Compls. Br. at 260-61. Respondents construe this term to mean "transceiver configured to automatically connect directly to an IEEE 802 compliant wireless network when such a connection is possible." Resps. Br. at 396-97.

For the reasons set forth above with respect to the claim term "IEEE 802 transceiver configured to communicate with a wireless local area network," the claim term "second transceiver configured to communicate with an IEEE 802 compliant wireless network" is construed to mean "hardware and/or software configured to transmit information to and receive information from an IEEE 802 compliant wireless network," which is InterDigital's proposed construction.

g. "maintain a communication session above the physical layer of the first protocol stack when none of the plurality of physical layer channels are assigned"

Claim Term/Phrase	InterDigital's Construction	Respondents' Construction
maintain a communication session above a physical layer of the first protocol stack when none of the plurality of physical layer channels are	a connection above the physical layer of the first protocol stack is maintained when the allocable physical layer channels are not in use	maintain the appearance to higher layers in the first protocol stack of an active physical layer connection when none of the plurality of

assigned	by the subscriber unit	physical layer channels are assigned

The claim term "maintain a communication session above a physical layer of the first protocol stack when none of the plurality of physical layer channels are assigned" is recited in asserted claim 10 of the '970 patent. JX-0005 at col. 12, lns. 1-16.

InterDigital construes this term to mean "a connection above the physical layer of the first protocol stack is maintained when the allocable physical layer channels are not in use by the subscriber unit." *See* Compls. Br. at 261; Compls. Reply at 104. Respondents construe this term to mean "maintain the appearance to higher layers in the first protocol stack of an active physical layer connection when none of the plurality of physical layer channels are assigned." *See* Resps. Br. at 386-87. The parties' arguments with respect to this disputed claim term are the same as their arguments with respect to the claim term "a communication session above the physical layer is maintained when all assigned physical layer channels have been released," discussed above. *See* Compls. Br. at 261; Compls. Reply at 104; Resps. Br. at 386.

For the reasons discussed above with respect to the claim term "a communication session above the physical layer is maintained when all assigned physical layer channels have been released," the claim term "maintain a communication session above a physical layer of the first protocol stack when none of the plurality of physical layer channels are assigned" is construed to mean "a connection above the physical layer of the first protocol stack is maintained when the allocable physical layer channels are not in use by the subscriber unit," which is InterDigital's proposed construction.

h. "a circuit configured to select the second transceiver in response to detection of the IEEE 802 compliant wireless network"

Claim Term/Phrase	InterDigital's Construction	Respondents' Construction
a circuit configured to select the second transceiver in response to detection of the IEEE 802 compliant wireless network	hardware and/or software coupled to the first and second transceivers and capable of selecting the second transceiver when a connection to the IEEE 802 compliant wireless network is possible	a circuit configured to automatically select the second transceiver in response to detection of the IEEE 802 compliant wireless network

The claim term "a circuit configured to select the second transceiver in response to detection of the IEEE 802 compliant wireless network" appears in asserted dependent claim 11. JX-0005 at col. 12, lns. 17-22.

InterDigital construes this term to mean "hardware and/or software coupled to the first and second transceivers and capable of selecting the second transceiver when a connection to the IEEE 802 compliant wireless network is possible." Compls. Br. at 262. Respondents construe this term to mean "a circuit configured to automatically select the second transceiver in response to detection of the IEEE 802 compliant wireless network." Resps. Br. at 396.

For the reasons discussed above with respect to the claim term "IEEE 802 transceiver configured to communicate with a wireless local area network," the term "a circuit configured to select the second transceiver in response to detection of the IEEE 802 compliant wireless network" is construed to mean "hardware and/or software coupled to the first and second transceivers and capable of selecting the second transceiver when a connection to the IEEE 802 compliant wireless network is possible," which is InterDigital's proposed construction.

i. "wherein the IEEE 802 transceiver is configured to transmit TCP/IP data when the communication session is maintained and all assigned physical layer channels have been released"

The claim term "wherein the IEEE 802 transceiver is configured to transmit TCP/IP data when the communication session is maintained and all assigned physical layer channels have been released" appears in asserted claim 2 of the '970 patent. JX-0005 at col. 11, lns. 24-27; col. 12, lns. 26-29.

Although this claim term appears on the GR12 filing as a disputed claim term that requires construction, both InterDigital and Respondents agree that the claim limitation should be accorded its plain and ordinary meaning. *See* Compls. Reply at 110; Resps. Br. at 397-98.

Respondents suggest that "the plain and ordinary meaning requires that a specific component be *configured* to perform a specific function *when* certain conditions are met," and argue that "InterDigital's infringement theories would read out these important limitations and rewrite the claim to require only the *capability* of transmitting TCP/IP data via a WLAN connection while a cellular communication session is maintained. Resps. Br. at 397-38 (emphasis original). InterDigital does not propose a specific plain meaning construction for this term. *See* Compls. Reply at 110.

Having considered the positions of the parties, the undersigned agrees that the plain meaning of the term "wherein the IEEE 802 transceiver is configured to transmit TCP/IP data when the communication session is maintained and all assigned physical layer channels have been released" should apply. The undersigned declines to adopt the "plain meaning" proposal of Respondents, however, inasmuch as the claim language itself indicates that the claim requires only that the claimed IEEE transceiver be capable of transmitting TCP/IP data via a WLAN

connection at the same time a communication session is maintained and all assigned physical channels have been released.[69]

j. "subscriber unit"

In their post-hearing brief, Respondents allege that, "[i]n an attempt to avoid the prior art, InterDigital new seeks new claim constructions that the preambles to claims 1 and 10 are limitations, and that the term "subscriber unit"—which only appears in the preambles—cannot consist of separate devices connected together." Resps. Br. at 386. Respondents argue that "No such constructions were sought in the parties' joint proposed claim constructions (JX-0022C)," and that "[t]his waiver alone should bar construction at this stage." *Id.*

InterDigital agrees that "InterDigital has not proposed that the ALJ construe 'subscriber unit.'" Compls. Reply at 103.

Inasmuch as both parties agree that "subscriber unit" should not be construed in this investigation, this initial determination will not construe the claim term.

D. Infringement

1. Claim 1

As set forth below, the evidence indicates that the '970 accused products satisfy all limitations of, and therefore infringe, asserted claim 1.

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[69] A similar claim term, "wherein the second transceiver is configured to transmit TCP/IP data when the communication session is maintained when none of the plurality of physical layer channels are assigned," appears in asserted claim 13 of the '970 patent. For the reasons discussed above, it is determined that the plain meaning of this limitation requires only that the claimed second transceiver be capable of transmitting TCP/IP data via a WLAN connection at the same time a communication session is maintained and none of the plurality of physical layer channels is assigned.

a. A subscriber unit comprising:

The preamble of claim 1 recites, "[a] subscriber unit comprising." The record evidence accused by InterDigital shows that the '970 accused products comprise subscriber units. Specifically, the '970 accused products are mobile, wireless communications devices in the form of either handsets or tablets. CX-1306C (Stark WS) at Q827, Q832, Q836, Q2282, Q3137, Q3143, Q3148.

b. a cellular transceiver configured to communicate with a cellular network via a cellular layered communication protocol;

Claim 1 recites, "a cellular transceiver configured to communicate with a cellular network via a cellular layered communication protocol." The record shows that [

] CX-1306C (Stark WS) at Q826, Q830, Q835, Q2281, Q3137, Q3142, Q3147; CX-1306.1C (Stark Errata) at 2. [

] *Id.* at Q939, Q942, Q2320, Q2323, Q3196, Q3199. Accordingly, the '970 accused products contain "a cellular transceiver configured to communicate with a cellular network via a cellular layered communication protocol."

c. an IEEE 802 transceiver configured to communicate with a wireless local area network (WLAN) via an IEEE 802 layered communication protocol;

Claim 1 recites, "an IEEE 802 transceiver configured to communicate with a wireless local area network (WLAN) via an IEEE 802 layered communication protocol." As discussed above, the claim term "IEEE 802 transceiver configured to communicate with a wireless local

area network" is construed to mean "hardware and/or software configured to transmit information to and receive information from an IEEE 802 wireless local area network," and the claim term "IEEE 802 layered communication protocol" is construed to mean "structured procedures for communicating with an IEEE 802 network." The record evidence shows that [

] CX-1306C (Stark WS) at Q1008, Q2249, Q3226; CX-1306.1C (Stark Errata) at 2. IEEE 802.11 is a layered communication protocol. CX-1306C (Stark WS) at Q790. Accordingly, under the adopted constructions of this claim term, the '970 accused products contain "an IEEE 802 transceiver configured to communicate with a wireless local area network (WLAN) via an IEEE 802 layered communication protocol."[70]

d. a detector configured to detect a signal from the WLAN; and

Claim 1 recites, "a detector configured to detect a signal from the WLAN." The '970 accused products [

] CX-1306C (Stark WS) at Q814; CX-1306.1C (Stark Errata) at 10. [

] *See, e.g.*, CX-0642 (Nokia Lumia 800 User

[70] Although Respondents do not dispute directly that this claim limitation is satisfied, their proposed construction of the claim term "IEEE 802 transceiver configured to communicate with a wireless local area network" requires that the claimed IEEE 802 transceiver be "configured to automatically connect directly to a W-LAN when such a connection is possible." *See* Resps. Br. at 398-414. This particular argument will be addressed below in conjunction with Respondents' argument that the '970 accused products do not satisfy the claim limitation "a circuit coupled to the cellular transceiver and the IEEE 802 transceiver and configured to communicate using the IEEE 802 transceiver in response to the signal."

Guide) at 39; CX-0443 (Huawei Impulse User Guide) at 36. Accordingly, the '970 accused products contain "a detector configured to detect a signal from the WLAN."

e. a circuit coupled to the cellular transceiver and the IEEE 802 transceiver and configured to communicate using the IEEE 802 transceiver in response to the signal;

Claim 1 recites, "a circuit coupled to the cellular transceiver and the IEEE 802 transceiver and configured to communicate using the IEEE 802 transceiver in response to the signal." As discussed above, this claim is construed to mean "hardware and/or software coupled to the cellular and IEEE 802 transceivers and operable to use the IEEE 802 transceiver to communicate with the wireless local area network when such a connection is possible." Analyzing the '970 accused products under this adopted construction, [

] *See, e.g.*, CX-1306C (Stark WS) at Q812, Q1210-1211, Q1217, Q1220, Q2264, Q2476-2478, Q3120, Q3341-3342; CX-1306.1C (Stark Errata) at 1, 10.

Respondents dispute that this claim limitation is satisfied, inasmuch as the '970 accused products "are not configured to communicate with a WLAN whenever a signal is detected from a WLAN." Resps. Br. at 410. Respondents note that "both Respondents' and InterDigital's claim construction for this element requires using the IEEE 802 transceiver for communications whenever such a WLAN connection is possible,"[71] and argue that "[t]he accused products operate differently." *Id.* It is argued that the '970 accused products "are incapable of

[71] Respondents' proposed construction for this claim term is "a circuit coupled to the cellular transceiver and the IEEE 802 transceiver and configured to automatically connect directly to a W-LAN when such a connection is possible in response to the signal." *See* Resps. Br. at 393-96.

[

] *Id.* (citing RX-3998C (Bims RWS) at Q431-443; Walker Tr. at 420-421; [RX-4027C] [

] Resps. Br. at 411 (citing RX-3998C (Bims RWS) at Q444-473).

Yet, under both parties' proposed constructions of "a circuit coupled to the cellular transceiver and the IEEE 802 transceiver and configured to communicate using the IEEE 802 transceiver in response to the signal," the claim requires only that the circuit be "configured to communicate" using the IEEE 802 transceiver "when such a connection is possible." Such a circuit would not actually need to use the IEEE 802 transceiver whenever the WLAN signal were available, but would instead merely need the capability to use the IEEE 802 transceiver. [

] *See, e.g.*, CX-1306C (Stark WS) at Q812, Q1210-1211, Q1217, Q1220, Q2264, Q2476-2478, Q3120, Q3341-3342; CX-1306.1C (Stark Errata) at 1, 10.

Respondents also argue that this claim limitation is not satisfied because they lack "three separate and distinct hardware components." *See* Resps. Br. at 411. Despite Respondents' arguments, neither the claim itself nor the parties' proposed construction of this claim limitation requires that the circuit, cellular transceiver, and IEEE 802 transceiver be comprised of "three separate and distinct hardware components." The record shows that Dr. Stark described how software and shared hardware in the '970 accused products defined the claimed circuit and two transceivers. CX-1526C (Stark RWS) at Q1059-1070; CX-1526.1C (Stark RWS Errata) at Q1060.

Accordingly, it is determined that the '970 accused products satisfy the claim limitation "a circuit coupled to the cellular transceiver and the IEEE 802 transceiver and configured to communicate using the IEEE 802 transceiver in response to the signal."[72]

f. wherein the cellular layered communication protocol includes a plurality of layers above a physical layer, and a plurality of physical layer channels are available for assignment for communication with the cellular network and a communication session above the physical layer is maintained when all assigned physical layer channels have been released.

Claim 1 recites, "wherein the cellular layered communication protocol includes a plurality of layers above a physical layer, and a plurality of physical layer channels are available for assignment for communication with the cellular network and a communication session above the physical layer is maintained when all assigned physical layer channels have been released."

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[72] InterDigital also takes the position that this claim limitation is satisfied under the doctrine of equivalents should Respondents' proposed construction of this claim limitation be adopted. *See* Compls. Br. at 272-73. InterDigital argues:

> Under either interpretation [of the claim language], the function of this element is to facilitate communication directly with an IEEE 802 WLAN when possible. CX-1306C (Stark) at ¶ 1234. Whether in overlapping or distinct software and/or hardware—which two configurations are expressly contemplated by the '970 Patent (JX-0005 ('970 Patent) at 9:41-43 ("The various components of the subscriber unit 101 may be realized in discrete devices or as an integrated unit."))—the function is performed in substantially the same way. That is, hardware and/or software operate to preferentially facilitate communication with / connection to an IEEE 802 WLAN when possible. CX-1306C (Stark) at ¶ 1234. And the same result—communication directly with an IEEE 802 WLAN when possible—is achieved. *Id.*

It is determined that, should Respondents' proposed construction for the claim limitation "a circuit coupled to the cellular transceiver and the IEEE 802 transceiver and configured to communicate using the IEEE 802 transceiver in response to the signal" be adopted, the '970 accused products would satisfy this limitation under the doctrine of equivalents, inasmuch as [ ] *See, e.g.*, CX-1306C (Stark WS) at Q812, Q1210-1211, Q1217, Q1220, Q2264, Q2476-2478, Q3120, Q3341-3342; CX-1306.1C (Stark Errata) at 1, 10.

As discussed above, the claim term "a plurality of physical layer channels are available for assignment for communication" is construed to mean "two or more physical layer channels allocable by the subscriber unit for data communication," and the claim term "a communication session above the physical layer is maintained when all assigned physical layer channels have been released" is construed to mean "a connection above the physical layer is maintained when the assigned physical layer channels are no longer in use by the subscriber unit."

With respect to the claim limitations "wherein the cellular layered communication protocol includes a plurality of layers above a physical layer" and "a plurality of physical layer channels are available for assignment for communication with the cellular network," both of the cellular technologies used by the '970 accused products, *i.e.*, WCDMA Release 6 (or later) and CDMA2000 EV-DO Revision A (or later), are "cellular layered communications protocols" that include "a plurality of layers above a physical layer." CX-1306C (Stark WS) at Q1299-1300, Q2516-2518, Q3382-3383; CX-1306.1C (Stark Errata) at 2. Accordingly, the '970 accused products satisfy these limitations.

The parties do dispute whether the '970 accused products satisfy the limitation "a communication session above the physical layer is maintained when all assigned physical layer channels have been released." *See* Compls. Br. at 274-86; Resps. Br. at 398-410.

Applying InterDigital's proposed construction of the claim term, *i.e.*, "a connection above the physical layer is maintained when the assigned physical layer channels are no longer in use by the subscriber unit," which was adopted above, the evidence demonstrates that the '970 accused products satisfy this claim limitation. Specifically,[

]

In the '970 accused products, [

] CX-1306 (Stark WS) at Q777; Bims Tr. 1314, 1315-1316. [

] CX-1306C (Stark WS) at Q1334, Q2547, Q3416. [

] *See* CX-1526C (Stark RWS) at Q1127 (discussing CX-4149 (AT&T PDP Connection)), Q1130 (discussing CX-4151 (Android PDP Connection Article)), Q1131 (discussing CX-4152 (Wind River PDP Connection)); [RX-4027C]

Under InterDigital's proposed construction, assigned physical layer channels in the '970 accused products are "released" when they are no longer in use by the subscriber unit, *i.e.*, when all assigned physical layer channels are released. Applying the adopted claim construction, the relevant channels are those that are allocable by the subscriber unit for use in data transmission. *See* CX-1306C (Stark WS) at Q688. The accused E-DPDCH (Enhanced Dedicated Physical Data Channels) and Walsh Channels of the '970 accused products using WCDMA and CDMA2000, respectively, are the claimed physical channels. CX-1306C (Stark WS) at Q1306, Q1320; CX-1306.1C (Stark Errata) at 4; Bims Tr. 1268, 1274.

Turning specifically to the WCDMA '970 accused products, [

] Bims Tr. 1271-1272. [

] *See* Bims Tr. 1273-1274.

Testing of the accused products demonstrates that the devices are configured to maintain a communication session, *i.e.*, a PDP context, above the physical layer when all assigned

physical layer channels are released (or when none are assigned). Specifically, representative accused products were tested for conformance with, and passed, the Service Request / RAB re-establishment / UE initiated / Single PDP context test defined in RX-3100 (Standard 34.123-1) at pages 2991-2993. Bims Tr. 1325. This testing confirms that the device under test performs certain operations using a preserved PDP context after (i) a connection release event, as well as (ii) when radio coverage is lost. Bims Tr. 1327; RX-3100 (Standard 34.123-1) at 2991-2993. The RRC connection release event releases the one RRC connection between the subscriber unit and the network, including all radio access bearers and all signaling radio bearers. Bims Tr. 1327-1328. At this time, any assigned E-DPDCH is also released. Bims Tr. 1321.

Conformance with the testing requires, among other things, that a PDP Context using background or interactive traffic class is preserved without modification after an RRC connection release event, as well as when radio coverage is lost. RX-3100 (Standard 34.123-1) at 2991-2992; CX-1306C (Stark WS) at Q3819; CX-1306.1C (Stark Errata) at 1. Conformance is determined by first establishing a PDP context with traffic class "background class," before a connection release event is emulated. RX-3100 (Standard 34.123-1) at 2992; CX-1306C (Stark WS) at Q3819; CX-1306.1C (Stark Errata) at 1. After the RRC connection release event, *i.e.*, the release of all radio access bearers and all signaling radio bearers, including any E-DPDCH, the device under test initiates an uplink transmission resulting in the setup of a radio access bearer for the active, preserved PDP context. Bims Tr. 1321, 1327-1328; RX-3100 (Standard 34.123-1) at 2992; CX-1306C (Stark WS) at Q3819; CX-1306.1C (Stark Errata) at 1. In other words, the test confirms that the subscriber not only can maintain a PDP Context when the physical layer channels are released, but it also confirms the subscriber unit can reestablish physical layer

channels, *i.e.*, radio access bearers, using the preserved PDP Context. *See* RX-3100 (Standard 34.123-1) at 2992; CX-1306C (Stark WS) at Q3819; CX-1306.1C (Stark Errata) at 1.

In a second test scenario, for the same preserved PDP Context with traffic class "background class," the device under test was made to experience an emulated four minute out-of-coverage event, *i.e.*, a period during which there are no physical layer channels in use between the subscriber unit and the network. Bims Tr. 1328-1329; CX-1306C (Stark WS) at Q3819; CX-1306.1C (Stark Errata) at 1. During this out-of-coverage event, the device releases its radio access bearers, *i.e.*, all physical layer channels, and enters idle mode. RX-3100 (Standard 34.123-1) at 2992; CX-1306C (Stark WS) at Q3819; CX-1306.1C (Stark Errata) at 1. Following emergence from the out-of-coverage event, the device under test initiates an uplink transmission resulting in the setup of a radio access bearer for the active, preserved PDP context. *See, e.g.*, CX-1306C (Stark WS) at Q3819; CX-1306.1C (Stark Errata) at 1. Thus, again, this testing confirms that the subscriber unit not only maintains a PDP Context when the physical layer channels are released, but it also confirms the subscriber unit reestablishes physical layer channels, *i.e.*, radio access bearers, using the preserved PDP Context. *See* RX-3100 (Standard 34.123-1) at 2992-2993; CX-1306C (Stark WS) at Q3819; CX-1306.1C (Stark Errata) at 1. [

] CX-1306C (Stark WS) at Q1348, Q1355, Q2561-2563, Q3425, Q3428-3430, Q3432, Q3441; CX-1306.1C (Stark Errata) at 1; CX-1308C (Walker WS) at Q157, Q172; CX-1307C (Goldberg WS) at Q705, Q745.

2. Claim 2

As set forth below, the evidence indicates that the '970 accused products satisfy all limitations of, and therefore infringe, asserted claim 2.

a. The subscriber unit of claim 1,

For the reasons discussed above, it has been shown that the '970 accused products satisfy the elements of claim 1.

b. wherein the IEEE 802 transceiver is configured to transmit TCP/IP data when the communication session is maintained and all assigned physical layer channels have been released.

As discussed above, the '970 accused products are configured to maintain a communication session when all assigned physical layer channels are released or when none of the plurality of the physical layer channels is assigned. Moreover, the '970 accused products are configured to transmit TCP/IP data via an included second, or IEEE 802, transceiver.

[

RX-3998C

(

RX-4027C]

[

] *See* CX-1308C (Walker WS) at Q83-93 (describing WLAN use case), Q105-125 (describing cellular use case, including steps relating to WLAN connection).

Respondents argue that the '970 accused products do not satisfy the additional limitation of claim 2 because "they do not satisfy the additional causal relationship required by the plain and ordinary meaning of these claims." Resps. Br. at 291-92. It was determined above, however, that the claim language itself indicates that the claim requires only that the claimed IEEE transceiver be capable of transmitting TCP/IP data via a WLAN connection at the same time a communication session is maintained and all assigned physical channels have been released. Accordingly, the '970 accused products satisfy this additional limitation of claim 2.

3. Claim 3

As set forth below, the evidence indicates that the '970 accused products satisfy all limitations of, and therefore infringe, asserted claim 3.

a. The subscriber unit of claim 1,

For the reasons discussed above, it has been shown that the '970 accused products satisfy the elements of claim 1.

b. wherein at least one of the plurality of layers above the physical layer is any one of a TCP layer, a IP layer, or a network layer.

The record evidence shows that each of the cellular layered communication protocols supported by the '970 accused products includes one or more of a TCP layer, a IP layer, or a network layer above the physical layer. *See, e.g.*, CX-1306C (Stark WS) at Q1524-1529; CX-1306.1C (Stark Errata) at 4. Respondents do not contest that this claim limitation is satisfied. *See* Resps. Br. at 418-19.

4. Claim 4

As set forth below, the evidence indicates that the '970 accused products satisfy all limitations of, and therefore infringe, asserted claim 4.

a. The subscriber unit of claim 1,

For the reasons discussed above, it has been shown that the '970 accused products satisfy the elements of claim 1.

b. wherein the cellular transceiver and the IEEE 802 transceiver are provided in a single unit.

The record evidence shows that the '970 accused products include both a cellular transceiver and an IEEE 802 transceiver. As observed by Dr. Stark, the cellular and IEEE 802 transceivers of the '970 accused products are provided in a single unit, *i.e.*, a single handset or tablet. *See, e.g.*, CX-1306C (Stark WS) at Q1590-1593. Further evidence that the '970 accused products include a cellular and IEEE 802 transceiver in a single unit is evidenced by the ability of the devices to notify a user of a connection with one or more of a cellular network and a IEEE 802 WLAN. *Id.* Respondents do not contest that this claim limitation is satisfied. *See* Resps. Br. at 418-19.

5. Claim 5

As set forth below, the evidence indicates that the '970 accused products satisfy all limitations of, and therefore infringe, asserted claim 5.

a. The subscriber unit of claim 1,

For the reasons discussed above, it has been shown that the '970 accused products satisfy the elements of claim 1.

b. wherein the subscriber unit is configured in a mobile telephone or personal digital assistant.

Each of the '970 accused products includes one or more software applications configuring the devices to perform common personal digital assistant (PDA) functions including instant messaging, sending and receiving email, as well as managing a calendar and contacts.

CX-1306C (Stark WS) at Q1653-1655; Q2700-2702; Q3605-3606; CX-1306.1C (Stark Errata) at 2, 3, 8; CX-0098 (Lumia 710 User Guide) at 31-34, 40-44, 62-63; CX-0688C (ZTE Warp Basics Guide) at 44-46, 53-59, 78; CX-0455C (M865 User Guide) at 22-26, 30-35, 53. Further, with few exceptions (*e.g.*, tablets), each of the '970 accused products is configured as a mobile phone. CX-1306C (Stark WS) at Q1653-1655; Q2700-2702; Q3605-3606; CX-1306C (Stark Errata) at 2, 3, 8; CX-0098 (Lumia 710 User Guide) at 29-31; CX-0688C (ZTE Warp Basics Guide) at 37-43; CX-0455C (M865 User Guide) at 17-22. Respondents do not contest that this claim limitation is satisfied. *See* Resps. Br. at 418-19.

6. Claim 6

As set forth below, the evidence indicates that the '970 accused products satisfy all limitations of, and therefore infringe, asserted claim 6.

a. The subscriber unit of claim 1,

For the reasons discussed above, it has been shown that the '970 accused products satisfy the elements of claim 1.

b. wherein the signal is a beacon frame or probe response frame.

The '970 accused products are configured to communicate with an IEEE 802.11 compliant WLAN. IEEE 802.11 compliant devices are configured to operate in Passive Scanning mode and/or Active Scanning mode. *See, e.g.*, CX-1306C (Stark WS) at Q1713-1714; CX-0390 (IEEE Std. 802.11-2007) at § 11.1.3. In Passive Scanning mode, the devices scan for Beacon frames. *Id.* In Active Scanning mode, these devices generate and transmit Probe Request frames and subsequently process received Probe Response frames. *See, e.g.*, CX-1306C (Stark WS) at Q1713-1714; CX-1306.1C (Stark Errata) at 4; CX-0390 (IEEE Std. 802.11-2007)

at § 11.1.3.2. Respondents do not contest that this claim limitation is satisfied. *See* Resps. Br. at 418-19.

7. Claim 7

As set forth below, the evidence indicates that the '970 accused products satisfy all limitations of, and therefore infringe, asserted claim 7.

a. The subscriber unit of claim 1,

For the reasons discussed above, it has been shown that the '970 accused products satisfy the elements of claim 1.

b. wherein at least one of the plurality of physical layer channels is a data channel.

The '970 accused products are configured to communicate with a cellular network via at least one physical layer data channel. *See, e.g.*, CX-1306C (Stark WS) at Q1780-1781. Specifically, Dr. Stark testified that[

] *Id.* at Q1782-1784.

[

] *Id.* at Q1786-1787. Respondents do not contest that this claim limitation is satisfied. *See* Resps. Br. at 418-19.

8. Claim 8

As set forth below, the evidence indicates that the '970 accused products satisfy all limitations of, and therefore infringe, asserted claim 8.

a. The subscriber unit of claim 1,

For the reasons discussed above, it has been shown that the '970 accused products satisfy the elements of claim 1.

b. wherein the cellular network is a licensed code division multiple access network and the WLAN is an unlicensed 802.11 network.

The '970 accused products are configured to communicate with CDMA cellular and IEEE 802.11 networks. In the United States, frequency spectrum used for cellular communications is regulated, managed, and licensed pursuant to the Communications Act, while "WLAN [including IEEE 802.11] uses license-exempt spectrum bands [including 2.4 GHz or 5 GHz] regulated by FCC rules 47 C.F.R. Part 15." CX-0412 (FCC Webpage) at 2; CX-1306C (Stark WS) at Q1794-1795, Q2767-2768, Q3686-3687. Respondents do not contest that this claim limitation is satisfied. *See* Resps. Br. at 418-19.

9. Claim 9

As set forth below, the evidence indicates that the '970 accused products satisfy all limitations of, and therefore infringe, asserted claim 9.

a. The subscriber unit of claim 1,

For the reasons discussed above, it has been shown that the '970 accused products satisfy the elements of claim 1.

b. wherein the cellular transceiver is a code division multiple access transceiver and the IEEE 802 transceiver is an 802.11 transceiver.

The '970 Accused Products are configured to communicate with CDMA cellular and IEEE 802.11 networks. *See* CX-1306C (Stark WS) at Q826, Q830, Q835, Q1008, Q2249, Q2281, Q3137, Q3142, Q3147, Q3226; CX-1306.1C (Stark Errata) at 2. Consequently, the '970 accused products include "a code division multiple access transceiver" and "an 802.11 transceiver." Respondents do not contest that this claim limitation is satisfied. *See* Resps. Br. at 418-19.

10. Claim 10

As set forth below, the evidence indicates that the '970 accused products do not satisfy all limitations of asserted claim 10.

a. A subscriber unit comprising:

The preamble of claim 10 recites, "[a] subscriber unit comprising." For the same reasons discussed above with reference to claim 1, the '970 accused products are subscriber units as recited in the preamble of claim 10.

b. a first transceiver configured to communicate with a first wireless network;

Claim 10 recites, "a first transceiver configured to communicate with a first wireless network." As discussed above with reference to claim 1, each of the '970 accused products include a cellular transceiver configured to communicate with either a WCDMA Release 6 or a CDMA2000 EV-DO Revision A network.

c. a second transceiver configured to communicate with an IEEE 802 compliant wireless network; and

Claim 10 recites that the claimed subscriber unit includes "a second transceiver configured to communicate with an IEEE 802 compliant wireless network." As discussed above with reference to claim 1, the '970 accused products include an IEEE 802 transceiver configured to communicate with an IEEE 802.11-based WLAN.

d. a processor coupled to the first transceiver and the second transceiver, and configured to operate a first protocol stack for the first wireless network and a second protocol stack for the IEEE 802 compliant wireless network, wherein a plurality of physical layer channels are available for assignment for communication with the first wireless network, and to maintain a communication session above a physical layer of the first protocol stack when none of the plurality of physical layer channels are assigned.

Claim 10 requires a "processor . . . configured to operate a first protocol stack for the first wireless network and a second protocol stack for the IEEE 802 compliant wireless network." The '970 accused products do not satisfy this requirement. [

] RX-3998C (Bims RWS) at Q556, Q561. [

] *See* CX-1306C (Stark WS) at Q2061, Q2863, Q3801; Stark Tr. 491-492. Accordingly, '970 the accused products do not satisfy the "processor . . . configured to operate a first protocol stack for the first wireless network and a second protocol stack for the IEEE 802 compliant wireless network" limitation of claim 10.

Claim 10 also recites, "a processor . . . wherein a plurality of physical layer channels are available for assignment for communication with the first wireless network, and to maintain a communication session above a physical layer of the first protocol stack when none of the plurality of physical layer channels are assigned." For the reasons stated above in the discussion of claim 1, the '970 accused products also meet this limitation of claim 10.

11. Claim 11

a. The subscriber unit of claim 10, further comprising:

Inasmuch as the '970 accused products do not satisfy the limitations of independent claim 10, they also do not satisfy the limitations of dependent claim 11.

b. a detector configured to detect the IEEE 802 compliant wireless network; and

Claim 11 recites, "a detector configured to detect the IEEE 802 compliant wireless network." As discussed above with reference to claim 1, the '970 products include "a detector configured to detect the IEEE 802 compliant wireless network."

c. a circuit configured to select the second transceiver in response to detection of the IEEE 802 compliant wireless network.

Claim 11 recites, "a circuit configured to select the second transceiver in response to detection of the IEEE 802 compliant wireless network." As discussed above with reference to claim 1, the '970 Accused Products include "a circuit configured to select the second transceiver in response to detection of the IEEE 802 compliant wireless network."

12. Claim 12

a. The subscriber unit of claim 11,

Inasmuch as the '970 accused products do not satisfy the limitations of claim 11, they also do not satisfy the limitations of dependent claim 12.

b. wherein detection of the IEEE 802 compliant wireless network is based on receipt of a beacon frame or probe response frame.

The '970 accused products are configured to communicate with an IEEE 802.11 compliant WLAN. IEEE 802.11 compliant devices are configured to operate in Passive Scanning mode and/or Active Scanning mode. *See, e.g.*, CX-1306C (Stark WS) at Q1713-1714; CX-0390 (IEEE Std. 802.11-2007) at § 11.1.3. In Passive Scanning mode, the devices scan for

Beacon frames. *Id.* In Active Scanning mode, these devices generate and transmit Probe Request frames and subsequently process received Probe Response frames. *See, e.g.*, CX-1306C (Stark WS) at Q1713-1714; CX-1306.1C (Stark Errata) at 4; CX-0390 (IEEE Std. 802.11-2007) at § 11.1.3.2. Therefore, the '970 accused products satisfy this additional limitation of claim 12.

13. Claim 13

a. The subscriber unit of claim 10,

Inasmuch as the '970 accused products do not satisfy the limitations of independent claim 10, they also do not satisfy the limitations of dependent claim 13.

b. wherein the second transceiver is configured to transmit TCP/IP data when the communication session is maintained when none of the plurality of physical layer channels are assigned.

As discussed above, the '970 accused products are configured to maintain a communication session when all assigned physical layer channels are released or when none of the plurality of the physical layer channels is assigned. Moreover, the '970 accused products are configured to transmit TCP/IP data via an included second, or IEEE 802, transceiver.

[

RX-3998C

RX-4027C]

[

] *See* CX-1308C (Walker WS) at

Q83-93 [ ] Q105-125 [ ]

Respondents argue that the '970 accused products do not satisfy the additional limitation of claim 13 because "they do not satisfy the additional causal relationship required by the plain and ordinary meaning of these claims." Resps. Br. at 291-92. It was determined above, however, that the claim language itself indicates that this limitation requires only that the claimed second transceiver be capable of transmitting TCP/IP data via a WLAN connection at the same time a communication session is maintained and none of the plurality of physical layer channels is assigned. Accordingly, the '970 accused products satisfy this additional limitation of claim 13.

14. Claim 14

a. The subscriber unit of claim 10,

Inasmuch as the '970 accused products do not satisfy the limitations of independent claim 10, they also do not satisfy the limitations of dependent claim 14.

b. wherein at least one of the plurality of layers above the physical layer is any one of a TCP layer, a IP layer, or a network layer.

The record evidence shows that each of the cellular layered communication protocols supported by the '970 accused products includes one or more of a TCP layer, a IP layer, or a network layer above the physical layer. *See, e.g.*, CX-1306C (Stark WS) at Q1524-1529; CX-1306.1C (Stark Errata) at 4. Respondents do not contest that this claim limitation is satisfied. *See* Resps. Br. at 418-19.

15. Claim 15

a. The subscriber unit of claim 10,

Inasmuch as the '970 accused products do not satisfy the limitations of independent claim 10, they also do not satisfy the limitations of dependent claim 15.

b. wherein at least one of the plurality of physical layer channels is a data channel.

The '970 accused products are configured to communicate with a cellular network via at least one physical layer data channel. *See, e.g.*, CX-1306C (Stark WS) at Q1780-1781. Specifically, Dr. Stark testified that [

] *Id.* at Q1782-1784.

[

] *Id.* at Q1786-1787. Respondents do not contest that this claim limitation is satisfied. *See* Resps. Br. at 418-19.

16. Claim 16

a. The subscriber unit of claim 10,

Inasmuch as the '970 accused products do not satisfy the limitations of independent claim 10, they also do not satisfy the limitations of dependent claim 16.

b. wherein the first wireless network is a licensed code division multiple access network and the IEEE 802 compliant wireless network is an unlicensed IEEE 802.11 network.

The '970 accused products are configured to communicate with CDMA cellular and IEEE 802.11 networks. In the U.S., frequency spectrum used for cellular communications is regulated, managed, and licensed pursuant to the Communications Act, while "WLAN [including IEEE 802.11] uses license-exempt spectrum bands [including 2.4 GHz or 5 GHz] regulated by FCC rules 47 C.F.R. Part 15." CX-0412 (FCC Webpage) at 2; CX-1306C (Stark

WS) at Q1794-1795, Q2767-2768, Q3686-3687. Respondents do not contest that this claim limitation is satisfied. *See* Resps. Br. at 418-19.

17. Claim 17

a. The subscriber unit of claim 10,

Inasmuch as the '970 accused products do not satisfy the limitations of independent claim 10, they also do not satisfy the limitations of dependent claim 17.

b. wherein the first transceiver is a code division multiple access transceiver and the second transceiver is an 802.11 transceiver.

The '970 Accused Products are configured to communicate with CDMA cellular and IEEE 802.11 networks. *See* CX-1306C (Stark WS) at Q826, Q830, Q835, Q1008, Q2249, Q2281, Q3137, Q3142, Q3147, Q3226; CX-1306.1C (Stark Errata) at 2. Consequently, the '970 accused products include "a code division multiple access transceiver" and "an 802.11 transceiver." Respondents do not contest that this claim limitation is satisfied. *See* Resps. Br. at 418-19.

18. Claim 18

a. The subscriber unit of claim 10,

Inasmuch as the '970 accused products do not satisfy the limitations of independent claim 10, they also do not satisfy the limitations of dependent claim 18.

b. wherein the first transceiver is a cellular transceiver.

The '970 accused products are configured to communicate with CDMA cellular networks. *See* CX-1306C (Stark WS) at Q826, Q830, Q835, Q2281, Q3137, Q3142, Q3147; CX-1306.1C (Stark Errata) at 2. Consequently, the '970 accused products include "first transceiver" that is a "cellular transceiver." Respondents do not contest that this claim limitation is satisfied. *See* Resps. Br. at 418-19.

19. Infringement of the Accused Products Upon Importation

Respondents argue that, inasmuch as the '970 accused products do not directly infringe upon importation into the United States, they do not satisfy the importation requirement of section 337. *See* Resps. Br. at 412-14 (citing *Electronic Devices* at 13-14 ("[I]nfringement, direct or indirect, must be based on the articles as imported to satisfy the requirements of section 337.")).

Respondents argue that, at the time of importation, "the WCDMA accused products require additional SIM card hardware before they can establish a packet data connection over a cellular network," but that "there is no evidence that the WCDMA accused products are imported with a SIM card; in fact, the evidence indicates the opposite." Resps. Br. at 412-13. It is further argued that, "Without a SIM card, the WCDMA accused products cannot establish a packet data connection as required by the asserted claims." *Id.* at 3.

Respondents also argue that, "as imported, the accused products cannot communicate with a WLAN as the claims require without additional configuration." Resps. Br. at 413. In particular, Respondents contend that "the accused products as imported are not configured to establish a connection to a WLAN," and that "at least some of the accused products have the WLAN functionality disabled when they are imported." *See id.* It is argued that, "[b]ecause the accused products must be manually configured after importation in order to be able to connect to and use a WLAN for data transfer, they cannot infringe claim 1 as imported." *Id.* at 413-14.

In response, InterDigital argues that "the '970 Accused Products as imported are configured to connect to a WLAN." Compls. Br. at 299. InterDigital further argues:

> [T] he '970 Accused Products are configured to automatically and directly communicate with an IEEE 802 WLAN without manual configuration, thereby satisfying the asserted claim limitations. *Id.* For example, the

[

] *Id.* [

] *Id.* at ¶ 1986-1987, 2958-2959, 3348, 4182. [

] *See* CX-1308C (Walker) at ¶ 48, 77-78; Tr. (Walker) at 419:16-420:19, 424:19-425:1. Respondents do not dispute these facts. Having to power on the device, including powering on an included IEEE 802.11 transceiver in a mere two devices, does not modify the '970 Accused Products so as to be configured to communicate with an IEEE 802 WLAN. And Respondents' argument—which expressly acknowledges that the IEEE 802.11 transceiver element is included and can be powered on—confirms they are imported so configured.

Id. (emphasis original).

InterDigital's position is persuasive. Notwithstanding Respondents' arguments, the record evidence demonstrates that the '970 accused products, as imported, are configured to connect to a WLAN. The act of powering-on an accused device, as well as the act of inserting a SIM card to connect the device to a cellular network, does not change the fact that the accused products as imported are pre-configured to connect to a cellular network.[73] It is therefore determined that the '970 accused products do satisfy the importation requirement of section 337.

20. Indirect Infringement

InterDigital also alleges that Respondents have violated section 337 by inducing and contributing to the infringement of the '970 patent. Compls. Br. at 300-03.

a. Induced Infringement

As discussed above, the '970 accused products satisfy all limitations of asserted claims 1-10. Moreover, the record shows that Respondents' customers have used the '970 accused

[73] InterDigital's analogy regarding the need to charge a cellular phone's battery before use is also instructive in this circumstance. *See* Compls. Br. at 409.

products in the United States. *See, e.g.,* CX-1332C (Cronin Dep.) at 43; CX-1328 (Jiang Dep.) at 64-65; CX-1320C (Bright Dep.) at 18. Accordingly, claims 1-10 of the '970 patent are directly infringed by Respondents' U.S. customers who use the '970 accused products in the manner intended, *i.e.*, to establish cellular communications via a WCDMA Release 6 (or later) or CDMA2000 EV-DO Rev. A (or later) network. *See* RX-3998C (Bims RWS) at Q542-545.

InterDigital alleges that "Respondents actively induce this infringement by providing user manuals and retail support programs instructing end users how to use the '970 Accused Products in a manner that infringes the '970 Patent." Compls. Br. at 300-01 (citing CX-1332C (Cronin Dep.) at 52; CX-0098 (Nokia Lumia 710 User Guide) at 8-9, 36-37; CX-0104C (Nokia Lumia 800 User Guide) at 8-9, 41-42; CX-1190C (Nokia 808 Pureview User Guide) at 7-9, 108-109; CX-0688C (ZTE Warp Basics Guide) at 60-61; CX-0443 (Huawei Impulse 4G User Guide) at 8, 35-36; CX-0506C (Huawei myTouch Q User Manual) at 6, 31; CX-0455C (Huawei M865 User Guide) at 35-36).

Based on the record evidence, it is determined that Respondents prepare and provide specific instructions to end-users of the '970 accused products, and that these instructions teach users how to insert SIM cards to communicate with a cellular network and how to use the products to communicate with a WLAN. *See, e.g.*, CX-1332C (Cronin Dep.) at 52; CX-0098 (Nokia Lumia 710 User Guide) at 8-9, 36-37; CX-0104C (Nokia Lumia 800 User Guide) at 8-9, 41-42; CX-1190C (Nokia 808 Pureview User Guide) at 7-9, 108-109; CX-0688C (ZTE Warp Basics Guide) at 60-61; CX-0443 (Huawei Impulse 4G User Guide) at 8, 35-36; CX-0506C (Huawei myTouch Q User Manual) at 6, 31; CX-0455C (Huawei M865 User Guide) at 35-36.

In addition, the evidence shows that Respondents have had actual knowledge of the '970 patent, as well as InterDigital's preliminary claim charts, since InterDigital filed its complaint in

this investigation on July 26, 2011. Since that time, Respondents have continued to import and sell the '970 accused products. *See* CX-1141C (Nokia's Responses to First Set of Requests for Admission); CX-1148C (Huawei's Responses to First Set of Requests for Admission); CX-1151C (ZTE's Responses to First Set of Requests for Admission). Therefore, it is determined that Respondents knowingly induce end-user customers to directly infringe claims 1-10 of the '970 patent.

b. Contributory Infringement

As discussed above, end-user customers directly infringe claims 1-10 of the '970 patent when they insert a SIM card or enable EV-DO functionality on the '970 accused products, and Respondents had actual knowledge of the '970 patent no later than July 26, 2011. In addition, the '970 products supporting WCDMA Release 6 (or later) are specifically designed to be used with a SIM card and to operate on WCDMA networks. *See, e.g.*, CX-0098 (Nokia Lumia 710 User Guide) at 9; CX-1328C (Jiang Dep.) at 54. To the extent the '970 accused products supporting WCDMA Release 6 (or later) are combined with a SIM card, it is determined that they constitute a material component of the claimed invention. *See* CX-1306 (Stark WS) at Q4178. Similarly, the '970 accused products supporting CDMA2000 EV-DO Rev. A are specifically designed to operate on CDMA2000 networks. *See, e.g.*, CX-1328C (Jiang Dep.) at 52-53. It is further determined that, inasmuch as the '970 accused products supporting CDMA2000 EV-DO Rev. A do not require additional hardware for EV-DO functionality to be enabled, they constitute a material component of the claimed invention. *See* CX-1306 (Stark WS) at Q4180.

Based on the record evidence, it is also determined that there are no substantial non-infringing uses for the '970 accused products. Any use of the '970 accused products without

a SIM card and/or EV-DO functionality enabled would deprive users of the benefit that the '970 accused products were intended to provide. Although Respondents' expert Dr. Bims testified that the '970 accused products have substantial non-infringing uses because the WLAN or cellular functionality may be disabled on certain devices, the mere fact that a device may be disabled or powered-off does not establish a non-infringing use. *See* RX-3998C (Bims RWS) at Q630. Moreover, Dr. Bims does not identify a specific, substantial non-infringing use of the '970 accused products when WLAN or cellular functionality is purportedly disabled. Therefore, it is determined that Respondents' importation and sale of the '970 accused products contribute to the direct infringement of claims 1-10 of the '970 patent.

E. Validity

1. Priority Date

The '970 descends, through a chain of continuation and continuation-in-part applications, from U.S. Patent Application No. 09/400,136, which was filed on September 21, 1999, and which ultimately issued as U.S. Patent No. 6,526,034. *See* JX-0005. InterDigital argues that the '970 patent should be granted a priority date earlier than its effective filing date of September 21, 1999. Compls. Br. at 303-06. Specifically, InterDigital argues that the '970 patent is entitled to a priority date no later than April 6, 1999. *Id.*

In order to substantiate a claim of an invention date prior to the filing of the application, the inventor's claim "must be corroborated by 'evidence which shows that the inventor disclosed to others his completed thought expressed in such clear terms as to enable those skilled in the art to make the invention.'" *Spansion, Inc. v. U.S. Int'l Trade Comm'n*, 629 F.3d 1331, 1356 (Fed. Cir. 2010).

InterDigital argues that the testimony of the '970 inventor, Mr. Gorsuch, [

CX-1269C

CX-1267C] along with the testimony of InterDigital's expert Dr. Stark, establish that Mr. Gorsuch conceived of his invention and disclosed his invention to Tantivy's patent prosecution counsel, Mr. David Thibodeau, by April 6, 1999. *See* Compls. Br. at 303-05.

[

CX-1314C

CX-1314.1C CX-1526C

CX-1269C]

With respect to the Thibodeau email, InterDigital argues as follows:

> [A] handwritten note by Lisa Kolb, a Tantivy employee present at the April 6, 1999 meeting, on a copy of Mr. Thibodeau's April 6, 1999 email that states "David to write-up for Tom" confirms that by April 6, 1999, Mr. Gorsuch had disclosed his invention to Mr. Thibodeau; Mr. Thibodeau was to "write-up" the application of the first member of the '970 Patent family based on Mr. Gorsuch's (Tom's) disclosure. CX-1267C (Thibodeau 4/6/99 Email) at IDC-ITC-017582808; *see also* CX-1526C (Stark RWS) at ¶ 118-123; CX-1526.1C (Stark RWS Errata) at 4; CX-1314C (Gorsuch) at ¶ 29-48; CX-1314.1C (Gorsuch Errata) at 2. After the April 6, 1999 meeting, Mr. Gorsuch "didn't provide any further details needed to disclose [his] invention." CX-1314C (Gorsuch) at ¶ 48. Tantivy gave the application for the '970 patent a "high priority," as indicated in CX-1270C (Patent Application Index, 7/20/99) and CX-1271C (Patent Application Index, 8/16/99).

Compls. Br. at 303-04.

InterDigital further argues that:

[

CX-1275C CX-1277C
CX-1273C CX-1274C
CX-1314C

CX-1269C

CX-1526C

]

Compls. Br. at 304.

At the hearing, InterDigital's expert Dr. Stark testified that CX-1269C (Presentation to U.S. West, 2/19/99), CX-1267C (Thibodeau 4/6/99 Email), CX-1270C (Patent Application Index, 7/20/99) and CX-1271C (Patent Application Index, 8/16/99) demonstrate that Mr. Gorsuch was in full possession of his invention by April 6, 1999, and that the application was diligently filed by September 21, 1999. *See* CX-1526C (Stark RWS) at Q113, Q114, Q118-143; CX-1526.1C (Stark RWS Errata) at 4.

Having examined the evidence adduced by InterDigital, it is determined that [ ] presentation does not set forth details of the WLAN functionality or the specific combination of cellular and WLAN elements claimed in the '970 patent. *See* RX-3519C (Bims WS) at Q309-347; RX-3998C (Bims RWS) at Q632-657. For example, Mr. Gorsuch testified that [CX-] shows WLAN features of the conceived dual mode device, but [

] *See* CX-1314C (Gorsuch WS) at Q78, Q80, Q136; RX-3998C (Bims RWS) at Q637. [

] is similarly misleading, inasmuch as the circuitry depicts communication with

base stations, which are features of cellular systems, and not of WLANs. *See* RX-3998C (Bims RWS) at Q639-644. [

] Gorsuch Tr. 398-399, 404. Moreover, Mr. Gorsuch testified that several specific claim elements are not disclosed [

] Gorsuch Tr. at 398-399, 404, 408; RX-3401C (Gorsuch Dep.) at 68-69.

As for the Thibodeau email (CX-1267C), the document itself is dated April 6, 1999, is heavily redacted, and contains a one-line reference to a meeting to discuss "Dual Mode TAU (iCDMA/WLAN)." *See* CX-1267C at IDC-ITC-017582787. This single line of text, without more, cannot corroborate Mr. Gorsuch's claim that he had conceived of the '970 invention as early as April 6, 1999.

Therefore, based on the evidence and arguments put forth by InterDigital, it is determined that InterDigital has not shown that the '970 patent is entitled to a priority date earlier than September 21, 1999, which is the effective filing date of the ancestor application to the '970 patent.

2. Anticipation and Obviousness

Respondents allege that two prior art references, U.S. Patent No. 6,243,581 to Jawanda ("Jawanda '581 patent" or "Jawanda") and U.S. Patent No. 6,681,259 to Lemiläinen and Haverinen ("Lemiläinen '259 patent" or "Lemiläinen"), teach or make obvious all limitations of the asserted claims of the '970 patent, inasmuch as they describe dual-mode units using GPRS or other prior art protocols. *See* Resps. Br. at 420.

a. The Jawanda '581 Patent Alone or in Combination with the GPRS Standards, Draft UMTS Standards, or IS-95/IS-657 Standards

The record evidence demonstrates, by clear and convincing evidence, that the Jawanda '581 patent, alone or in combination with the GPRS Standards, draft UMTS Standards, and/or IS-95/IS-657 Standards, renders obvious the asserted claims of the '970 patent.[74]

The Jawanda '581 patent, on which Respondents rely for their invalidity case, qualifies as prior art to the '970 patent under 35 U.S.C. § 102(e), inasmuch as it was filed on December 11, 1998, which is even earlier than InterDigital's alleged conception date of April 6, 1999.

For their invalidity case, Respondents also rely on the following sections of the 1997 Release of the GPRS standards:

Standard Section	Exhibit	Publicly available by	Testimony from RX-3519C (Bims WS)
GSM 02.60 v. 6.1.1 Rel. 1997	RX-3498	Nov. 1998	Q. 933, 1168-75
GSM 03.02 v. 6.1.0 Rel. 1997	RX-0092	July 1998	Q. 962
GSM 03.60 v. 6.1.1 Rel. 1997	RX-0079	Aug. 1998	Q. 990
GSM 04.07 v. 6.1.0 Rel. 1997	RX-0046	July 1998	Q. 955
GSM 04.08 v. 6.1.1 Rel. 1997	RX-0091	Aug. 1998	Q. 948
GSM 04.60 v. 6.1.0 Rel. 1997	RX-0047	Aug. 1998	Q. 969
GSM 04.64 v. 6.1.0 Rel. 1997	RX-0093	July 1998	Q. 976
GSM 04.65 v. 6.1.0 Rel. 1997	RX-0048	July 1998	Q. 983
GSM 05.01 v. 6.1.1 Rel. 1997	RX-0045	July 1998	Q. 941

See Resps. Br. at 429.

[74] To the extent that Respondents argue that Jawanda anticipates the asserted claims of the '970 patent, it is determined below that Jawanda does not explicitly or inherently teach the use of an IEEE 802.11 transceiver as required by the '970 claims. *See* RX-3519C (Bims WS) at Q555-558; GR12 Filing at 13 (identifying anticipation by Jawanda as an issue to be determined); Resps. Br. at 425 (heading arguing that Jawanda renders obvious the '970 claims, but not arguing anticipation), 452 (same). Therefore, it is determined that Jawanda does not anticipate the asserted '970 claims.

Respondents further rely on the following sections of the draft UMTS standards documents and change requests:

Standard Section	Exhibit	Publicly available by	Testimony from RX-3519C (Bims WS)
3GPP 25.212 v. 2.0.0	RX-0039	June 1999	Q. 1182-88
3GPP 25.201 v. 2.1.0	RX-0062	June 1999	Q. 1189-95
3GPP 25.211 v. 2.1.0	RX-0063	June 1999	Q. 1196-1202
3GPP 23.121 v. 3.0.0	RX-0085	July 1999	Q. 1203-09
3GPP 25.101 v. 2.0.0	RX-0086	June 1999	Q. 1210-16
3GPP 24.008 v. 3.0.0	RX-0087	July 1999	Q. 1217-23
3GPP 25.301 v. 3.0.0	RX-0088	April 1999	Q. 1224-30
3GPP 25.213 v. 2.1.0	RX-0089	June 1999	Q. 1231-37
3GPP 25.302 v. 2.3.0	RX-0090	June 1999	Q. 1238-44
S2-99712 (Change Request)	RX-0038	August 20, 1999	Q. 1245-50

See Resps. Br. at 430.

The GPRS Standards documents, as well as the and Draft UMTS Standards documents and change requests, qualify as prior art printed publications inasmuch as they were widely available to the interested public prior to the earliest priority date for the '970 patent. Relevant case law specifies that a document that has been made available to interested members of the public qualifies as a "printed publication" under 35 U.S.C. § 102. *In re Hall*, 781 F.2d 897, 898-99 (Fed. Cir. 1986). A document is available when persons ordinarily skilled in the subject matter could obtain the document using reasonable diligence. *Id.* The documents relied on by Respondents were promulgated by standards setting organizations, and each document bears a date that indicates it was widely available to the interested public prior to the September 21, 1999 effective filing date of the '970 patent.

InterDigital questions whether these publications were available to the public in the relevant timeframe, but the record evidence does not provide any reason to doubt that these publications were indeed publicly available on the dates attributed to them. *See* Compls. Br. at

308-13. Even InterDigital's expert Dr. Stark testified that, as a member of the interested public in 1999, he was able to get copies of the standards even though he was not a member of the relevant standards organization. Stark Tr. 2149-2151.

It is therefore determined that these standards documents are prior art publications with respect to the '970 patent.

Lastly, the IS-95 and IS-657 standards on which Respondents rely for invalidity are also prior art to the '970 patent. *See* RX-3519.2C (Bims Suppl. WS) at Q1848, Q1921.

***

In their post-hearing brief, Respondents assigned alphanumeric identifiers, *e.g.*, "1A" and "10D" to the separate limitations of the '970 asserted claims, and provided a chart purporting to summarize the evidence demonstrating that the elements of the '970 claims "are taught or made obvious by Jawanda alone, or in obvious combination with relevant prior art." *See* Resps. Br. at 426. This chart is as follows:

Claim Element	Summary of Proof of Anticipation/Obviousness
1 Preamble: subscriber unit	This is not a limitation; Jawanda teaches and makes obvious a subscriber unit
1A: cellular transceiver	[no constructions sought]: no dispute this is taught by Jawanda.
1B: IEEE 802 transceiver	Dr. Stark conceded Jawanda makes this limitation obvious
1C: WLAN detector	Under any construction this limitation is taught or made obvious by Jawanda
1D: circuit to use WLAN	[InterDigital construction]: not disputed that Jawanda teaches this limitation . [Respondent construction]: Jawanda teaches this limitation.
1E: plurality of layers above physical layer	[no construction sought]: not disputed this is taught by Jawanda alone or made obvious in combination with one of GPRS, UMTS, IS-95.
1F: plurality of channels available	[Respondent construction]: not disputed this is taught by Jawanda inherently, or made obvious by Jawanda in combination with one of GPRS, IS-95, UMTS [InterDigital construction]: made obvious by Jawanda in combination with either GPRS or UMTS.

Claim Element	Summary of Proof of Anticipation/Obviousness
1G: maintain session	[InterDigital construction]: taught by Jawanda. [Respondent construction]: taught by Jawanda. [InterDigital infringement theory (PDP context is communication session)]: Obvious by Jawanda in combination with GPRS or UMTS.
10 preamble: subscriber unit	See claim 1 Preamble, above
10A: first transceiver	[no construction sought]: taught by Jawanda
10B: second transceiver	[no construction sought]: taught by Jawanda
10C: processor coupled	[InterDigital infringement theory (collection of hardware and software can be the "processor")]: taught by Jawanda
10D: channels available	See element 1F
10E: maintain session	See element 1G
2, 13: TCP/IP over WLAN	[no construction sought]: no dispute this is taught by Jawanda
3, 14: TCP/IP or network layer	[no construction sought]: no dispute this is taught by Jawanda
4: single unit	[no construction sought]: obvious over Jawanda, conceded at hearing it would be obvious to enclose Jawanda system in single unit
5: mobile phone or PDA	[no construction sought]: obvious over Jawanda.
6: 12: beacon frame	[no construction sought]: not disputed this is taught by Jawanda
7, 15: data channel	[no construction sought]: not disputed this is taught by Jawanda
8, 16: licensed CDMA, unlicensed WLAN	[no construction sought]: not disputed this is taught by Jawanda
9, 17: CDMA and 802.11	[no construction sought]: Jawanda teaches CDMA. Conceded at hearing that 802.11 is obvious over Jawanda
11: detector circuit, circuit to use WLAN	[no construction sought]: See element 1C, 1D
18: cellular transceiver	[no construction sought]: See element 1A

Resps. Br. at 426-27.

Respondents contend that "very little" of the information in the chart is disputed by the parties. *See* Resps. Br. at 425. Specifically, Respondents argue:

> Dr. Stark has conceded that the following elements are disclosed or made obvious by Jawanda: a subscriber unit composed of separate devices or combined into single unit (preamble); an IEEE 802.11 transceiver (1A), a cellular transceiver (1B), a circuit to detect the presence of WLAN (1C), a circuit that uses WLAN when detected (1D), a session between to two peer computers over a network using a cellular connection (1G); the

> session is at the top of the cellular protocol stack (1G), the session is preserved when the cellular connection is no longer used; (1G); GPRS had a layered communication protocol (1A), GPRS had multiple physical layer channels available for use to transmit data by the subscriber unit (1E), GPRS had a PDP context (1G), and GPRS maintained the PDP context when physical layer channels were not in use (1G).

Id. at 425-26.

Respondents further argue:

> Dr. Stark admitted that at least the following limitations are either disclosed by or rendered obvious by Jawanda alone or in combination with GPRS, draft UMTS, or IS-95/657: 1 Preamble (Stark Tr. 2116:5-2117:17, 2125:2-2126:17), 1A and 18 (*id.* 2126:18-2127:5, 2168:10-24, 2120:10-15), 1B (*id.* 2126:4-17), 1C (*id.* 2125:2-2126:17, 2134:13-2135:6), 1D (*id.* 2134:13-2136:22), 1E (*id.* 2127:2-8), 1F and 10D (*id.* at 436:2-637:8, 348:17-22, 2127:18-2128:20), 4 (Stark Tr. 2118:19-2119:19, 2116:5-2117:17), and 11 (*id.* 2125:2-2126:17, 2134:13-2135:6, 2134:13-2136:22).

Resps. Br. at 426 n.10.

The specific disclosures of the references relied upon by Respondents are discussed in further detail on a claim-by-claim basis below.

i. (Claim 1) A subscriber unit comprising:

As an initial matter, Respondents argue that the preamble of claim 1 is not a limitation, and that "to invalidate this claim prior art need not anticipate it or make it obvious." Resps. Br. at 427.

As discussed above, the term "subscriber unit" has not been construed. Nevertheless, even if "subscriber unit" were determined to be a limitation of claim 1, the evidence demonstrates clearly and convincingly that the Jawanda '581 patent either (i) teaches a subscriber unit, if a subscriber unit could be composed of discrete or separate devices connected using an existing conventional computer interface, or (ii) shows that a unitary subscriber unit would have been obvious to a person of ordinary skill in the art.

The Jawanda '581 patent teaches a compound subscriber unit, which is also called a "mobile computer terminal," having a cellular and a wireless transceiver. RX-0032 (Jawanda '581 patent) at col. 6, lns. 22-35; col. 6, lns. 57-59. Jawanda shows that the mobile computer terminal can consist of a mobile terminal 14 and the mobile phone 16 of Figure 1, coupled by an RS-232 connection, which is "an existing conventional computer interface." *Id.* at col. 3, lns. 27-65. As InterDigital's expert Dr. Stark testified, it would have been obvious in light of Jawanda to add a card to a laptop for data transmission, producing the result depicted in Figure 5 of the '970 patent. Stark Tr. 2116-2117, 2125-2126.

ii. (Claim 1) a cellular transceiver configured to communicate with a cellular network via a cellular layered communication protocol;

The parties do not dispute that the Jawanda '581 patent teaches a mobile computer terminal that includes this element, inasmuch as InterDigital's expert Dr. Stark testified to such at the hearing. *See, e.g.*, Stark Tr. 2126-2127, 2168, 2120. The Jawanda '581 patent discloses a mobile phone 16 in Figure 1, and a mobile phone inherently includes a cellular transceiver. The mobile phone can communicate with WWAN 110, *i.e.*, the Wireless Wide Area Network, which is the cellular network, "according to any currently available or future wireless data protocol such as code division multiple access (CDMA), CDPD, or GPRS." RX-0032 (Jawanda '581 patent) at col. 3, lns. 1-9; col. 4, lns. 31-44. The cellular phone protocols existing at the time of the Jawanda '581 patent, including GPRS, draft UMTS and IS-95/IS-657, all used a layered communication protocol. RX-3519C (Bims WS) at Q999-1009, Q1272-1274; RX-3519.2C (Bims Suppl. WS) at Q 1788-1789. Thus, the Jawanda '581 patent inherently discloses the layered communication protocols of those standards. Also, one of skill in the art at the relevant timeframe knew that the prevailing cell phone protocols provide cellular layered communication

protocols, so that this limitation would have been obvious based on the Jawanda '581 patent alone even if were not inherently disclosed. RX-3519C (Bims WS) at Q539-547.

InterDigital argues that the respective standards relied on by Respondents' expert Dr. Bims are not a single publication, such that the combinations relied on by Dr. Bims to show invalidity of the '970 patent constitute multiple references. *See* InterDigital Br. at 313-16. The evidence demonstrates, however, that one of ordinary skill in the art would treat these disclosures as a single cohesive standard. *See* RX-3519C (Bims WS) at Q296-297, Q1177, Q1406, Q1662; RX-3519.2C (Bims Suppl. WS) at Q1848, Q1921). Even if InterDigital were correct, the motivation to combine the selected standards documents for a given cell phone standard is compelling because the documents are designed to work together as a coherent reference. RX-3519C (Bims WS) at Q296-297, Q1177, Q1407, Q1662; RX-3519.2C (Bims Suppl. WS) at Q1848, Q1921. The standards sections can be considered different chapters of a construction manual for building a standard-compliant cell phone. *Id.* Moreover, even Dr. Stark conceded that, in order to build a standard-compliant cell phone, the builder must comply with all the relevant mandatory standard sections. Stark Tr. 2163. Therefore, it would not only be obvious, but also necessary, for a person of ordinary skill to read all the related sections of the standard together as an integrated whole. RX-3519C (Bims WS) at Q296-297, Q1177, Q1407, Q1662; RX-3519.2C (Bims Suppl. WS) at Q1848, Q1921).

Moreover, the standards documents Dr. Bims relies on specifically reference one another. For example, the GPRS standards document list of normative references, which is at page six of exhibit RX-0092 (GSM 03.02 v. 6.1.0 Rel. 1997), specifically refers to section 3.60, which is RX-0079 (GSM 03.60 v. 6.1.0 Rel. 1997). In turn, the list of normative references on pages nine through ten of RX- 0079 (GSM 03.60 v. 6.1.0 Rel. 1997) specifically refers to standard sections

4.07, 4.08, 4.60, 4.64, 4.65, and 2.60, which are exhibits RX-0046 (GSM 04.07 v. 6.1.0 Rel. 1997), RX-0047 (GSM 04.60 v. 6.1.0 Rel. 1997), RX-0048 (GSM 04.65 v. 6.1.0 Rel. 1997), RX-0091 (GSM 04.08 v. 6.1.1 Rel. 1997), RX-0093 (GSM 04.64 v. 6.1.0 Rel. 1997), and RX-3498 (GSM 02.60 v. 6.1.1 Rel. 1997). The other document Dr. Bims relies on, RX-0045 (GSM 05.01 v. 6.1.1 Rel. 1997), is a general description of the "Physical layer on the radio path," and is thus critical to defining and understanding the GPRS physical layer channels referenced in the other documents. Furthermore, the list of normative references on page five of RX-0045 (GSM 05.01 v. 6.1.1 Rel. 1997) specifically refers to section 4.08, which is RX-0091 (GSM 04.08 v. 6.1.1 Rel. 1997). Dr. Stark agrees that normative references listed in a standards document must be read to understand that document. Stark Tr. 2162-2163. Collectively, the documents discussed above are all necessary to understand the assignment and use of physical layer channels as well as the PDP context of the GSM/GPRS standard.[75]

Inasmuch as the standards documents are meant to be read together by designers of cell phones and contain internal cross-references identifying specific documents and sections, there is a powerful motivation to combine and use these documents together. Specifically, each standards document is part of a standard release, each one specifically identifies other documents within the release with which it should be combined, and it is effectively impossible for a person of ordinary skill in the art to build a conforming device without combining those references. Stark Tr. 2163-2165.

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[75] The same is true of the Draft UMTS standards relied on by Dr. Bims. They are the specific sections of the UMTS standard available at the time of the '970 patents, and are necessary for understanding the relevant functioning of the UMTS physical layer channels and the PDP context at that time.

Returning to a discussion of the Jawanda '581 patent, this reference discloses that the mobile phone 16 in Figure 1 can communicate "according to *any currently available or future wireless data protocol* such as code division multiple access (CDMA), CDPD, or GPRS." RX-0032 at col. 3, lns. 1-9 (emphasis added). The GPRS, draft UMTS, and IS-95/IS-657 standards constitute "currently available or future wireless data protocol[s]" as set forth in Jawanda. For instance, GPRS is explicitly listed. Jawanda also lists CDMA explicitly, and the only CDMA system in use in the United States at the time was IS-95/IS-657. RX-3519C (Bims WS) at Q546-547, Q594, Q611. Further, the draft UMTS standard is a follow-on to GPRS. It would have been an obvious design choice for a person of ordinary skill in the art to design the cell phone system disclosed in Jawanda such that it complied with any of these three then-existing, well-known cell phone standards. RX-3519C (Bims WS) at Q594, Q605, Q611, Q615. *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007) ("When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp."). Therefore, with the motivation set forth in Jawanda to use a cell phone protocol for transmitting data, a person of ordinary skill in the art would have found it obvious to read and use the cell phone standards describing data transmission channels and data communications as set forth in the standard sections relied on by Dr. Bims.

iii. (Claim 1) an IEEE 802 transceiver configured to communicate with a wireless local area network (WLAN) via an IEEE 802 layered communication protocol;

The Jawanda '581 patent discloses the use of a WLAN transceiver. *See* CX-1526C (Stark RWS) at Q329; RX-3519C (Bims WS) at Q548-561). InterDigital's expert Dr. Stark

admitted that it would have been obvious for the WLAN to be an 802.11 network if one knew of the 802.11 standard. Stark Tr. 2126. Dr. Stark further testified that a person of ordinary skill would be presumed to know about the 802.11 standard. *Id.* 2107.

iv. (Claim 1) a detector configured to detect a signal from the WLAN; and

The Jawanda '581 patent discloses this limitation. In particular, Figure 4 of the Jawanda '581 patent and the accompanying text teaches that the mobile terminal can detect the presence of a WLAN. *See* RX-0032 (Jawanda '581 patent) at col. 5, lns. 20-27; Fig. 4. The Jawanda '581 patent further describes detecting a signal from the WLAN: "[T]he determination illustrated at block 106 can be made by WLAN interface 96 . . . [by] periodically determining whether an 'advertisement' message has been received by wireless LAN adapter 64 from wireless network adapter 20." *Id.* at col. 4, ln. 61 – col. 5, ln. 9. The Jawanda '581 patent therefore inherently teaches circuitry to carry out this detecting function. Moreover, Dr. Stark also testified that Jawanda discloses such a detector. Stark Tr. 2134-213.

v. (Claim 1) a circuit coupled to the cellular transceiver and the IEEE 802 transceiver and configured to communicate using the IEEE 802 transceiver in response to the signal;

There is no dispute that the Jawanda '581 patent discloses this claim limitation under the adopted construction of this claim term. *See* CX-1526C (Stark RWS) at Q 339; RX-3519C (Bims WS) at Q 577-585.

If, however, Respondents' proposed construction of this claim limitation were adopted, it is determined that the Jawanda '581 patent would nevertheless disclose this limitation. The only significant difference between Respondents' and InterDigital's proposed constructions is that Respondents' construction requires that the subscriber unit automatically connect to a WLAN in

response to detecting a WLAN signal. In other words, the connection is in response to the signal, and not in response to an intervening act by the user. Dr. Stark admits that Jawanda discloses exactly this, *i.e.*, a circuit that is configured to communicate using the IEEE 802 transceiver "seamlessly," or without the user noticing. Stark Tr. 2134-2136.

As shown in Figure 4, in response to detecting the WLAN in box 106, the system will switch the physical connection on which the communication session is taking place from the cellular transceiver path to the WLAN transceiver path, and establish a WLAN connection. RX-0032 at Fig. 4. As discussed above, Dr. Stark testified at the hearing that it would be obvious that the WLAN could be an IEEE 802 WLAN.[76] Accordingly, the Jawanda '581 patent teaches this limitation under Respondents' proposed construction.[77]

vi. (Claim 1) wherein the cellular layered communication protocol includes a plurality of layers above a physical layer,

InterDigital's expert does not dispute that the Jawanda '581 patent discloses this limitation. *See, e.g.*, CX-1526C (Stark RWS) at Q329. The Jawanda '581 patent discloses this

[76] There is no dispute that Jawanda teaches the other elements of this limitation. The mobile terminal has a circuit (the processor 52 in Figure 2) that is running software that makes the switch to the WLAN in response to detecting the beacon signal indicating a WLAN is present. "In addition to application 90, mobile terminal 14 executes communication software including network access arbitrator 92 . . . network access arbitrator 92 routes datagrams output by application 90 to either CAI 94 or WLAN interface 96." This circuit is thus coupled to both transceivers. RX-0032 at col. 4, lns. 2-14. Furthermore, it is inherent that there is hardware and/or software to carry out the establishment of the WLAN connection in response to detecting the signal shown in Fig. 4, and it is inherent that, in order to route data over either transceiver, this hardware and/or software must be coupled to both transceivers. RX-3519C (Bims WS) at Q581-585.

[77] InterDigital also argues that this limitation is satisfied under the doctrine of equivalents should Respondents' proposed construction be adopted. *See* Compls. Br. at 272-73. Inasmuch as it is determined that the '970 accused products literally infringe this limitation under Respondents' proposed construction, InterDigital's doctrine of equivalents argument will not be addressed.

limitation in two ways. First, it explicitly discloses the use of multiple protocol layers.[78] Moreover, it would have been obvious to combine the Jawanda '581 patent with any one of the GPRS, draft UMTS, or IS-95/IS-657 standards, inasmuch as these standards all had a plurality of layers above a physical layer. RX-3519C (Bims WS) at Q 586-615; RX-3519.2C (Bims Suppl. WS) at Q1788-1789. Further, Dr. Stark testified at the hearing that GPRS teaches this limitation. Stark Tr. 2127.

vii. (Claim 1) and a plurality of physical layer channels are available for assignment for communication with the cellular network

Applying the construction of this claim term adopted above, this limitation is made obvious by the Jawanda '581 patent in combination with either the GPRS, the Draft UMTS, or IS-95/IS-657 Standards.

As an initial matter, InterDigital's expert Dr. Stark testified that "allocation," as used in the adopted construction, means the same thing as "use." Stark Tr. 498-499. GPRS and UMTS both provide two or more channels to a subscriber unit to use to transmit data. RX-3519C (Bims WS) at Q623, Q628-629. Additionally, Dr. Stark testified that it was obvious to have an IS-95 subscriber unit use two or more channels to communicate data, and that GPRS teaches a plurality of channels available for a subscriber unit to use to transmit data. Stark Tr. 438, 2127-2128. Thus, this limitation is obvious in light of either the GPRS or IS-95 standards, even under Respondents' construction.

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[78] Jawanda teaches Cellular Access Interface ("CAI"), which is a physical layer that transmits a control signal via a control channel and transmits datagrams via at least one data channel. RX-0032 at col. 3, ln. 66 – col. 4, ln. 19; col. 4, lns. 31-60; Fig. 3. Figures 1 and 3 show that the cellular functionality includes multiple independent blocks, and that communication between these elements would take place on different protocol layers. RX-3519C (Bims WS) at Q594-596.

Moreover, the Draft UMTS Standards disclose this element. Those standards determine the number of channels (zero or more) assigned to a Layer 1 connection based on the number of Transport Blocks in the Transport Block Set. RX-3519C (Bims WS) at Q628-630. InterDigital's expert Dr. Stark does not dispute this fact. *See* CX-1526C (Stark RWS) at Q330-338) (making no response to Dr. Bims' proof that the draft UMTS standards disclose plural uplink channels).

In the event that Respondents' proposed construction for this claim limitation were adopted, InterDigital does not dispute that Jawanda would teach this limitation either alone or in combination with GPRS, IS-95, or UMTS. CX-1526C (Stark RWS) at Q329; RX-3519C (Bims WS) at Q 616-631. The Jawanda '581 patent teaches explicitly a plurality of physical layer channels. RX-3519C (Bims WS) at Q617-618. Jawanda also teaches this limitation inherently by disclosing use of GPRS or CDMA. *Id.* at Q617, Q619-627; RX-3519.2C (Bims Suppl. WS) at Q1823-28). As discussed above, it would have been obvious to combine Jawanda with any one of the GPRS, draft UMTS, or IS-95/IS-657 standards. Moreover, Dr. Stark confirmed that in IS-95 and GPRS, the base station assigns the physical layer channels. Stark Tr. at 436-637; *see* RX-3519C (Bims WS) at Q618-630.

viii. (Claim 1) and a communication session above the physical layer is maintained when all assigned physical layer channels have been released.

Respondents have shown, clearly and convincingly, that Jawanda teaches this limitation under the adopted construction of this claim limitation. RX-3519C (Bims WS) at Q632-644.

Jawanda, similar to the asserted '970 patent, teaches that a communication session can be established between two devices over a network using either a cellular or WLAN communication path. Specifically, Figure 3 of Jawanda shows an application 90, running on mobile terminal 14,

and communicating with application 91 running on a remote terminal 24. RX-0032 at col. 4, lns. 2-14. Network Access Arbitrator 92, also running on terminal 14, chooses between two physical communication paths, *i.e.*, the cellular access interface (CAI 94) or the wireless local area network interface (WLAN I/F 96), to transmit and receive datagrams during the communication session. *Id.*; *see* RX-3519C (Bims WS) at Q33-37, Q639.

Jawanda further teaches that the mobile computer terminal can "seamlessly" maintain the existing communication session undisturbed while switching the physical connection from a cellular network to a WLAN. RX-0032 at col. 5, lns. 34-39; Fig. 4; RX-3519C (Bims WS) at Q638-639; Stark Tr. 2131. After the handoff, maintaing the cellular connection is optional. RX-0032 at Fig. 4 (box 112); col. 5, ln. 64 – col. 6, ln. 1; RX-3519C (Bims WS) at Q 644. Accordingly, once the session switches to using the WLAN connection, the cellular connection can be maintained without being used. RX-3519C (Bims WS) at Q644. Therefore, this claim limitation is satisfied under the construction adopted above.

Moreover, Jawanda in combination with the GPRS, Draft UMTS, or IS-95/IS-657 Standards either inherently discloses this element or renders it obvious under InterDigital's infringement contentions and infringement theories based on the PDP context. These standards contain the same PDP context functionality InterDigital contends satisfies this limitation for infringement. *See* RX-3519C (Bims WS) at Q44-49, Q178, Q640-642, Q1053-1055, Q1343-1347. As Dr. Stark testified at the hearing, a PDP context in a GPRS-compliant network must be activated when data is to be sent. Stark Tr. 2144. Dr. Stark also testified that a GPRS mobile station can retain a PDP context in the "active" state indefinitely when all previously assigned physical layer data transmission channels are not in use. Stark Tr. 2145-2146.

As Dr. Bims has testified, UMTS is based on GPRS, and it also has a PDP context that is maintained when the cell phone is not using the data channels to transmit data. RX-3519C (Bims WS) at Q 642, Q1178-1181. This feature was adopted by 3GPP before the effective filing date of the '970 patent. *See* RX-3519C (Bims WS) at Q642, Q1245-1252, Q1343-1347; RX-0038 (3GPP S2-99712).

As for the IS-95/IS-657 Standards, they disclose this limitation for reasons similar to those discussed above. *See* RX-3519.2C (Bims Suppl. WS) at Q1840-1848.

In the event Respondents' proposed construction were adopted for this claim limitation, Jawanda would nevertheless teach this limitation. As discussed above, Jawanda teaches maintaining the communication session between applications 90 and 91 on the two terminals 14 and 24 when the physical connection is changed from a cellular path to the WLAN path. Prior to this switch, the application-layer session is at the top of the cellular protocol stack, and thus is a "higher layer in the cellular layered communication protocol" as required by Respondents' proposed construction. Stark Tr. 2131-2133, 2140-2141, 2168-2169; RX-3519C (Bims WS) at Q276.

As shown in Figure 4, and as Dr. Stark testified, the transfer of datagrams at the application level is "seamlessly" handed off from the cellular path to the WLAN path. In other words, by substituting the WLAN path for the cellular path it appears to the application layer that the physical layer connection is preserved, inasmuch as the application session is not disturbed, *i.e.*, the applications can continue to send or receive data grams without interruption. The cellular connection can optionally be terminated. If so, *i.e.*, the cell phone hangs up, then all cellular physical layer channels are no longer being used and are released. RX-3519C (Bims WS) at Q38-42, Q639; Stark Tr. 2140-2141. This satisfies Respondents' proposed construction

that "the appearance to higher layers in the cellular layered communications protocol of an active physical layer connection is maintained when all physical layer channels have been released." In particular, the "physical layer channels" referenced in claim 1 are those in the cellular layered protocol that are released when the cell phone hangs up.

ix. (Claim 2) wherein the IEEE 802 transceiver is configured to transmit TCP/IP data when the communication session is maintained and all assigned physical layer channels have been released.

The Jawanda '581 patent inherently discloses this additional limitation of claim 2 when it discloses the use of Mobile IP and RFC 2002 from the Internet Engineering Task Force, as well as the design option of only transmitting data to the WLAN network while having a concurrent connection to the cellular and WLAN networks. RX-3519C (Bims WS) at Q645-652, Q716. A person of ordinary skill in the art would understand that the use of Mobile IP implies capability to transmit TCP/IP data across a wireless network. *Id.*; RX-0032 at col. 6, lns. 1-20.

x. (Claim 3) wherein at least one of the plurality of layers above the physical layer is any one of a TCP layer, a IP layer, or a network layer.

The Jawanda '581 patent inherently discloses the additional limitation of claim 3 when it discloses the use of underlying cellular standards such as GPRS and CDMA, as well as Mobile IP and RFC 2002 from the Internet Engineering Task Force. RX-3519C (Bims WS) at Q653-658, Q717; RX-3519.2C (Bims Suppl. WS) at Q1858-1860. A person of ordinary skill in the art would understand that the use of Mobile IP implies transmission of data using an IP layer, which is a network layer, and the capability to transmit a TCP layer across a wireless network. *Id.* at Q648-650.

xi. (Claim 4) wherein the cellular transceiver and the IEEE 802 transceiver are provided in a single unit.

The Jawanda '581 patent discloses or renders the additional limitation in this claim obvious. RX-3519C (Bims WS) at Q659-671. Claim 1 of Jawanda claims a "mobile computer terminal" that comprises both a WLAN and a cellular transceiver, is able to communicate data using either transceiver, and uses the WLAN transceiver to communicate when it detects the availability of a WLAN. RX-0032 at col. 6, lns. 24-42. Figure 1 of Jawanda shows that this system includes a mobile terminal 14 and a cellular telephone 16 coupled by an RS-232 connector. RX-0032 at Fig. 1. All of the elements are coupled into one functional unit as shown in Figure 2, and together comprise a "single unit." *See* RX-3519C (Bims WS) at Q666-669.

Furthermore, the teachings of Jawanda render this claim limitation obvious to a person of ordinary skill in the art. InterDigital's expert Dr. Stark testified that a person of ordinary skill would have known that the system shown in Jawanda could have been implemented by using a PCMCIA card inserted into the laptop to provide wireless or cellular transceivers in the same laptop unit, and that there was "nothing novel" about this configuration. Stark Tr. 2116-2117, 2118-2119.

xii. (Claim 5) wherein the subscriber unit is configured in a mobile telephone or personal digital assistant.

Jawanda renders the additional limitation of this claim obvious. *See* RX-3519C (Bims WS) at Q 672-675. As shown above for claim 4, it would have been obvious to combine the components of the system described in Jawanda in a single housing such as a portable computer. Aside from size and computing power, there is no functional difference between a personal digital assistant and a portable computer. RX-3519C (Bims WS) at Q666-669, Q674-675). Such

differences are merely a design choice driven by the availability of small components, price and demand. *Id.* Therefore, this claim limitation is rendered obvious in light of Jawanda.

xiii. (Claim 6) wherein the signal is a beacon frame or probe response frame.

Jawanda discloses the additional limitation of claim 6. RX-3519C (Bims WS) at Q676-681, Q715. As shown for claim 1, the Jawanda explicitly teaches that detection of the WLAN is performed by receiving an "advertisement" message from the WLAN, which is the claimed "beacon frame" of claim 6. Furthermore, as shown above, it would have been obvious to combine the system taught in Jawanda with an IEEE 802.11 WLAN. The IEEE 802.11 Standard discloses a beacon frame. RX-0097 (IEEE 802.11-1997) at §11.1.2.2; RX-3519C (Bims WS) at Q562-576, Q678-681.

xiv. (Claim 7) wherein at least one of the plurality of physical layer channels is a data channel.

The Jawanda '581 patent inherently discloses the claim 7 limitation "at least one of the plurality of physical layer channels is a data channel" when it discloses datagrams transmitted across the wireless network. RX-3519C (Bims WS) at Q682-686, Q718; RX-0032 at col. 4, lns. 35-47. Furthermore, the prior art GPRS and CDMA standards disclosed in Jawanda teach using a data channel. *Id.* at Q686; RX-3519.2C (Bims Suppl. WS) at Q1864-1866.

xv. (Claim 8) wherein the cellular network is a licensed code division multiple access network and the WLAN is an unlicensed 802.11 network.

Jawanda renders obvious this additional claim limitation. RX-3519C (Bims WS) at Q687-694, Q719-720. As discussed above, Jawanda discloses a licensed CDMA network. RX-3519C (Bims WS) at Q691; RX-0032 at col. 3, lns. 6-9. It would have been obvious for a person of ordinary skill in the art to combine the teachings of Jawanda with the IEEE 802.11

Standard. *See* RX-3519C (Bims WS) at Q689. The IEEE 802.11 Standard states that its intended use is for unlicensed ISM applications. RX-0097 (IEEE 802.11-1997 Standard) at §15.1; RX-3519C (Bims WS) at Q690.

xvi. (Claim 9) wherein the cellular transceiver is a code division multiple access transceiver and the IEEE 802 transceiver is an 802.11 transceiver.

Jawanda renders obvious this additional claim limitation. RX-3519C (Bims WS) at Q687-694, Q719-720. As discussed above, Jawanda discloses a licensed CDMA network. RX-3519C (Bims WS) at Q691; RX-0032 at col. 3, lns. 6-9. It would have been obvious for a person of ordinary skill in the art to combine the teachings of Jawanda with the IEEE 802.11 Standard. *See* RX-3519C (Bims WS) at Q689. The IEEE 802.11 Standard states that its intended use is for unlicensed ISM applications. RX-0097 (IEEE 802.11-1997 Standard) at §15.1; RX-3519C (Bims WS) at Q690.

xvii. (Claim 10) A subscriber unit comprising:

Jawanda teaches or renders obvious this limitation for the reasons stated above with respect to the discussion of claim 1. *See* RX-3519C (Bims WS) at Q695-703; RX-3519.2C (Bims Suppl. WS) at Q1873-1884.

xviii. (Claim 10) a first transceiver configured to communicate with a first wireless network;

Jawanda teaches or renders obvious this limitation for the reasons stated above with respect to the discussion of claim 1. *See* RX-3519C (Bims WS) at Q695-703; RX-3519.2C (Bims Suppl. WS) at Q1873-1884.

xix. (Claim 10) a second transceiver configured to communicate with an IEEE 802 compliant wireless network; and

Jawanda teaches or renders obvious this limitation for the reasons stated above with respect to the discussion of claim 1. *See* RX-3519C (Bims WS) at Q704-706.

xx. (Claim 10) a processor coupled to the first transceiver and the second transceiver, and configured to operate a first protocol stack for the first wireless network and a second protocol stack for the IEEE 802 compliant wireless network,

The evidence shows that the Jawanda '581 patent discloses this element. *See* RX-3519C (Bims WS) at Q707-710. Under the claim construction for this limitation adopted above, all that is required is "hardware and/or software coupled to the first and second transceivers and capable of operating a first protocol stack for the first wireless network and a second protocol stack for the IEEE 802 compliant wireless network." *See* CX-1306C (Stark WS) at Q743. Given this interpretation of the claim, the protocol stacks on the two transceivers in the Jawanda system are operated by hardware alone, or hardware and software, and it is necessarily true that a collection of hardware and software must be "coupled" to the two transceivers in order to transmit or receive data. *See, e.g.*, RX-3519C (Bims WS) at Q710; RX-0032 at col. 3, lns. 29-55.

xxi. (Claim 10) wherein a plurality of physical layer channels are available for assignment for communication with the first wireless network, and to maintain a communication session above a physical layer of the first protocol stack when none of the plurality of physical layer channels are assigned.

Jawanda teaches or renders obvious this limitation for the reasons stated above with respect to the discussion of the claim 1 limitation "a communication session above the physical layer is maintained when all assigned physical layer channels have been released." *See* RX-3519C (Bims WS). at Q 711-713; RX-3519.2C (Bims Suppl. WS) at Q 1905-1921.

xxii. (Claim 11) a detector configured to detect the IEEE 802 compliant wireless network; and a circuit configured to select the second transceiver in response to detection of the IEEE 802 compliant wireless network.

Jawanda discloses or renders obvious the additional limitations of this claim for the same reasons stated in the discussion of the corresponding elements of claim 1: (i) a cellular transceiver configured to communicate with a cellular network via a cellular layered communication protocol; (ii) a detector configured to detect a signal from the WLAN; and (iii) a circuit coupled to the cellular transceiver and the IEEE 802 transceiver and configured to communicate using the IEEE 802 transceiver in response to the signal. *See* RX-3519C (Bims WS) at Q539-547, Q562-576, Q577-585 Q714, Q721.

xxiii. (Claim 12) wherein detection of the IEEE 802 compliant wireless network is based on receipt of a beacon frame or probe response frame.

Jawanda discloses the additional limitation of claim 12. RX-3519C (Bims WS) at Q676-681, Q715. As shown for claim 1, the Jawanda explicitly teaches that detection of the WLAN is performed by receiving an "advertisement" message from the WLAN, which is the claimed "beacon frame" of claim 12. Furthermore, as shown above, it would have been obvious to combine the system taught in Jawanda with an IEEE 802.11 WLAN. The IEEE 802.11 Standard discloses a beacon frame. RX-0097 (IEEE 802.11-1997) at §11.1.2.2; RX-3519C (Bims WS) at Q562-576, Q678-681.

xxiv. (Claim 13) wherein the second transceiver is configured to transmit TCP/IP data when the communication session is maintained when none of the plurality of physical layer channels are assigned.

The Jawanda '581 patent inherently discloses this additional limitation of claim 13 when it discloses the use of Mobile IP and RFC 2002 from the Internet Engineering Task Force, as

well as the design option of only transmitting data to the WLAN network while having a concurrent connection to the cellular and WLAN networks. RX-3519C (Bims WS) at Q645-652, Q716. A person of ordinary skill in the art would understand that the use of Mobile IP implies capability to transmit TCP/IP data across a wireless network. *Id.*; RX-0032 at col. 6, lns. 1-20.

xxv. (Claim 14) wherein at least one of the plurality of layers above the physical layer is any one of a TCP layer, a IP layer, or a network layer.

The Jawanda '581 patent inherently discloses the additional limitation of claim 14 when it discloses the use of underlying cellular standards such as GPRS and CDMA, as well as Mobile IP and RFC 2002 from the Internet Engineering Task Force. RX-3519C (Bims WS) at Q653-658, Q717; RX-3519.2C (Bims Suppl. WS) at Q1858-1860. A person of ordinary skill in the art would understand that the use of Mobile IP implies transmission of data using an IP layer, which is a network layer, and the capability to transmit a TCP layer across a wireless network. *Id.* at Q648-650.

xxvi. (Claim 15) wherein at least one of the plurality of physical layer channels is a data channel.

The Jawanda '581 patent inherently discloses the claim 15 limitation "at least one of the plurality of physical layer channels is a data channel" when it discloses datagrams transmitted across the wireless network. RX-3519C (Bims WS) at Q682-686, Q718; RX-0032 at col. 4, lns. 35-47. Furthermore, the prior art GPRS and CDMA standards disclosed in Jawanda teach using a data channel. *Id.* at Q686; RX-3519.2C (Bims Suppl. WS) at Q1864-1866.

xxvii. (Claim 16) wherein the first wireless network is a licensed code division multiple access network and the IEEE 802 compliant wireless network is an unlicensed IEEE 802.11 network.

Jawanda renders obvious this additional claim limitation. RX-3519C (Bims WS) at Q687-694, Q719-720. As discussed above, Jawanda discloses a licensed CDMA network. RX-3519C (Bims WS) at Q691; RX-0032 at col. 3, lns. 6-9. It would have been obvious for a person of ordinary skill in the art to combine the teachings of Jawanda with the IEEE 802.11 Standard. *See* RX-3519C (Bims WS) at Q689. The IEEE 802.11 Standard states that its intended use is for unlicensed ISM applications. RX-0097 (IEEE 802.11-1997 Standard) at §15.1; RX-3519C (Bims WS) at Q690.

xxviii. (Claim 17) wherein the first transceiver is a code division multiple access transceiver and the second transceiver is an 802.11 transceiver.

Jawanda renders obvious this additional claim limitation. RX-3519C (Bims WS) at Q687-694, Q719-720. As discussed above, Jawanda discloses a licensed CDMA network. RX-3519C (Bims WS) at Q691; RX-0032 at col. 3, lns. 6-9. It would have been obvious for a person of ordinary skill in the art to combine the teachings of Jawanda with the IEEE 802.11 Standard. *See* RX-3519C (Bims WS) at Q689. The IEEE 802.11 Standard states that its intended use is for unlicensed ISM applications. RX-0097 (IEEE 802.11-1997 Standard) at §15.1; RX-3519C (Bims WS) at Q690.

xxix. (Claim 18) wherein the first transceiver is a cellular transceiver.

Jawanda discloses or renders obvious the additional limitation of this claim for the same reasons stated in the discussion of the corresponding elements of claim 1: (i) a cellular transceiver configured to communicate with a cellular network via a cellular layered

communication protocol; (ii) a detector configured to detect a signal from the WLAN; and (iii) a circuit coupled to the cellular transceiver and the IEEE 802 transceiver and configured to communicate using the IEEE 802 transceiver in response to the signal. *See* RX-3519C (Bims WS) at Q539-547, Q562-576, Q577-585 Q714, Q721.

b. The Jawanda '581 Patent in Combination with the IEEE 802.11-1997 Standard Alone or with Any One of the GPRS Standards, the Draft UMTS Standards, or the IS-95/IS-657 Standards

As discussed above, the Jawanda '581 patent alone or in combination with any one of the GPRS Standards, the Draft UMTS Standards, or the IS-95/IS-657 Standards renders obvious all of the asserted '970 patent claims. Additionally, Jawanda itself in combination with the IEEE 802.11-1997 standard renders all asserted claims of the '970 patent obvious. *See* RX-3519C (Bims WS) at Q21, Q512-712. The Jawanda Patent inherently discloses all the cellular-related claim limitations by teaching that the cellular functionality can be compliant with the GPRS or CDMA (IS-95/IS-657) standards. *See id.* at Q544-547. The principal claim limitation from the '970 patent that Jawanda does not explicitly or inherently teach requires the use of an IEEE 802.11 transceiver to provide the WLAN functionality discussed in Jawanda. *See id.* at Q555-558. Such a combination, however, is obvious based solely on Jawanda and the IEEE 802.11 standard.

As noted in the '970 patent itself, the IEEE 802.11 standard was the "newly accepted standard" for WLANs. JX-0005 at col. 2, lns. 26-33. A person of ordinary skill in the art would have been motivated to use the "newly accepted" IEEE 802.11 standard for WLANs in conjunction with the WLAN transceiver, inasmuch as this would allow the Jawanda mobile

terminal to communicate with any 802.11 WLAN it encounters when moving from place to place. *See* RX-3519C (Bims WS) at Q551-558.

Inasmuch as InterDigital's expert Dr. Stark claims that certain dependent claims of the '970 patent are not anticipated or rendered obvious by the Jawanda patent because those claims require IEEE 802.11-specific functionality, the combination of the Jawanda Patent and the IEEE 802.11 standard inherently discloses those limitations. *See* CX-1526C (Stark RWS) at Q359-361; RX-3519C (Bims WS) at Q551-576, Q645-652, Q676-681, Q687-694, Q714, Q719-720. For example, claim 6 further claims that the "signal" indicating the presence of a WLAN in claim 1 is a beacon frame or probe response frame. As noted in the '970 patent itself, the use of a beacon frame to indicate the presence of a WLAN is inherently taught in the IEEE 802.11 standard. *See* JX-0005 at col. 9, lns. 1-4; RX-3519C (Bims WS) at Q 676-681. Therefore, the combination of Jawanda and the IEEE 802.11 standard also renders obvious this claim limitation, as well as similar limitations in claims 8, 9, 12, 16, and 17. *Id.* at Q676-681, Q687-694, Q714, Q719-720.

c. The Jawanda '581 Patent in Combination with the Lemiläinen '259 Patent and Any One of the GPRS Standards, the Draft UMTS Standards, or the IS-95/IS-657 Standards

As discussed above, the Jawanda '581 patent alone or in combination with any one of the GPRS Standards, the Draft UMTS Standards or the IS-95/IS-657 Standards renders obvious all of the asserted '970 patent claims.

The Lemiläinen '259 patent also teaches a dual mode terminal having both a cellular transceiver and an IEEE 802.11 transceiver to permit data communication over either selected transceiver. It would have been obvious to combine Jawanda with Lemiläinen, inasmuch as this combination is motivated by the fact that both references address the problem of providing

alternative data communication paths for optimal transmission speed. RX-3519C (Bims WS) at Q558-560, Q833-835. Both permit switching from a cellular transceiver to a WLAN transceiver when one is available to obtain higher data transmission speed. *Id.* It would have been obvious to use improvements taught by Lemiläinen, such as the use of a transceiver compliant with the IEEE 802.11 standard, for the WLAN transceiver in the Jawanda mobile computer terminal. *Id.*

For instance, the additional limitation of dependent claim 6 requires that the "signal" indicating the presence of a WLAN in claim 1 is a beacon frame or probe response frame. As noted in the '970 patent itself, the use of a beacon frame to indicate the presence of a WLAN is taught in IEEE 802.11. JX-0005 at col. 9, lns. 1-4. Therefore, the combination of Jawanda and the Lemiläinen '259 patent, which teaches the use of an IEEE 802.11 transceiver, also makes this claim requirement obvious.[79]

d. The Lemiläinen '259 Patent Alone or Combination with Any One of the GPRS Standards, the Draft UMTS Standards, or the IS-95/IS-657 Standards

The evidence shows, clearly and convincingly, that the Lemiläinen '259 patent also renders obvious all the elements of claims 1 and 10 of the '970 patent, both alone or in combination with any one of the GPRS Standards, the Draft UMTS Standards, or the IS-95/IS-657 Standards. *See* RX-3519C (Bims WS) at Q722-924; RX-3519.2C (Bims Suppl. WS) at Q1807-1809, Q1897-1904, Q1943-1946. The Lemiläinen '259 patent qualifies as prior art under 35 U.S.C. § 102(e)(2) inasmuch it is a U.S. Patent that issued from an application filed

[79] The parties dispute whether Respondents disclosed its arguments regarding the combination of Jawanda with Lemiläinen in its pre-hearing brief. *See* GR12 Filing at 13. A review of Respondents' pre-hearing brief shows that these arguments were disclosed, for example, at page 616, on which Respondents explained that "the Lemiläinen 259 Patent (RX-0034) anticipates the independent claims of the 970 Patent, and renders all of the claims obvious alone or in combination with other art including the Jawanda 581 Patent, the GPRS Standards, the IS-95/IS-657 Standards, and the Draft UMTS Standards."

on May 10, 1999, which predates the effective filing date of the '970 patent. RX-0034 (Lemiläinen '259 patent).

At a high level, Lemiläinen discloses a dual mode device, such as a GPRS/IEEE 802.11 device, that can communicate with multiple types of wireless networks, choose a wireless network, and then configure itself to select which network to use "without terminating active connections." RX-0034 at col. 3, lns. 23-24; RX-3519C (Bims WS) at Q728-775. Lemiläinen also explains that the dual mode device changes between different connection types "in such a way that the user does not even notice the transition." RX-0034 at col. 3, lns. 25-26.

As a dual mode cellular/IEEE 802.11 device, much of the same analysis that applied to the Jawanda '581 patent (RX-0032) applies equally to the Lemiläinen '259 patent (RX-0034). *Compare* RX-3519C (Bims WS) at Q512-721, *with id.* at Q722-924 (discussing Jawanda and Lemiläinen, respectively). For example, both patents disclose that the cellular functionality in a dual-mode cellular/WLAN device can be compliant with the GPRS standards. *Compare* RX-0032 (Jawanda) at col. 3, lns. 1-3, *with* RX-0034 (Lemiläinen) at col. 4, lns. 14-32. Lemiläinen, moreover, expressly discloses that the WLAN functionality can be compliant with the IEEE 802.11 standard. RX-0034 (Lemiläinen) at Fig. 4; col. 4, lns. 14-32; *see* RX-3519C (Bims WS) at Q743-751. Additionally, Lemiläinen also expressly discloses a dual-mode subscriber unit that consists of a single device. Accordingly, Lemiläinen renders obvious each of the asserted independent claims of the '970 patent, as well as asserted dependent claims 2-7 and 11-15.

Asserted dependent claims 8-9 and 16-17 require CDMA functionality, which is not disclosed by Lemiläinen either expressly or inherently. Nevertheless, the evidence shows those claims are rendered obvious based on combinations of Lemiläinen with any one of the several

references that disclose CDMA functionality, including the Draft UMTS standards and the IS-95/IS-657 standards. *See, e.g.*, RX-3519C (Bims W) at Q531-538, Q788-795, Q871, Q875, Q923-924.

The below table was included in the Respondents' post-hearing brief, and purports to identify how each limitation of each asserted claim is disclosed or rendered obvious by Lemiläinen. As discussed above, InterDigital's expert Dr. Stark does not dispute that many of these limitations are taught in the prior art. The remaining limitations will be discussed in more detail below.

Claim Element	Summary of Proof of Anticipation/Obviousness
1 Preamble: subscriber unit	RX-0034 (Lemiläinen Patent) at 2:66-3:4, 4:14-19, Figs 1-2, 6; RX-3519C (Bims WS) at Q. 728-33; conceded at hearing (Stark Tr. 2118:19-2119:19); not a limitation
1A: cellular transceiver	RX-0034 (Lemiläinen Patent) at 1:39-2:4, 4:19-32, 4:61-5:21, 9:41-50, Figs. 1-2, 6; RX-3519C (Bims WS) at Q. 734-42; not disputed
1B: IEEE 802 transceiver	RX-0034 (Lemiläinen Patent) at 4:20-32, 4:61-5:5, 6:15-28, 7:55-8:4, 9:14-32, Figs. 1-2, 4, 6; RX-3519C (Bims WS) at Q. 743-51); not disputed
1C: WLAN detector	RX-0034 (Lemiläinen Patent) at 7:55-8:4, 10:31-51; RX-3519C (Bims WS) at Q. 752-66; not disputed
1D: circuit to use WLAN	*See* below. *See also* RX-0034 (Lemiläinen 259 Patent) at 2:7-3:4, 3:14-41, 4:14-5:32, 10:34-11:6, 12:57-13:42, Figs. 2-3c, 8a; RX-3519C (Bims WS) at Q. 767-75; not disputed under InterDigital's proposed construction
1E: plurality of layers above physical layer	RX-0034 (Lemiläinen 259 Patent) at 5:5-32, 6:25-56, 7:61-67, 7:29-36, 4:20-32; RX-3519C (Bims WS) at Q. 776-95; not disputed
1F: plurality of channels available	*See* below. Inherent in Lemiläinen; also obvious in combination with GPRS, UMTS, or IS-95/IS-657. *See also* RX-0034 (Lemiläinen 259 Patent) at 6:29-49, 7:20-28, 4:20-32, 4:61-5:14, 5:19-21; RX-3519C (Bims WS) at Q. 796-821; RX-3519.2C (Bims Suppl. WS) at Q. 1823-28; Stark Tr. 438:17-22; not disputed under Respondents' proposed construction
1G: maintain session	*See* below. *See also* RX-0034 (Lemiläinen 259 Patent) at 3:7-13, 4:14-32, 8:62-9:13, 11:52-56, 12:57-13:11, 13:33-42, Figs. 1-2, 6; RX-3519C (Bims WS) at Q. 822-36; RX-3519.2C (Bims Suppl. WS) at Q. 1840-48.
10 preamble: subscriber unit	*See* 1 Preamble; *see also* RX-3519C (Bims WS) at Q. 877-81.
10A: first transceiver	*See* 1A; *see also* RX-3519C (Bims WS) at Q. 882-90.

10B: second transceiver	*See* 1B; *see also* RX-3519C (Bims WS) at Q. 891-99.
10C: processor coupled	RX-0034 (Lemiläinen 259 Patent) at 4:33-5:27, 10:53-11:6, Figs. 3a-c, 7-8a; RX-3519C (Bims WS) at Q. 900-08; not disputed
10D: channels available	*See* 1F; *see also* RX-3519C (Bims WS) at Q. 909-13.
10E: maintain session	*See* 1G; *see also* RX-3519C (Bims WS) at Q. 914-15.
2, 13: TCP/IP over WLAN	RX-0034 (Lemiläinen 259 Patent) at 6:15-278, 8:62-9:13; RX-3519C (Bims WS) at Q. 837-42, 919; not disputed
3, 14: TCP/IP or network layer	RX-0034 Lemiläinen 259 Patent at 5:22-31, 6:25-56, 6:64-7:24, 8:4-6, Fig. 4; RX-3519C (Bims WS) at Q. 843-46, 920; not disputed
4: single unit	RX-0034 Lemiläinen 259 Patent at Fig. 2, 4:14-32, 1:36-46, 1:59-66; RX-3519C (Bims WS) at Q. 847-54; not disputed
5: mobile phone or PDA	RX-0034 Lemiläinen 259 Patent at 5:5-12, 1:39-2:4; RX-3519C (Bims WS) at Q. 855-57; not disputed
6: 12: beacon frame	*See* below. *See also* RX-0034 (Lemiläinen 259 Patent) at 10:31-39, 13:25-26, 10:34-36, 13:16-36; RX-3519C (Bims WS) at Q. 680-81, 743-66, 858-64, 917-18; CX-1314C (Gorsuch WS) at Q. 115; RX-0097 (IEEE 802.11 Std.) §§ 7.2.3.1, 11.1.
7, 15: data channel	RX-0034 Lemiläinen 259 Patent at 4:61-5:14, 6:29-49, 7:20-28, 9:8-12, Abstract, 1:59-66.; RX-3519C (Bims WS) at Q. 865-68, 921; not disputed
8, 16: licensed CDMA, unlicensed WLAN	obvious over Lemiläinen 259 Patent in combination with any one of the knowledge of one of ordinary skill in the art, the GPRS standards, UMTS draft standards, and the IS-95/IS-657 standards; RX-3519C (Bims WS) at Q. 869-72, 922; not disputed
9, 17: CDMA and 802.11	obvious over Lemiläinen 259 Patent in combination with any one of the knowledge of one of ordinary skill in the art, the GPRS standards, UMTS draft standards, and the IS-95/IS-657 standards; RX-3519C (Bims WS) at Q. 873-76, 923; not disputed
11: detector circuit, circuit to use WLAN	*See* 1C, 1D; *see also* RX-3519C (Bims WS) at Q. 916.
18: cellular transceiver	*See* 1A; *see also* RX-3519C (Bims WS) at Q. 924.

Resps. Br. at 457-58.

i. (Claim 1) a circuit coupled to the cellular transceiver and the IEEE 802 transceiver and configured to communicate using the IEEE 802 transceiver in response to the signal;

InterDigital's expert Dr. Stark does not dispute that Lemiläinen discloses this limitation under the construction of this claim limitation adopted above, but does contend that there is no disclosure in the Lemiläinen '259 patent of "automatically" connecting directly to a WLAN when such a connection is possible. CX-1526C (Stark RWS) at Q383-390. Lemiläinen does, however, describe switching from communicating with a cellular network to a WLAN network once it moves within range of the WLAN without intervening intervention from a user:

> A reason for the connection change can also be that the terminal A enters the operation range of such a data network which the user has given a higher priority than the data network active at that moment. The terminal A is, for example, connected to a GSM mobile communication network and the user of the terminal arrives in an office where a wireless local area network is available.

RX-0034 at col. 12, ln. 57 – col. 13, ln. 42.

Lemiläinen explains that the appropriate network selection takes place "without the initiator of the communication having to know to which data transmission network the terminal is coupled at a given time." RX-0034 at col. 3, lns. 37-41. This is the same "automatic" connection required under Respondents' proposed construction of this claim limitation. Accordingly, Lemiläinen discloses this limitation.

ii. (Claim 1) and a plurality of physical layer channels are available for assignment for communication with the cellular network

Applying the construction of this claim limitation adopted above, and as explained in connection with Jawanda, is disclosed in the functionality implicit in a GPRS device. Under the GPRS standards, a phone can use between one and eight traffic channels to transfer uplink

information. While a network identifies the channels available for use, the mobile station ultimately decides whether or not to transmit information on these channels. *See, e.g.*, RX-0034 (Lemiläinen) at col. 4, lns. 14-32; RX-3519C (Bims WS) at Q740, Q749, Q780-781. Also, as described above in the context of the Jawanda Patent, Dr. Stark testified that GPRS handsets could transmit on up to five uplink channels. Stark Tr. 2127-2128.

To the extent that this limitation is not inherent in the disclosure of Lemiläinen, it would be obvious to one of ordinary skill in the art to combine the teachings of Lemiläinen with the multi-channel uplink capabilities of GPRS. Lemiläinen itself provides strong motivation to combine, specifically identifying the GPRS standard and its high-speed capabilities. Finally, this limitation would also be obvious in light of the UMTS draft standards, which are higher-speed successors to the GPRS standard explicitly disclosed in Lemiläinen, or the IS-95/IS-657 standards. *See* RX-3519C (Bims WS) at Q792-795; RX-3519.2C (Bims Suppl. WS) at Q1823-1828; Stark Tr. 438.[80]

iii. (Claim 1) and a communication session above the physical layer is maintained when all assigned physical layer channels have been released.

The Lemiläinen '259 patent teaches this element in two different ways. First, it expressly discloses using GPRS functionality in a dual-mode device, thereby inherently disclosing this element. *See, e.g.*, RX-3519C (Bims WS) at Q829-830. Second, the Lemiläinen '259 patent also discloses maintaining connections even after releasing the physical layer channels of one network and changing to another network. RX-3519C (Bims WS) at Q828-829, Q836.

[80] For the same reasons set forth in this section, Lemiläinen also discloses the claim 10 limitation "wherein a plurality of physical layer channels are available for assignment for communication with the first wireless network."

As described above in the context of Jawanda, Dr. Stark testified that GPRS phones would maintain a PDP context both in between and after transmissions. Stark Tr. 2144-2146. Lemiläinen therefore inherently discloses this claim limitation through its reliance on the GPRS standards for cellular connectivity. Additionally, this limitation would be obvious in light of the Lemiläinen patent combined with either the Draft UMTS or IS-95/IS-657 Standards for similar reasons. RX-3519C (Bims WS) at Q796-821; RX-3519.2C (Bims Suppl. WS) at Q1840-1848.

Lemiläinen also discloses maintaining a communications session when terminating a connection with a cellular network, thereby releasing assigned physical layer channels, by rerouting network layer information though an IEEE 802.11 WLAN. RX-3519C (Bims WS) at Q828-829. For example, Lemiläinen describes shifting "an active connection from one data network to another." RX-0034 at col. 12, ln. 57 – col. 13, ln. 42. That connection consists of a connection made at the TCP protocol layer, which is the same layer as the network layer identified in the '970 patent. *Compare* RX-0034 (Lemiläinen) at col. 13, lns. 8-9, *with* JX-0005 ('970 patent) at col. 5, lns. 17-21; col. 6, lns. 20-29. Inasmuch as the connection at the TCP layer is maintained, data can be transmitted to or from the subscriber unit using the same IP address, and "the communication network used at a given time can be changed without terminating active connections." RX-0034 at col. 3, lns. 22-24.[81]

iv. (Claim 6) wherein the signal is a beacon frame or probe response frame

Lemiläinen teaches this element in two ways. First, it expressly discloses using IEEE 802.11 compliant functionality in a dual-mode device, thereby inherently disclosing this element.

[81] For the same reasons set forth in this section, Lemiläinen also discloses the claim 10 limitation "and to maintain a communication session above a physical layer of the first protocol stack when none of the plurality of physical layer channels are assigned."

See, e.g., RX-3519C (Bims WS) at Q680-681, Q743-766, Q861-862. Second, Lemiläinen discloses the use of WLAN registration messages, which a person of ordinary skill in the art would recognize as corresponding to beacon frames. RX-3519C (Bims WS) at Q860.[82]

e. The Draft UMTS Standards in Combination with the Lemiläinen '259 Patent

The evidence also shows that the asserted '970 patent claims are rendered obvious in view of the Draft UMTS standards in combination with the Lemiläinen '259 patent. As discussed above, the Draft UMTS Standards disclose a dual-mode cellular/WLAN device that switches between the cellular network and WLAN. RX-3519C (Bims WS) at Q1280-1309.

While the Draft UMTS standards do not expressly disclose a dual-mode UMTS/IEEE 802.11 device, such a combination would have been obvious to one of skill in the art based on the Lemiläinen '259 patent. RX-3519C (Bims WS) at Q1279-1310. In particular, the Draft UMTS Standards include an express teaching of combining cellular functionality with WLAN functionality in a single device and switching between them. RX-3519C (Bims WS) at Q1280-1309. Moreover, one of skill in the art would recognize IEEE 802.11 networks as substitutes for the HIPERLAN2 networks referenced in the Draft UMTS standards, inasmuch as both share similar data rates and mobility features. *Id.* at Q1275-1309, Q1408.

f. The Draft UMTS Standards in Combination with the IEEE 802.11 Standard

The evidence adduced by Respondents also show that the Draft UMTS Standards and IEEE 802.11 standards render the '970 patent claims obvious. RX-3519C (Bims WS) at Q1178-1179, Q1279-1283. As explained above, the Draft UMTS Standards disclose a

[82] For the same reasons set forth in this section, Lemiläinen also discloses the claim 11 limitation "wherein detection of the IEEE 802 compliant wireless network is based on receipt of a beacon frame or probe response frame."

dual-mode WCDMA/WLAN device that uses the HIPERLAN2 standard. The purpose of the dual-mode device in the Draft UMTS Standards is to provide higher data rates when the WLAN is available, *i.e.*, in "hotspot environments." *Id.* Q1281. That dual-mode device described by the Draft UMTS Standards discloses all the elements of the asserted '970 patent claims, with the sole exception of WLAN functionality that is explicitly compliant with the IEEE 802.11 standard. *Id.* at Q1178-1409. Replacing the HIPERLAN2 functionality disclosed in the Draft UMTS Standards with the alternative IEEE 802.11 functionality would have been obvious to one of skill in the art. *Id.* at Q1282-1309. Accordingly, the combination of the Draft UMTS Standards and IEEE 802.11 standards renders obvious the asserted '970 patent claims.

g. Secondary Considerations of Nonobviousness

InterDigital argues that secondary indicia support a finding of nonobviousness, including skepticism in the industry, unexpected results, commercial success, long-felt but unsolved need, licensing by others, and simultaneous development by others. *See* Compls. Br. at 339-44. InterDigital's arguments are not persuasive, inasmuch as the evidence adduced by InterDigital does not establish the requisite nexus between the secondary considerations and the '970 patent. In addition, the evidence does not support InterDigital's proposed findings of teaching away, commercial success, long-felt need and failure of others, unexpected results, licensing, and simultaneous development by others.

As an initial matter, none of the evidence adduced by InterDigital with respect to secondary considerations provides a nexus to any allegedly novel aspects of the asserted claims of the '970 patent, but rather is directed to dual-mode phones generally. *See* RX-3519C (Bims WS) at Q675-1751. It is therefore determined that InterDigital's evidence fails to satisfy the requirement that it have a nexus to the claimed '970 invention.

With respect to InterDigital's claim that there was skepticism in the industry and an alleged teaching away from the '970 invention, the evidence shows that any skepticism in the industry was based on the financial feasibility of a dual-mode phone, and not on technical feasibility. *See* RX-3519C (Bims WS) at Q1675-1696; RX-3401C (Gorsuch Dep.) at 76-77. Inasmuch as this economic skepticism on behalf of cellular operators shows certainty as to the technical feasibility, and not skepticism, the evidence weighs in favor of a finding of obviousness. *See* RX-3519C (Bims WS) at Q1688; *see also id.* at Q1697-1700 (addressing whether the prior art teaches away).

InterDigital has not shown any nexus between the claimed '970 inventions and the evidence it proffers to show commercial success. InterDigital relies on the commercial success of the iPhone 4 and iPhone 4S, as well as on general reports about the market penetration of dual-mode devices, but none of this evidence has a sufficient nexus to the asserted claims of the '970 patent. *See* RX-3519C (Bims WS) at Q1701-1718. It is argued that the commercial success of the iPhone 4 and iPhone 4S was driven by the invention claimed in the '970 patent because many users wanted to take advantage of the additional speeds the iPhones provided through HSUPA and EV-DO Rev. A. *See* CX-1314C (Gorsuch WS) at Q203-209. InterDigital has not shown, however, that the mass adoption of the iPhones in question were due to their HSUPA or EV-DO capabilities, instead of the many other features that drove iPhone success. *See* RX-3519C (Bims WS) at Q1713-1714. Therefore, InterDigital has not demonstrated that the commercial success of products incorporating a dual-mode capability is necessarily linked to the '970 inventions.

As for InterDigital's allegations that there was a long-felt need in the industry for the solutions provided in the '970 patent, as well as a failure of others to achieve a dual-mode

device, the evidence shows that, at the time of the '970 invention, cellular operators were in fact opposed to heterogeneous networks. CX-1526C (Stark RWS) at Q1010-1011; *see* RX-3519C (Bims WS) at Q1719-1726. Moreover, InterDigital's designated witness testified that he was not aware of any specific failure of others in the industry with respect to the '970 claimed inventions. RX-3406C (Gorsuch Dep.) at 188-191. Accordingly, InterDigital has not shown either a long-felt need or failure by others.

The evidence also does not support InterDigital's claim of unexpected results. In fact, record evidence demonstrates that the claimed '970 invention works exactly as one of ordinary skill in the art would have expected it to work in 1999. RX-3519C (Bims WS) at Q1739. Therefore, InterDigital has not shown unexpected results.

The record evidence fails to show that any third party agreed to license InterDigital's patent portfolio based on the '970 patent or any related patent. *See* RX-3519C (Bims WS) at Q1741-1751. The fact that the '970 patent or a related patent was identified as part of licensing discussions does not by itself demonstrate the required nexus between the '970 patent and the license. Therefore, the evidence that the '970 patent has been licensed does not weigh in favor of a finding of nonobviousness.

InterDigital's final argument relating to secondary considerations of nonobviousness, that of simultaneous development by others, is also not persuasive. Specifically, there are multiple prior art references that disclose the concepts of the '970 patent, and each reference appears to have independently developed around the timeframe of InterDigital's alleged conception of the '970 patent. *See* RX-3519C (Bims WS) at Q1752-1759.

VIII. Domestic Industry

A. General Principles of Law

A violation of section 337(a)(1)(B), (C), (D), or (E) can be found "only if an industry in the United States, with respect to the articles protected by the patent, copyright, trademark, mask work, or design concerned, exists or is in the process of being established." 19 U.S.C. § 1337(a)(2). Section 337(a) further provides:

> (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, mask work, or design 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).

These statutory requirements consist of an economic prong (which requires certain activities)[83] and a technical prong (which requires that these activities relate to the intellectual property being protected). *Certain Stringed Musical Instruments and Components Thereof*, Inv. No. 337-TA-586, Comm'n Op. at 13 (May 16, 2008) ("*Stringed Musical Instruments*"). The

[83] The Commission practice is usually to assess the facts relating to the economic prong at the time that the complaint was filed. *See Certain Coaxial Cable Connectors and Components Thereof and Products Containing Same*, Inv. No. 337-TA-560, Comm'n Op. at 39 n.17 (Apr. 14, 2010) ("We note that only activities that occurred before the filing of a complaint with the Commission are relevant to whether a domestic industry exists or is in the process of being established under sections 337(a)(2)-(3).") (citing *Bally/Midway Mfg. Co. v. U.S. Int'l Trade Comm'n*, 714 F.2d 1117, 1121 (Fed. Cir. 1983)). In some cases, however, the Commission will consider later developments in the alleged industry, such as "when a significant and unusual development occurred after the complaint has been filed." *See Certain Video Game Systems and Controllers*, Inv. No. 337-TA-743, Comm'n Op., at 5-6 (Jan. 20, 2012) ("[I]n appropriate situations based on the specific facts and circumstances of an investigation, the Commission may consider activities and investments beyond the filing of the complaint.").

burden is on the complainant to show by a preponderance of the evidence that the domestic industry requirement is satisfied. *Certain Multimedia Display and Navigation Devices and Systems, Components Thereof, and Products Containing Same*, Inv. No. 337-TA-694, Comm'n Op. at 5 (July 22, 2011) ("*Navigation Devices*").

"With respect to section 337(a)(3)(A) and (B), the technical prong is the requirement that the investments in plant or equipment and employment in labor or capital are actually related to 'articles protected by' the intellectual property right which forms the basis of the complaint." *Stringed Musical Instruments* at 13-14. "The test for satisfying the 'technical prong' of the industry requirement is essentially same as that for infringement, i.e., a comparison of domestic products to the asserted claims." *Alloc, Inc. v. Int'l Trade Comm'n*, 342 F.3d 1361, 1375 (Fed. Cir. 2003). "With respect to section 337(a)(3)(C), the technical prong is the requirement that the activities of engineering, research and development, and licensing are actually related to the asserted intellectual property right." *Stringed Musical Instruments* at 13.

With respect to the economic prong, and whether or not section 337(a)(3)(A) or (B) is satisfied, the Commission has held that "whether a complainant has established that its investment and/or employment activities are significant with respect to the articles protected by the intellectual property right concerned is not evaluated according to any rigid mathematical formula." *Certain Printing and Imaging Devices and Components Thereof*, Inv. No. 337-TA-690, Comm'n Op. at 27 (Feb. 17, 2011) ("*Printing and Imaging Devices*") (citing *Certain Male Prophylactic Devices*, Inv. No. 337 TA-546, Comm'n Op. at 39 (Aug. 1, 2007)). Rather, the Commission examines "the facts in each investigation, the article of commerce, and the realities of the marketplace." *Id.* "The determination takes into account the nature of the

investment and/or employment activities, 'the industry in question, and the complainant's relative size.'" *Id.* (citing *Stringed Musical Instruments* at 26).

With respect to section 337(a)(3)(C), whether an investment in domestic industry is "substantial" is a fact-dependent inquiry for which the complainant bears the burden of proof. *Stringed Musical Instruments* at 14. There is no minimum monetary expenditure that a complainant must demonstrate to qualify as a domestic industry under the "substantial investment" requirement of this section. *Id.* at 25. There is no need to define or quantify an industry in absolute mathematical terms. *Id.* at 26. Rather, "the requirement for showing the existence of a domestic industry will depend on the industry in question, and the complainant's relative size." *Id.* at 25-26.

When a complainant relies on licensing[84] to demonstrate the existence of a domestic industry pursuant to section 337(a)(3)(C), the Commission has explained the showing required of the complainant as follows:

> Complainants who seek to satisfy the domestic industry requirement by their investments in patent licensing must establish that their asserted investment activities satisfy three requirements of section 337(a)(3)(C). First, the statute requires that the investment in licensing relate to "its exploitation," meaning an investment in the exploitation of the asserted patent. 19 U.S.C. § 1337(a)(3)(C) . . . . Second, the statute requires that the investment relate to "licensing." 19 U.S.C. § 1337(a)(3)(C) . . . . Third, any alleged investment must be domestic, i.e., it must occur in the United States. 19 U.S.C. § 1337(a)(2), (a)(3). Investments meeting these requirements merit consideration in our evaluation of whether a complainant has satisfied the domestic industry requirement. Only 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. 19 U.S.C. § 1337(a)(3)(C). If a complainant's activity is only partially

[84] A recent Federal Circuit opinion confirms that a finding of domestic industry under section 337(a)(3)(C) can be supported by licensing activities alone. *InterDigital Commc'ns, LLC v. Int'l Trade Comm'n*, 690 F.3d 1318, 1329-30 (Fed. Cir. 2012).

> related to licensing the asserted patent in the United States, the Commission examines the strength of the nexus between the activity and licensing the asserted patent in the United States.

Navigation Devices at 7-8 (footnotes omitted).

In *Navigation Devices*, the Commission held that, "[w]here the complainant's licensing activities and investments involve a group of patents or a patent portfolio, the complainant must present evidence that demonstrates the extent of the nexus between the asserted patent and the complainant's licensing activities and investments." *Navigation Devices* at 9. The Commission provided a non-exhaustive list of factors it may consider to establish the strength of the nexus, including (1) the number of patents in the portfolio, (2) the relative value contributed by the asserted patent to the portfolio, (3) the prominence of the asserted patent in licensing discussions, negotiations and any resulting license agreement, and (4) the scope of technology covered by the portfolio compared to the scope of the asserted patent. *Id.* at 10. "A showing that the asserted patent is relatively important within the portfolio is not required to show a nexus between that patent and the licensing activities . . . but may be one indication of the strength of the nexus." *Id.* at 11.

For the purposes of satisfying the domestic industry requirement a patentee can rely on the activities of a licensee. *See, e.g.*, *Certain Electronic Devices, Including Handheld Wireless Communications Devices*, Inv. Nos. 337-TA-673, 337-TA-667, Order No. 49C at 4-5 (Oct. 15, 2009).

B. InterDigital's Domestic Investments

1. 3G Licensing Investments

The record evidence shows that InterDigital licenses its patents on a portfolio-wide basis. CX-1313C (Brezski WS) at Q43; CX-1311C (Putnam WS) at Q121; CX-1312C (Ditty WS) at

Q122. InterDigital does not track, in the ordinary course of business, expenditures related to licensing specific patents or patent families. CX-1313C (Brezski WS) at Q23-24. InterDigital's Chief Financial Officer, Mr. Richard Brezski, sought to determine InterDigital's expenditures related to licensing its 3G patents, which include licensing the patents asserted in this investigation. To do so, Mr. Brezski first calculated the percentage of time that relevant InterDigital employees devoted to InterDigital's 3G licensing efforts. *Id.* at Q24.

Estimation of InterDigital's 3G licensing investments was a two-step process. CX-1313C (Brezski WS) at Q24. For the first step, more than twenty InterDigital personnel involved in licensing were contacted and asked to estimate the percentage of time they spent on 3G licensing from 2008 through the first half of 2009. *Id.* at Q25-29; CX-1287C (compilation of email responses from InterDigital employees) at IDC-ITC-300001564-97. Those employees included: [

] CX-1313C (Brezski WS) at Q26. Mr. Brezski consolidated those estimates into one spreadsheet and verified the reasonableness of those estimates with Larry Shay, who heads InterDigital's licensing department. *Id.* at Q28-30; CX-1284C (spreadsheet showing licensing efforts costs for InterDigital employees 2008-1H 2009) at IDC-ITC-300001554-55. Mr. Brezski's compilation of those estimates, as well as Mr. Shay's verification of their reasonableness, were uncontested at the hearing. Brezski Tr. at 630 (forgoing cross-examination of Mr. Brezski).

For the second step, Mr. Brezski interviewed by telephone or in person InterDigital's personnel involved in licensing from the second half of 2009 through 2011. CX-1313C (Brezski WS) at Q31-32. Mr. Brezski asked the employees for: (i) their job title and description, (ii) their department or group, (iii) the name of their supervisor or manager, (iv) the names of employees they supervise, (v) their telephone extension, (vi) when they started at their current position, (vii) what prior positions (if any) they held, (viii) the identity of each major area in which they work, (ix) a short description of their 3G licensing responsibilities, (x) what records they maintained regarding their 3G licensing activities, and (xi) an estimated percentage of time spent on 3G licensing activities from July 1, 2009 through December 31, 2010. *Id.* at Q36. Mr. Brezski created a spreadsheet to consolidate the responses to those interviews, and later updated it to include employee estimations for time spent on 3G licensing from 2010 through 2011. *Id.* at Q33, Q36; CX-1286C (licensing efforts notes for InterDigital employees from second half of 2009-2011) at IDC-ITC-3000001559-63.

For an estimate of time spent on 3G licensing during the time period from the second half of 2009 through 2011, Mr. Brezski interviewed employees

] CX-1313C (Brezski WS) at Q35.

The employees were asked to estimate their time spent on 3G licensing activities, which included "activities designed to exploit InterDigital's 3G patents through licensing." CX-1313C (Brezski WS) at Q37. For example, InterDigital employees included in their estimates activities

that involved direct licensing negotiations, preparing claim charts to send to potential licensees for their consideration during the negotiation process, and compliance with license agreements. *Id.* Activities expressly excluded from any estimate were activities relating to litigation, patent prosecution, or due diligence related to patent acquisition. *Id.* at Q38. In a few instances where an employee was on extended leave or had left the company, Mr. Brezski interviewed the employee's direct manager. *Id.* at Q40. As with the estimates for 2008 through the first half of 2009, Mr. Brezski verified the reasonableness and accuracy of these later estimates with the head of the licensing department, Mr. Larry Shay. *Id.* at Q41. As with the estimates for 2008 through the first half of 2009, Mr. Brezski's compilation of the 2009-2011 estimates, as well as Mr. Shay's verification of their reasonableness, were uncontested at the hearing. Brezski Tr. 630 (forgoing cross-examination of Mr. Brezski).

In total, the estimates of percentages of their total time each InterDigital employee spent on 3G licensing from 2008-2011 is consolidated below:

	2008	2009	2010	2011
[	-			

	2008	2009	2010	2011
	-			]

Compls. Br. at 434-35 (citing CX-1313C (Brezski WS) at Q42; CX-1284C (licensing efforts costs for InterDigital employees 2008 - 1H 2009) at IDC-ITC-300001554-55; CX-1286C (licensing effort notes for InterDigital employees from second half of 2009 through 2011) at IDC-ITC-300001559-63).

Inasmuch as the table above includes fewer people than those Mr. Brezski interviewed, InterDigital explains that this reflects the determination that some interviewees (those not listed on the table) did not support InterDigital's 3G licensing activities, and also reflects and the change in responsibilities over time for some employees. CX-1313C (Brezski WS) at Q39. InterDigital therefore contends that "each of the InterDigital employees listed in the table above supported InterDigital's licensing activities at some point from 2008 through 2011." Compls. Br. at 435 (citing CX-1312C (Ditty WS) at Q11-119).

After Mr. Brezski collected each employee's estimation of time spent on 3G licensing from 2008-2011, Mr. Brezski calculated InterDigital's compensation-related investments in 3G

licensing based on those estimates. *See* CX-1313C (Brezski WS) at Q44. To do so, Mr. Brezski collected the W-2 tax forms for each of those employees from 2008 through 2011 to determine the precise compensation paid to them by InterDigital during those time periods. *Id.* at Q45-56; CX-1388C; CX-1390C; CX-1282C; CX-1389C (compilation of InterDigital W-2 tax forms from 2008-2011, respectively). Specifically, those W-2 tax forms identify the total "Medicare wages and tips" compensation paid by InterDigital to each respective employee that year. CX-1313.1C (Brezski WS errata) at Q47; CX-1313C (Brezski WS) at Q47.

Inasmuch as not all employees devoted 100% of their time to 3G licensing activities, Mr. Brezski pro-rated each employee's total compensation by the percentage of time spent on 3G licensing for each calendar year. *See* CX-1313C (Brezski WS) at Q58. Mr. Brezski was thus able to estimate InterDigital's compensation-related investments in 3G licensing based on the percentage of time that the relevant employees devoted to InterDigital's licensing efforts:

	2008	2009	2010	2011	Total 2008-2011 Investment
[	-				

	2008	2009	2010	2011	Total 2008-2011 Investment
					]

Compls. Br. at 436-38 (citing CX-1313C (Brezski WS) at Q58).

InterDigital provides a "conservative" estimate that it spent approximately [ ] on compensation-related investments in its 3G licensing activities from 2008 through 2011. Compls. Br. at 438 (citing CX-1313C (Brezski WS) at Q58). InterDigital characterizes this estimate as conservative "because InterDigital also spent approximately [ ] over that time period on associated payroll taxes and other benefits that are not captured by the [ ] figure representing InterDigital's investments in 3G licensing." Compls. Br. at 438 (citing CX-1313C (Brezski WS) at Q60-61).

During the time period 2008 through 2011, InterDigital also invested approximately [ ] in pro-rated facilities-related expenses allocable to InterDigital's 3G licensing activities. CX-1313C (Brezski WS) at Q62-74; *see also* CX-1285C (compilation of facilities expenses) at IDC-ITC-300001558. Those facilities-related expenses are for 3G licensing expenses related to only InterDigital's King of Prussia, Pennsylvania facility, and no other facility. CX-1313C (Brezski WS) at Q75-77.

In summary, InterDigital estimates that it invested approximately [ ] in its activities related to 3G licensing. CX-1313C (Brezski WS) Q58-60, Q71-74. As mentioned previously, Mr. Brezski's analysis, on which this estimate is based, was not cross-examined at the hearing. *See* Brezski Tr. 630 (forgoing cross-examination of Mr. Brezski).

2. Alleged Investments in the Asserted Patents

As discussed above, InterDigital alleges that its estimated investment of [ ] "represents InterDigital's compensation-related expenses which can be directly tied to 3G licensing activities [ ] plus its facility-related expenses attributable to 3G licensing (about [ ]." *See* CX-1311C (Putnam WS) at Q59. From that calculation,

InterDigital's expert Dr. Jonathan D. Putnam determined InterDigital's investments in the exploitation of the asserted patents. *Id.* at Q60.

In particular, Dr. Putnam examined more than 10,000 documents produced by InterDigital representing its licensing negotiations with more than 100 different entities. CX-1311C (Putnam WS) at Q64; CX-1253C (compilation of InterDigital licensing negotiations); CX-0809C (summary of InterDigital patents identified in negotiations). Dr. Putnam found that about 70% of those documents did not reference any patents at all, but generally discussed economic terms such as the portfolio royalty rate, the negotiation of a non-disclosure agreement, or other activities that were not patent-specific. CX-1311C (Putnam WS) at Q64. In order to determine what share of InterDigital's licensing negotiations were devoted to the asserted patents or related family members, Dr. Putnam "conservatively" estimated that 50% of InterDigital's documents contained no reference to any patent at all. *Id.* at Q64-65.

For the other InterDigital negotiation documents in which at least one patent was mentioned, Dr. Putnam tabulated whether those negotiations included reference to any of the asserted patents or a related family member:

> The overall objective was to determine conservatively which patents appeared most frequently and prominently in negotiations with actual and prospective licensees.
>
> One difficulty that arises is defining the appropriate unit of observation for this analysis. On the one hand, it may be useful to measure the quantity of times each particular patent is discussed in a given negotiation. On the other hand, that approach gives rise to further difficulties, such as avoiding double-counting (e.g. if the same email chain referencing a particular patent is produced multiple times). For this reason, my analysis evaluates whether or not a particular patent was presented in a given negotiation. This allowed me to generate a data set containing the identity and count of unique patents that were identified in any and all InterDigital negotiations (given the set of documents I was provided). To make this exercise

> tractable and to avoid another potential area of double-counting, I limit the analysis to U.S. patents.

CX-1311C (Putnam WS) at Q62-63, 101; Putnam Tr. 680-681 (Dr. Putnam "focus[ed] on U.S. patent numbers so that we wouldn't be double-counting an invention by also counting a foreign equivalent patent.").

With respect to his decision to count related family members along with the asserted patents, Dr. Putnam testified:

> Several of the patents asserted in this Investigation represent later members of a patent family, which InterDigital invested in to capture additional value not fully realized in the initial application. By evaluating InterDigital's licensing practice solely as it relates to the asserted patents and not to their related family members, one risks improperly ignoring InterDigital's investments in all the members of the same family which, in one way or another, all built on the initial application, in which InterDigital also invested.

CX-1311C (Putnam WS) at Q116. Inasmuch as InterDigital does not license its patents on a patent-by-patent basis, but rather on a portfolio basis including patent families as a whole, Dr. Putnam opined that, by featuring a related family member in a negotiation, InterDigital necessarily features all members of the same family (including the asserted patents). *Id.* at Q120-123.

After analyzing the more than 10,000 licensing negotiation documents, Dr. Putnam found that, for those documents that mentioned at least one patent at all, the median rate at which the asserted patents or related patents were mentioned was about 1/3. CX-1311C (Putnam WS) at Q63. With this information, Dr. Putnam calculated the share of InterDigital's [ ] in compensation-related investment in 3G licensing that was attributable to the asserted patents:

> In sum, I compute $x = aX + p(1-a)X$, where X = total compensation-related expenditures devoted to 3G licensing, which is [ ] a = the share of resources necessary to negotiate a patent license,

> independent of any individual patent, and p = the share of patent-specific resources that could be plausibly attributed to the asserted patents.
>
> To compute a, I evaluated documents devoted to negotiations with InterDigital licensees and prospective licensees. In doing so, I recognized that a large majority of communication and documentation are devoted to activities other than technical discussions or individual patent analyses. As a practical matter, this is unsurprising – many patent license negotiations focus on economic terms or other issues that are independent of the technical merits in any given patent.
>
> To compute p, I relied on my review and analysis of the negotiation related documents as shown in CDX-0007C.0003 (CX-0809C, summary of InterDigital patents identified in negotiations). In particular, I computed the ratio of asserted and related patents to the total number of patents that were disclosed to each InterDigital licensee or prospective licensee. As shown in CDX-0007C.0003 (CX-0809C, summary of InterDigital patents identified in negotiations), the median for this ratio was [ ] while the weighted average across all licenses or prospective licenses was [ ] To be conservative, I adopted the lower of those values, [ ] for p.
>
> Applying those findings, I calculated that x, the amount of InterDigital's 3G licensing expenditures attributable to the asserted patents, equals approximately [ ]

Id. at Q66.

Dr. Putnam elaborated on his calculations as follows:

> I began with X, the [ ] in salaries attributable to 3G licensing activities from 2008-2011. Half (that is, a) of that, or [ ] is necessary to negotiating a license but is not specific to any individual patent. That leaves the other half, or [ ], which can be allocated based on a determination of references to specific patents. I calculated that [ ] (that is, p) of that half should be allocated to the asserted patents, based on the frequency with which the asserted or related patents were mentioned in negotiations. [ ] of the [ ] in patent-specific licensing expenditures is [ ], which is allocated specifically to the asserted patents. That gives a total of [ ].

CX-1311C (Putnam WS) at Q67.

According to Dr. Putnam's analysis, approximately half of InterDigital's 3G licensing investments, or approximately [ ], are fixed costs, *i.e.*, the fixed costs of getting into the business of negotiating any patent in InterDigital's 3G portfolio. Putnam Tr. 659. As Dr. Putnam explained:

> [I]t's the entry fee that is necessary to conduct negotiations for InterDigital because when you produce a license, you don't necessarily negotiate over individual patents all the time. You also need to negotiate over other terms that are not patent-specific. And that's true regardless of the contribution of an individual patent.

Putnam Tr. 668.

Dr. Putnam explained that there are certain fixed costs characteristic of any production activity, including the production of licenses. Putnam Tr. 659 ("[T]his is a completely generic statement of the difference between fixed and variable costs, which would be characteristic of the analysis of any production activity, including the production of licenses."). Dr. Putnam further testified that, "in the same way that when you get into a cab, there's an entry fee and that applies regardless of how far I drive the cab, so, yes, there's a fixed cost of getting into the business, a fixed cost of getting into the cab, and it applies regardless of the patents that are actually being licensed." Putnam Tr. 669.

Dr. Putnam concluded that the remaining half of InterDigital's 3G licensing investments, or approximately [ ], are variable costs, or costs that vary based on which patents are driving certain licensing negotiations. Dr. Putnam calculated that approximately "[ ] of that half [or approximately [ ]] should be allocated to the asserted patents, based on the frequency with which the asserted or related patents were mentioned in negotiations." CX-1311C (Putnam WS) at Q67. InterDigital's approximately [ ] in fixed licensing costs, plus approximately [ ] in variable costs relating to "the frequency with which the

asserted or related patents were mentioned in negotiations," results in a total of approximately [ ]. From there, Dr. Putnam added the [ ] in facilities expenses necessary for the negotiation of any license and determined that InterDigital's domestic industry investments allocated to the exploitation of the Asserted Patents is approximately [ ]. *Id.* at Q68-69.

C. Analysis and Conclusion on the Domestic Industry

1. InterDigital's Reliance on the Asserted Patent Families

As an initial matter, Respondents' criticize InterDigital's reliance on investment figures for "all seven asserted patents and their purported families combined," rather than on investment figures for the seven asserted patents individually. *See* Resps. Br. at 480-82. It is argued that InterDigital has not "provided [an] evidentiary basis from which to identify or estimate what portion of its alleged domestic licensing investments 'might be allocated' to each of the asserted patents," but has instead "attempted to create a single 'domestic industry' comprised of all seven asserted patents and their extended families of unasserted patents." *See id.* at 480.

Previous investigations before the Commission suggest that considering the asserted patents and their related family members is appropriate in the context of evaluating the domestic industry. For example, in an earlier investigation, InterDigital previously moved for summary determination that its licensing activities satisfied the domestic industry under 19 U.S.C. § 1337(a)(3)(C). *Certain 3G Wideband Code Division Multiple Access (WCDMA) Handsets and Components Thereof*, Inv. No. 337-TA-601, Order No. 20 at 1 (June 24, 2008) (unreviewed) (produced to Respondents at ITC-IDC-300014731). In granting the motion, Judge Luckern reviewed InterDigital's licensing practices and recognized that consideration of InterDigital's investments in the asserted patents, as well as in related patents, accurately reflected the realities

of the licensing marketplace. In particular, when considering the nexus between InterDigital's investments in licensing and the asserted patents, Judge Luckern held:

> As part of its overall licensing efforts, InterDigital negotiates with potential licensees, sometimes in long-running and complex discussions. During those negotiations, InterDigital identifies certain of its more significant patents or patent families. Said discussions have included one or more of the five specific patents being asserted in this investigation or the patent families to which they belong."

Id. at 9.

> During InterDigital's licensing negotiations, it discussed at least one or more members of the power ramp-up family.

Id. at 10.

> In some licensing presentations, InterDigital indicated to the prospective licensees that one or more of the patents in issue or related patents were essential to practicing certain 3G standards.

Id. at 13.

> In addition, as set forth supra, InterDigital in licensing negotiations has highlighted each of the patents in issue as well as the patent families to which the asserted patents belong . . . .

Id. at 17.[85]

The Commission later recognized Judge Luckern's analysis as an example of previous instances in which an ALJ has "addressed the issue of whether a nexus between the activities and the asserted patents exists." *Navigation Devices*, Comm'n. Op. at 8 n.5 (Aug. 8, 2011) (citing *3G Mobile Handsets*, Order No. 20).

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[85] In Inv. No. 337-TA-613, to which respondent Nokia was a party, Judge Luckern also granted summary determination that InterDigital satisfied the domestic industry requirement under 19 U.S.C. § 1337(a)(3)(C). *Certain 3G Mobile Handsets and Components Thereof*, Inv. No. 337-TA-613, Order No. 42 (March 10, 2008) (unreviewed) (produced to respondents at ITC-IDC-300014711). Judge Luckern's determination was based on a near-identical analysis of InterDigital's licensing program, including the importance of considering the asserted patents and their related family members. *Id.* at 9, 10, 13, 16.

Turning now to the evidence adduced by InterDigital in this investigation, Dr. Putnam testified that InterDigital does not license its patents on a patent-by-patent basis, but rather on a portfolio basis including patent families as a whole. CX-1311C (Putnam WS) at Q121. Mr. Ditty, a member of InterDigital's licensing team, further testified:

> We [InterDigital] do not discuss or negotiate about all of the portfolio at once. Rather, we identify particular patents and families of patents that we think will be of particular interest to the licensee. These families of patents are the ones we believe are among the most valuable in our portfolio, and the negotiation with the potential licensee tends to be centered on those families. These families really drive the negotiations and the remainder of the portfolio is licensed as well.

CX-1312C (Ditty WS) at Q124.

The documentary evidence also demonstrates that InterDigital generally licenses its patents by family. For example, in an [ ] licensing discussion between InterDigital and [ ] InterDigital identified particular patents for discussion, as well as their patent families. CX-1253C (compilation of InterDigital licensing negotiation documents) at IDC-ITC-016555393 (identifying the '013 and '406 asserted patents, as well as their families).

Similarly, in [ ] licensing discussions with [ ], InterDigital again identified particular patents, as well as their patent families. CX-1253C (compilation of InterDigital licensing negotiation documents) at IDC-ITC-016567310 (identifying the '013 and '406 asserted patents, as well as their families).

On [ ], InterDigital provided to [ ] a list of "CDMA2000 Exemplary Families." *Id.* at IDC-ITC-016575211. Based on the evidence, Dr. Putnam further testified that "an investment in exploiting a patent family member is necessarily an investment in exploiting the asserted patent itself." CX-1311C (Putnam WS) at Q121.

Consequently, in considering the nexus between InterDigital's 3G licensing investments and the asserted patents in the circumstances of this investigation, it is determined that the appropriate unit of observation is InterDigital's alleged exploitation of the asserted patents, as well as those patents related to the asserted patents.

2. The Nexus Between InterDigital's 3G Licensing Investments and the Asserted Patents

The following analysis examines the record evidence as it relates to the non-exhaustive factors set forth in *Navigation Devices* to determine whether there is a nexus between InterDigital's licensing investments and the asserted patents.

a. The Number of Patents in InterDigital's Portfolio

The record evidence shows that, as of February 2011, InterDigital's patent portfolio comprised about 1,500 U.S. patents among a total portfolio of approximately 19,500 U.S. and foreign-issued patents and applications. CX-1311C (Putnam WS) at Q87; *see also* JX-0049 (InterDigital's 2011 form 10-K filed with the SEC). Only seven of InterDigital's portfolio of patents are asserted in this investigation.

b. The Relative Value of the Asserted Patents to InterDigital's Portfolio

The Commission has explained that the asserted patents may be shown to be particularly important or valuable within the portfolio where there is evidence that: (1) they were discussed during licensing negotiations, (2) they have been successfully litigated before by the complainant, (3) they are related to a technology industry standard, (4) they are base patents or pioneering patents, (5) they are infringed or practiced in the United States, or (6) the market recognizes the patents' value in some other way. *Certain Integrated Circuits, Chipsets, and*

Products Containing Same Including Televisions, Inv. No. 337-TA-786, Comm'n Op. at 164 (Sept. 19, 2012) (citing *Navigation Devices* at 10-11).

i. Whether the Asserted Patents Were Prominently Discussed During the Licensing Negotiation Process

To determine whether the asserted patents or related family members were discussed in the licensing negotiation process, Dr. Putnam sought documents demonstrating InterDigital's licensing communications. CX-1311C (Putnam WS) at Q100. He received more than 10,000 documents comprising "claim charts, financial spreadsheets, email communications, and related items that address the issues raised by one party or the other in the course of reaching, or attempting to reach, agreement as to a license." *Id.* In doing so, Dr. Putnam explained that "his overall objective was to determine conservatively which patents appeared most frequently and prominently in negotiations with actual and prospective licensees."[86] *Id.* at Q101.

Dr. Putnam then sought to determine which patents were appropriately considered "related family members" to the asserted patents. CX-1311C (Putnam WS) at Q129. To do so, Dr. Putnam relied on the publicly available, independent International Patent Document Center

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[86] In doing so, Dr. Putnam cautioned:

> One difficulty that arises is defining the appropriate unit of observation for this analysis. On the one hand, it may be useful to measure the *quantity of times* each particular patent is discussed in a given negotiation. On the other hand, that approach gives rise to further difficulties, such as avoiding double-counting (*e.g.* if the same email chain referencing a particular patent is produced multiple times). For this reason, my analysis evaluates *whether or not* a particular patent was presented in a given negotiation. This allowed me to generate a data set containing the identity and count of unique patents that were identified in any and all InterDigital negotiations (given the set of documents I was provided). To make this exercise tractable and to avoid another potential area of double-counting, I limit the analysis to U.S. patents.

CX-1311C (Putnam WS) at Q100 (emphasis original).

("INPADOC") database currently maintained by the European Patent Office. *Id.* at Q129-131. Dr. Putnam specifically relied on INPADOC's database, rather than on other sources, "[b]ecause it is the most comprehensive worldwide source of patent family information, and because as an unrelated party INPADOC offers an objective, reproducible method of defining InterDigital's patent families." *Id.* at Q131. INPADOC's searchable database offers only one definition of "patent family," and Dr. Putnam relied on its output of patent families based on the input of the seven asserted U.S. patents. *Id.* at Q133. The U.S. patents that INPADOC recognized as "related family members" to the seven asserted patents were compiled by Dr. Putnam in demonstrative exhibit CDX-0007C.0004. *Id.* at Q93; *see also* CDX-0007C.0004 (demonstrative showing InterDigital's asserted and related patents).

With his protocols in place, Dr. Putnam then undertook his analysis of InterDigital's more than 10,000 licensing negotiation documents. Based on this analysis, Dr. Putnam concluded that the asserted patents or related family members were indeed "discussed during the licensing negotiation process." *See* CX-1311C (Putnam WS) at Q102; *see also* CX-0809C (summary exhibit providing results of Dr. Putnam's analysis). Dr. Putnam testified that, based on the number of times an asserted patent or related family member was identified in a claim chart during a licensing negotiation, the asserted patents were discussed "prominently" in licensing negotiations. CX-1311C (Putnam WS) at Q103, Q107-108.

With respect to the '406 Power-Control patent, InterDigital presented a PowerPoint presentation to [ ] on [ ] that addressed only that patent. CX-1253C (compilation of InterDigital's licensing negotiation documents) at IDC-ITC-016556865-79. In correspondence with [ ] dated [ ], InterDigital provided a detailed response to [ ] questions specifically about the '406 patent. *Id.* at IDC-ITC-016536088-

94. Similarly, in [ ] correspondence with [ ], InterDigital responded to [ ] questions directed specifically to the '406 patent. *Id.* at IDC-ITC-016521175-78. During ongoing discussions with [ ] InterDigital again addressed [ ] specific questions regarding the '406 patent on [ ]. *Id.* at IDC-ITC-016555482-48 at 527-48. The '406 patent has also been featured in licensing negotiations with the Respondents. CX-1311C (Putnam WS) at Q140-141 (citing CX-0859C; CX-0851C; CX-0862C; CX-0860C (examples of claim charts for separate claims of the '406 patent provided to [ ]); CX-0856C; CX-0861C; CX-0853C; CX-0857C; CX-0852C; CX-0863C; CX-0855C (examples of claim charts for separate claims of the '406 patent provided to [ ]). The evidence further shows that the '406 patent is included in claim charts or lists of exemplary patents provided to many prospective licensees. *See, e.g.*, CX-1253C (compilation of InterDigital's licensing negotiation documents) at IDC-ITC-016570234 ('406 patent claim chart provided to [ ] on [ ]), IDC-ITC-016574903 ('406 patent claim chart provided to [ ]), IDC-ITC-016564511 ('406 patent claim chart provided to [ ]), IDC-ITC-016540912 ('406 patent claim chart provided to [ ]), IDC-ITC0016529374 ('406 patent claim chart provided to [ ]), IDC-ITC-016575211 ('406 patent included in list of exemplary families provided to [ ]).

As for the '332 Power-Control patent, the record evidence shows that the '332 patent was identified during licensing negotiations. For example, on [ ], InterDigital provided a PowerPoint presentation to [ ] devoted to discussion of the '332 patent. CX-1253C (compliation of InterDigital licensing negotiation documents) at IDC-ITC-016534598-607. The '332 patent is also frequently included in claim charts or lists of

exemplary patents provided to prospective licensees. *See*, *e.g.*, CX-1253C (compilation of InterDigital's licensing negotiation documents) at IDC-ITC-016529085 ('332 patent claim chart provided to [ ]), IDC-ITC-016528719 ('332 patent claim chart provided to [ ]), IDC-ITC-016581868 ('332 patent claim chart provided to [ ]), IDC-ITC-016571608 ('332 patent claim chart provided to [ ]), IDC-ITC-016564576 ('332 patent claim chart provided to [ ]), IDC-ITC-016577127 ('332 patent included on "InterDigital Exemplary 3G Patents" list provided to [ ].

The record evidence also shows that the '830 Power Ramp-Up patent was featured during licensing negotiations. For example, on [ ], InterDigital provided a PowerPoint presentation to [ ] devoted to discussion of the '830 patent. The '830 patent is also included in claim charts or lists of exemplary patents provided to prospective licensees. *See*, *e.g.*, CX-1253C (compilation of InterDigital's licensing negotiation documents) at IDC-ITC-017196254 ('830 patent claim chart provided to [ ]), IDC-ITC-016571618 ('830 patent claim chart provided to [ ), IDC-ITC-016564586 ('830 patent claim chart provided to [ ]), IDC-ITC-016531799 ('830 patent claim chart provided to [ ]), IDC-ITC-016530736 ('830 patent claim chart provided to [ ], IDC-ITC-016577401 ('830 patent included on "InterDigital Exemplary Patents - 3G" list provided to [ ]).

The record evidence demonstrates that the '636 Power Ramp-Up patent was identified during licensing negotiations. For example, on [ ], InterDigital provided a

PowerPoint presentation to [ ] devoted to discussion of the '636 patent. CX-1253C (compilation of InterDigital's licensing negotiation documents) at IDC-ITC-017196272-87. On [ ], in follow-up discussions related to the '636 patent, InterDigital wrote to [ ] to answer specific questions regarding the '636 patent. *Id.* at IDC-ITC-016519054. The '636 patent is also included in claim charts provided to many prospective licensees. *See, e.g.*, CX-1253C (compilation of InterDigital's licensing negotiation documents) at IDC-ITC-017196315 ('636 patent claim chart provided to [ ]), IDC-ITC-016540028 ('636 patent claim chart provided to [ ]).

The record evidence shows that the '013 UE ID patent was also identified during licensing negotiations. For example, on [ ], InterDigital provided a PowerPoint presentation to [ ] devoted to discussion of the '013 patent. CX-1253C (compilation of InterDigital's licensing negotiation documents) at IDC-ITC-016556880-95. Similarly, the '013 patent was one of only a handful of patents discussed at length during [ ] licensing discussions with [ ]. *See* CX-1253C (compilation of InterDigital's licensing negotiation documents) at IDC-ITC-016567310, IDC-ITC-016555392-481 at 441-56. The '013 patent is also included in claim charts or lists of exemplary patents provided to prospective licensees. *See, e.g.*, CX-1253C (compilation of InterDigital's licensing negotiation documents) at IDC-ITC-016574934 ('013 patent claim chart provided to [ ]), IDC-ITC-016570243 ('013 patent claim chart provided to [ ]), IDC-ITC-016571574 ('013 patent claim chart provided to [ ]), IDC-ITC-016564523 ('013 patent claim chart provided to [ ]), IDC-ITC-016591273 ('013 patent

included on "InterDigital Exemplary Patents Across Technologies" list provided to [ ]).

The record evidence demonstrates that the '127 UE ID patent was also featured during licensing negotiations. For example, the '127 patent is included in claim charts or lists of exemplary patents provided to many prospective licensees. *See, e.g.*, CX-1253C (compilation of InterDigital's licensing negotiation documents) at IDC-ITC-017196242 ('127 patent claim chart provided to [ ]), IDC-ITC-016559066 ('127 patent claim chart provided to [ ]), IDC-ITC-016529553 ('127 patent claim chart provided to [ ]).

The evidence adduced at the hearing also shows that the '970 dual-mode subscriber unit patent was featured during licensing negotiations. For example, on [ ], InterDigital provided a PowerPoint presentation to [ ] devoted to discussion of the '970 patent. CX-1253C (compilation of InterDigital's licensing negotiation documents) at IDC-ITC-016570005-30. In follow-up discussions with [ ], InterDigital provided a claim chart mapping claims of the '970 patent to the [ ]. *See* CX-1253C (compilation of InterDigital's licensing negotiation documents) at IDC-ITC-016572938. On [ ], InterDigital provided to [ ] a claim chart mapping claims of the '970 patent to [ ] wireless device. CX-1253C (compilation of InterDigital's licensing negotiation documents) at IDC-ITC-016565761. In follow-up discussions with [ ], InterDigital provided to [ ] a PowerPoint presentation devoted to discussion of the '970 patent. *See* CX-1253C (compilation of InterDigital's licensing negotiation documents) at IDC-ITC-016555587-611. InterDigital has also provided other potential licensees claim charts and lists of exemplary patents, including the '970 patent, during licensing discussions. *See, e.g.*,

CX-1253C (compilation of InterDigital's licensing negotiation documents) at IDC-ITC-016534039 ('970 patent claim chart provided to [ ]), IDC-ITC-016523041 ('970 patent included on "InterDigital Exemplary Patents – CDMA2000" list provided to [ ]), IDC-ITC-016567835-39 ('970 patent included on "InterDigital Exemplary Patents – 3G" list provided to [ ]).

Moreover, Dr. Putnam testified that for 12 out of 15 executed licenses, InterDigital disclosed the asserted patents and/or related family members to the eventual licensee. CX-1311C (Putnam WS) at Q133; *see also* CDX-0007C.0005 (count of licensees that were shown patents during negotiations). For the 145 prospective licensees approached by InterDigital that have yet to execute a license, 71 of them were shown an asserted patent or related family member during negotiations. CX-1311C (Putnam WS) at Q133; *see also* CDX-0007C.0006 (count of prospective licensees that were shown patents during negotiations).

Respondents contend that Dr. Putnam's use of INPADOC's database resulted in an "overbroad" definition of patent families, thus allegedly artificially inflating InterDigital's investments in exploitation of the asserted patents. Resps. Br. at 485-90. Respondents have identified two patents, U.S. Patent No. 6,808,825 ("the '825 patent") (RX-2869) and U.S. Patent No. 6,414,951 ("the '951 patent") (RX-4030) as allegedly outside the proper scope of patents related to the asserted patents. *See* Resps. Br. at 489. Despite the fact that INPADOC considers these patents to be related to the asserted patents, the record evidence shows that the '825 patent was referenced only twice among the more than 10,000 InterDigital licensing negotiation documents analyzed by Dr. Putnam. *See* CX-1253C (Compilation of InterDigital licensing

negotiation documents) at IDC-ITC-016551729-44 at 732 and IDC-ITC-016575204-16 at 207.[87] The '951 patent was not mentioned at all in any of the more than 10,000 licensing documents analyzed by Dr. Putnam. Thus, as Dr. Putnam's analysis relied on median references across all licensing negotiations, the exclusion of those patents from Dr. Putnam's analysis would have had no effect on Dr. Putnam's ultimate conclusions.

Having considered the evidence adduced at the hearing, and the arguments of the parties, it is determined that the asserted patents were discussed during licensing negotiations, and that they were discussed "prominently." Therefore, this factor weighs in favor of finding that the asserted patents are important to InterDigital's patent portfolio.

ii. Whether the Asserted Patents Have Been Successfully Litigated Before by the Complainant

InterDigital has twice been recognized as satisfying the domestic industry requirement based on its substantial investments in the exploitation of patents through licensing. *See Certain 3G Wideband Code Divisio Multiple Access (WCDMA) Handsets and Components Thereof*, Inv. No. 337-TA-601 ("the 601 Investigation"), Order No. 20, Initial Determination (June 24, 2008) (unreviewed); *Certain 3G Mobile Handsets and Components Thereof*, ITC Inv. No. 337-613 ("the 613 Investigation"), Order No. 42, Initial Determination (March 10, 2009) (unreviewed). Moreover, the Federal Circuit recently confirmed that InterDigital represents "a classic case for the application of [19 U.S.C. § 1337(a)(3)] subparagraph (C)." *InterDigital Commc'ns, LLC v. Int'l Trade Comm'n*, No. 2010-1093, at 5 (Fed. Cir. Jan. 10, 2013).

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[87] One of those documents also refers to the asserted '406 patent, and was therefore properly included in Dr. Putnam's analysis. *See* CX-1253C (Compilation of InterDigital licensing negotiation documents) at IDC-ITC-016575204-16 at 211.

The 601 Investigation involved five patents related to the six of the seven patents asserted in the present Investigation. *See* CX-1311C (Putnam WS) at Q143. On November 24, 2008, InterDigital and Samsung (a respondent in the 601 Investigation) agreed to a settlement which included a six-year license covering, among other things, 3G devices. *See id.* Under the agreement, Samsung agreed to pay $400 million to InterDigital. *See id.* That $400 million license to InterDigital's patents was signed the same day Judge Luckern's Final Initial Determination was due in the 601 Investigation. *See id.* InterDigital therefore argues that the 601 Investigation was a successful litigation by InterDigital of patents related to those asserted in this investigation. Compls. Br. at 469 (citing *id.* at Q144).

The 613 Investigation involved four patents related to patents asserted in the present investigation. *See* CX-1311C (Putnam WS) at Q143. Judge Luckern found that these patents were "not invalid." *See id.* The Commission determined that Nokia's products did not infringe the asserted patents, but the Federal Circuit vacated that determination and remanded for reconsideration applying InterDigital's claim constructions. *See id.* On January 10, 2013, the Federal Circuit denied Nokia's petition for rehearing and rehearing *en banc* of that opinion. Although the 613 Investigation has not yet concluded, InterDigital argues that the ALJ's initial determination that the related patents are not invalid, coupled with the Federal Circuit's final determination of a claim construction favoring InterDigital's position, indicates that InterDigital's related patents were successfully litigated in the 613 Investigation. Compls. Br. at 469 (citing *id.* at Q144).

Inasmuch as none of the patents asserted in this investigation was asserted in the 601 or 613 Investigation, this particular factor is neutral as to whether the asserted patents are important to InterDigital's patent portfolio.

iii. Whether the Asserted Patents Relate to a Technology Industry Standard

Each of the asserted patents relates to a technology industry standard. In particular, they relate to the WCDMA and CDMA2000 standards promulgated by ETSI and by the Telecommunications Industry Association (TIA), respectively. *See* CX-1311C (Putnam) at Q146. InterDigital states that the '970 patent, or other members of the same patent family, relate to the GAN/GERAN standard. *See id.* at Q146-147 (citing JX-0046 (ETSI disclosure document, IDC-ITC-000069495 - IDC-ITC-000069539); CX-0848C (ETSI disclosure document, IDC-ITC-010628203 - IDC-ITC-010628203); JX-0047 (ETSI disclosure document, IDC-ITC-010628204 - IDC-ITC-010628204); CX-0850C (ETSI disclosure document, IDC-ITC-014215775- IDC-ITC-014215788); CX-0864C (ETSI disclosure document, IDC-ITC-017242842 - IDC-ITC-017242886)).

Accordingly, this factor weighs in favor of a determination that the asserted patents are important to InterDigital's patent portfolio.

iv. Whether the Asserted Patents Are "Base" or "Pioneering" Patents

InterDigital has not claimed that the asserted patents are "base" or "pioneering patents." *See* Compls. Br. at 470. The asserted patents are continuations and continuations-in-part of earlier patents that may or may not be "pioneering" patents. InterDigital argues, however, that "patents issuing later in time extending the claims of a previous so-called 'pioneering' patent may prove to be more valuable." *Id.* As InterDigital's expert Dr. Putnam testified, "[w]hile the fact that a patent is considered 'pioneering' could provide evidence of its value, a patent that 'merely' extends the claims of another patent may be equally or more valuable. In fact, one or

more such 'improvement' patents often bridges the gap between a pioneering initial disclosure and a viable commercial product." CX-1311C (Putnam WS) at Q151.

Inasmuch as the asserted patents are not "base" or "pioneering" patents, this factor is neutral as to whether the asserted patents are important to InterDigital's patent portfolio.

v. Whether the Asserted Patents Are Infringed or Practiced in the United States

InterDigital alleges that the asserted patents are infringed in the United States. As detailed above, it is determined that asserted claims 1-9 of the '970 patent are infringed in the United States. It was further determined that the remaining asserted claims of the asserted patents are not infringed in the United States. This factor is therefore neutral as to a finding that the asserted patents are important to InterDigital's patent portfolio.

vi. Whether the Market Recognizes the Asserted Patents' Value in Some Other Way

InterDigital's expert Dr. Putnam identified additional indicators allegedly showing that InterDigital's patents have substantial market value. In particular, he examined movements in InterDigital's share price in response to news about its patents, and has examined the pattern of citations that InterDigital's patents have received from other patents. CX-1311C (Putnam WS) at Q155.

In analyzing movements in InterDigital's share price in response to news regarding its portfolio or specific patents, Dr. Putnam found 19 qualifying events. CX-1311C (Putnam WS) at Q161. For example, on July 8, 2008, the ITC staff recommended a finding that Samsung did not infringe the patents that InterDigital had asserted against Samsung in the 601 investigation, and InterDigital's share price dropped 22.6%. *Id.* Since the broader market index increased in value by about 1.7% that day, InterDigital earned a daily so-called "excess" return of -24.3%. *Id.* In

dollar terms, InterDigital's market capitalization thus dropped by about $258 million based on the news regarding patents related to those in this investigation. *Id.* Similarly, on December 21, 2007, an InterDigital patent not asserted in this investigation was found to be essential to a standard, sending InterDigital's value up by about $107 million. *Id.* Dr. Putnam summarized the complete results of his market analysis in CDX-0007.0007 and CDX-0007.0008. Of the 19 events reviewed in Dr. Putnam's analysis, 15 produced fluctuations in InterDigital's value of $100 million or more. *Id.* From this uncommon market fluctuation, Dr. Putnam concluded:

> InterDigital's investors carefully follow and trade on news about individual (or small groups of) InterDigital patents, and that the large gains and losses indicated by these trades demonstrates the high valuations that investors place on these individual patents. These findings are consistent with the conclusion that InterDigital's exploitation of its most important patents, as that exploitation evolves through licensing and litigation, constitutes an economically significant "industry."

Id. at Q163. With respect to the asserted patents in particular, Dr. Putnam testified that on August 1, 2012, InterDigital won an appeal at the Federal Circuit in the 613 investigation regarding related patents asserted against Nokia. That news increased InterDigital's stock market value by $165 million. *Id.* at Q164. Consequently, based on the market's reaction to news regarding InterDigital's patents and portfolio as demonstrated by correlated and unexpected fluctuations in share price, the market recognizes the value of InterDigital's patents, including the asserted patents.

Inasmuch as the evidence shows that InterDigital's market value fluctuates when news of developments in InterDigital's patent litigations is reported, this factor weighs in favor of a determination that the asserted patents are important to InterDigital's patent portfolio.

c. The Scope of the Technology Covered by the Portfolio Compared to the Scope of the Asserted Patents

InterDigital's licensing program covers a relatively narrow range of economic activity, *i.e.*, sales of mobile devices conforming to particular cellular technical standards. *See* CX-1311C (Putnam WS) at Q176. By way of comparison, many InterDigital licensees are large electronics firms with broad patent portfolios that extend not only to wireless technical standards, but also to many other areas. *See id.* Thus, while InterDigital's patents surely to a range of technical functions, most or all of these functions enable end-users or consumers to perform a single type of operation, *i.e.*, to communicate wirelessly in compliance with certain technical standards. The asserted patents therefore fit "congruently" with InterDigital's portfolio.

d. Conclusion

Having considered the evidence adduced by InterDigital summarized above, it is hereby determined that InterDigital has shown the existence of a nexus between the asserted patents and its U.S. investments in 3G licensing.

3. InterDigital's Domestic 3G Licensing Investments Are Substantial

The Commission has adopted "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." *Navigation Devices* at 15. The Commission has set forth several factors that might be relevant in determining whether a complainant's investment is substantial: (i) the nature of the industry and the resources of the complainant; (ii) the existence of other types of "exploitation" of the asserted patent such as research, development, or engineering; (iii) the existence of license-related ancillary activities such as ensuring compliance with license agreements and providing training or technical support to its licensees; (iv) whether

complainant's licensing activities are continuing; and (v) whether complainant's licensing activities are those that are referenced favorably in the legislative history of section 337(a)(3)(C). *Navigation Devices* at 15-16. The complainant's return on its licensing investment (or lack thereof) may also be circumstantial evidence of the complainant's investment. *Id.* at 16.

With respect to these factors, InterDigital argues that the record evidence supports a finding that InterDigital's investments in the exploitation of the asserted patents are "substantial." Specifically, it is argued that there exist other types of "exploitation" of the asserted patent such as research, development, or engineering, inasmuch as InterDigital invests significantly in developing the technology that it eventually patents and then seeks to license, such as the asserted patents. Compls. Br. at 477 (citing CX-1311C (Putnam WS) at Q40-48, Q182-186). It is also argued that there exist other license-related ancillary activities such as ensuring compliance with license agreements. *Id.* (citing CX-1313C (Brezski WS) at Q37). InterDigital also argues that its licensing activities are continuing. *Id.* InterDigital further argues that its licensing activities are those that are referenced favorably in the legislative history of section 337. *Id.* Specifically, InterDigital alleges that it engages in production-driven licensing designed to exploit the significant research and development expended creating and licensing new technologies to bring new products to market. *Id.* (citing CX-1311C (Putnam WS) at Q42, Q50-51, Q183-84). Finally, InterDigital asserts that it has generated approximately [ ] in licensing fees from licenses that include 3G patents (including [ ] in 2011 alone) since 2005, thereby demonstrating additional "circumstantial evidence of the complainant's investment." *Id.* (citing CX-1311C (Putnam WS) at Q45).

In summary, InterDigital argues that "[its] investment of approximately [ ] in the exploitation of the asserted patents is 'of a large magnitude' as to constitute 'substantial'

under any threshold. Compls. Br. at 476 (citing CX-1311C (Putnam WS) at Q186). InterDigital further argues that, "[e]ven under Dr. Putnam's alternate analysis, InterDigital's 'alternate' calculation of an investment of [ ] in exploitation of the asserted patents through licensing meets any minimum threshold of 'substantial.'" *Id.*

Respondents argue in their post-hearing brief that "InterDigital appears to maintain that its investments are substantial in an absolute sense, providing little of the required context in which the substantiality of its investments could be assessed . . . ." Resps. Br. at 501. Moreover, they argue, InterDigital's investments are entitled to less weight because they target existing production, such as that of Respondents, and are therefore revenue-driven, rather than production-driven. *Id.* (citing *Navigation Devices*, Comm'n Op. at 25). Finally, they argue, "even accepting InterDigital's aggregate calculations of licensing expenditures, these investments are not substantial enough to overcome the extremely attenuated nexus to the asserted patents that results from aggregation and reliance on patent families." *Id.* (citing *Navigation Devices*, Comm'n Op. at 15).

In their reply, Respondents argue that for purposes of satisfying the "substantiality" requirement of the statute, "InterDigital apparently is unconcerned with the fact that over 75% of its alleged investment is comprised of 'fixed costs' that have no particular connection to licensing the asserted patents, and the remaining 25% was allocated to the asserted patents based on a methodology that relied on unjustifiably broad families as a proxy for the asserted patents." Resps. Reply at 237. It is further argued that InterDigital inappropriately included expenses associated with licensing technologies other than 3G, expenses associated with licensing foreign patents, and expenses that were incurred after filing the Complaint." *Id.* Respondents argue that

InterDigital has failed to prove the investments that can be attributed to each of the asserted patents. *Id.* at 236-38.

The Staff opposes a finding that InterDigital's investments are substantial, arguing that the evidence introduced by InterDigital leaves the Commission "without sound footing" for evaluating whether the investments are "substantial." Staff Br. at 132-33 (*citing Certain Semiconductor Chips and Products Containing Same*, Inv. No. 337-TA-753, Comm'n Op. at 49 (Aug. 17, 2012)); Staff Reply at 35-36. It is argued that "the evidence does not show what the dollar amount of investment in the domestic industry is, much less what portion of the amount in total licensing expenditures incurred by InterDigital, or what portion of time or expenses incurred by the InterDigital employees might be allocated to the asserted UEID patents." *Id.*

As indicated above, the evidence offered by InterDigital and analyzed by its expert, Dr. Putnam, account for the fact that certain expenditures are fixed, as well as the fact that the expenditures at issue must be associated with 3G licensing and, more precisely, the asserted patents. For the reasons stated above, the required nexus exists between certain InterDigital investments and the asserted patents.

Considering the aforementioned factors set forth in the Commission's *Navigation Devices* opinion, it is clear that InterDigital does not rely on many of the investments that customarily support a finding that investments are "substantial." Notably, InterDigital's investments are exclusively focused on licensing activities, and are not connected to activities such as current research and development. Nevertheless, a finding of domestic industry under section 337(a)(3)(C) can be supported by licensing activities alone. *See InterDigital*, 690 F.3d at 1329-30.

In this case, even looking to Dr. Putnam's "alternate" estimate, one finds an investment of [ ]. That estimate accounts only for 3G licensing, and excludes expenditures linked to licensing discussions that failed to mention specific patents. See CX-1311C (Putnam WS) at Q 70-71, Q186. Under that more conservative estimate, InterDigital's investments in the domestic exploitation of the asserted patents are "of a large magnitude" and are, therefore, substantial.

Consequently, it is determined that the domestic industry requirement is satisfied under 19 U.S.C. § 1337(a)(3)(C).

IX. Other Defenses

A. FRAND

The administrative law judge has not found that Respondents have infringed a valid asserted patent. Nevertheless, Respondents have raised various defenses based on InterDigital's membership in and FRAND/RAND[88] commitments to standards-setting organizations ("SSOs"). *See* Resps. Br. at 503-74. Respondents' FRAND arguments include:

- The Commission should refuse to allow licensors to obtain exclusion orders on FRAND-encumbered patents against willing licensees (*id.* at 516-20);
- InterDigital has failed to negotiate in good faith with Respondents, and should therefore be denied injunctive relief (*id.* at 520-47);
- InterDigital's licensing offers to Respondents are discriminatory and therefore do not qualify as FRAND (*id.* at 547-66);

[88] "FRAND" is an acronym for "fair, reasonable and non-discriminatory." "RAND" is an acronym for "reasonable and non-discriminatory."

- InterDigital should be equitably estopped from enforcing declared-essential patents against Respondents (*id.* at 567-71);
- InterDigital has waived its right to enforce the asserted patents due to its alleged breach of FRAND commitments (*id.* at 571);
- InterDigital has granted an implied license to Respondents for the asserted patents (*id.* at 572); and
- InterDigital is barred from enforcing the asserted patents under the doctrine of patent misuse (*id.* at 573-74).

InterDigital denies that it has violated any FRAND obligation, and argues that Respondents' requested relief should be denied, inasmuch as InterDigital is not precluded from enforcing the asserted patents at the Commission. *See* Compls. Br. at 479-558.

The Staff takes the position that "[t]he evidence does not support the Respondents' affirmative defense based on InterDigital's FRAND obligations." *See* Staff Br. at 113-21.

1. The Relevant IPR Policies

As discussed above, the products accused of infringing the asserted patents operate in accordance with one or both of two 3G wireless standards, WCDMA and CDMA2000. The WCDMA standard was developed by the 3GPP consortium, in which companies participate through organizational partners. InterDigital participated in 3GPP through its membership in the European Telecommunications Standards Institute ("ETSI"). The CDMA2000 standard was developed by the 3GPP2 consortium, for which the relevant organizational partner is the Telecommunications Industry Association ("TIA"). CDMA2000 was also approved as an international standard by the International Telecommunications Union ("ITU"). Thus, the ETSI IPR Policy is relevant for FRAND defenses relating to WCDMA accused products, and the TIA

and ITU IPR Policies are relevant with respect to the CDMA2000 accused products. *See* Compls. Br. at 481-82.

a. The ETSI IPR Policy (WCDMA)

Section 3.1 of the ETSI IPR[89] Policy states that its objective is to adopt "solutions which best meet the technical objectives" of the telecommunications sector, and provides:

> In achieving this objective, the ETSI IPR POLICY seeks a balance between the needs of standardization for public use in the field of telecommunications and the rights of the owners of IPRs.

CX-1717 (ETSI policy) at § 3.1.

The next section expressly provides:

> IPR holders whether members of ETSI and their AFFILIATES or third parties, should be adequately and fairly rewarded for the use of their IPRs in the implementation of STANDARDS and TECHNICAL SPECIFICATIONS.

CX-1717 (ETSI policy) § 3.2.

In addition to providing that IPR owners are entitled to adequate and fair compensation, the ETSI Guide on IPRs makes clear that the details of compensation paid to IPR owners are matters for negotiation between individual companies: "Specific licensing terms and negotiations are commercial issues between the companies and shall not be addressed within ETSI. Technical Bodies are not the appropriate place to discuss IPR issues." RX-0313 (Guide on IPRs) at § 4.1.

In order to "reduce the risk" that patents are unavailable to those using the standard, but at the same time provide a mechanism for patent owners to be fairly and adequately compensated for the use of their IPR, ETSI asks that the owner of "Essential IPR" provide "an undertaking in

[89] "IPR" is an acronym for "intellectual property right."

writing that it is prepared to grant irrevocable licenses on fair, reasonable and non-discriminatory terms and conditions under such IPR . . . ." *See* CX-1717 (ETSI policy) at §§ 3, 6.1. The policy further makes clear that "[t]he above undertaking may be made subject to the condition that those who seek licenses agree to reciprocate." *Id.* at § 6.1.

Section 6.1 of the ETSI IPR Policy, which relates to FRAND licensing of "Essential" patents, covers a narrower range of patents than Section 4.1, which covers disclosure of patents that "might be" Essential. *Id.* at § 4.1 (member 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"). The current form of ETSI IPR Information Statement and Licensing Declaration sets forth the content and the limits of the undertaking made by the IPR owner. There are two sections to the form: (i) The "IPR Information Statement," for disclosing potentially Essential IPR, and (ii) the "IPR Licensing Declaration," for making an undertaking to license actually Essential IPR on FRAND terms. CX-1717 (ETSI policy) at Annex 6, Appx. A. There is a difference in scope between the IPRs that are disclosed (*i.e.*, those that "may be or may become ESSENTIAL") and the IPRs as to which the owner declares it is prepared to grant licenses on FRAND terms and conditions (*i.e.*, "[t]o the extent that the IPR(s) disclosed . . . are or become, and remain ESSENTIAL"). *Id.*; *see also* CX1520C (Huber WS) at Q82 (testifying that FRAND declaration applies to patents that are Essential, and not to every patent that is disclosed); CX 4099C (Ditty RWS) at Q32.

b. The ITU and TIA IPR Policies (CDMA2000)

The TIA and ITU policies both have provisions with respect to the licensing of Essential patents. The TIA policy provides that a "license under any Essential Patent(s) . . . will be made available to all applicants under terms and conditions that are reasonable and

non-discriminatory," but "only to the extent necessary for the practice of any or all of the Normative portions Standards falling within the above indicated Scope for the field of use of the practice of said Standards." RX-0400 (TIA policy) at 91. The ITU policy's licensing declaration states that for patents "the use of which would be required to implement" the standard, the patent holder "is prepared to grant a license to an unrestricted number of applicants on a worldwide, non-discriminatory basis and on reasonable terms and conditions." RX-3353 (ITU declaration) at 2. The ITU declaration form further notes that "Negotiations are left to the parties concerned and are performed outside the [ITU]." *Id.* The ITU patent policy itself describes the nature of the licensing undertaking as follows: "the patent holder is willing to negotiate licenses with other parties on a non-discriminatory basis on reasonable terms and conditions." RX-0627 (ITU policy) at 9.

c. The Obligation to Negotiate in Good Faith

The licensing undertakings on which Respondents rely for their FRAND defenses state that InterDigital is "prepared to grant" licenses to Essential patents on FRAND terms and conditions. *See* RX-0147 (InterDigital ETSI Declaration); JX-0046 (InterDigital ETSI Declaration); RX-3390 (InterDigital ETSI Declaration); RX-3391 (InterDigital ETSI Declaration); RX-3208 (InterDigital ETSI Declaration); RX-3322 (InterDigital ITU Declaration); RX-3353 (InterDigital ITU Declaration); RX-0681 (InterDigital ITU Declaration). As stated in the ITU policy, this means that the patent owner is "willing to negotiate" licenses for the use of Essential patents. RX-0627 (ITU policy) at 9. This commitment means that the IPR owner must negotiate towards licenses on FRAND terms, making genuine and good faith efforts to reach agreement. By so doing, the IPR owner fulfills its FRAND obligation.

The parties agree that the ETSI IPR Policy is governed by French law. CX-1717 (ETSI policy) at § 12 & Annex 6, Appx. A. Under French law, the type of obligation set forth in the ETSI undertaking is best described as *un accord de principe* (agreement in principle). CX-1518C (Fages WS) at Q70, Q80-84. This imposes on both negotiating parties a duty to negotiate in good faith. *Id.*; Fages Tr. 2389-2391. It does not, however, impose an obligation actually to conclude a contract. CX-1518C (Fages WS) at Q70, Q80-84. The remedies available for breaching an obligation to negotiate consist only of damages; there is no specific performance available, and there is no remedy consisting of "the forced conclusion of a contract." *Id.* at Q91. In this regard, French law is consistent with U.S. contract law, under which a generalized "agreement to agree" is unenforceable, but parties may enter into binding agreements to negotiate. *See, e.g.*, *Copeland v. Baskin Robbins USA*, 96 Cal. App. 4th 1251, 1256-59 (2002).

2. Respondents' Contentions

a. Commission Adjudication of Standard-Essential Patents

Respondents argue that the Commission should decline to issue exclusion orders to a complainant asserting standard-essential patents, inasmuch as that type of equitable remedy would "assist it in engaging in conduct that competition authorities have deemed unfair competition." Resps. Br. at 518. It is argued that other federal agencies such as the Federal Trade Commission, Department of Justice, and Patent & Trademark Office "have serious concerns about the lawfulness of companies like InterDigital obtaining exclusion and cease and desist orders from this Commission against willing licensees, using patents that they had committed to license on FRAND terms," and that the Commission should join these agencies in

denying relief to InterDigital, whom Respondents allege comes before the Commission with unclean hands. *See* Resps. Br. at 516-18.

As an initial matter, Respondents have not cited any binding legal authority for its proposition that the Commission should refrain from issuing an exclusion order should it find a violation of section 337 based on infringement of patents subject to a FRAND undertaking. *See* Resps. Br. at 503-74. The Commission "is a creature of statute, and must find authority for its actions in its enabling statute." *Kyocera v. Int'l Trade Comm'n*, 545 F.3d 1340, 1355 (Fed. Cir. 2008). Section 337 requires the Commission to investigate any alleged violation based upon a complaint under oath. 19 U.S.C. § 1337(b)(1). If a violation is found, section 337 gives the Commission authority to exclude articles that infringe valid and enforceable U.S. patents. 19 U.S.C. §§ 1337(a)(1)(B), (d)(1). The statute makes no distinction between patents that have or have not been declared to be essential to a standard. Respondents have not offered any statutory construction that demonstrates that the Commission *per se* cannot issue an exclusion order for infringement of a declared-essential patent. Moreover, the Commission has not adopted any rule or policy in response to the FTC statement cited by Respondents (RX-3479).

b. InterDigital's Negotiations with Respondents

Respondents argue that InterDigital has breached its FRAND obligations, inasmuch as InterDigital has negotiated in bad faith with Respondents. Compls. Br. at 520-47. It is argued that "InterDigital's entire licensing scheme is grounded in bad faith given that InterDigital in this and similar proceedings seeks injunctions based on essential patents while knowing full well that injunctive relief should be available only for non-essential patents." *Id.* at 520.

i. Huawei

[

CX-1717 CX-1520C

CX-1528C [90] CX-1521C

CX-1530C CX-1460C

CX-1531C RX-0013C

CX-1481C CX-4091C CX-1474C

CX-1458C

CX-1459C]

[90] [

] *Id.*

[

[91]

CX-1520C CX-1521C

CDX-0014.0018C to CDX-0014.0022C

(CX-2173C to CX-2178C] Moreover, the licensing undertakings submitted by InterDigital under SSO IPR policies do not require single-country licenses, but instead contemplate worldwide licenses. *See* CX-1952 (ETSI report) at

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[91] [

(RX-4062C),

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NK800IDC22911209; CX-3711C (submission to ETSI ad hoc group); CX-1521C (Putnam RWS) at Q194; CX-3562C (ETSI report) at IDC-ITC-017736679; RX-3353 (ITU declaration).

[

CX-1512C

CX-1511C CX-1516C

CX-1470C ; CX-1460C

CX-1460C

CX-1531C

CX-1465C

CX-

1464C]

[

RX-0013C

[92] CX-1481C

CX-1480C]

Having reviewed the lengthy history of negotiations between InterDigital and Huawei adduced by the record evidence, as well as the arguments raised by the parties, it is determined that Huawei has not shown that InterDigital has negotiated in bad faith with Huawei.[93]

ii. ZTE

With respect to ZTE, it is argued that InterDigital breached its FRAND obligations to negotiate in good faith with ZTE by, *inter alia*, "surpris[ing] ZTE by filing suit at the ITC" while "[i]n the midst of negotiations." Resps. Br. at 529. It is further argued that InterDigital opposed the determination of a FRAND by the U.S. District Court in Delaware, "forcing ZTE to continue negotiations with the threat of an ITC exclusion order hanging over its head." *Id.* at 529-30. The

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[92] [
CX-1530C

]

[93] Huawei further argues that InterDigital's royalty rate demands far exceed the rates paid by InterDigital's previous licensees, and that InterDigital has therefore breached its FRAND obligations. Resps. Br. at 528-29. InterDigital's allegedly discriminatory royalty rates will be addressed in a separate section below.

evidence does not support these allegations, however. The record shows that ZTE and InterDigital had been involved in licensing discussions since 2009, two years before InterDigital filed the complaint in this investigation, and ZTE's argument that it was "surprised" by this lawsuit is therefore not persuasive. [*See* CX-1461C CX-1463C CX-1466C]. Moreover, the fact that InterDigital opposed a partial lifting of the stay of parallel proceedings in the Delaware District Court to address only ZTE's FRAND counterclaims does not merit a finding that InterDigital acted in bad faith. *See InterDigital Communc'ns, Inc. v. Huawei Techs. Co. Ltd.*, No. 13-cv-00008-RGA, slip op. at 2 (D. Del. Mar. 13, 2013).[94]

Indeed, the evidence shows that InterDigital has been working with ZTE to license the asserted patents since at least 2009. [*See* CX-1461C

See Compls. Br. at 529.

CX-1463C

CX-1466C

CX-1462C (

CX-1457C *See* Compls. Br. at 530. CX-1468C

See CX-1473C (ZTE

[94] ZTE also argues that the royalty rates demanded by InterDigital, as well as the fact that InterDigital insists on a world-wide license structure, demonstrates a FRAND violation. *See* Resps. Br. at 530-32. The argument regarding a world-wide license has previously been addressed in the context of Huawei negotiations. The issue of royalty rates will be addressed in a separate section below.

Id.

CX-1475C

CX-1477C .]

When viewed as a whole, the entire negotiation history between InterDigital and ZTE fails to support ZTE's allegations that InterDigital has breached its FRAND obligations to negotiate in good faith towards a license. [

] Accordingly, it is determined that ZTE has not shown that InterDigital negotiated in bad faith.

iii. Nokia

Nokia also alleges that InterDigital has breached its FRAND obligation to negotiate a license in good faith. *See* Resps. Br. at 533-39. Nokia argues, *inter alia*, that "InterDigital has consistently refused to provide Nokia with an offer limited to its essential patents or Nokia's US sales." *Id.* at 533. It is further argued that "InterDigital's stream of litigation-driven, discriminatory behavior is a classic case of bad faith, making it impossible for Nokia to secure a license on FRAND terms." *Id.*

A review of the record evidence shows that InterDigital and Nokia have been involved in patent disputes for many years. [

. *See* CX-1519C

CX-1510C

CX-1519C

CX-1521C .

[95] RX-0151C

CX-1519C RX-0643C

CX-1519C

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[95] [

See CX-1472C
RX-0151C]

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[96]

CX-2376C

RX-3521C

CX-1467C

CX-1471C

CX-1478C

CX-1479C

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[96] [*See* CX-1490C

[97]

CX-1522C

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RX-3467C RX-3468C

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The fact that InterDigital and Nokia have not yet reached agreement on a license does not mean that InterDigital necessarily breached any FRAND obligation to negotiate in good faith. As discussed above, InterDigital's practice is to license its patent portfolio on a worldwide basis, and InterDigital's rejection of Nokia's U.S.-only license proposal is not an indication of bad faith on the part of InterDigital.

c. InterDigital's Licensing Offers

The FRAND nondiscrimination requirement prohibits "unfair discrimination," but it does not require uniform treatment across licensees, nor does it require the same terms for every manufacturer or competitor. *See* CX-1521C (Putnam RWS) at Q87-89; RX-3521C (Jarosz WS) at Q68. Respondents base their argument that InterDigital's license offers are discriminatory on their calculation of the "effective royalty rate" of the offers. *See* Resps. Br. at 547-66. A nondiscrimination analysis, however, requires an examination of the whole of each license agreement, and not just the effective royalty rate.

i. InterDigital's Licenses with Third Parties

InterDigital's expert Dr. Putnam testified, "InterDigital has licensed its patent portfolio of 3G (WCDMA and CDMA2000) patents to more than 30 licensees." CX-1521C (Putnam RWS) at Q96. As demonstrated by Dr. Putnam, the WCDMA and CDMA2000 royalty rates in InterDigital's running royalty licenses range from [ ], and nearly all of InterDigital's running royalty licenses include contractual 3G royalty rates of [ ] CX-1521C (Putnam RWS) at Q105; CX-2169C (summary of license terms). While the lump

sum agreements do not have running royalty rates and cannot be directly compared to running royalty agreements, Dr. Putnam's calculation of expected effective royalty rates for the [ ] lump-sum agreements are between [ ] for WCDMA and between [ ] for CDMA2000. CX-1521C (Putnam RWS) at Q126, Q134, Q152.

ii. InterDigital's Offer to Huawei

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CX-3751C; CX-1521C

CX-1521C CX-2169C

CX-1521C

[

]

iii. InterDigital's Offer to ZTE

Similarly, ZTE has failed to show that InterDigital's [ ] license offer to ZTE was discriminatory. [

CX-2621C; CX-1521C]

ZTE claims that it has been discriminated against because (i) it "offers its handsets at a lower average selling price relative to other top handset manufacturers," and should thus be entitled to a lower royalty rate, and (ii) [

] and ZTE should thus be entitled to a lower rate in that jurisdiction. Resps. Br. at 563.

There is no basis for ZTE's argument that its prices or profit margins should affect what would be a FRAND rate. Moreover, offering a single worldwide rate is not discriminatory, but

instead is consistent with InterDigital's standard licensing practice. CX-1521C (Putnam RWS) at Q238. Accordingly, ZTE's claims of discrimination are not persuasive.

ZTE also claims that InterDigital has discriminated against ZTE because InterDigital has not offered ZTE a royalty rate of [ ]. Resps. Br. at 562. ZTE does not explain why or how Nokia should be considered a similarly-situated licensee, or why InterDigital is required to offer ZTE identical terms.

iv. InterDigital's Offer to Nokia

[ ] RX-0616C. [

] *See* Resps. Br. at 566 n.68. [

]

d. Equitable Estoppel

Respondents argue that InterDigital should be estopped from "using the exclusion order it seeks in this Investigation." *See* Resps. Br. at 567-71. The Federal Circuit's opinion in *A.C. Aukerman Co. v. R.L. Chaides Constr. Co.*, 960 F.2d 1020 (Fed. Cir. 1992) sets forth the standard to be applied with respect to a defense of equitable estoppel in a patent case. In *Aukerman*, the Federal Circuit held, *inter alia*, that "[e]quitable estoppel is cognizable under 35 U.S.C. § 282 as an equitable defense to a claim for patent infringement," that "[w]here an alleged infringer establishes the defense of equitable estoppel, the patentee's claim may be entirely

barred," that three elements must be established to bar a patentee's suit by reason of equitable estoppel, and that "[n]o presumption is applicable to the defense of equitable estoppel."[98] 960 F.2d at 1028. The three elements that must be established in an equitable estoppel case are the following: (1) "the statements or conduct of the patentee . . . must communicate something in a misleading way," (2) "[the] accused infringer must show that, in fact, it substantially relied on the misleading conduct of the patentee in connection with taking some action," and (3) "the accused infringer must establish that it would be materially prejudiced if the patentee is now permitted to proceed."[99] *Id.* at 1042-43. "Finally, the trial court must, even where the three elements of equitable estoppel are established, take into consideration any other evidence and facts respecting the equities of the parties in exercising its discretion and deciding whether to allow the defense of equitable estoppel to bar the suit.[100] *Id.* at 1043.

Respondents argue that InterDigital's statements to ETSI and ITU that InterDigital would grant licenses on FRAND terms were misleading, inasmuch as "[t]hose statements induced implementers, including the Respondents, to reasonably rely on those statements and conclude that FRAND licenses would be available for the Asserted Patents." Resps. Br. at 567-68. With respect to reliance, Respondents argue that they have each invested large sums in the development, manufacture, and sale of products compliant with the relevant standards. Resps.

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[98] The Federal Circuit, contrasting equitable estoppel with laches (also at issue in the *Aukerman* appeal) held, "Because the whole suit may be barred, we conclude that the defendant should carry a burden to establish the defense based on proof, not a presumption." *Aukerman*, 960 F.2d at 1043.

[99] "As with laches, the prejudice may be a change of economic position or loss of evidence." *Aukerman*, 960 F.2d at 1043.

[100] The Federal Circuit also held that "since no special considerations are implicated by the defense of equitable estoppel as we have defined it herein, we adopt the preponderance of evidence standard in connection with the proof of equitable estoppel factors, absent special circumstances, such as fraud or intentional misconduct." *Aukerman*, 960 F.2d at 1046.

Br. at 569. Respondents also argue that "Respondents would suffer material prejudice if this Commission were to issue an exclusionary or cessation order barring the importation of all or a substantial portion of their products into the United States based on misleading statements made by InterDigital." Resps. Br. at 569-70.

The evidence adduced by Respondents fails to show that they relied on InterDigital's statements to ETSI and ITU to such an extent that applying an equitable estoppel bar is warranted in this investigation. It is undisputed that Respondents invested hundreds of millions of dollars in the mobile handsets at issue in this investigation, but they have not shown that they relied on any specific statements InterDigital made to the SSOs. Furthermore, it has also not been shown that the statements made by InterDigital were, in fact, misleading. As discussed above, InterDigital's conduct has not been shown to violate the FRAND obligation to negotiate a license in good faith.

Therefore, Respondents have not prevailed in their equitable estoppel defense.[101]

e. Waiver

Respondents argue that InterDigital has waived its right to enforce its patents before the Commission. *See* Resps. Br. at 571. An implied waiver defense may be applicable against a party if (i) the party has intentionally relinquished its rights to enforce the patents or (ii) its conduct was so inconsistent with the intent to enforce its patents as to induce a reasonable belief

[101] Respondents also argue that InterDigital's claims are barred by the doctrine of promissory estoppel. Resps. Br. at 570-71. A basis for promissory estoppel is established if (i) a promise was made, (ii) it was the reasonable expectation of the promisor to induce action or forbearance on the part of the promise, (iii) the promise reasonably relied on the promise and took action to his detriment, and (iv) the promise is binding because injustice can be avoided only by enforcement of the promise. *See Lord v. Souder*, 748 A.2d 393, 399 (Del. 2000). For the reasons discussed with respect to Respondents' defense of equitable estoppel, inasmuch as Respondents have not proven reasonable reliance on InterDigital's statements to the relevant SSOs, Respondents have not prevailed in their promissory estoppel defense.

that the right had been relinquished. *See, e.g.*, *Qualcomm Inc. v. Broadcom Corp.*, 548 F.3d 1004, 1020 (Fed. Cir. 2008) (upholding application of the implied waiver defense when Qualcomm had failed to disclose essential patents). It is argued that:

> InterDigital's conduct was intended to assure willing licensees that they could license the patents-in-suit on FRAND terms and that they would not be denied the ability to practice the patents-in-suit through injunctive or exclusionary relief. InterDigital breached this obligation when InterDigital failed to offer or accept FRAND terms and by seeking injunctive relief before the Commission. Likewise, the Respondents have all relied on InterDigital's statements in deciding to manufacture products utilizing the relevant standards.

Resps. Br. at 571.

The *Qualcomm* case centered on a patent holder that did not disclose essential patents to the relevant SSO. There is no such allegation in this investigation. In fact, InterDigital did disclose the asserted patents, but it has not been shown that InterDigital waived its right to assert the patents by doing so. Accordingly, Respondents have not prevailed in their waiver defense.

f. Implied License

Respondents also argue that InterDigital has granted an implied license to the asserted patents to Respondents. Resps. Br. at 572. In the context of patent law, an implied license signifies a patent holder's waiver of the right to exclude others from making, using or selling the patented invention. *See Wang Labs., Inc. v. Mitsubishi Elecs. Am. Inc.*, 103 F.3d 1571, 1580 (Fed. Cir. 1997) (citing *Spindelfabrik Suessen-Schurr, Stahlecker & Grill GmbH v. Schubert & Salzer Maschinenfabrik Akttiengesellschaft*, 829 F.2d 1075, 1081 (Fed. Cir. 1987)). In support of their implied license argument, Respondents argue that "InterDigital's conduct before ETSI and ITU has plainly manifested its consent to the Respondents' use of its declared-essential

patents subject to final agreement on, or determination of, the FRAND compensation to be paid for such use." Resps. Br. at 572.

Respondents have provided no authority supporting the proposition that an executed document, such as an ETSI IPR Information Statement and Licensing Declaration or a similar declaration to the ITU, resulted in an implied license. In fact, the record evidence shows that such declarations indicate that InterDigital is merely prepared to grant a license on FRAND/RAND terms.

In addition, to the extent that Respondents argue that the ETSI IPR undertaking is an actual license under French law, it is determined that there is not a license from InterDigital to Respondents, inasmuch as InterDigital has not received compensation for ongoing royalties from the Respondents. *See* Resps. Br. at 513-16; Compls. Reply at 244-45.

Accordingly, it is found that Respondents have not carried their burden with respect to their defense of implied license.

g. Patent Misuse

Respondents argue that "InterDigital is barred from enforcing the patents in suit by the doctrine of patent misuse." Resps. Br. at 572-74. "The key inquiry under the patent misuse doctrine is whether, by imposing the condition in question, the patentee has impermissibly broadened the physical or temporal scope of the patent grant and has done so in a manner that has anticompetitive effects." *Princo Corp. v. Int'l Trade Comm'n*, 616 F.3d 1318, 1328 (Fed. Cir. 2010). A finding of misuse renders a patent temporarily unenforceable until the misuse has been purged. *B. Braun Medical, Inc. v. Abbott Labs.*, 124 F. 3d 1419, 1427 (Fed. Cir. 1997).

Respondents' patent misuse theory rests on the claim that, by seeking worldwide licenses for its patent portfolio, InterDigital has impermissibly expanded the scope of its U.S. patents

outside the United States. *See* Resps. Br. at 573-74. As discussed above, InterDigital's practice of licensing its patents on a worldwide basis does not indicate a refusal to negotiate in bad faith. In fact, the evidence shows that this practice is common among global companies. It is therefore determined that Respondents have failed to prove patent misuse.

B. License

Respondents allege that they are licensed to four of the seven asserted patents with respect to the accused products in this investigation [

] *See* Resps. Br. at 574-86.

Respondents argue:

[

]

Id. at 574-75.

1. General Principles of Law

A license under a patent, whether express or implied, is generally a complete defense to a charge of infringement, as long as the patent or invention is used in accordance with the license agreement. *Certain Mobile Devices and Related Software*, Inv. No. 337-TA-750, Initial Determination at 186 (Jan. 25, 2012) ("*Mobile Devices*") (unreviewed in relevant part); *see also Cytrix Corp. v. Intel Corp.,* 77 F.3d 1381, 1385-87 (Fed. Cir. 1996) (affirming summary judgment of non-infringement based on express license). A respondent has the burden to prove

the affirmative license defense by a preponderance of the evidence. *Mobile Devices*, Initial Determination at 186.

2. Factual Background

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RX-3441C ; RX-3716C

RX-3441C ; CX-1522C

RX-3441C

RX-3441C

RX-3441C

CX-1522C

RX-3441C]

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RX-0539C

CX-1522C

RX-3454C

RX-3455C

CX-1522C

CX-1522C

See CX-1522C

CX-4108 CX-4109

CX-4110 CX-3716C

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3. Analysis and Conclusion

[

RX-3441C]

[

(JX-0026),

(RX-3441C

(RX-0183

(RX-3441C
RX-3716C .]

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RX-3441C

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Id. at 583.

RX-3455C

CX-1522C

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X. Conclusions of Law

1. The Commission has subject matter, personal, and *in rem* jurisdiction in this investigation.

2. The importation requirement is satisfied as to Nokia, Huawei, and ZTE.

3. Respondents' accused products do not infringe asserted claims 1, 2, 3, and 5 of the '830 patent; asserted claims 1, 2, 4, 6, 7, and 8 of U.S. Patent No. the '636 patent; asserted claims 6, 13, 20, 26, and 29 of the '406 patent; asserted claims 2, 3, 4, 7, 8, 9, 10, 11, 14, 22, 23, 24, and 27 of the '332 patent; asserted claims 1, 2, 3, 4, 5, 6, and 7 of the '127 patent; asserted claims 16, 17, 18, and 19 of the '013 patent; or asserted claims 10, 11, 12, 13, 14, 15, 16, 17, and 18 of the '970 patent.

4. Respondents' accused products infringe asserted claims 1, 2, 3, 4, 5, 6, 7, 8, and 9 of the '970 patent.

5. It has not been shown by clear and convincing evidence that any asserted claim of the '830 patent, the '636 patent, the '406 patent, or the '332 patent is invalid.

6. It has been shown by clear and convincing evidence that asserted claims 1, 2, 3, 4, 5, 6, and 7 of the '127 patent; asserted claims 16, 17, 18, and 19 of the '013 patent; and asserted claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, and 18 of the '970 patent are invalid in light of prior art references.

7. The domestic industry requirement is satisfied as to all asserted patents.

8. Respondents have not shown that they are licensed under the asserted patents.

9. Respondents have not prevailed on any equitable or FRAND defense.

XI. Initial Determination on Violation

Accordingly, it is the Initial Determination of the undersigned that no violation of section 337 (19 U.S.C. § 1337) has occurred in the importation into the United States, the sale for importation, or the sale within the United States after importation of certain wireless devices with 3G capabilities and components thereof with respect to asserted claims 1, 2, 3, and 5 of U.S. Patent 7,706,830; asserted claims 1, 2, 4, 6, 7, and 8 of U.S. Patent No. 8,009,636; asserted claims 6, 13, 20, 26, and 29 of U.S. Patent No. 7,502,406; asserted claims 2, 3, 4, 7, 8, 9, 10, 11, 14, 22, 23, 24, and 27 of U.S. Patent No. 7,706,332; asserted claims 1, 2, 3, 4, 5, 6, and 7 of U.S. Patent No. 7,970,127; asserted claims 16, 17, 18, and 19 of U.S. Patent No. 7,536,013; and asserted claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, and 18 of U.S. Patent No. 7,616,970.

Further, this Initial Determination, together with the record of the hearing in this investigation consisting of (1) the transcript of the hearing, with appropriate corrections as may hereafter be ordered, and (2) the exhibits received into evidence in this investigation, is hereby CERTIFIED to the Commission.

In accordance with 19 C.F.R. § 210.93(c), all material found to be confidential by the undersigned under 19 C.F.R. § 210.5 is to be given *in camera* treatment.

The Secretary shall serve a public version of this Initial Determination upon all parties of record and the confidential version upon counsel who are signatories to the Protective Order, as amended, issued in this investigation.

Pursuant to 19 C.F.R. § 210.42(h), this Initial Determination shall become the determination of the Commission unless a party files a petition for review pursuant to

§ 210.43 (a) or the Commission, pursuant to § 210.44, orders on its own motion a review of the ID or certain issues herein. **XII. Order**

To expedite service ofthe public version, each party is hereby ordered to file with the Comrnission Secretary no later than July 8, 2013, a copy of this Initial Determmation with brackets to show any portion considered by the party (or its suppliers of mformation) to be confidential, accompanied by a list indicating each page on which such a bracket is to be found.[102] At least one copy of such a filing shall be served upon the office of tlie undersigned, and the brackets shall be marked in red. If a party (and its suppliers of iriformation) considers nothing in the Initial Determination to be confidential, and thus makes no request that any portion be redacted from the public version, then a statement to that effect shall be filed.

David P. Shaw
Administrative Law Judge

Issued: June 28, 2013

Confidential business infonnation ("CBI") is defined in accordance with 19 C.F.R. § 201.6(a) and § 210.5(a). When bracketing portions of this Initial Determination to indicate CBI, ahigh level of care must be exercised in order to ensure that non-CBI portions are not indicated. Oflier than in extreniely rare circumstances, block-bracketing is prohibited. In most cases, bracketing of only discrete CBI words and phrases will be permitted.

CERTAIN WIRELESS DEVICES WITH 3G CAPABILITIES AND COMPONENTS THEREOF

Inv. No. 337-TA-800

PUBLIC CERTIFICATE OF SERVICE

I, Lisa R. Barton, hereby certify that the attached **INITIAL DETERMINATION** has been served by hand upon the Commission Investigative Attorney, **Brian Koo, Esq.**, and the following parties as indicated on JUL 29 2013.

Lisa R. Barton, Acting Secretary
U.S. International Trade Commission
500 E Street, SW, Room 112A
Washington, DC 20436

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