UNITED STATES INTERNATIONAL TRADE COMMISSION

Washington, D.C.

In the Matter of **CERTAIN ELECTRONIC DEVICES WITH COMMUNICATION CAPABILITIES, COMPONENTS THEREOF, AND RELATED SOFTWARE**	**Inv. No. 337-TA-808**

ORDER NO. 16: CONSTRUING TERMS OF THE ASSERTED PATENTS

(June 18, 2012)

The claim terms construed in this Order are done so for the purposes of this Investigation. Hereafter, discovery and briefing in this Investigation shall be governed by the construction of the claim terms in this Order. Those terms not in dispute need not be construed. *See Vanderlande Indus. Nederland BV v. Int'l Trade Comm'n*, 366 F.3d 1311, 1323 (Fed. Cir. 2004) (noting that the administrative law judge need only construe disputed claim terms).

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Table of Abbreviations

COB	Complainant's Opening Markman Brief
CRB	Complainant's Reply Markman Brief
C. Ex.	Complainant's Exhibit
ROB	Respondents' Opening Markman Brief
RRB	Respondents' Reply Markman Brief
R. Ex.	Respondents' Exhibit
SB	Staff's Markman Brief
S. Ex.	Staff's Exhibit

I. INTRODUCTION

By publication of notice in the Federal Register, this Investigation was instituted by the Commission on September 30, 2011, to determine whether certain electronic devices with communication capabilities, components thereof, and related software infringe one or more of claims 1, 4–13, and 15–21 of U.S. Patent No. 7,765,414 ("the '414 patent"); claim 1 of U.S. Patent No. 7,417,944 (''the '944 patent''); claims 1–5 of U.S. Patent No. 7,672,219 (''the '219 patent''); claims 1–3 of U.S. Patent No. 6,708,214 (''the '214 patent''); claims 1, 3, and 7–11 of U.S. Patent No. 6,473,006 (''the '006 patent''); claims 1, 2, and 9 of U.S. Patent No. 7,289,772 (''the '772 patent''); claims 11, 12, and 19 of U.S. Patent No. 6,868,283 (''the '283 patent''); and claims 1, 5, 9–11, 13, 14, 16, and 17 of U.S. Patent No. 7,020,849 (''the '849 patent'') and whether an industry in the United States exists or is in the process of being established as required by subsection (a)(2) of section 337. 76 Fed. Reg. 60870 (Sept. 30, 2011). The complainant is HTC Corp. ("HTC"). The respondent is Apple Inc. ("Apple"). The Commission Investigative Staff ("Staff") is participating in this Investigation with respect to the '214, '006, '944, and '219.

On April 26-27, 2012, a Markman hearing was held in this Investigation. On June 8, 2012, I issued an Initial Determination Granting Apple's Motion for Partial Termination of the Investigation with Respect to the '006, '214, '283, '849, and '772 Patents Due to Lack of Standing. (Order. No. 15.) Accordingly, this Order does not address the disputed terms of the '006, '214, '283, '849, and '772 Patents.

II. RELEVANT LAW

"An infringement analysis entails two steps. The first step is determining the meaning and scope of the patent claims asserted to be infringed. The second step is comparing the properly construed claims to the device accused of infringing." *Markman v. Westview*

Instruments, Inc., 52 F.3d 967, 976 (Fed. Cir. 1995) (*en banc*) (internal citations omitted), *aff'd*, 517 U.S. 370 (1996). Claim construction is a "matter of law exclusively for the court." *Id.* at 970-71. "The construction of claims is simply a way of elaborating the normally terse claim language in order to understand and explain, but not to change, the scope of the claims." *Embrex, Inc. v. Serv. Eng'g Corp.*, 216 F.3d 1343, 1347 (Fed. Cir. 2000).

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

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

his invention."). The context in which a term is used in an asserted claim can be ""highly instructive." *Phillips*, 415 F.3d at 1314. Additionally, other claims in the same patent, asserted or unasserted, may also provide guidance as to the meaning of a claim term. *Id.*

The specification "is always highly relevant to the claim construction analysis. Usually it is dispositive; it is the single best guide to the meaning of a disputed term." *Id.* at 1315 (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). "[T]he specification may reveal a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess. In such cases, the inventor's lexicography governs." *Id.* at 1316. "In other cases, the specification may reveal an intentional disclaimer, or disavowal, of claim scope by the inventor." *Id.* As a general rule, however, the particular examples or embodiments discussed in the specification are not to be read into the claims as limitations. *Id.* at 1323. In the end, "[t]he construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be ... the correct construction." *Id.* at 1316 (quoting *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998)).

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

1371, 1384 (Fed. Cir. 2005) ("The purpose of consulting the prosecution history in construing a claim is to exclude any interpretation that was disclaimed during prosecution.").

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

If, after a review of the intrinsic and extrinsic evidence, a claim term remains ambiguous, the claim should be construed so as to maintain its validity. *Phillips*, 415 F.3d at 1327. Claims, however, cannot be judicially rewritten in order to fulfill the axiom of preserving their validity. *See Rhine v. Casio, Inc.*, 183 F.3d 1342, 1345 (Fed. Cir. 1999). Thus, "if the only claim construction that is consistent with the claim's language and the written description renders the claim invalid, then the axiom does not apply and the claim is simply invalid." *Id.*

III. THE GEILE PATENTS

A. Overview

U.S. Patent Nos. 7,417,944 B2 ("the '944 patent") and 7,672,219 B2 ("the '219 patent") share the same specification and are related, each claiming priority to the same parent patent application. The named inventor of the patents is Michael J. Geile and the patents list ADC

Telecommunications Inc. as the assignee. ADC Telecommunications, Inc. transferred certain rights in the '944 and '219 patents to HTC by assignment dated April 12, 2011. Amended Complaint, Exs. 5, 6 (Sept. 7, 2011).

1. The '944 Patent

The '944 patent, titled "Method for Orderwire Modulation," was filed on June 14, 2007, and issued on August 26, 2008. According to U.S. Patent & Trademark Office records, the '944 patent is a continuation of U.S. Application Serial No. 11/420,851, filed on May 30, 2006, which is a division of U.S. Application Serial No. 09/903,273, filed on July 11, 2001, now U.S. Patent No. 7,069,577, which is a continuation of U.S. Application Serial No. 09/397,443, filed on September 15, 1999, now U.S. Patent No. 6,279,158, which is a division of U.S. Application Serial No. 08/673,002, filed on June 28, 1996, now U.S. Patent No. 6,334,219, which is a continuation-in-part of U.S. Application Serial No. 08/650,408, filed on May 20, 1996, now abandoned, and a continuation-in-part of U.S. Application Serial No. 08/457,295, filed on June 1, 1995, now abandoned, and a continuation-in-part of U.S. Application Serial No. 08/457,317, filed on June 1, 1995, now abandoned, and a continuation-in-part of U.S. Application Serial No. 08/384,659, filed on February 6, 1995, now abandoned.

The '944 patent has two claims, of which claim 1 is at issue in this investigation. Claim 1 reads as follows (with the disputed terms highlighted in bold):

> 1. A method for **an orthogonal frequency division multiplexing multipoint-to-point communications system**, the method comprising:
>
> establishing communication between a first remote unit of a plurality of remote units and a host unit, **the plurality of remote units communicatively coupled to the host unit in a multipoint-to-point configuration**;

transmitting non-control data on up to a plurality of tones[1] from the first remote unit using an orthogonal frequency division multiplexing (OFDM) waveform, the up to a plurality of tones modulated with the non-control data using a first modulation scheme; and

transmitting control signals on up to a plurality of tones from the first remote unit using an orthogonal frequency division multiplexing (OFDM) waveform, the up to a plurality of tones modulated with the control signals using a second, more robust modulation scheme;

wherein transmitting the control signals comprises transmitting control signals on tones modulated using binary phase shift keying (BPSK).

2. The '219 Patent

U.S. Patent 7,672,219 B2 titled "Multipoint-to-Point Communication Using Orthogonal Frequency Division Multiplexing," was filed on February 6, 2007, and issued on March 2, 2010.According to U.S. Patent & Trademark Office records, the '219 patent is a continuation of U.S. Application Serial No. 11/420,851, filed on May 30, 2006, which is a division of U.S. Application Serial No. 09/903,273, filed on July 11, 2001, now U.S. Patent No. 7,069,577, which is a continuation of U.S. Application Serial No. 09/397,443, filed on September 15, 1999, now U.S. Patent No. 6,279,158, which is a division of U.S. Application Serial No. 08/673,002, filed on June 28, 1996, now U.S. Patent No. 6,334,219, which is a continuation-in-part of U.S. Application Serial No. 08/650,408, filed on May 20, 1996, now abandoned, and a continuation-in-part of U.S. Application Serial No. 08/457,295, filed on June 1, 1995, now abandoned, and a continuation-in-part of U.S. Application Serial No. 08/457,317, filed on June 1, 1995, now abandoned, and a continuation-in-part of U.S. Application Serial No. 08/384,659, filed on February 6, 1995, now abandoned.

[1] The parties shall address how "tones" are utilized in the allegedly infringing devices in their pre-hearing briefs including how this pertains to wireless technology.

The '219 patent has twelve claims, of which claims 1-5 are at issue in this investigation.

These claims read as follows (with the disputed terms highlighted in bold):

> 1. **A remote communication device** for operation in a bidirectional communication system, the device comprising:
>
> at least one symbol mapper for mapping symbols using quadrature amplitude modulation (QAM) symbol mapping and phase-shift keying (PSK) symbol mapping;
>
> a Fast Fourier Transform (FFT) engine that receives a frame of parallel data based on symbol data generated by the symbol mapper, **the Fast Fourier Transform (FFT) engine generating a frame of time domain in-phase and quadrature phase data from the symbol data generated by the symbol mapper**;
>
> at least one converter generating an analog signal based on the stream of time domain in-phase and quadrature phase data;
>
> a radio frequency transmitter for transmitting a radio frequency signal based on the analog signal; and
>
> a processor, wherein the symbol mapper is responsive to the processor, and the processor controls **synchronization of symbol timing and carrier frequency of transmissions from the radio frequency transmitter**.
>
> 2. The remote communication device of claim 1, wherein the radio frequency transmitter modulates a carrier frequency with the at least one analog signal.
>
> 3. The remote communication device of claim 1, further comprising:
>
> a buffer receiving symbols of both payload and control data from the at least one symbol mapper.
>
> 4. The remote communication device of claim 1, wherein the at least one converter comprises at least one digital to analog converter (DAC) receiving the time domain in-phase and quadrature phase data and generating at least one analog signal based on the stream of time domain in-phase and quadrature phase data.
>
> 5. The remote communication device of claim 1, wherein the at least one symbol mapper comprises a binary phase-shift keying (BPSK) symbol mapper.

B. Ordinary Skill in the Art

HTC asserts a person of ordinary skill in the art would be a person with a bachelor's degree in electrical engineering or its equivalent, and at least three years of experience in telecommunications. (COB at 93.) HTC further asserts more education could substitute for experience, and that experience, especially when combined with training, could substitute for formal college education. (*Id.*)

Apple's expert, Dr. Wicker, asserts a person of ordinary skill in the art would be a person with a master's degree in electrical engineering or a related field with an emphasis in digital communications and two years of experience with modem design or communication system design. (R. Ex. 15-1 at ¶ 17; *see also* RRB at 6 n.2.) Dr. Wicker alternatively asserts a person of ordinary skill in the art would hold a bachelor's degree in electrical engineering or a related field, with an emphasis in digital communications, would have taken at least two courses in the communications area, and would have had at least four years of experience with modem design or communication system design. (R. Ex. 15-1 at ¶ 17; *see also* RRB at 6 n.2.)

The parties agree that a person of ordinary skill in the art would hold a bachelor's degree in electrical engineering or its equivalent.[2] Both parties require experience with communications, but disagree on the number of years of experience required. The level of skill articulated by Apple goes beyond the level of ordinary skill in the art. Apple has not offered a sufficient justification regarding why a person of ordinary skill in the art would need both the stated academic focus and course work and four years of experience with modem design or communications system design. *Standard Oil Co. v. American Cyanamid Co.*, 774 F.2d 448,

[2] Dr. Wicker offers an alternative position that requires a master's degree.

454 (Fed. Cir. 1985) ("A person of ordinary skill in the art is...presumed to be one who thinks along the line of conventional wisdom in the art and is not one who undertakes to innovate, whether by patient, and often expensive, systematic research or by extraordinary insights, it makes no difference which."). The '944 and '219 patents are directed to OFDMA (orthogonal frequency division multiple access) systems. '944 Abstract; '219 Abstract. There is no discussion in the '944 or '219 patent suggesting that the OFDMA systems being addressed by the patents would require the level of education or experience suggested by Apple. Accordingly, I find that a person of ordinary skill in the art is a person who has bachelor's degree in electrical engineering or its equivalent, and at least three years of experience in telecommunications.

C. Disputed Claim Terms

1. "an orthogonal frequency division multiplexing multipoint-to-point communications system" ('944 patent, claim 1)

(Plain and ordinary meaning) "a communications system in which one or more remote units share access to a medium to communicate with a host unit, each remote unit transmitting information over a plurality of orthogonal carriers"	"a communication system in which multiple remote units simultaneously transmit on different subsets of orthogonal subcarriers to a single host unit, *i.e.,* OFDMA"	"a communication system in which multiple remote units simultaneously transmit on different subsets of orthogonal subcarriers to a single host unit"

HTC argues its proposed construction is consistent with the plain and ordinary meaning of the disputed term, the claim language, and the specification. (COB at 96.) HTC asserts OFDM means a technique for transmitting information over a plurality of orthogonal carriers. (*Id.* (citing '944 patent, at 19:10-37; C Ex. 28 at ¶ 39.) HTC asserts the term "multipoint-to-point communications system" means "a communications system in which one or more remote

units share access to a medium to communicate with a host unit." (COB at 96 (citing Ex. 27 at ¶ 156; Ex. 28 at ¶ 39.) HTC argues Apple's proposed construction is inconsistent with the claim language, the relevant prosecution history, and reflects a fundamental misunderstanding of the technology as it adds two additional limitations to this term—first, by adding the requirement that "multiple remote units simultaneously transmit" signals to the host unit; and second, by restricting the claim even further by adding "*i.e.,* OFDMA" at the end of its construction. (COB at 96-100.)

Apple argues its construction is supported by the specification and certain statements made during the prosecution of related patents unequivocally and unambiguously limit the scope of the '944 patent to an OFDMA system. (ROB at 21-39.) Apple argues that HTC's proposed construction is contrary to the '944 patent specification, the '944 patent file history, and related application file histories. (ROB at 36-37.) Apple asserts, for example, because HTC is attempting to construe this term as "a communications system in which ***one or more*** remote units share access to a medium to communicate with a host unit," the scope of HTC's proposed construction encompasses not only multipoint-to-point OFDM (*i.e.,* OFDMA), but also architectures that are point-to-point at a given point in time, such as TDMA and point-to-point OFDM. (*Id.* at 37.)

The Staff asserts the parties primarily dispute two points with respect to this phrase: (1) whether "multiplexing multipoint-to-point communications" requires that a communications medium be shared *simultaneously* by multiple remote units; and (2) whether this disputed phrase is limited to orthogonal frequency division multiple access ("OFDMA"). (SB at 12.) The Staff states that Apple contends that the intrinsic evidence and prosecution disclaimer overwhelmingly

support its position that sharing must be simultaneous and limited to OFDMA. (SB at 12 (citing ROB at 21-38).) The Staff states that HTC, on the other hand, proposes a construction that requires neither orthogonal frequency division multiplexing, multipoint-to-point communications, nor OFDMA. (SB at 12 (citing COB at 95-100).) The Staff states except with respect to the OFDMA requirement, the Staff agrees with Apple. (SB at 12.)

The Staff submits that, in light of the intrinsic record, the phrase "orthogonal frequency division multiplexing multipoint-to-point communications system" requires simultaneous transmission by multiple remote units. (SB at 12-14.) The Staff argues HTC's proposed construction is not supported by the intrinsic record or the plain language of the claim and is so broad that it covers any multiple access technique. (*Id.* at 14.)

I find that the term "an orthogonal frequency division multiplexing multipoint-to-point communications system" means "a communication system in which multiple remote units simultaneously transmit on different subsets of orthogonal subcarriers to a single host unit, *i.e.*, an OFDMA system."

Claim 1 of the '944 patent recites "an orthogonal frequency division multiplexing multipoint-to-point communications system." As noted by Apple and Staff, in light of the intrinsic record of the '944 patent, it is clear that the phrase "multipoint-to-point communications" was not intended to encompass all methods of multiple access, but instead was intended to require simultaneous transmission by multiple remote devices to form a single, unified signal. (ROB at 21-39; Staff at 12-14.)

The '944 patent describes an OFDM multipoint-to-point communications system where signals from multiple remote units are combined to form a single unified OFDM signal:

> In a bidirectional multipoint-to-point multicarrier plant [] the head-end receiver sees all channels as though they had been generated by a single source, because the HDT decodes all channels in an entire 6 MHz band as a single orthogonal waveform, with a single FFT converter.

'944 patent at 67:30-35; *see also id.* at 66:22-27. In order for transmissions from the remote units to appear as a single unified waveform, it is necessary that those transmissions be carefully synchronized. *Id.* at 49:51-50:6, 56:62-57:6. This synchronization, according to the patent, is necessary "due to the ***multi-point to point nature*** of transport [...] from multiple ISUs 100 to a single HDT 12[]." *Id.* at 39:39-44 (emphasis added). The multipoint-to-point nature of the transmission (*i.e.*, the forming of a single, unified signal through simultaneous transmissions of remote units) requires that the "symbol periods of all channels received upstream from the different ISUs 100 are aligned at the point they reach the HDT 12." *Id.* at 36:11-30. In other words, the specification uses multipoint-to-point communications to refer to a multiple access technique where remote devices simultaneously transmit to form a combined, unified signal.

The prosecution history of the application that matured as the '944 patent makes clear that the claimed invention is limited to an OFDMA system. In a November 1, 2007, Response to an Office Action dated October 1, 2007, applicant traversed a rejection to claim 1 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 5,446,727 ("Bruckert"). (S. Tab 6 at 0056-0062.) The applicant argued that "one of ordinary skill in the art upon reading the present specification would readily appreciate that the code-division multiple access (CDMA) scheme described by Bruckert cannot be credited with disclosing or suggesting the orthogonal frequency division multiplexing (OFDM) scheme of the present application because the two schemes utilize substantially different modulation processes to produce waveforms having substantially different structures." (*Id.* at 0057.) In support of this argument, applicant submitted a

declaration by Prof. Jeffrey G. Andrews, Ph.D. filed under 37 C.F.R. § 1.132 in the form of expert testimony ("1.132 Declaration"). (*Id.*)

The applicant argued:

> Further, at least one reference on record supports the applicant in its position that one of ordinary skill in the art could not simply select OFDM as an obvious design choice in a multipoint-to-point network at the time of the priority date of this application. See, Engstrom, "A system for Test of Multiaccess Methods based on OFDM", [sic] June 1994. The Engstrom article tells us that
>
> > OFDM ('Orthogonal Frequency Division Multiplex'), has only been used for broadcasting of digital radio and television and has not previously been used in a multi-access environment. ... In the downlinks (base to mobile) a transmission scheme, similar to that used in an ordinary broadcast system, could be used. For the uplinks however, we can not expect the perfect synchronization needed to get the orthogonal carriers necessary for normal OFDM signaling.
>
> Engstrom, Abstract. The Engstrom article does not itself identify a solution to achieve the required synchronization, concluding only that it is "a non trivial task." See, Engstrom, p 1844. Accordingly, the applicant respectfully asserts that Bruckert does not enable one of ordinary skill in the art to realize multipoint-to-point OFDM communication as described by the claims of the present application.
>
> As Professor Andrews further explains "OFDM is a modulation scheme, and wasn't intended at first to carry the data of multiple users" but was instead designed as "a type of digital modulation, in which a *single user's* data is modulated onto a plurality of subcarriers." See, 1.132 Declaration, Section 4 paragraphs 1 and 4. **In order to use OFDM as the basis for a multiple access system "it is important that all the users are aligned in time and frequency. This is not difficult in the *downlink* (from a central base station to a number of receivers), but is quite difficult in the *uplink*, since each user's transmitter is not necessarily synchronized in time and frequency."** See 1.132 Declaration, Section 4 paragraph 3.

(S. Tab 6 at 0061-0062 (underscore and italics emphasis in original; bold emphasis added).)

This requirement for use of OFDM as the basis for a multiple access system is explicitly referred

to as OFDMA in Dr. Andrews' Declaration. (S. Tab 6 at 0083.) Specifically, Dr. Andrews' Declaration states:

> OFDMA refers to putting the data of different users on different subcarriers. Conceptually, one can simply let user 1 take the first group of subcarriers, user 2 the next group, and so on. In practice, there are many subtleties in how to allocate the subcarriers efficiently. Furthermore, it is important that all the users are aligned in time and frequency. This is not difficult in the downlink (from a central base station to a number of receivers), but is quite difficult in the uplink, since each user's transmitter is not necessarily synchronized in time and frequency.

(*Id.*) Dr. Andrews further explains that "OFDM is a modulation scheme, and wasn't intended at first to carry the data of multiple users" and "OFDMA is the art of putting multiple users signals simultaneously into a single OFDM block, which amounts to sharing the subcarriers amongst different users." (*Id.*) Further, Apple cites to a litany of consistent explicit representations by the applicant made to the U.S. Patent & Trademark Office during prosecution of the application that led to the '944 patent as well as related patent applications that make it clear that the claimed invention is limited to OFDMA. (ROB at 32-39; *see also* SB at 13, 14.)

With respect to HTC's proposed construction, I find the construction is impermissibly broad because it covers any multiple access technique. (COB at 96.) However, this broad construction is not supported by the intrinsic record or the plain language of the claim. Indeed, the applicant relinquished this subject matter by explicitly distinguishing point-to-point OFDM systems during prosecution before the U.S. Patent & Trademark Office:

> As Professor Andrews further explains "OFDM is a modulation system, and wasn't intended at first to carry the data of multiple users" but was instead designed as "a type of digital modulation, in which a single user's data is modulated onto a plurality of subcarriers." See, 1.132 Declaration, Section 4 paragraphs 1 and 4. In order to use OFDM as the basis for a multiple access system "it is important that all users are aligned in time and frequency. This is not difficult in the downlink (from a central base station to a number of receivers),

but is quite difficult in the uplink, since each user's transmitter is not necessarily synchronized in time and frequency." See, 1.132 Declaration, Section 4 paragraph 3.

(S. Tab 6 at 0062 (emphasis in original).) HTC cannot now recapture that which has been disclaimed or disavowed. Moreover, HTC's construction is inconsistent with the meaning of "multipoint-to-point" as it is used throughout the intrinsic record.

For the forgoing reasons, the term "an orthogonal frequency division multiplexing multipoint-to-point communications system" means "a communication system in which multiple remote units simultaneously transmit on different subsets of orthogonal subcarriers to a single host unit, *i.e.,* an OFDMA system."

2. "the plurality of remote units communicatively coupled to the host unit in a multipoint-to-point configuration" ('944 patent, claim 1)

(Plain and ordinary meaning) "the plurality of remote units ready to communicate with the host unit over a shared medium"	"the plurality of remote units simultaneously transmitting on different subsets of orthogonal subcarriers to a single host unit, *i.e.,* OFDMA"	"the plurality of remote units ready to communicate with the host unit over a shared medium"

HTC argues its proposed construction is consistent with the plain and ordinary meaning as understood by one of ordinary skill in the art and is supported by the intrinsic evidence. (COB at 100.) HTC argues Apple's proposed construction improperly incorporates limitations from a mere embodiment. (*Id.*) HTC argues the plain and ordinary meaning of "communication (data transmission)" is "[t]he transmission of information from one point to another by means of electromagnetic waves." (*Id.* at 101 (citing Ex. 34 at 218).) HTC argues the plain and ordinary meaning of "coupling (data transmission)" is "the association of two or more circuits or systems

in such -a way that power or signal information may be transferred from one to another." (*Id.* at 101 (citing Ex. 34 at 277).) HTC argues as a result, "communicatively coupled" means "ready to communicate," as reflected in HTC's and the Staff's proposed construction. (*Id.*)

HTC argues its and the Staff's proposed construction is also consistent with the '944 specification. (*Id.*) HTC asserts, for example, the specification includes a number of passages that disclose communicatively coupling a remote unit (*e.g.*, an ISU) and a host unit (*e.g.*, an HDT) such that the ISU is ready to communicate *after* going through an establishment process. (*Id.* (citing '944 patent at 51:16-19, 56:62-65, 64:17-40, 101:6-13, 103:57-59).) HTC argues thus, the remote units must initialize before transmitting, which means that the remote units are ready to transmit but not necessarily transmitting, consistent with HTC's and the Staff's proposed constructions of the claim term at issue. (COB at 102.)

HTC argues Apple's proposed construction improperly incorporates features from a disclosed embodiment. (*Id.*) Specifically, HTC asserts Apple relies on a totally unrelated claim term in attempting to limit the claim to simultaneous transmission using OFDMA. (*Id.*)

Apple argues its proposed construction is not based on any other terms in claim 1, but rather is based on the voluminous intrinsic record in which the inventor, the inventor's corroborating witness, the applicant's technical expert, and the applicant's legal representative repeatedly characterized the '944 patent multipoint-to-point system as an OFDMA system requiring simultaneous transmissions. (ROB at 23-36, 41-43.)

Staff states the parties primarily dispute whether the term "communicatively coupled" requires that remote devices need only be ready to communicate or whether the term requires that the remote devices simultaneously transmit in a multipoint-to-point configuration. (SB at

16.) Staff states it agrees with HTC's contention that the disputed term only requires that remote devices be ready to communicate. (*Id.*)

The Staff asserts the specification of the '944 patent describes initialization and synchronization that occurs before a device is ready to communicate. (*Id.* (citing '944 patent at 51:16-19, 56:62-65).) The Staff argues while such initialization and synchronization likely requires transmissions, the plain language does not require that those transmissions occur as multipoint-to-point communications. (SB at 16.) The Staff asserts, to the contrary, the plain language of the claim only requires that remote units be communicatively coupled (*i.e.*, ready to communicate) in a multipoint-to-point configuration. (*Id.*) The Staff notes the construction proposed by the Staff and HTC does ignore the "multipoint-to-point" phrase with respect to this one limitation, however, according to the Staff, this does not broaden or otherwise change the resulting claim scope to the extent that each of the recited "transmissions" would be limited to multipoint-to-point OFDM transmissions. (*Id.* at 16-17.)

The Staff notes Apple contends that the claimed "multipoint-to-point" communications requires that multiple remote devices simultaneously transmit. (SB at 17 (citing ROB at 39-43).) The Staff states with respect to the "transmission" limitations, the Staff agrees. (SB at 17.) The Staff argues, however, the plain language of this disputed term does not require transmission – the plain language of the claim term only requires that the remote units be "communicatively coupled." (*Id.*)

I find the term "the plurality of remote units communicatively coupled to the host unit in a multipoint-to-point configuration" means "the plurality of remote units ready to communicate

with the host unit over a shared medium, the plurality of remote units having synchronization of transmission timing and carrier frequency to enable simultaneous transmission to the host unit."

Apple argues applicant's statements to the PTO during prosecution of a sibling patent application (U.S. Patent Application No. 11/686,888), which shares the same specification and parent as the '944 patent, along with similar claim limitations are informative because applicant amended claim 13 of the '888 application from the exact same claim limitation as in claim 1 of the '944 patent to "establishing communication between a first remote unit of a plurality of remote units and a host unit, the plurality of remote units communicatively coupled to the host unit in a multipoint-to-point configuration using orthogonal frequency division multiple access" to "more clearly point out what was at least implied by the original claims" – *i.e.*, that the multipoint-to-point configuration was indeed an orthogonal frequency division multiple access (OFDMA) configuration. The applicant stated that claim 13 has "been amended to explicitly provide that the plurality of remote units communicate with the host through orthogonal frequency division multiple access (OFDMA)." R. Ex. 15-11 at HTC8081TC03686738-41. However, this amendment does not support the requirement of Apple's proposed construction that the "remote units simultaneously transmit[]." Indeed, as noted by HTC and the Staff, the plain language of this disputed term does not require transmission and rather requires that the remote units be "communicatively coupled."

The plain language of the claim term at issue is unambiguous that the plurality of remote units are merely "communicatively coupled" to the host unit, not "simultaneously transmitting" to the host unit, as Apple would require. Other limitations of the claim recite "transmitting non-control data" and "transmitting control signals." Clearly, had the applicant intended for

"communicatively coupled" to mean the same thing as "simultaneously transmitting," the claim would have been drafted to use the same, rather than different phrases.

HTC and the Staff are correct in that "communicatively coupled" means "ready to communicate." However, as noted by Staff, the construction proposed by the Staff and HTC ignores the "multipoint-to-point" limitation of the disputed phrase. (SB at 16-17.) HTC acknowledges that "the specification includes a number of passages that disclose communicatively coupling a remote unit (*e.g.*, an ISU [integrated service unit]) and a host unit (*e.g.*, an HDT [host digital terminal]) such that the ISU is ready to communicate *after* going through an establishment process." (COB at 101.)

As noted by HTC:

> In the upstream direction, each ISU 100 must be ***initialized and activated*** through a process of upstream synchronization ***before*** an HDT 12 can enable the ISU 100 for ***transmission***.

'944 patent at 56:62-65 (emphasis added). HTC is correct that the remote unit must be initialized and activated before it is ready to communicate:

> ***Until the ISU is initialized and activated, the ISU 100 has no capability of transmitting telephony data information on any of the 480 tones or carriers.*** After such initialization and activation has been completed, the ***ISUs are within tolerance required for transmission*** within the OFDM waveform and the ISU is informed that transmission is possible and upstream synchronization is complete.

Id. at 61:35-41 (emphasis added). While the remote units are "within tolerance required for transmission" upon initialization and activation, the remote units must "maintain required upstream synchronization system parameters:"

> After the ISU is initialized and activated into the system, *ready for transmission*, the ISU *will maintain required upstream synchronization system parameters* using the carrier, amplitude, frequency recovery block 222. An unused but

initialized and activated ISU will be commanded to transmit on an IOC and the block 222 will estimate the parameters therefrom as explained above.

(*Id.* at 51:16-22 (emphasis added).)

Indeed, the '944 patent discusses extensively the synchronization required for the '944 patent multipoint-to-point configuration to enable a plurality of remote units to transmit on different subsets of orthogonal subcarriers to a single host unit. *See id.* col. 41:9-23; *id.* col. 44:56-63. For example, the specification states:

> The primary difference between the downstream and upstream paths are the support of downstream synchronization and upstream synchronization. ***In the downstream direction, all ISUs lock to information from the HDT (point to multi-point). The initialization and activation of ISUs are based on signals supplied in the upstream synchronization channel. During operation, ISUs track the synchronization via the IOC channels. In the upstream, the upstream synchronization process involves the distributed (multi-point to point) control of amplitude, frequency, and timing; although frequency control can also be provided utilizing only the downstream synchronization channel as described further below. The process of upstream synchronization occurs in one of the two upstream synchronization channels, the primary or the secondary synchronization channel.***

'944 patent at 41:9-23 (emphasis added); *see also id.* at 44:56-63.

> After an ISU 100 is initialized and activated for the system, ***follow-up synchronization or tracking may be performed periodically to keep the ISUs calibrated within the required tolerance of the OFDM transport requirements.*** The follow-up process is implemented to account for drift of component values with temperature. If an ISU 100 is inactive for extreme periods of time, the ISU can be tuned to the synchronization channels and requested to update upstream synchronization parameters in accordance with the upstream synchronization process described above. Alternatively, if an ISU has been used recently, the follow-up synchronization or tracking can proceed over an IOC channel. Under this scenario, as generally shown in FIG. 28, the ISU 100 is requested to provide a signal over an IOC channel by the HDT 12, 2800. The HDT 12 then acquires and verifies that the signal is within the tolerance required for a channel within the OFDM waveform 2811. If not, then the ISU is requested to adjust such errored parameters 2813. In addition, during long periods of use, ISUs can also be requested by the HDT 12 to send a signal on an IOC channel or a synchronization channel for the purpose of updating the upstream synchronization parameters.

In the downstream direction, the IOC channels transport control information to the ISUs 100. The modulation format is preferably differentially encoded BPSK, although the differential aspect of the downstream modulation is not required. In the upstream direction, the IOC channels transport control information to the HDT 12. The IOC channels are differentially BPSK modulated to mitigate the transient time associated with the equalizer when sending data in the upstream direction. Control data is slotted on a byte boundary (500 .mu.s frame). Data from any ISU can be transmitted on an IOC channel asynchronously; therefore, there is the potential for collisions to occur. As there is potential for collisions, detection of collisions on the upstream IOC channels is accomplished at a data protocol level. The protocol for handling such collisions may, for example, include exponential back-off by the ISUs. As such, when the HDT 12 detects an error in transmission, a retransmission command is broadcast to all the ISUs such that the ISUs retransmit the upstream signal on the IOC channel after waiting a particular time; the wait time period being based on an exponential function.

One skilled in the art will recognize that upstream synchronization can be implemented allowing for multi-point to point transmission using only the symbol timing loop for adjustment of symbol timing by the ISUs as commanded by the HDT. The frequency loop for upstream synchronization can be eliminated with use of high quality local free running oscillators in the ISUs that are not locked to the HDT. In addition, the local oscillators at the ISUs could be locked to an outside reference. The amplitude loop is not essential to achieve symbol alignment at the HDT.

In the process described above with respect to initialization and activation, including upstream synchronization, if for some reason communication is lost between a large number of ISUs 100 and the HDT 12, after a period of time these ISUs 100 will require initialization and activation once again. Such a case may arise when a fiber is cut and users of multiple ISUs 100 are left without service. As initialization and activation is described above, only one ISU 100 would be initialized and activated at one time. The time frame for initialization and activation of multiple **ISUs** 100 in this manner is shown in FIG. 19.

Id. at 61:42-62:36.

During and after the process of FIGS. **47** and **48**, the ISU receiving modem, FIG. **22** or **23**, must track the acquired frequency and symbol timing of the HDT transmitting modem of FIG. 21.

Id. at 66:10-13; *see also id.* at 66:13-69:3.

For the forgoing reasons, "the plurality of remote units communicatively coupled to the host unit in a multipoint-to-point configuration" means "the plurality of remote units ready to communicate with the host unit over a shared medium, the plurality of remote units having synchronization of transmission timing and carrier frequency to enable simultaneous transmission to the host unit."

3. "a remote communication device" ('219 patent, claim 1)

"a communication device that shares a medium with one or more communication devices to communicate with a host unit in a multipoint-to-point communication system"	"a non-portable transceiver installed at a subscriber's premises"	"a communication device that shares a medium with one or more communication devices to communicate with a host unit in a multipoint-to-point communication system"

HTC argues its proposed construction is supported by the intrinsic evidence. (COB at 103-105. HTC argues while the term "remote communication device" is not used in the '219 specification, the term "remote units" is used in the context of a "multipoint-to-point system" and clearly supports the construction of "remote communication device" proposed by HTC and the Staff. (*Id.* at 103 (citing '219 patent at 12:66-13:1, 13:29-31).) HTC asserts in the disclosed embodiments, the '219 specification identifies remote units such as remote integrated service units (ISUs) that share a medium to communicate with a head end including a host digital terminal (HDT). (COB at 104 (citing '219 patent at 18:42-48, 39:50-55).) Apple asserts Figure 1 of the '219 patent supports HTC's and the Staff's proposed constructions by showing, for example, remote communication devices (*e.g.*, MISU 66 and HISU 68) sharing a communication medium (*e.g.*, communication medium 30) to communicate with a host unit (*e.g.*, head end 32).

(COB at 104.) HTC argues even Apple's expert, Dr. Wicker, agrees that the '219 specification depicts a multipoint-to-point system in which a remote communication device "share[s] a communication link" with additional communication devices. (COB at 105 (citing Ex. 28 at ¶ 39).)

HTC argues Apple's proposed construction—"a non-portable transceiver installed at a subscriber's premises"—improperly limits the "remote communication device" to one particular example given in the disclosed embodiment (a hybrid fiber/coax distribution network), while excluding other examples in the specification. (*Id.* at 105.) HTC argues Apple's construction includes details regarding *what* the claimed "remote communication device" is ("a non-portable transceiver"), *where* it is supposedly located ("a subscriber's premises"), and *how* it supposedly got there ("installed") that are clearly not tied to any actual claim language. (*Id.*) Further, HTC argues Apple's construction is inconsistent with the '219 patent's recitation that the technologies it discloses can be used in different types of systems, expressly including wireless systems. (*Id.* (citing '219 patent at 18:17-24).)

Apple submits that the term "a remote communication device" should be construed to mean "a non-portable transceiver installed at a subscriber's premises." (ROB at 59.) Apple argues its construction is not only consistent with the intrinsic and extrinsic evidence, it is required to avoid invalidating the entire claim 1 of the '219 patent for lack of enablement. (*Id.*) Apple asserts whereas the '219 patent focuses solely on a fiber optic and coaxial cable distribution system, HTC's results-oriented construction expands this claim term to include wireless and mobile devices. (*Id.* at 59-60.) Apple argues a person of ordinary skill in the art, reading the '219 patent specification, would understand "remote communication devices" to be

non-portable because the '219 patent specification does not disclose any mobile remote communication devices or any way to solve the immense technical challenges in creating a working system with moving remote communication devices. (*Id.* at 60.)

Specifically, Apple argues the specification describes that "service units" are installed in "remote units." (*Id.* at 60-62 (citing '219 patent at 5:12-26, 6:58-64, 8:47-54, 9:1-7, 9:66-10:7, 18:50-58, 20:24-29, 123:12-15).) Second, Apple argues the '219 patent clearly and consistently defines a "remote unit" as a subscriber's physical premises and describes the delivery of data in terms of fixed geographical destinations, such as residences or businesses. (ROB at 62-63 (citing '219 patent at 94:7-14, 123:22-25, 108:41-43, 10:26-42, 10:53-57).) Third, Apple argues the '219 patent specification repeatedly characterizes the "service units" as modems or devices installed at a subscriber's premises. (ROB at 63-64 (citing '219 patent at 100:46-55, 27:65-28:21).) Apple argues one of ordinary skill in the art would recognize that these "service units" as disclosed by the '219 patent are non-portable transceivers. (ROB at 63.) Apple further argues its construction is supported by Figure 1 of the '219 patent and technical literature published by the original patent assignee. (*Id.* at 64-65.)

Apple argues that its construction is required to avoid invalidating the entire claim 1 of the '219 patent for lack of enablement because the '219 patent focuses solely on a fiber optic and coaxial cable distribution system in which multiple remote communication devices simultaneously transmit on different subsets of orthogonal subcarriers to a single host unit. (*Id.* at 67.) Apple asserts the one passing reference in the patent to wireless, an insufficient disclosure to enable one of ordinary skill in the art to make and use the patent's fiber optic/coaxial cable network in a wireless environment. (*Id.* at 68.)

Staff argues that intrinsic record is consistent with the construction proposed by the Staff and HTC. (SB at 18.) The Staff asserts the specification of the '219 patent describes "remote units" communicating in a multipoint to point communication system:

> A bidirectional communication system is provided. The system includes a first remote unit for communicating with a host unit using orthogonal frequency division multiplexing. The host unit is communicatively coupled to a plurality of remote units in a multipoint-to-point configuration.

('219 patent at Abstract.)

The Staff argues Apple's construction improperly attempts to import limitations from a disclosed embodiment into the claims because the intrinsic record does not evidence an express intent to import these limitations. (SB at 19.) The Staff contends that Apple's argument that the full scope of the claim would not be enabled as required by 35 U.S.C. § 112, should the claim not be limited to "non-portable" devices, is unavailing because claims are only construed so as to preserve validity where they are amenable to more than one construction. (*Id.*) The Staff asserts the phrase "a remote communication device" is not amenable to Apple's construction and argues thus, it would be improper to construe that term as Apple has proposed, even if it would preserve validity. (*Id.*)

I find that the term "a remote communication device" means "a communication device that shares a medium with one or more communication devices to communicate with a host unit in an orthogonal frequency division multiplexing multipoint-to-point communication system."

As noted by the parties, the term "a remote communication device" does not appear in the specification of the '219 patent. However, the specification of the '219 patent describes "remote units" communicating in an orthogonal frequency division multiplexing multipoint-to-point communication system:

> A bidirectional communication system is provided. The system includes a first remote unit for communicating with a host unit using ***orthogonal frequency division multiplexing***. The host unit is communicatively coupled to a plurality of remote units in a ***multipoint-to-point configuration***.

'219 patent, Abstract (emphasis added). Additionally, the specification discloses:

> Due to the ***multi-point to point*** nature of transport over the HFC distribution network 11 from multiple ISUs 100 to a single HDT 12, in order to utilize ***orthogonal frequency division multiplexing techniques***, symbols modulated on each carrier by the ISUs 100 must be aligned within a certain phase margin.

Id. at 39:50-55.

HTC and the Staff's proposed construction of "a communication device that shares a medium with one or more communication devices to communicate with a host unit in a multipoint-to-point communication system" cannot be correct because it fails to include the limitation that the system is a orthogonal frequency division multiplexing system. The intrinsic record clearly limits the system to an orthogonal frequency division multiplexing multipoint-to-point communication system. *See e.g., id.* at Abstract, 39:50-55, Figure 24; '219 Patent File History, 7/24/2009 Amendment and Response at 2, 7-9.

The intrinsic record does not evidence an express intent to import the limitations found in Apple's proposed construction. Indeed, the specification clearly anticipates distribution networks other than hybrid fiber coax networks, such as wireless systems:

> It should be apparent to one skilled in the art that the modem transport architecture described herein and the functionality of the architecture and operations surrounding such architecture could be utilized with distribution networks *other than hybrid fiber coax networks*. For example, *the functionality may be performed with respect to wireless systems*. Therefore, the present invention contemplates use of such systems in accordance with the accompanying claims.

'219 patent, at 18:17-24 (emphasis added). Further, during prosecution of Application No. 11/736, 324 which, like the '219 patent, is a continuation of Application No. 11/420,851, the applicant argued:

> The Applicant's OFDMA based technology is applicable to multiple access transport of radio frequency signals through either a wireless or wired medium, as recognized by the Applicant in the specification. *See*, Specification Par. 167.

(R. Ex. 15-13 at 8.)

Further, Apple's attempt to incorporate features from the specification because it is allegedly necessary to avoid invalidating the claim for lack of enablement is improper and not supported by the case relied on by Apple, *Liebel-Flarsheim Co. v. Medrad, Inc.*, 481 F.3d 1371 (Fed. Cir. 2007). In *Liebel-Flarsheim*, the issue of whether a claim was invalid for lack of enablement was raised only *after* the relevant claim terms had been construed. *Id.* at 1376-77. *Liebel-Flarsheim* does not purport to allow claim language to be construed in an unsupported manner simply so that the claim can be found enabled, as Apple suggests. Indeed, in an earlier decision in the same case, *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898 (Fed. Cir. 2004), the Federal Circuit rejected this precise approach. Specifically, the court found that while an ambiguity may be resolved in a manner that avoids invalidating a claim, claim language cannot be 'interpreted narrowly" to cover only a disclosed embodiment in order to avoid invalidating the claim:

> [T]he canon that claims should be construed to preserve their validity, if possible, applies only if the scope of the claims is ambiguous. The asserted claims at issue in this case clearly cover more than the ''indicia indicating the length of the extender.'' We therefore may not interpret the claims narrowly because of concerns about their possible invalidity.

Id. at 914. In short, therefore, Apple's enablement argument provides no basis for limiting the scope of the claim to a particular embodiment.

For the forgoing reasons, "a remote communication device" means "a communication device that shares a medium with one or more communication devices to communicate with a host unit in an orthogonal frequency division multiplexing multipoint-to-point communication system."

4. "the Fast Fourier Transform (FFT) engine generating a frame of time domain in-phase and quadrature phase data from the symbol data generated by the symbol mapper" ('219 patent, claim 1)

(Plain and ordinary meaning) "a component that generates a signal that includes orthogonal carriers from the modulation symbols generated by the symbol mapper, for subsequent modulation of an RF carrier wave"	"the Fast Fourier Transform (FFT) engine operating on the frequency domain data produced by the symbol mapper to generate time domain in-phase and quadrature values"	"the Fast Fourier Transform (FFT) engine operating on the frequency domain data produced by the symbol mapper to generate time domain in-phase and quadrature values"

HTC proposes to construe "the Fast Fourier Transform (FFT) engine generating a frame of time domain in-phase and quadrature phase data from the symbol data generated by the symbol mapper" as "a component that generates a signal that includes orthogonal carriers from the modulation symbols generated by the symbol mapper, for subsequent modulation of an RF carrier wave." (COB at 107.) HTC asserts this term includes terms of art, such as FFT and symbol mapper, and argues its proposed construction incorporates the plain and ordinary meaning of these terms. (*Id.*) HTC argues, Apple's construction limits the claim to a particular embodiment while ignoring other descriptions in the specification. (*Id.*)

HTC argues its proposed construction is consistent with the plain and ordinary meaning and is supported by the extrinsic evidence. (*Id.*) HTC asserts one of ordinary skill in the art would understand that "symbol mapper" is a term of art in the field that describes a component that translates data bits into modulation symbols for modulating a carrier according to a particular modulation scheme. (*Id.* (citing Ex. 27 ¶¶ 30-32).) HTC argues the descriptions of embodiments in the '219 patent specification are consistent with this plain and ordinary meaning. (COB at 107 (citing '219 patent at 47:16-19).)

HTC argues Apple's and Staff's proposed construction improperly limits the term by requiring the symbol mapper to produce data only in the "frequency domain" and that the modulation symbols generated by the symbol mapper to be directly fed into the FFT engine. (COB at 108.) HTC argues simply because the particular embodiment shown in Figure 24 of the '219 patent puts the modulation symbols generated by a symbol mapper in the frequency domain (*i.e.*, as input to the FFT engine) does not mean the modulation symbols are necessarily in the frequency domain. (*Id.* at 110.) HTC asserts the '219 specification describes a mapping process in general terms, *i.e.*, bits are mapped to modulation symbols. (*Id.* at 110 (citing '219 patent at 42:16-19.)

HTC notes that neither Apple nor the Staff even attempts to construe the claim term "an FFT engine." (CRB at 76.) HTC asserts Apple's and the Staff's proposed construction improperly imposes the requirement that the FFT engine must directly process (operating *on*) the output of the symbol mapper, *i.e.*, the output of the symbol mapper must be exactly the input to the FFT engine. (*Id.*) HTC argues this requirement is inconsistent with the claim language, which only says that the FFT engine generates data "*from* the symbol data generated by the

symbol mapper." (*Id.*) HTC argues the claim provides that the input to the FFT engine is "a frame of parallel data ***based on*** symbol data generated by the symbol mapper." (*Id.*) HTC asserts any requirement of a direct connection between the symbol mapper and the FFT engine is squarely contradicted by the claim language itself, and should therefore be rejected. (*Id.*)

HTC argues requiring the output of the symbol mapper to be in the frequency domain, as Apple and the Staff propose, strays from the plain and ordinary meaning of the claim terms. (*Id.* at 77.) HTC asserts the specification teaches (consistent with the understanding of one of ordinary skill in the art) that a symbol mapper merely generates modulation symbols for modulating a carrier according to a particular modulation scheme. (COB at 107; CRB at 77.) HTC argues it is meaningless to discuss which domain—frequency or time—the modulation symbols are in, which is a question that can only be answered based on subsequent processes performed on the modulation symbols. (COB at 108-109; CRB at 77.)

Apple argues its construction finds ample support in the claim language, the specification, and the prosecution history. (ROB at 45-48.) Apple argues HTC's proposed construction reads out any mention of "time domain" data, thereby improperly broadening the claim. (RRB at 29.) Apple further argues HTC's proposed construction also eliminates the "in-phase and quadrature phase data" requirement of this claim phrase. (*Id.*) Apple asserts under HTC's overly broad construction, the FFT engine could generate any type of data, either in time domain or frequency domain, an impermissible expansion of claim scope beyond what is required by the plain claim language. (*Id.* at 29-30.)

Staff argues its construction is consistent with the plain language of the claim and the intrinsic record. (SB at 21-22.) Staff argues HTC's construction is inconsistent with the plain

language of the claim and seeks to impermissibly ignore recited limitations. (*Id.* at 22.) Specifically, the Staff argues HTC's proposed construction ignores the "FFT engine" limitation and requires only "a component that generates a signal that includes orthogonal carriers." (*Id.*) Staff further argues that HTC's proposed construction is improper because it does not require "generating a frame of time domain in-phase and quadrature phase data from the symbol data" as required by the claim. (*Id.*)

I find the term "the Fast Fourier Transform (FFT) engine generating a frame of time domain in-phase and quadrature phase data from the symbol data generated by the symbol mapper" properly construed, means "the Fast Fourier Transform (FFT) engine operating on the frequency domain data produced by the symbol mapper to generate time domain in-phase and quadrature values."

The plain language of claim 1 explicitly states that the FFT engine is "generating a frame of ***time domain*** in-phase and quadrature phase data from the symbol data generated by the symbol mapper." Because an Inverse Fourier Transform, by definition, operates on frequency domain data to generate time domain data (R. Ex. 15-1 at ¶ 152), it necessarily follows that the claimed FFT engine in fact is performing an Inverse Fourier Transform on ***frequency domain*** data generated by the preceding symbol mapper. As a corollary, the plain language of claim 1 rules out the possibility that the claimed FFT engine is performing a Fourier Transform because, by definition, a Fourier Transform operates on time domain data to generate frequency domain data, an output domain contrary to the express language of this claim element. (*See id.*)

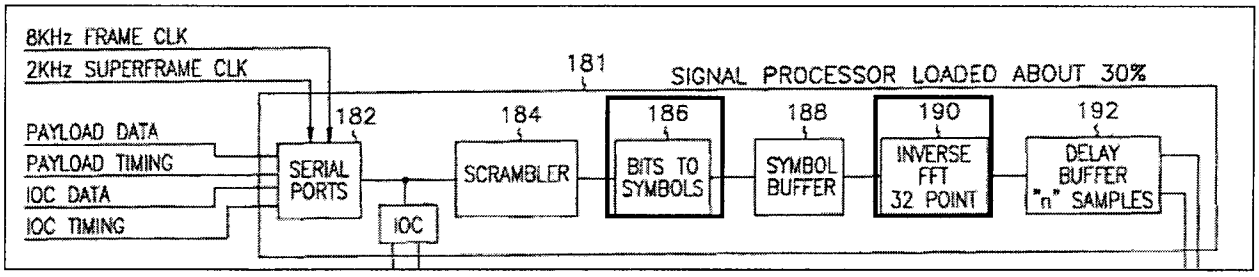
The '219 patent specification describes how the claimed "Fast Fourier Transform (FFT) engine" is performing an Inverse Fourier Transform on the frequency domain symbol data

generated by the symbol mapper ("bits to symbol converter 186") to produce time domain values:

> ***The incoming bits are mapped into symbols, or complex constellation points, including I/Q components in the frequency domain, by bits to symbol converter 186.*** The constellation points are then placed in symbol buffer 188. Following the buffer 188, ***an inverse FFT 190 is applied to the symbols to create time domain samples***; 32 samples corresponding to the 32 point FFT.

'219 patent at 47:29-36 (emphasis added); *see also id.* at 43:26-42, 77:66-78:4.

Figure 24 of the '219 patent (excerpt reproduced below) illustrates the claimed FFT engine 190 operating on the frequency domain data produced by the symbol mapper 186 to generate the time domain in-phase and quadrature values. The explicit use of "Inverse FFT" in block 190 shows this functional block is operating on frequency domain data produced by the symbol mapper ("bits to symbols" block 186) to generate time domain in-phase and quadrature values:



'219 Patent at Fig. 24 (excerpt) (annotations added).

Further, during prosecution of the patent application that matured into the '219 patent, the applicant amended original claim 1 to add the limitation "the Fast Fourier Transform (FFT) engine generating a frame of time domain in-phase and quadrature phase data from the symbol data generated by the symbol mapper." '219 Patent File History, 7/24/2009 Amendment and Response at 2. Referring to Figure 24 (excerpt reproduced above), the applicant identified block

186 "Bits to Symbols" as support for the claimed symbol mapper and block 190 "Inverse FFT" as support for the claimed FFT engine receiving symbol data generated by symbol mapper 186. *Id.* at 7-8.

HTC's argument that Apple's construction limits the claim to a particular embodiment while ignoring other descriptions in the specification (COB at 107) is unavailing as HTC fails to identify such "other descriptions. HTC argues that the patent's "symbol mapper" is consistent with its proposed construction (COB at 107-108) citing to the '219 patent at column 47, lines 16-19, however, the cited passage states that the symbol mapper converts bits "into symbols, or complex constellation points, ***including I/Q components in the frequency domain.***" '219 patent 47:16-19. As such, HTC's assertion that "[i]t is improper, however, to specify that the modulation symbols generated by the symbol mapper are in the frequency domain" is inconsistent with the plain language of the specification. Dispute HTC's argument to the contrary (COB at 108), nothing in Apple's and Staff's proposed construction requires "direct input" from the symbol mapper to the FFT engine. In Figure 24 of the '219 patent, there is a symbol buffer placed between the symbol mapper and the inverse FFT, the existence of which is acknowledged above.

HTC's argument that Apple's construction limits the claim to a particular embodiment while ignoring other descriptions in the specification (COB at 107) is unavailing for at least two reasons. First, HTC fails to identify any such description in the specification. Second, when the applicant added the disputed phrase to claim 1, the applicant specifically identified Figure 24 and its related description in the specification as offering support for the amendment. '219 Patent

File History, 7/24/2009 Amendment and Response at 7-8. Claim 1 is clearly directed to the embodiment shown in Figure 24.

For the forgoing reasons, "the Fast Fourier Transform (FFT) engine generating a frame of time domain in-phase and quadrature phase data from the symbol data generated by the symbol mapper" means "the Fast Fourier Transform (FFT) engine operating on the frequency domain data produced by the symbol mapper to generate time domain in-phase and quadrature values."

5. "synchronization of symbol timing and carrier frequency of transmissions from the radio frequency transmitter" (claim 1, '219 patent)

(Plain and ordinary meaning) "adjustment of the timing and carrier frequency of the transmissions from the radio frequency transmitter relative to the transmissions from a host unit and/or one or more remote communication devices in a multipoint-to-point communication system"	Invalid under 35 U.S.C. § 112, ¶ 2 (indefinite) or "synchronization of transmission timing and carrier frequency with other remote communication devices to enable simultaneous transmission by remote communication devices"	"synchronization of transmission timing and carrier frequency with other remote communication devices in a multipoint-to-point communication system"

HTC argues that Apple's argument that this term is indefinite is belied by Apple's ability to propose a construction for the term. (COB at 111.) HTC asserts in plain English, "synchronize" means "[to] operate in synchrony with another device." (*Id.* (citing Ex. 64 at 3188.) HTC asserts the specification of the '219 patent describes multiple synchronization processes. (COB at 111-114.) HTC argues its proposed construction properly accounts for what the claim term "synchronization" means in the context of the specification, without improperly

excluding any disclosed embodiment. (*Id.* at 115.) HTC further argues because the claim language "synchronization of symbol timing and carrier frequency of *transmissions from* the radio frequency transmitter" is explicitly limited to transmissions, not receptions, HTC's proposed construction properly excludes receive synchronization, *i.e.*, a process by which a receiver attempts to detect the timing of a received signal. (*Id.*)

HTC argues Apple's and Staff's proposed constructions fail to explain the meaning of "synchronization," exclude disclosed embodiments, and also improperly incorporate limitations from the specification. (*Id.* at 115-116.) HTC further argues the doctrine of claim differentiation also supports the conclusion that Apple's proposed construction is wrong. (*Id.* at 115.) HTC states claim 12 of the '219 patent recites "wherein the processor causes the transmissions to be orthogonal with respect to other signals when received at the multipoint-to-point host unit." (*Id.* at 115-116.) HTC asserts one of ordinary skill in the art would understand this language to be an explicit requirement of simultaneous transmissions from remote communication devices to achieve orthogonality at the host unit. (*Id.* at 116.) HTC argues because this language is used in claim 12 but not in claim 1, the doctrine of claim differentiation suggests that claim 1 should not be limited in the same way. (*Id.*)

Apple argues the intrinsic evidence provides ample support for its construction. (ROB at 49-59.) Apple argues in the absence of construing the claim in the manner proposed by Apple, the claims would be indefinite and therefore invalid. (*Id.* at 49.) Apple argues an adequate construction of the term "synchronization of symbol timing and carrier frequency of transmissions from the radio frequency transmitter" should address the following two questions:

- With what is the claimed remote communication device synchronizing (*i.e.*, what is the reference for synchronization)?

- What is the purpose of synchronization that would instruct one of ordinary skill in the art to recognize whether synchronization is successful? In other words, why is synchronization necessary?

(*Id.*) Apple argues its construction answers these two questions. (*Id.*)

With respect to the first question, Apple argues one of ordinary skill in the art would understand that the act of synchronization inherently requires a reference or a baseline against which synchronization is performed. (*Id.*) Apple asserts the '219 patent specification discloses that, because the remote communication devices are operating in a multipoint-to-point architecture, the remote communication devices are each synchronizing with a host unit and, therefore, the remote communication devices are synchronized with each other. (*Id.* at 49-51.) With respect to the second question, Apple argues the '219 patent specification discloses that the purpose of synchronization of symbol timing and carrier frequency of transmission from the radio frequency transmitter" is to enable simultaneous transmission by remote communication devices (to the head end or host unit). (*Id.* at 51-53.) Apple argues the file histories of the patents related to the '219 patent unequivocally support its proposed claim construction that a given remote communication device is synchronizing with other remote communication devices to enable simultaneous transmission by remote communication devices. (*Id.* at 53-58.)

Apple argues that if its construction is not adopted, the claim would be invalid under 35 U.S.C. § 112, ¶ 2 as indefinite. (*Id.* at 58.) Apple argues a person of ordinary skill in the art would not understand the scope of the claim term without knowing two critical elements, viz., what the reference for synchronization is, and why synchronization is necessary. (*Id.* at 59.) Apple asserts because HTC's construction does not articulate those elements, a person of

ordinary skill in the art would not understand the scope of the claimed invention, thus rendering the claim insolubly ambiguous and indefinite. (*Id.*)

The Staff notes the parties agree that the plain language of this limitation requires synchronization of symbol timing and carrier frequency of transmission. (SB at 23-24.) The Staff asserts Apple's proposed construction requires transmission synchronization among other remote devices. (*Id.* at 24.) The Staff states it agrees with Apple that transmission synchronization is performed with respect to other remote transmitting devices, but does not agree that this term is indefinite. (*Id.*) The Staff argues its construction is supported by the intrinsic record of the '219 patent. (*Id.* at 24-26.) The Staff argues HTC's proposed construction is flawed because it does not require synchronization among other remote devices and is not limited to multipoint-to-point communication. (*Id.* at 26.)

I find that the term "synchronization of symbol timing and carrier frequency of transmissions from the radio frequency transmitter" means "synchronization of transmission timing and carrier frequency with other remote communication devices to enable simultaneous transmission by remote communication devices."

Claim 1 of the '219 patent requires "synchronization of symbol timing and carrier frequency of transmissions." The '219 patent describes two forms of synchronization: (i) downstream synchronization; and (ii) upstream synchronization. *See* '219 patent at 41:20-42, 56:65-57:4. In the downstream direction, "all information at an ISU 100 is generated by a single CXMU 56, so the symbols modulated on each multicarrier are automatically phase aligned." '219 patent at 36:24-43. Thus, symbol phase alignment is not necessary in downstream synchronization. However, in the upstream direction, "the upstream

synchronization process involves the distributed (multi-point to point) control of amplitude, frequency, and timing[]." '219 patent, 41:20-34. As the claim requires synchronization of symbol timing (*i.e.*, phase) and carrier frequency, it is clear from the intrinsic record that this term refers to upstream synchronization in a multipoint to point communication system.

The specification of the '219 patent discloses that upstream synchronization of symbol timing and carrier frequency is used to enable multipoint-to-point communications:

> The purpose of the upstream synchronization process is to initialize and activate ISUs such that the waveform from distinct ISUs combine to a unified waveform at the HDT 12. The parameters that are estimated at the HDT 12 by carrier, amplitude, and timing recovery block 222 and adjusted by the ISUs are amplitude, timing, and frequency.... If a payload channel is transmitted adjacent to another payload channel with sufficient frequency error, orthogonality in the OFDM waveform deteriorates and error rate performance is compromised. Therefore, the frequency of the ISU must be adjusted to close tolerances. Timing of the recovered signal also impacts orthogonality. A symbol which is not aligned in time with adjacent symbols can produce transitions within the part of the symbol that is subjected to the FFT process.

'219 patent, 49:63-50:18.

The construction of "synchronization of symbol timing and carrier frequency of transmissions from the radio frequency transmitter" as "synchronization of transmission timing and carrier frequency with other remote communication devices to enable simultaneous transmission by remote communication devices" is overwhelmingly supported by the specification. *See, e.g.*, '219 patent at 36:24-43, 39:50-40:11, 45:64-46:10, 49:63-50:18, 51:36-52, 57:7-19.

Moreover, as set forth in detail by Apple (ROB at 53-59), there are numerous instances in the prosecution history of related applications where the patentee made representations to the U.S. Patent & Trademark Office concerning the scope of its inventions and disclosure. For

example, during prosecution of Application No. 11/736, 324 which, like the '219 patent, is a continuation of Application No. 11/420,851, the applicant argued:

> The Applicant's specification defines an OFDMA system by describing the quintessential interactions between those elements that make up an OFDMA system. The synchronization features discussed in the specification describe circuits and processes for allowing the simultaneous sharing of subcarriers of an OFDM waveform among a plurality of remote units and thus, together with the balance of the specification, provide a written description of an OFDMA system for the reasons already provided.

(R. Ex. 15-13 at 8.) These representations further confirm that the disputed "synchronization" term requires upstream synchronization in a multipoint-to-point system. *See Microsoft Corp. v. Multi-Tech Sys.*, 357 F.3d 1340, 1350 (Fed. Cir. 2004) ("Any statement of the patentee in the prosecution of a related application as to the scope of the invention would be relevant to claim construction."); *see also e.g., Jonsson v. Stanley Works*, 903 F.2d 812, 818 (Fed. Cir. 1990). Moreover, when a patentee disavows claim scope through those statements, prosecution disclaimer results. *Ormco Corp.*, 498 F.3d at 1314. ("When the application of prosecution disclaimer involves statements from prosecution of a familial patent relating to the same subject matter as the claim language at issue in the patent being construed, those statements in the familial application are relevant in construing the claims at issue.").

As discussed above, the claimed "synchronization" refers to upstream synchronization and not downstream synchronization. HTC's proposed construction is impermissibly broad as it is not be limited to upstream synchronization or even limited to multipoint-to-point communications. HTC's construction is contrary to explicit representations made to and relied upon by the U.S. Patent & Trademark Office in the intrinsic record and is therefore improper.

For the forgoing reasons, the term "synchronization of symbol timing and carrier frequency of transmissions from the radio frequency transmitter" means "synchronization of transmission timing and carrier frequency with other remote communication devices to enable simultaneous transmission by remote communication devices."

IV. THE '414 PATENT

U.S. Patent 7,765,414, titled "Circuit and operating method for integrated interface of PDA and wireless communication system," was filed on August 23, 2007, and issued on July 27, 2010 to Hsun-Hsin Chuang, Hsi-Cheng Yeh, Chih-Chao Hsieh, Shi-Je Lin, and Wen-Hsing Lin. The '414 patent is a continuation of U.S. Patent No. 7,278,032, filed on April 7, 2003, which claims the benefit of priority of Taiwan Patent Application No. 91118369, filed on August 15, 2002. The '414 patent has 21 claims, of which claims 1, 4-13, and 15-21 are at issue in this investigation. These claims read as follows (with the disputed terms highlighted in bold):

> 1. A circuit for an **integrated interface** of a PDA and a wireless communication system, suitable for **integrating** the PDA and the wireless communication system, the circuit comprising:
>
> > a first serial port, having two terminals, wherein one of the two terminals is electrically connected to the PDA, another one of the two terminals is electrically connected to the wireless communication system, and the first serial port is used to bi-directionally transmit a control signal between the PDA and the wireless communication system; and
> >
> > a second serial port, having two terminals, wherein one of the two terminals is electrically connected to the PDA, another one of the two terminals is electrically connected to the wireless communication system, and the second serial port is used to bi-directionally transmit audio data between the PDA and the wireless communication system.
>
> 4. The circuit of claim 1, wherein the first serial port is further used to transmit status data of the wireless communication system.
>
> 5. The circuit of claim 4, wherein the status data includes an antenna intensity.

6. The circuit of claim 1, wherein the audio data is digital data.

7. The circuit of claim 6, wherein the wireless communication system includes a wireless communication element used for receiving an electromagnetic wave signal, and the electromagnetic wave signal is converted into the digital data.

8. The circuit of claim 7, wherein the PDA includes an audio element for receiving the digital data through the second serial port.

9. An operating method for an **integrated interface** of a PDA and a wireless communication system, suitable for **integrating** the PDA and the wireless communication system, the operating method comprising:

using a first serial port to bi-directionally transmit a control signal between the PDA and the wireless communication system; and

using a second serial port to bi-directionally transmit audio data between the PDA and the wireless communication system.

10. The method of claim 9, wherein the audio data is digital data.

11. The method of claim 10, further comprising:

receiving an electromagnetic wave signal by a wireless communication element; and

converting the electromagnetic wave signal into the digital data.

12. An operating method for an **integrated interface** of a PDA and a wireless communication system, suitable for **integrating** the PDA and the wireless communication system, the operating method comprising:

using a first serial port to transmit a control signal between the PDA and the wireless communication system;

using a second serial port to transmit audio data between the PDA and the wireless communication system; and

when the PDA is **turned on**, performing the following steps:

turning on the PDA; and

turning on the wireless communication system by the PDA.

13. The operating method of claim 12, further comprising:

resetting the wireless communication system after turning on the wireless communication system.

15. The operating method of claim 12, wherein the step of turning on the wireless communication system by the PDA, further comprising:

transmitting a PDA-turn-on-wireless-communication-system signal from the PDA to the wireless communication system to turn on the wireless communication system.

16. A circuit for an **integrated interface** of a PDA and a wireless communication system, suitable for **integrating** the PDA and the wireless communication system, the circuit comprising:

a first serial port, having two terminals, wherein one of the two terminals is electrically connected to the PDA, another one of the two terminals is electrically connected to the wireless communication system, and the first serial port is used to transmit status data of the wireless communication system between the PDA and the wireless communication system; and

a second serial port, having two terminals, wherein one of the two terminals is electrically connected to the PDA, another one of the two terminals is electrically connected to the wireless communication system, and the second serial port is used to transmit audio data between the PDA and the wireless communication system.

17. The circuit of claim 16, wherein the status data includes one of an antenna intensity and a battery capacity.

18. The circuit of claim 16, wherein the audio data is digital data.

19. The circuit of claim 18, wherein the wireless communication system includes a wireless communication element used for receiving an electromagnetic wave signal, and the electromagnetic wave signal is converted into the digital data.

20. The circuit of claim 19, wherein the PDA includes an audio element for receiving the digital data through the second serial port.

21. The circuit of claim 16, wherein the status data includes an antenna intensity.

A. Ordinary Skill in the Art

HTC asserts its expert, Dr. Tim Williams, expert, opined that a person of ordinary skill in the art would be a person with a bachelor's degree in electrical engineering or its equivalent, plus one year of experience in electronic device design. (COB at 118 (citing Ex. 36 at ¶ 36).) Work experience, especially when combined with training, could substitute for formal college education. (COB at 118.) HTC asserts Dr. Donald Alpert, Apple's expert, generally agrees with Dr. Williams. (*Id.* citing (Ex. 38 at ¶ 5.3).)

Apple asserts its expert, Dr. Donald Alpert, opined that a person of ordinary skill in the relevant art of the '414 patent at the time of the invention would be an engineer with a Bachelor's Degree in Electrical or Computer Engineering and one or more years of experience working with portable computing and/or communications devices, or a Master's Degree in Electrical or Computer Engineering focused on portable computing and/or communications devices. (RRB at 106 n.23 (citing R. Ex. 20-1 at ¶ 7.2.1).) Apple asserts HTC's expert, Dr. Tim Williams, generally agrees with Dr. Alpert on this issue. (RRB at 106 n.23 .)

There apparently being no material dispute, I find a person of ordinary skill in the art relevant to the '414 patent would have bachelor's degree in electrical engineering or its equivalent, plus one year of experience in electronic device design, portable computing, and/or communications devices.

B. Disputed Claim Terms

1. "integrated interface" and "integrating" (claims 1, 9, 12, 16)

"integrated interface"	"internal connection"	"a connection between two physically separate products that are external to one another"
"integrating"	"internally connecting"	"combining two stand-alone products"

HTC states that HTC and Apple generally agree that the terms "integrated interface" and "integrating" refer to a connection. (COB at 122.) However, their proposed constructions differ in whether these terms mean internally connecting within a single device (as HTC proposes) or externally connecting two physically separate, external, and stand-alone devices (as Apple proposes). (*Id.*)

HTC argues its proposed constructions are supported by the claim language itself, the preferred embodiments disclosed in the '414 patent, the background section of the '414 patent discussing the disadvantages of the prior art, and the understanding of one of ordinary skill in the art. (*Id.* at 123-129.) HTC argues Apple's proposed constructions, on the other hand, take those disputed claim terms out of the context of the claims, exclude the preferred embodiments, and read squarely on the prior art that the '414 patent distinguished itself from. (*Id.* at 129-139.)

Apple argues the term "integrated interface" should be construed to mean "a connection between two physically separate products that are external to one another" and the term "integrating" should be construed to mean "combining two stand-alone products." (ROB at 128.) Apple argues its constructions are consistent with the specification, as well as the clear and

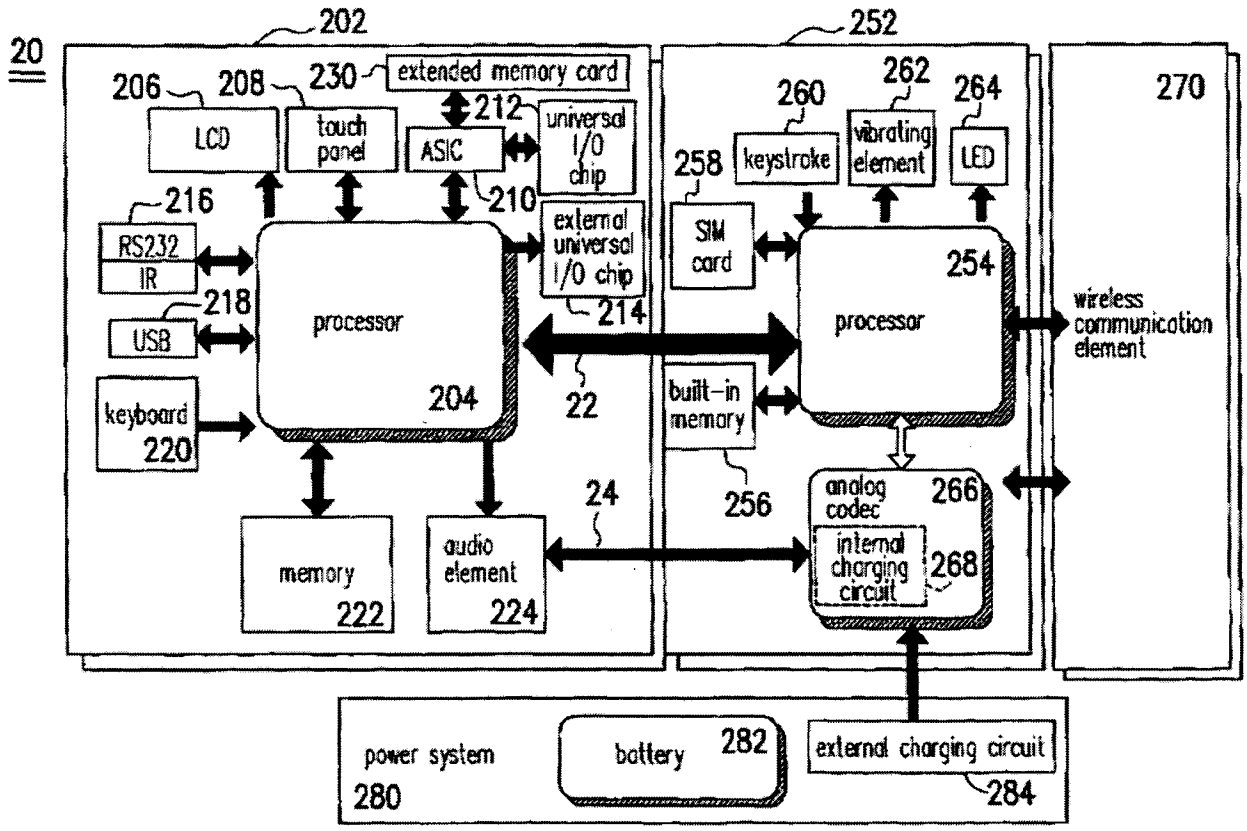
unequivocal statements the patentee made during prosecution of this patent and its foreign counterpart. (*Id.* at 128-135.)

I find that the terms "integrated interface"/"integrating" do not require construction and should be given their plain and ordinary meaning. "Generally speaking, we indulge a 'heavy presumption' that a claim term carries its ordinary and customary meaning." *CCS Fitness v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002) (citations omitted). Specifically, I find the intrinsic record supports both HTC's and Apple's proposed constructions.

In a preferred embodiment illustrated in Figure 2, a device 20 comprises, *inter alia*, a PDA 220, wireless communication system 252, and a power system 280:

> The device 20 comprises a PDA 202, a wireless communication system 252, a power system 280, and an integrated interface composed of a serial port 22 and a serial port 24.

Id. at 5:59-62. Figure 2, shown below, also illustrates that the "PDA system 220" and "wireless communication system 252" are both part of "device 20."



'219 patent, Figure 2. The '414 patent refers to the PDA 202 and wireless communication system 252 as "portions" of the integrated device 20:

> Wherein, the ***PDA 202 portion*** comprises a processor 204, an LCD (liquid crystal display) 206, a touch panel 208, an ASIC (Application Specific Integrated Circuit) 210, a universal I/O chip 212, an external universal I/O chip 214, an external device interface (RS232/IR) 216, a USB (Universal Serial Bus) 218, ***a keyboard 220***, a memory 222, an audio element 224, and an extended memory card 230. The ***wireless communication system 225 portion*** comprises a processor 254, a built-in memory 256, a SIM card 258, ***a keyboard 260***, a vibrating element 262, an LED 264, an analog Codec (coder/decoder) 266 with an internal charging circuit 268 included in it, and a wireless communication element 270 used for sending and receiving the electromagnetic wave signal.

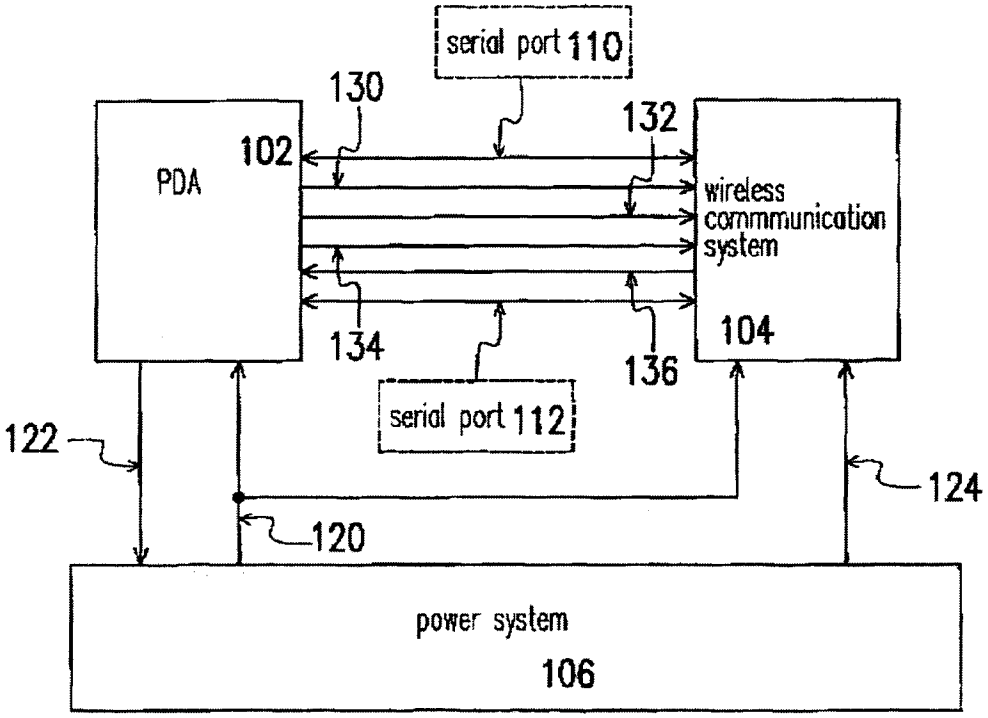
Id. at 5:62-6:8 (emphasis added). While Figure 2 is referred to as a device, I do not find that the device 20 is limited to a single, unitary device. For example, the specification discloses that the

PDA 202 and the wireless communication system 225 have respective keyboards 220 and 260. A single, unitary device would not require two keyboards.

With respect to Figure 1 (shown below), the '414 patent, the specification states:

> The circuit for the integrated interface of the PDA (Personal Digital Assistant) and the wireless communication system shown in FIG. 1 transmits signal between the PDA 102 and the wireless communication system 104 to integrate and make them into a whole.

'414 patent at 5:9-13 (emphasis added). While the specification states that the integrated interface "make[s] them into a whole," I do not find this statement to require a single, unitary device.



'219 patent, Figure 1.

Because I find the terms "integrated interface"/"integrating" properly construed are broad enough to cover both parties' proposed constructions, Apple's argument that applicants made no attempt to distinguish the prior art cited by the examiner as failing to teach an "internal

connection" (ROB at 134-135) is unavailing. Likewise, I do not find Apple's arguments regarding the European counterpart to the '414 patent persuasive. As an initial matter, the '414 patent claims priority to a Taiwanese patent application, not the European patent application. The prosecution history of the European patent application is therefore extrinsic evidence. *Goldenberg v. Cytogen, Inc.*, 373 F.3d 1158, 1167 (Fed. Cir. 2004) ("In the absence of an incorporation into the intrinsic evidence, this court's precedent takes a narrow view on when a related patent or its prosecution history is available to construe the claims of a patent at issue and draws a distinct line between patents that have a familial relationship and those that do not.") Indeed, statements made during prosecution of the European counterpart to the '414 patent are irrelevant to claim construction because they were made in response to patentability requirements under European law. *See Pfizer, Inc. v. Ranbaxy Laboratories Ltd.*, 457 F.3d 1284, 1290 (Fed. Cir. 2006). As such, I decline to rely on the European prosecution history to limit the claimed term to connecting or combing external or stand alone products as proposed by Apple. *See Key Pharm. v. Hercon Lab. Corp.*, 161 F.3d 709, 715 (Fed. Cir. 1998) (disapproving the "us[e of] extrinsic evidence to arrive at a claim construction that is clearly at odds . . .with the written record of the patent").

For the forgoing reasons, the term "integrated interface"/"integrating" shall be given its plain and ordinary meaning.

2. "turned on" (claim 12)

"turned on"	"an event for activating"	"an event that causes power to be applied to the PDA after it has been completely unpowered"

HTC argues its proposed construction is consistent with the claim language and comes directly from the preferred embodiments and the prosecution history of the '414 patent. (COB at 140.) HTC argues Apple's proposed construction, on the other hand, uses language that cannot be found anywhere in the intrinsic record and is admittedly and narrowly limited to one embodiment at the cost of excluding the other embodiments. (*Id.*)

HTC argues "turned on," is an event that leads to the later "turning on" steps and asserts Apple agrees with HTC that "turned on" refers to "an event." (*Id.*) HTC argues the disclosed embodiments directly support construing "turning on" as "an event for activating" the PDA. (*Id.*) HTC asserts the '414 patent discloses exemplary events for turning on the PDA, each being followed by turning on the PDA. (*Id.*) For example, after "a keyboard is used by the user to *turn on* the device 20," "the [power] system will turn on the PDA 202 first (step S304)," then "the PDA 202 transmits the PDA-turn-on-GSM signal . . . to turn on the GSM 252 (step S308)." (*Id.*) HTC argues the specification also describes the "turning on" operation as "activating." (*Id.* at 141.)

HTC argues in addition to the keyboard event, another example for turning on the PDA is a charging event, which relates steps S330 to S334 in Figure 3 above. (*Id.*) HTC argues as another event, "[i]f the switch is pressed while in the standby state, the PDA 202 will wake up,

and the GSM 252 is activated simultaneously (steps S404-S406)." (*Id.* at 142.) HTC argues the claim recitation "when the PDA is turned on" is not limited to when the PDA is turned on *from the off state*, nor is it limited to when the PDA is turned on *for the first time*. (*Id.*) HTC argues the proposed construction of "an event for *activating*" comes directly from the prosecution history. (*Id.* at 142-143.) HTC argues extrinsic evidence, such as dictionary definitions, also supports the proposed construction of "an event for activating." (*Id.* at 143.)

HTC argues Apple's proposed construction improperly imports limitations from the specification into the claims at the cost of excluding other intrinsic evidence. (*Id.* at 143-144.) HTC argues Apple's proposed construction is contradicted by the understanding of one of ordinary skill in the art from reading the '414 patent. (*Id.* at 144-145.)

Apple argues he term "turned on" should be construed to mean "an event that causes power to be applied to the PDA after it has been completely unpowered." (ROB at 136.) Apple asserts its construction is drawn directly from the '414 patent's specification, throughout which the term "turned on" is used in connection with scenarios in which the PDA is unpowered. (*Id.*)

Apple argues the specification provides clear guidance as to the meaning of the claim term "turned on." (*Id.*) That claim term, as well as the related terms "turn on" and "turning on," appear in the portions of the specification that describe the turning-on method (Figure 3), the power-saving method (Figure 4), and power charging method (Figure 5). (*Id.*) Apple argues among the three methods, the turning-on method depicted in Figure 3 is the sole method that involves the steps of "turning on the PDA" and "turning on the wireless communication system by the PDA," as required by claim 12. (*Id.*)

Apple argues according to the specification, Figure 3 illustrates a step flow chart that relates to "the operations of turning on the system for the first time." (*Id.* at 136-137.) Apple argues the aspect of the PDA being "turned on" is repeatedly associated with the concept of power. (*Id.* at 137.) Apple argues, more specifically, the specification describes the turn-on method to occur when the PDA is without power, which is consistent with Apple's proposed construction. (*Id.*)

Apple argues, HTC's construction, *i.e.*, "an event for activating," clearly conflicts with the disclosures in the specification. (*Id.*) Apple argues when describing other states during which the PDA is not completely powered off and an event occurs to change that state, the specification does not describe the PDA as being "turned on." (*Id.*) Apple argues rather, in the example where the PDA is in the "standby" or "sleep" state, the PDA is described as being "wakened" from that state, as opposed to "turned on." (*Id.*) Apple argues this disclosure confirms that the patentee did not intend the term "turned on" to broadly encompass any condition where the PDA is being "activated," rather it was intended to describe those circumstances under which the PDA had been completely without power. (*Id.*)

I find the term "turned on" properly construed mean "an event that causes power to be applied to the PDA after it has been completely unpowered or turned off."

The specification is consistent is consistent with a construction of "an event that causes power to be applied to the PDA after it has been completely unpowered or turned off." Figures 3, 4 and 5 of the '414 patent describe a method for "turning on the system [for the] first time" (Figure 3), the "power-saving method" (Figure 4), and "power charging method" (Figure 5). '414 patent at 4:50-63. Among the three methods, the turning-on method depicted in Figure 3 is

the sole method that involves the steps of "turning on the PDA" and, subsequently, "turning on the wireless communication system by the PDA," as required by claim 12. *See* '414 patent Fig. 3 (elements S304 ("turn on PDA first"), S308 ("PDA turn on GSM")).

The specification states:

> It has to be specified that the wording of the "turning on the system first time" used herein is switching the state of the PDA 202 *from turn-off state to turn-on state*. For example, the turn-on operation performed *after the battery is exhausted* or the PDA 202 is turned off to *replace the battery* belongs to the range of "turning on the system first time."

'414 patent at 6:33-39 (emphasis added). The patentee further explained:

> [A]ll other methods for turning on the device that comply with the definition of "turning on device first time" can be used with the method mentioned above. For example, under the circumstance that the *power of the power system 280 is completely exhausted* and the device 20 has to rely on recharging via the external charging cable for resuming its operation, after the charging cable is plugged into the device 20 and starts charging the power system 280 (step S330), the power system 280 is charged gradually (step S332). Then, *the device 20 tries to turn on the PDA 202 (step S334), and if the PDA 202 cannot be turned on yet, the device 20 charges the power system 280 continuously; if the power stored in the power system 280 is large enough to turn on the PDA 202, the process turns into the step S304 to turn on the PDA 202, and subsequently performs the turn-on-device operation mentioned above.*

Id. at 7:24-27.

HTC's argument that "turning on" and "activating" were used interchangeably during prosecution of the '414 patent (COB at 142) is unavailing. While claim 12 also recites "turning on," the claim term at issue is "turned on." HTC acknowledges that step S302 equates to "turned on" which occurs before the actual "turning on" step S304. (COB at 140.) No equivalent step is shown in Figure 4, so I do not find HTC's argument that the specification also describes "turning on" as "activating." (*Id.* at 141.) Further, because the specification relates "turned on" to

"turning on the system first time" as shown in S302 and the specification clearly defines "turning on the system first time," I am not persuaded by HTC's extrinsic evidence in support of its proposed construction.

For the forgoing reasons "turned on" means "an event that causes power to be applied to the PDA after it has been completely unpowered or turned off."

SO ORDERED.

Thomas B. Pender
Administrative Law Judge

IN THE MATTER OF CERTAIN ELECTRONIC DEVICES WITH COMMUNICATION CAPABILITIES, COMPONENTS THEREOF AND RELATED SOFTWARE

337-TA-808

CERTIFICATE OF SERVICE

I, Lisa R. Barton, hereby certify that the attached **ORDER NO. 16** has been served upon, **R. Whitney Winston, Esq.**, Commission Investigative Attorney, and the following parties via first class mail and air mail where necessary on June 19, **2012.**

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IN THE MATTER OF CERTAIN ELECTRONIC DEVICES WITH COMMUNICATION CAPABILITIES, COMPONENTS THEREOF AND RELATED SOFTWARE **337-TA-808**

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