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(Multiuser OFDM with Adaptive Subcarrier, Bit, and Power Allocation (10/1999); CX-1425 (Adaptive Communications over Fading Satellite Channels (2001)); CX-1420 (TSGR1#12, R1-556, Feasibility Study of Advanced Techniques for HSDPA). A person of ordinary skill in the art would certainly have understood how to use channelization code set and modulation information to recover payload data carried on a channel in a wireless system using adaptive modulation and coding. CX-1523C (Jackson RWS) at Q140. In particular, it would have been well understood that the channelization code set would be used to identify from which HS-PDSCH channels to recover data, and that the modulation type would be used to determine the modulation type to use in demodulating those channels. *Id.* at Q142, Q154. A person of ordinary skill in the art would readily know what circuitry could be used to perform those operations, and would not have expected or needed the inventors of the '127 patent to include such well-known information in the specification. *Id.* at Q139-142.

The testimony of Respondents' expert Dr. Madisetti also supports the validity of the asserted claims. Dr. Madisetti testified that as of March 2002, the 3GPP Release 5 Specifications disclosed the element "wherein the control information is used for decoding a high speed physical downlink shared channel (HS-SCCH)" in connection with the '013 patent. RX-3520C (Madisetti WS) at Q781. He further testified that in the design of HSDPA, it was contemplated that a user equipment would use the channelization code set as well as the modulation type, *i.e.*, the control information, to recover the payload data from the HS-PDSCH. Madisetti Tr. 985-986. Dr. Madisetti also testified that the intention was for a user equipment to use the channelization code set information to identify the HS-PDSCHs from which the user equipment would keep data to pass to the next layer. Madisetti Tr. 986. Inasmuch as there is no dispute that the details in the 3GPP Release 5 technical specification from March 2002 were already

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well-known to persons of ordinary skill in the art as of March 2002, the claims of the '127 patent are not invalid for lack of written description. *See, e.g.*, Madisetti Tr. 989.

Second, with respect to recovering payload data “in response to the HS-SCCH including [certain] bits,” the '127 patent, as well as its ancestor the '579 patent, disclose as follows:

To obtain its Part-1 information, each HSDPA UE monitors up to four HS-SCCHs for its information. The information for a particular UE is distinguished from other UEs by its UE identification (UE ID) specific scrambling sequence. The UE processes each monitored HS-SCCH with its UE ID specific scrambling sequence to detect the HS-SCCH intended for the UE. After processing, the UE determines on which HS-SCCH, if any, information was carried using its scrambling sequence. The UE descrambles the data carried on Part-1 of its HS-SCCH using its scrambling sequence.

JX-0004 ('127 patent) at col. 1, lns. 40-49; JX-0034 ('579 patent) at col. 1, lns. 31-41.

This excerpt confirms that the UE uses its UE ID specific scrambling sequence to determine if control information is intended for it. As discussed above, that control information is then used to recover the payload data from the HS-PDSCH. InterDigital's expert Dr. Jackson explained that a person of ordinary skill in the art would understand that the purpose of this determination is to allow the UE to recover payload data designated by a particular HS-SCCH in response to detecting that the particular HS-SCCH carries control information combined with that UE's user-specific scrambling sequence. CX-1523C (Jackson RWS) at Q143-144.<sup>63</sup>

Third, with respect to “circuitry in the WCDMA UE configured to process a high speed shared control channel (HS-SCCH),” Respondents' expert Dr. Madisetti testified that the '127 patent contains written description support for this limitation under all parties' proposed

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<sup>63</sup> For the same reasons discussed with respect to “circuitry configured to recover payload data from a HS-PDSCH,” Respondents argue that similar language in claim 5 of the '127 patent lacks written description support. *See* RX-3520C (Madisetti WS) at Q1046. As explained above with respect to claim 1 of the '127 patent, it is determined that the relevant language in claim 5 does, indeed, have written description support.

constructions. *See* RX-3520C (Madisetti WS) at Q1048. The evidence demonstrates that Dr. Madisetti's opinion that the claim lacks written description support is true only if portions of the specification supporting the limitation are disregarded. *See id.* at Q1048 ("The 127 Patent's specification describes the processing of the HS-SCCH in the user equipment. . . . One of ordinary skill in the art at the time of the invention would not have understood the inventors to have had in their possession any invention comprising circuitry in the WCDMA UE to perform 'one or more operations on a received HS-SCCH to derive control information' *other than the disclosed operation . . .*") (emphasis added). In addition, Dr. Madisetti does not offer any testimony explaining what additional disclosure he believes a person of ordinary skill in the art would expect to see under his interpretation of the written description requirement. *See* RX-3520C (Madisetti WS) at Q1047-1048.

In light of the arguments and evidence set forth above, it is determined that the disputed limitations of the '127 patent are supported by the written description of the specification and are therefore not invalid.

#### **4. Indefiniteness ('127 Patent)**

Respondents allege that dependent claim 3 of the '127 patent is invalid for indefiniteness. Resps. Br. at 161.

Independent claim 1, from which claim 3 depends, reads as follows:

1. A wideband code division multiple access (WCDMA) user equipment (UE) comprising:

circuitry in the WCDMA UE configured to process a high speed shared control channel (HS-SCCH); and

circuitry in the WCDMA UE configured to recover payload data from a high speed physical downlink shared channel (HS-PDSCH) associated with the HS-SCCH in response to the HS-SCCH including bits; wherein the bits are a result of a combining of a user specific

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scrambling sequence associated with the UE with control information; and wherein the user specific scrambling sequence is a result of a ½ rate convolutional encoding of a UE identification (ID).

JX-0004 at col. 3, lns. 18-30.

Claim 3 recites:

3. The WCDMA UE of claim 1 wherein the user specific scrambling sequence is a result of rate matching the ½ rate convolutional encoded UE ID.

JX-0004 at col. 3, lns. 34-36.

Respondents argue that the additional limitation of claim 3, “wherein the user specific scrambling sequence is a result of rate matching the ½ rate convolutional encoded UE ID,” renders claim 3 indefinite. Resps. Br. at 161. Specifically, Respondents argue that the “rate matching” requirement of claim 3 renders the claim indefinite. *Id.*

Respondents’ argument is as follows:

Rate matching refers to increasing or decreasing the number of bits in a sequence (RX-3520C (Madisetti WS) at Q1052, 1139). The user specific scrambling sequence of claim 3 (which is a result of rate matching the ½ rate convolutionally encoded UE ID) thus must be larger or smaller than the user specific scrambling sequence of claim 1 (which is the result of ½ rate convolutionally encoding the UE ID) (*id.* at 1051-52). Because claim 1 and claim 3 both refer to the same user specific scrambling sequence and a sequence cannot be larger or smaller than itself, the term “wherein the user specific scrambling sequence is a result of rate matching the ½ rate convolutionally encoded UE ID” is insolubly indefinite. *See, e.g., Allen Eng’g Corp. v. Bartell Indus., Inc.*, 299 F.3d 1336, 1349 (Fed. Cir. 2002) (claims indefinite where the claim covered subject matter that was contrary to a description in the specification).

Resps. Br. at 161.

Although claim 1 of the ‘127 patent requires that the “user specific scrambling sequence is a result of a ½ rate convolutional encoding of a UE identification,” the claim is silent regarding whether the sequence also may be a result of rate matching. The rate matching

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limitation is added by dependent claim 3. Inasmuch as claim 3 depends from claim 1, this necessarily means that claim 1 is broad enough to include, but not require, rate matching. Such an interpretation is in accord with the principles of claim interpretation, and is consistent with the way in which a person of ordinary skill in the art would understand claims 1 and 3 in light of the specification. *See SanDisk Corp. v. Kingston Tech. Co.*, 695 F.3d 1348, 1361 (Fed. Cir. 2012) (“Where . . . the sole difference between the independent claim and the dependent claims is the limitation that one party is trying to read into the independent claim, the doctrine of claim differentiation is at its strongest.”); CX-1523C (Jackson RWS) at Q156-157; Madisetti Tr. 872-873.

In particular, the specification for the ‘127 patent states, “[a]fter encoding, based on the length of the output string, a rate matching stage 12 *may* be added to puncture bits to obtain a desired string length.” JX-0004 at col. 2, lns. 56-58 (emphasis added). Similarly, in discussing an embodiment of the invention, the specification also states, “[t]o reduce the length of the code to a preferred length of 40 bits, eight bits are *preferably* punctured.” *Id.* at col. 3, lns. 1-2 (emphasis added). Therefore, it would be clear to a person of ordinary skill in the art that claim 1 refers to a category of user specific scrambling sequences, and that claim 3 describes a particular member of that category. *See* CX-1523C (Jackson RWS) at Q157.

For these reasons, Respondents have not shown by clear and convincing evidence that claim 3 is “insolubly ambiguous.” It is therefore determined that claim 3 of the ‘127 patent is not invalid for indefiniteness.

**VII. The Dual Mode Subscriber Unit ('970) Patent**

**A. Overview of the '970 Patent and Asserted Claims**

Asserted U.S. Patent No. 7,616,970 ("the '970 patent") is titled, "Dual Mode Unit for Short Range, High Rate and Long Range, Lower Rate Data Communications." JX-0005 ('970 patent). The '970 patent issued on November 10, 2009, and the named inventor is Thomas E. Gorsuch. *Id.* The '970 patent relates generally to short-range, higher speed and long-range, lower speed wireless communications. *Id.* at Abstract. The '970 patent is also referred to as the "Dual Mode Subscriber" patent.

InterDigital asserts independent claims 1 and 10, and dependent claims 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17, and 18 of the '970 patent. These claims read as follows:

**1. A subscriber unit comprising:**

a cellular transceiver configured to communicate with a cellular network via a cellular layered communication protocol;

an IEEE 802 transceiver configured to communicate with a wireless local area network (WLAN) via an IEEE 802 layered communication protocol;

a detector configured to detect a signal from the WLAN; and

a circuit coupled to the cellular transceiver and the IEEE 802 transceiver and configured to communicate using the IEEE 802 transceiver in response to the signal;

wherein the cellular layered communication protocol includes a plurality of layers above a physical layer, and a plurality of physical layer channels are available for assignment for communication with the cellular network and a communication session above the physical layer is maintained when all assigned physical layer channels have been released.

**2. The subscriber unit of claim 1, wherein the IEEE 802 transceiver is configured to transmit TCP/IP data when the communication session is maintained and all assigned physical layer channels have been released.**

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3. The subscriber unit of claim 1, wherein at least one of the plurality of layers above the physical layer is any one of a TCP layer, a IP layer, or a network layer.
4. The subscriber unit of claim 1, wherein the cellular transceiver and the IEEE 802 transceiver are provided in a single unit.
5. The subscriber unit of claim 1, wherein the subscriber unit is configured in a mobile telephone or personal digital assistant.
6. The subscriber unit of claim 1, wherein the signal is a beacon frame or probe response frame.
7. The subscriber unit of claim 1, wherein at least one of the plurality of physical layer channels is a data channel.
8. The subscriber unit of claim 1, wherein the cellular network is a licensed code division multiple access network and the WLAN is an unlicensed 802.11 network.
9. The subscriber unit of claim 1, wherein the cellular transceiver is a code division multiple access transceiver and the IEEE 802 transceiver is an 802.11 transceiver.
10. A subscriber unit comprising:
  - a first transceiver configured to communicate with a first wireless network;
  - a second transceiver configured to communicate with an IEEE 802 compliant wireless network; and
  - a processor coupled to the first transceiver and the second transceiver, and configured to operate a first protocol stack for the first wireless network and a second protocol stack for the IEEE 802 compliant wireless network, wherein a plurality of physical layer channels are available for assignment for communication with the first wireless network, and to maintain a communication session above a physical layer of the first protocol stack when none of the plurality of physical layer channels are assigned.
11. The subscriber unit of claim 10, further comprising:
  - a detector configured to detect the IEEE 802 compliant wireless network; and

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a circuit configured to select the second transceiver in response to detection of the IEEE 802 compliant wireless network.

12. The subscriber unit of claim 11, wherein detection of the IEEE 802 compliant wireless network is based on receipt of a beacon frame or probe response frame.

13. The subscriber unit of claim 10, wherein the second transceiver is configured to transmit TCP/IP data when the communication session is maintained when none of the plurality of physical layer channels are assigned.

14. The subscriber unit of claim 10, wherein at least one of the plurality of layers above the physical layer is any one of a TCP layer, a IP layer, or a network layer.

15. The subscriber unit of claim 10, wherein at least one of the plurality of physical layer channels is a data channel.

16. The subscriber unit of claim 10, wherein the first wireless network is a licensed code division multiple access network and the IEEE 802 compliant wireless network is an unlicensed IEEE 802.11 network.

17. The subscriber unit of claim 10, wherein the first transceiver is a code division multiple access transceiver and the second transceiver is an 802.11 transceiver.

18. The subscriber unit of claim 10, wherein the first transceiver is a cellular transceiver.

JX-0005 at col. 11, ln. 5 – col. 12, ln. 43.

**B. The '970 Accused Products**

The Nokia products accused of infringing the '970 patent include: C3-01, C5-03, C6-01, C7, E5, E6-00, E7-00, E72, E73, N500, N700, N701, N8-00, X3-02, X7-00, 808 Pureview, Vertu Constellation, Vertu Constellation Quest, Lumia 710, Lumia 719, Lumia 800, Lumia 810,



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Lumia 820, Lumia 822, Lumia 900, and Lumia 920. *See* Compl. Br. at 262 (citing CX-0381C (Stark Nokia Infringement Chart)).<sup>64</sup>

The Huawei products accused of infringing the '970 patent include: M650, M660, M835, M860, M865, M886 (C8860), M920, M931, MediaPad (S7-Pro, S7-303u), MediaPad 10 FHD (S10-102u), S7-104, S7-202u, U8665, U8680/U8730, U8800, U8800-51, U9000, U9000-81, W1/U8835, Y210/C8686, and Y300C. *See* Compl. Br. at 262-63 (citing CX-0380C (Stark Huawei Infringement Chart)).

The ZTE products accused of infringing the '970 patent include: D930, N850, N859, N860, N861, N9500, P736T, V55, V66, V8000, X500, X501, and Z990. *See* Compl. Br. at 263 (citing CX-0382C (Stark ZTE Infringement Chart)).

With respect to the '970 accused products, InterDigital's expert Dr. Stark analyzed physical samples, design documents, user guides and manuals, deposition testimony from representatives of Nokia, Huawei, ZTE, Microsoft, HiSilicon, and Qualcomm, Respondents' discovery responses, and the source code analysis conducted by Drs. Walker and Goldberg. CX-1306C (Stark WS) at Q619-627; CX-0377 (Stark Materials Considered). Based on his analysis, Dr. Stark concluded that the Lumia 710 and 800, as well as the 808 Pureview, are representative of Nokia's accused products, that the N860 is representative of the ZTE accused products, and that the U8800-51, U8680/U8730 and M865 products are representative of the accused Huawei products. CX-1306C (Stark WS) at Q813-814, Q2265-2266, Q3121-3122.

In general, Respondents' expert Dr. Bims admitted that he did not identify any relevant differences between the '970 representative products analyzed by Dr. Stark analyzed and any

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<sup>64</sup> InterDigital no longer asserts that the Nokia N900 or N9-00 products infringe any claim of the '970 patent. Compl. Br. at 262 n.35.

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other '970 accused products. Bims Tr. at 1264-1265. Dr. Bims further admitted that for purposes of non-infringement, there are no differences between the Qualcomm chips in this Investigation. Bims Tr. at 1264. Dr. Bims therefore opines on infringement by Respondents' products collectively. See Resps. Br. at 398-420.

C. Claim Construction

1. Level of Ordinary Skill

A person of ordinary skill in the art of the '970 patent would have at least a bachelor's degree in electrical engineering, computer science, computer engineering or a related field, and two to three years' experience in the area of wireless communications. CX-1306 (Stark WS) at Q17. Alternatively, a person of ordinary skill would have a master's degree in electrical engineering, computer science, computer engineering or a related field with an emphasis on communications.<sup>65</sup> *Id.*

2. Construction of Disputed Claims

a. "IEEE 802 transceiver configured to communicate with a wireless local area network"

| Claim Term/Phrase  | InterDigital's Construction   | Respondents' Construction  |
|--|---|--|
| IEEE 802 transceiver   | hardware and/or software operable to transmit information to and receive information from an IEEE 802 wireless local area network | n/a  |
| configured to communicate with a wireless local area network |   | configured to automatically connect directly to a W-LAN <sup>66</sup> when such a connection is possible |

<sup>65</sup> Respondents propose that a person of ordinary skill in the art of the '970 patent would have a master's degree or the equivalent in electrical engineering, and three or more years of work experience relating to data communications over wireless networks. RX-3519C (Bims WS) at Q73-Q75. The parties have not identified any way in which differences in their proposed definitions of the level of ordinary skill in the art affect issues in this investigation. See Compls. Reply at 98.

<sup>66</sup> "W-LAN" is an acronym for wireless local area network.

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The claim term “IEEE 802 transceiver configured to communicate with a wireless local area network” appears in asserted independent claim 1. JX-0005 at col. 11, lns. 5-23.

InterDigital construes this term to mean “hardware and/or software operable to transmit information to and receive information from an IEEE 802 wireless local area network.” Compls. Br. at 239-43. Respondents contend that “IEEE 802 transceiver” needs no construction, and construe “configured to communicate with a wireless local area network” to mean “configured to automatically connect directly to a W-LAN when such a connection is possible.” Resps. Br. at 396-97.

As proposed by InterDigital, the claim term “IEEE 802 transceiver configured to communicate with a wireless local area network” is construed to mean “hardware and/or software configured to transmit information to and receive information from an IEEE 802 wireless local area network.” This construction represents the plain meaning of the term as understood by a person of ordinary skill in the art, and is supported by the intrinsic evidence.

Persons having skill in the art recognize that a “transceiver” is a combination of a transmitter and a receiver. CX-1306C (Stark WS) at Q666. The ‘970 patent specification provides that functions of the claimed invention, including that of a transceiver, may be implemented in hardware and/or software:

Note that the path switches 211A, 211B may be implemented in software or hardware, or a combination of hardware and software. Other functions may also be implemented in hardware and/or software which may further be shared by the W-LAN and CDMA sections where appropriate.

JX-0005 at col. 10, lns. 54-59.

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The plain meaning of “IEEE 802 transceiver” is therefore a transceiver that can communicate with a wireless local area network operating according to any IEEE 802 standard. *See* CX-1306C (Stark WS) at Q669. Moreover, the plain language of the term “configured to communicate with” means “operable to transmit information to and receive information from.” *See id.* at Q670.

In response to the arguments supporting InterDigital’s proposed construction, Respondents argue that InterDigital’s position is incorrect because, *inter alia*, the claimed “transceiver” cannot be implemented purely in software. Resps. Br. at 397 (citing RX-3519C (Bims WS) at Q381). Respondents’ argument is not persuasive, however, because it ignores the express teaching of the ‘970 specification, excerpted above, that functions of the claimed invention, including that of a transceiver, may be implemented in hardware and/or software. JX-0005 at col. 10, lns. 54-59.

Respondents also argue that “the 970 Patent is clear that the invention was designed to solve the problem of manual selection of networks in prior art dual-mode devices and the specification disclaims solutions that do not automatically connect to a WLAN when possible,” and that “[a]ccordingly, all the claims of the 970 Patent must be so limited.” *See* Resps. Br. at 397 (citing RX-3519C (Bims WS) at Q468-Q473); *id.* at 394-95. As support for this position, Respondents cite to the ‘970 specification, which recites, in part:

It would therefore be desirable to have a device which can automatically select the cheaper and faster W-LAN when possible, e.g., when within its range, and to resort to the long range cellular network when access to the W-LAN is not possible or practical. Previously, two devices would have been required, one for accessing the W-LAN and one for accessing the long range network. At best, these two devices could fit into two slots in, for example, a laptop computer, requiring the user to select, either through software or hardware, which device, and hence, which network to access.

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The present invention, on the other hand, is a single device which connects directly to a W-LAN using a protocol such as IEEE 802.11 when such a connection is possible, and automatically reverts to connecting to the long range network only when out of range of the W-LAN base stations.

Thus, the same equipment can be used without any reconfiguration and even without knowledge of the user.

JX-0005 at col. 2, ln. 50 – col. 3, ln.2 (Summary of the Invention).

The cited passage, however, provides that the claimed invention “connects directly to a W-LAN,” and says nothing about that connection being automatic. Use of the permissive word “can” in the statement, “the same equipment can be used without any reconfiguration and even without knowledge of the user,” demonstrates that such “automatic” behavior is merely desirable in the claimed invention, and not mandatory. Moreover, even though the ‘970 specification states that “[i]t would therefore be desirable to have a device which can automatically select the cheaper and faster W-LAN when possible,” saying that a feature is “desirable” is not the explicit disavowal of the use of manual selection argued by Respondents. *Cf.* Resps. Br. at 395.

Respondents further argue that InterDigital’s proposed construction is incorrect because it improperly equates the claim language “configured to” with “operable to.” Resps. Br. at 395-96. It is argued that “InterDigital’s proposed construction is inconsistent with the claim language, introduces ambiguity, and lacks support in the intrinsic evidence.” *Id.* at 395 (citing RX-3519C (Bims WS) at Q472). It is further argued that “the claims themselves require that the circuit be ‘configured’ to perform functionality ‘in response to’ certain events,” and that “[i]n response to’ connotes that the second event occur in reaction to the first event.” *Id.* (citation omitted).

In response to this argument, InterDigital states that it “believes that [‘configured to’ and ‘operable to’] are synonyms, and is agreeable to leaving the term ‘configured to’ unconstrued.”

*See* Compls. Reply at 109.

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Therefore, the claim term “IEEE 802 transceiver configured to communicate with a wireless local area network” is construed to mean “hardware and/or software configured to transmit information to and receive information from an IEEE 802 wireless local area network.”

**b. “IEEE 802 layered communication protocol”**

| Claim Term/Phrase                       | InterDigital’s Construction   | Respondents’ Construction |
|---|---|---------------------------|
| IEEE 802 layered communication protocol | plain meaning, <i>i.e.</i> , structured procedures for communicating with an IEEE 802 network | n/a                       |

The claim term “IEEE 802 layered communication protocol” appears in asserted independent claim 1. JX-0005 at col. 11, lns. 5-23.

InterDigital construes this term to take its plain meaning to one of ordinary skill in the art, *i.e.*, “structured procedures for communicating with an IEEE 802 network.” Compls. Br. at 243-44. Respondents do not contest InterDigital’s proposed construction. *See* Resps. Br. at 376-98; Compls. Br. at 240 n.32.

As proposed by InterDigital, the claim term “IEEE 802 layered communication protocol” is construed to mean “structured procedures for communicating with an IEEE 802 network.” This construction represents the plain meaning of the term as understood by a person of ordinary skill in the art. *See* CX-1306C (Stark WS) at Q676, Q759.

**c. “a circuit coupled to the cellular transceiver and the IEEE 802 transceiver and configured to communicate using the IEEE 802 transceiver in response to the signal”**

| Claim Term/Phrase   | InterDigital’s Construction  | Respondents’ Construction  |
|---|--|--|
| a circuit coupled to the cellular transceiver and the IEEE 802 transceiver and configured to communicate using the IEEE 802 | hardware and/or software coupled to the cellular and IEEE 802 transceivers and operable to use the IEEE 802 transceiver to communicate with the wireless | a circuit coupled to the cellular transceiver and the IEEE 802 transceiver and configured to automatically connect directly to a W-LAN when such a |

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|                                       |   |  |
|---------------------------------------|---|--|
| transceiver in response to the signal | local area network when such a connection is possible | connection is possible in response to the signal |
|---------------------------------------|---|--|

The claim term “a circuit coupled to the cellular transceiver and the IEEE 802 transceiver and configured to communicate using the IEEE 802 transceiver in response to the signal” appears in asserted independent claim 1. JX-0005 at col. 11, Ins. 5-23.

InterDigital construes this term to mean “hardware and/or software coupled to the cellular and IEEE 802 transceivers and operable to use the IEEE 802 transceiver to communicate with the wireless local area network when such a connection is possible.” Compls. Br. at 244-46. Respondents construe this term to mean “a circuit coupled to the cellular transceiver and the IEEE 802 transceiver and configured to automatically connect directly to a W-LAN when such a connection is possible in response to the signal.” Resps. Br. at 393-96.

As proposed by InterDigital, the claim term “a circuit coupled to the cellular transceiver and the IEEE 802 transceiver and configured to communicate using the IEEE 802 transceiver in response to the signal” is construed to mean “hardware and/or software coupled to the cellular and IEEE 802 transceivers and configured to use the IEEE 802 transceiver to communicate with the wireless local area network when such a connection is possible.”

As discussed above with respect to the claim term “IEEE 802 transceiver configured to communicate with a wireless local area network,” the ‘970 specification teaches that the “circuit” coupled to the IEEE 802 transceivers consists of hardware and/or software:

Note that the path switches 211A, 211B may be implemented in software or hardware, or a combination of hardware and software. Other functions may also be implemented in hardware and/or software which may further be shared by the W-LAN and CDMA sections where appropriate.

JX-0005 at col. 10, Ins. 54-59.

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As further discussed above with respect to the claim term “IEEE 802 transceiver configured to communicate with a wireless local area network,” the claimed invention is not limited to a device that automatically connects to a W-LAN when one is available. See JX-0005 at col. 2, ln. 50 – col. 3, ln.2 (Summary of the Invention).

d. “a plurality of physical layer channels are available for assignment for communication”

| Claim Term/Phrase   | InterDigital’s Construction   | Respondents’ Construction  |
|---|---|--|
| a plurality of physical layer channels are available for assignment for communication | two or more physical layer channels allocable by the subscriber unit for data communication | two or more physical layer channels are available for assignment for communication |

The claim term “a plurality of physical layer channels are available for assignment for communications” appears in asserted independent claims 1 and 10. JX-0005 at col. 11, lns. 5-23; col. 12, lns. 1-16.

InterDigital construes this term to mean “two or more physical layer channels allocable by the subscriber unit for data communication.” Compl. Br. at 246-53. Respondents construe this term to mean “two or more physical layer channels are available for assignment for communication.” Resps. Br. at 376-85.

As proposed by InterDigital, the claim term “a plurality of physical layer channels are available for assignment for communication” is construed to mean “two or more physical layer channels allocable by the subscriber unit for data communication,” a construction that is supported by the intrinsic evidence.



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Figure 6 of the '970 patent "shows a terminal 615 which includes a subscriber unit 101 incorporating the features of the present invention." JX-0005 at col. 9, lns. 27-28. Regarding subscriber unit 101, the specification provides:

The subscriber unit 101 itself preferably consists of an interface 120, a CDMA protocol converter 130 that performs various functions including spoofing 132 and bandwidth management 134 as described earlier, a CDMA transceiver 140, a W-LAN protocol converter 230, a W-LAN transceiver 240, a W-LAN detection circuit 201, path selection switches 211A, 211B, and a subscriber unit antenna 150.

*Id.* at col. 9, lns. 36-41. The specification also teaches that "[t]he bandwidth management function 134 is responsible for allocating and deallocating CDMA radio channels 160 as required," but that "wireless bandwidth is allocated only when there is actual data present from the terminal equipment to the CDMA transceiver." *Id.* at col. 9, lns. 64-66; col. 10, lns. 33-35. The specification therefore demonstrates that the assignment or allocation of radio channels, as well as deallocation or release of those channels, is performed by the subscriber unit, and that the assignment occurs when the subscriber unit has data to transmit.

Respondents argue, *inter alia*, that InterDigital's proposed construction is incorrect, inasmuch as "[t]he specification of another patent for which Mr. Gorsuch<sup>67</sup> was the inventor . . . shows that base stations assign channels in either patent regardless of who transmits on the channel." *See* Resps. Br. at 378. Respondents' argument rests on a false comparison between the '970 patent and U.S. Patent 6,081,536 ("the '536 patent"), a patent for which Mr. Gorsuch is a named inventor, but that is not related to the '970 patent. *See id.* at 378-380; RX-4065 ('536 patent). Notwithstanding Respondents' argument, the teachings of the '536 patent do not affect the claim construction analysis of the '970 patent.

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<sup>67</sup> Thomas E. Gorsuch is the sole named inventor of the '970 patent. JX-0005.

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Respondents further argue in opposition to InterDigital's proposed construction that it is improper to equate "assignment," which is used in the claim language, with "allocation," which is used in InterDigital's proposed construction. *See* Resps. Br. at 382-84. Respondents' argument lacks persuasive force, however, inasmuch as InterDigital established at the hearing that the terms "assignment" and "allocation" are understood by person of ordinary skill in the art to be synonyms. *See* CX-1526C (Stark RWS) at Q300-302; RX-3998C (Bims RWS) at Q60; Bims Tr. 1290-1292.

Respondents argue that their proposed claim construction should be adopted because, "[b]y expressing the claim limitation in the passive voice, the patentee did not limit channel assignment to a particular actor." Resps. Br. at 380. Respondents also argue that, "[i]n the prevailing cellular systems at the time of the 970 Patent's claimed invention, it was the base station or network, not the subscriber unit, that assigned physical layer channels." *Id.* at 380-81 (citation omitted). Respondents further argue that their proposed construction must be correct because "the specification describes a preferred embodiment 'in which the channels are *allocated centrally*,'" and that "[a] person of ordinary skill understands 'allocated centrally' means allocated by the base station or network, not the subscriber unit." *Id.* at 381 (citing JX-0005 at col. 3, lns. 42-44) (emphasis added by Respondents). These arguments by Respondents are not persuasive, however, inasmuch as they ignore the central fact that the '970 claims are directed to "a subscriber unit," and that any allocation of channels must therefore be performed by the subscriber unit, not the base station.

Respondents further argue that the prosecution history "shows that the specification includes the central allocation of physical layer channels used by the subscriber unit," and that their proposed construction should therefore be adopted. Resps. Br. at 381. Respondents rely on

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their interpretation of originally submitted claim 19 to show that the specification discloses such an embodiment. *See id.* This argument is inapposite, however, because original claim 19 was not directed to a subscriber unit, but rather to a “wireless data communication interface.” *See* JX-0012 (‘970 file history) at IDC-ITC-016389797-800. Consequently, original claim 19 sheds little light as to the construction of asserted claims 1 and 10, which are directed to “[a] subscriber unit.”

Accordingly, the claim term “a plurality of physical layer channels are available for assignment for communication” is construed to mean “two or more physical layer channels allocable by the subscriber unit for data communication.”

- e. **“a communication session above the physical layer is maintained when all assigned physical layer channels have been released”**

| Claim Term/Phrase   | InterDigital's Construction   | Respondents' Construction   |
|---|---|---|
| a communication session above the physical layer is maintained when all assigned physical layer channels have been released | a connection above the physical layer is maintained when the assigned physical layer channels are no longer in use by the subscriber unit | the appearance to higher layers in the cellular layered communication protocol of an active physical layer connection is maintained when all physical layer channels have been released |

The claim term “a communication session above the physical layer is maintained when all assigned physical layer channels have been released” is recited in asserted claim 1 of the ‘970 patent. JX-0005 at col. 11, lns. 5-23.

InterDigital construes this term to mean “a connection above the physical layer is maintained when the assigned physical layer channels are no longer in use by the subscriber unit.” Compls. Br. at 254-60. Respondents construe this term to mean “the appearance to higher

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layers in the cellular layered communication protocol of an active physical layer connection is maintained when all physical layer channels have been released.” Resps. Br. at 386-93.

As proposed by InterDigital, the claim term “a communication session above the physical layer is maintained when all assigned physical layer channels have been released” is construed to mean “a connection above the physical layer is maintained when the assigned physical layer channels are no longer in use by the subscriber unit.”

The ‘970 specification teaches that the claimed “communication session above the physical layer” is a “connection above the physical layer.” In particular, the specification describes the bandwidth management function maintaining both “physical layer and network layer connections.” JX-0005 at col. 6, lns. 30-39. When there is no data to transmit, the physical layers are released, or deallocated, thereby making wireless bandwidth available to other subscriber units. *See id.* at col. 4, lns. 14-18; col. 10, lns. 37-42. When the physical layers are released, a logical connection in the form of the communication session is nevertheless maintained above the physical layer. *Id.* at col. 4, lns. 6-14. Maintaining this communication session when the underlying physical layer channels are released avoids “the overhead associated with having to set up an end-to-end connection each time that data needs to be transferred.” *See id.* at col. 4, lns. 19-26. Accordingly, the claimed “communication session” is a connection.

The ‘970 specification also teaches that the claimed “release[]” of the physical layer channels occurs when the assigned channels are “no longer in use by the subscriber unit.” Specifically, the physical layer is “released” when it is no longer in use, and wireless channel bandwidth is consequently made available to other subscriber units. *See* JX-0005 at col. 4, lns. 19-26. In other words, deallocating, releasing, or no longer using “initially assigned radio

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channel bandwidth” makes that bandwidth “available for another transceiver and another subscriber unit.” *Id.* at col. 10, lns. 38-43.

In support of their proposed construction, Respondents argue that “[m]aintaining a communication session’ was defined as maintaining the appearance of a connection during prosecution of a related application.” *See* Resps. Br. at 388-89. In support of this argument, Respondents cite to the prosecution of U.S. Patent Application No. 12/615,098, which is a child of the application that ultimately issued as the ‘970 patent. *See id.*; RX-0031. This argument is not persuasive, however, inasmuch as Respondents have not shown that the prosecution history of a patent application descended from the asserted patent should take precedence over the teachings of the asserted patent itself with respect to the construction of the asserted claims.<sup>68</sup>

Respondents also contend that the ‘970 specification “teaches one of ordinary skill in the art that ‘[maintaining] a communication session above the physical layer . . . when all assigned physical layer channels have been released’ has a specific and unique meaning of ‘maintaining the appearance of an active physical layer connection.’” *See* Resps. Br. at 389-90. Specifically, Respondents argue that “nothing in the specification suggests that ‘maintaining a communication session’ means anything other than ‘maintaining the appearance of an active physical layer connection.’” *Id.* at 390 (citing, *inter alia*, JX-0005 at col. 3, ln. 56 – col. 4, ln. 5; col. 4, lns. 29-33; col. 9, lns. 58-63; col. 10, lns. 28-42). The portions of the ‘970 specification cited by Respondents relate to “spoofing,” which is described as “stripping off the lower layers of the protocol while reformatting higher layer messages for transmission using a more efficient

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<sup>68</sup> Respondents further argue that “[t]he personal notes and deposition testimony of the 970 Patent, Robert Leonard, also support Respondents’ proposed construction.” Resps. Br. at 390-91. This extrinsic evidence, however, does not override the teachings of the ‘970 specification, discussed above, that support InterDigital’s proposed construction.

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CDMA based encapsulated protocol.” JX-0005 at col. 4, lns. 29-33. Another description of spoofing is “insuring that the subscriber unit 101 appears, to the terminal equipment 110, to be connected to the public network 619 (FIG. 5) on the other side of the base station 605 at all times.” *Id.* at col. 9, lns. 58-63. Spoofing is further described as a “function 132 involv[ing] having the CDMA transceiver 140 loop back synchronous data bits to spoof the terminal equipment 110 into believing that a sufficiently wide wireless communication link 160 is continuously available.” *Id.* at col. 10, lns. 28-33.

Spoofing, as set forth in these descriptions from the ‘970 specification, does not require providing the appearance of an active physical layer connection. For instance, the first description is silent as to how the maintained upper layers are to appear. *See* JX-0005 at col. 4, lns. 29-33. The second description cited above states that the subscriber unit presents the appearance of an available connection, with no mention of activity or inactivity. *See id.* at col. 9, lns. 59-63. The third description has the stated goal of presenting the appearance “that a sufficiently wide wireless communication link 160 is continuously available,” and not of presenting the appearance of an “active physical layer connection.” *See id.* at col. 10, lns. 28-33. These descriptions of spoofing teach that the appearance of a connection *above* the physical layer should be maintained, and are silent as to the appearance of a connection *at* the physical layer. Accordingly, the requirement of Respondents’ proposed construction that “the appearance . . . of an active physical layer” be maintained is incorrect.

Respondents also argue that “the plain language of the limitation requires that ‘*all* . . . physical layer channels have been released.’” *See* Resps. Br. at 391 (emphasis original). This argument, however, reads out the word “assigned” from the claim language. Respondents’ position also contradicts the ‘970 specification, which explains that the subscriber unit’s

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“bandwidth management function 134 deallocates initially assigned radio channel bandwidth 160 and makes it available for another transceiver and another subscriber unit 100.” JX-0005 at col. 10, Ins. 37-42. Accordingly, the claimed invention requires that all “assigned physical layer channels” be released, and not “all physical layer channels,” assigned or unsigned.

An additional argument Respondents make in opposition to InterDigital’s proposed construction is that “release” of a channel is not the same as a subscriber unit no longer using the channel: “One of ordinary skill in the art would recognize the difference in meaning between a channel being ‘assigned’/‘released’ and merely being ‘used’/‘no longer in use.’” *See* Resps. Br. at 391-93. Based on their argument, addressed above, that “assignment” and “allocation” have different meanings, Respondents argue that a channel can be “assigned,” yet not be “in use.” *See id.* Dr. Stark testified, however, that an assigned channel released from a first subscriber unit cannot be used by a second subscriber unit, inasmuch as a channel includes a time dimension. *See* Stark Tr. at 502. That is, only the bandwidth freed from a released channel can be used by another subscriber unit. *See id.* Accordingly, Respondents’ position, that release of a channel requires that the channel can be used by another subscriber unit, contradicts the teachings of the ‘970 patent.

Therefore, the claim term “a communication session above the physical layer is maintained when all assigned physical layer channels have been released” is construed to mean “a connection above the physical layer is maintained when the assigned physical layer channels are no longer in use by the subscriber unit.”

**f. “second transceiver configured to communicate with an IEEE 802 compliant wireless network”**

| <b>Claim Term/Phrase</b> | <b>InterDigital’s Construction</b> | <b>Respondents’ Construction</b> |
|--------------------------|------------------------------------|----------------------------------|
| second transceiver       | hardware and/or software           | transceiver configured to        |

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|   |   |   |
|---|---|---|
| configured to communicate with an IEEE 802 compliant wireless network | operable to transmit information to and receive information from an IEEE 802 compliant wireless network | automatically connect directly to an IEEE 802 compliant wireless network when such a connection is possible |
|---|---|---|

The claim term “second transceiver configured to communicate with an IEEE 802 compliant wireless network” appears in asserted independent claim 10. JX-0005 at col. 12, lns. 1-16.

InterDigital construes this term to mean “hardware and/or software operable to transmit information to and receive information from an IEEE 802 compliant wireless network.” Compls. Br. at 260-61. Respondents construe this term to mean “transceiver configured to automatically connect directly to an IEEE 802 compliant wireless network when such a connection is possible.” Resps. Br. at 396-97.

For the reasons set forth above with respect to the claim term “IEEE 802 transceiver configured to communicate with a wireless local area network,” the claim term “second transceiver configured to communicate with an IEEE 802 compliant wireless network” is construed to mean “hardware and/or software configured to transmit information to and receive information from an IEEE 802 compliant wireless network,” which is InterDigital’s proposed construction.

- g. **“maintain a communication session above the physical layer of the first protocol stack when none of the plurality of physical layer channels are assigned”**

| Claim Term/Phrase   | InterDigital’s Construction   | Respondents’ Construction   |
|---|---|---|
| maintain a communication session above a physical layer of the first protocol stack when none of the plurality of physical layer channels are | a connection above the physical layer of the first protocol stack is maintained when the allocable physical layer channels are not in use | maintain the appearance to higher layers in the first protocol stack of an active physical layer connection when none of the plurality of |



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|          |                        |                                      |
|----------|------------------------|--------------------------------------|
| assigned | by the subscriber unit | physical layer channels are assigned |
|----------|------------------------|--------------------------------------|

The claim term “maintain a communication session above a physical layer of the first protocol stack when none of the plurality of physical layer channels are assigned” is recited in asserted claim 10 of the ‘970 patent. JX-0005 at col. 12, lns. 1-16.

InterDigital construes this term to mean “a connection above the physical layer of the first protocol stack is maintained when the allocable physical layer channels are not in use by the subscriber unit.” *See* Compls. Br. at 261; Compls. Reply at 104. Respondents construe this term to mean “maintain the appearance to higher layers in the first protocol stack of an active physical layer connection when none of the plurality of physical layer channels are assigned.” *See* Resps. Br. at 386-87. The parties’ arguments with respect to this disputed claim term are the same as their arguments with respect to the claim term “a communication session above the physical layer is maintained when all assigned physical layer channels have been released,” discussed above. *See* Compls. Br. at 261; Compls. Reply at 104; Resps. Br. at 386.

For the reasons discussed above with respect to the claim term “a communication session above the physical layer is maintained when all assigned physical layer channels have been released,” the claim term “maintain a communication session above a physical layer of the first protocol stack when none of the plurality of physical layer channels are assigned” is construed to mean “a connection above the physical layer of the first protocol stack is maintained when the allocable physical layer channels are not in use by the subscriber unit,” which is InterDigital’s proposed construction.

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- h. “a circuit configured to select the second transceiver in response to detection of the IEEE 802 compliant wireless network”

| Claim Term/Phrase   | InterDigital's Construction  | Respondents' Construction   |
|---|--|---|
| a circuit configured to select the second transceiver in response to detection of the IEEE 802 compliant wireless network | hardware and/or software coupled to the first and second transceivers and capable of selecting the second transceiver when a connection to the IEEE 802 compliant wireless network is possible | a circuit configured to automatically select the second transceiver in response to detection of the IEEE 802 compliant wireless network |

The claim term “a circuit configured to select the second transceiver in response to detection of the IEEE 802 compliant wireless network” appears in asserted dependent claim 11. JX-0005 at col. 12, lns. 17-22.

InterDigital construes this term to mean “hardware and/or software coupled to the first and second transceivers and capable of selecting the second transceiver when a connection to the IEEE 802 compliant wireless network is possible.” Compls. Br. at 262. Respondents construe this term to mean “a circuit configured to automatically select the second transceiver in response to detection of the IEEE 802 compliant wireless network.” Resps. Br. at 396.

For the reasons discussed above with respect to the claim term “IEEE 802 transceiver configured to communicate with a wireless local area network,” the term “a circuit configured to select the second transceiver in response to detection of the IEEE 802 compliant wireless network” is construed to mean “hardware and/or software coupled to the first and second transceivers and capable of selecting the second transceiver when a connection to the IEEE 802 compliant wireless network is possible,” which is InterDigital’s proposed construction.

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- i. **“wherein the IEEE 802 transceiver is configured to transmit TCP/IP data when the communication session is maintained and all assigned physical layer channels have been released”**

The claim term “wherein the IEEE 802 transceiver is configured to transmit TCP/IP data when the communication session is maintained and all assigned physical layer channels have been released” appears in asserted claim 2 of the ‘970 patent. JX-0005 at col. 11, lns. 24-27; col. 12, lns. 26-29.

Although this claim term appears on the GR12 filing as a disputed claim term that requires construction, both InterDigital and Respondents agree that the claim limitation should be accorded its plain and ordinary meaning. *See* Compls. Reply at 110; Resps. Br. at 397-98.

Respondents suggest that “the plain and ordinary meaning requires that a specific component be *configured* to perform a specific function *when* certain conditions are met,” and argue that “InterDigital’s infringement theories would read out these important limitations and rewrite the claim to require only the *capability* of transmitting TCP/IP data via a WLAN connection while a cellular communication session is maintained. Resps. Br. at 397-38 (emphasis original). InterDigital does not propose a specific plain meaning construction for this term. *See* Compls. Reply at 110.

Having considered the positions of the parties, the undersigned agrees that the plain meaning of the term “wherein the IEEE 802 transceiver is configured to transmit TCP/IP data when the communication session is maintained and all assigned physical layer channels have been released” should apply. The undersigned declines to adopt the “plain meaning” proposal of Respondents, however, inasmuch as the claim language itself indicates that the claim requires only that the claimed IEEE transceiver be capable of transmitting TCP/IP data via a WLAN

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connection at the same time a communication session is maintained and all assigned physical channels have been released.<sup>69</sup>

### j. “subscriber unit”

In their post-hearing brief, Respondents allege that, “[i]n an attempt to avoid the prior art, InterDigital new seeks new claim constructions that the preambles to claims 1 and 10 are limitations, and that the term “subscriber unit”—which only appears in the preambles—cannot consist of separate devices connected together.” Resps. Br. at 386. Respondents argue that “No such constructions were sought in the parties’ joint proposed claim constructions (JX-0022C),” and that “[t]his waiver alone should bar construction at this stage.” *Id.*

InterDigital agrees that “InterDigital has not proposed that the ALJ construe ‘subscriber unit.’” Compls. Reply at 103.

Inasmuch as both parties agree that “subscriber unit” should not be construed in this investigation, this initial determination will not construe the claim term.

### D. Infringement

#### 1. Claim 1

As set forth below, the evidence indicates that the ‘970 accused products satisfy all limitations of, and therefore infringe, asserted claim 1.

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<sup>69</sup> A similar claim term, “wherein the second transceiver is configured to transmit TCP/IP data when the communication session is maintained when none of the plurality of physical layer channels are assigned,” appears in asserted claim 13 of the ‘970 patent. For the reasons discussed above, it is determined that the plain meaning of this limitation requires only that the claimed second transceiver be capable of transmitting TCP/IP data via a WLAN connection at the same time a communication session is maintained and none of the plurality of physical layer channels is assigned.

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**a. A subscriber unit comprising:**

The preamble of claim 1 recites, “[a] subscriber unit comprising.” The record evidence accused by InterDigital shows that the ‘970 accused products comprise subscriber units. Specifically, the ‘970 accused products are mobile, wireless communications devices in the form of either handsets or tablets. CX-1306C (Stark WS) at Q827, Q832, Q836, Q2282, Q3137, Q3143, Q3148.

**b. a cellular transceiver configured to communicate with a cellular network via a cellular layered communication protocol;**

Claim 1 recites, “a cellular transceiver configured to communicate with a cellular network via a cellular layered communication protocol.” The record shows that [

] CX-1306C (Stark WS) at Q826, Q830, Q835, Q2281, Q3137, Q3142, Q3147; CX-1306.1C (Stark Errata) at 2. [

] *Id.* at Q939, Q942, Q2320, Q2323, Q3196, Q3199. Accordingly, the ‘970 accused products contain “a cellular transceiver configured to communicate with a cellular network via a cellular layered communication protocol.”

**c. an IEEE 802 transceiver configured to communicate with a wireless local area network (WLAN) via an IEEE 802 layered communication protocol;**

Claim 1 recites, “an IEEE 802 transceiver configured to communicate with a wireless local area network (WLAN) via an IEEE 802 layered communication protocol.” As discussed above, the claim term “IEEE 802 transceiver configured to communicate with a wireless local

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area network” is construed to mean “hardware and/or software configured to transmit information to and receive information from an IEEE 802 wireless local area network,” and the claim term “IEEE 802 layered communication protocol” is construed to mean “structured procedures for communicating with an IEEE 802 network.” The record evidence shows that

[

] CX-1306C (Stark WS) at

Q1008, Q2249, Q3226; CX-1306.1C (Stark Errata) at 2. IEEE 802.11 is a layered communication protocol. CX-1306C (Stark WS) at Q790. Accordingly, under the adopted constructions of this claim term, the ‘970 accused products contain “an IEEE 802 transceiver configured to communicate with a wireless local area network (WLAN) via an IEEE 802 layered communication protocol.”<sup>70</sup>

**d. a detector configured to detect a signal from the WLAN; and**

Claim 1 recites, “a detector configured to detect a signal from the WLAN.” The ‘970 accused products [

] CX-1306C (Stark WS) at

Q814; CX-1306.1C (Stark Errata) at 10. [

] *See, e.g.*, CX-0642 (Nokia Lumia 800 User

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<sup>70</sup> Although Respondents do not dispute directly that this claim limitation is satisfied, their proposed construction of the claim term “IEEE 802 transceiver configured to communicate with a wireless local area network” requires that the claimed IEEE 802 transceiver be “configured to automatically connect directly to a W-LAN when such a connection is possible.” *See* Resps. Br. at 398-414. This particular argument will be addressed below in conjunction with Respondents’ argument that the ‘970 accused products do not satisfy the claim limitation “a circuit coupled to the cellular transceiver and the IEEE 802 transceiver and configured to communicate using the IEEE 802 transceiver in response to the signal.”

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Guide) at 39; CX-0443 (Huawei Impulse User Guide) at 36. Accordingly, the '970 accused products contain "a detector configured to detect a signal from the WLAN."

- e. **a circuit coupled to the cellular transceiver and the IEEE 802 transceiver and configured to communicate using the IEEE 802 transceiver in response to the signal;**

Claim 1 recites, "a circuit coupled to the cellular transceiver and the IEEE 802 transceiver and configured to communicate using the IEEE 802 transceiver in response to the signal." As discussed above, this claim is construed to mean "hardware and/or software coupled to the cellular and IEEE 802 transceivers and operable to use the IEEE 802 transceiver to communicate with the wireless local area network when such a connection is possible."

Analyzing the '970 accused products under this adopted construction, [

] *See, e.g.,*

CX-1306C (Stark WS) at Q812, Q1210-1211, Q1217, Q1220, Q2264, Q2476-2478, Q3120, Q3341-3342; CX-1306.1C (Stark Errata) at 1, 10.

Respondents dispute that this claim limitation is satisfied, inasmuch as the '970 accused products "are not configured to communicate with a WLAN whenever a signal is detected from a WLAN." Resps. Br. at 410. Respondents note that "both Respondents' and InterDigital's claim construction for this element requires using the IEEE 802 transceiver for communications whenever such a WLAN connection is possible,"<sup>71</sup> and argue that "[t]he accused products operate differently." *Id.* It is argued that the '970 accused products "are incapable of

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<sup>71</sup> Respondents' proposed construction for this claim term is "a circuit coupled to the cellular transceiver and the IEEE 802 transceiver and configured to automatically connect directly to a W-LAN when such a connection is possible in response to the signal." *See* Resps. Br. at 393-96.

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[

] *Id.* (citing RX-3998C (Bims RWS) at Q431-443; Walker Tr. at 420-421;

[RX-4027C

] [

] Resps. Br. at 411 (citing RX-3998C (Bims RWS)

at Q444-473).

Yet, under both parties' proposed constructions of "a circuit coupled to the cellular transceiver and the IEEE 802 transceiver and configured to communicate using the IEEE 802 transceiver in response to the signal," the claim requires only that the circuit be "configured to communicate" using the IEEE 802 transceiver "when such a connection is possible." Such a circuit would not actually need to use the IEEE 802 transceiver whenever the WLAN signal were available, but would instead merely need the capability to use the IEEE 802 transceiver. [

] *See, e.g.,*

CX-1306C (Stark WS) at Q812, Q1210-1211, Q1217, Q1220, Q2264, Q2476-2478, Q3120, Q3341-3342; CX-1306.1C (Stark Errata) at 1, 10.

Respondents also argue that this claim limitation is not satisfied because they lack "three separate and distinct hardware components." *See* Resps. Br. at 411. Despite Respondents' arguments, neither the claim itself nor the parties' proposed construction of this claim limitation requires that the circuit, cellular transceiver, and IEEE 802 transceiver be comprised of "three separate and distinct hardware components." The record shows that Dr. Stark described how software and shared hardware in the '970 accused products defined the claimed circuit and two transceivers. CX-1526C (Stark RWS) at Q1059-1070; CX-1526.1C (Stark RWS Errata) at Q1060.



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Accordingly, it is determined that the '970 accused products satisfy the claim limitation “a circuit coupled to the cellular transceiver and the IEEE 802 transceiver and configured to communicate using the IEEE 802 transceiver in response to the signal.”<sup>72</sup>

- f. **wherein the cellular layered communication protocol includes a plurality of layers above a physical layer, and a plurality of physical layer channels are available for assignment for communication with the cellular network and a communication session above the physical layer is maintained when all assigned physical layer channels have been released.**

Claim 1 recites, “wherein the cellular layered communication protocol includes a plurality of layers above a physical layer, and a plurality of physical layer channels are available for assignment for communication with the cellular network and a communication session above the physical layer is maintained when all assigned physical layer channels have been released.”

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<sup>72</sup> InterDigital also takes the position that this claim limitation is satisfied under the doctrine of equivalents should Respondents’ proposed construction of this claim limitation be adopted. *See* Compls. Br. at 272-73. InterDigital argues:

Under either interpretation [of the claim language], the function of this element is to facilitate communication directly with an IEEE 802 WLAN when possible. CX-1306C (Stark) at ¶ 1234. Whether in overlapping or distinct software and/or hardware—which two configurations are expressly contemplated by the '970 Patent (JX-0005 ('970 Patent) at 9:41-43 (“The various components of the subscriber unit 101 may be realized in discrete devices or as an integrated unit.”))—the function is performed in substantially the same way. That is, hardware and/or software operate to preferentially facilitate communication with / connection to an IEEE 802 WLAN when possible. CX-1306C (Stark) at ¶ 1234. And the same result—communication directly with an IEEE 802 WLAN when possible—is achieved. *Id.*

It is determined that, should Respondents’ proposed construction for the claim limitation “a circuit coupled to the cellular transceiver and the IEEE 802 transceiver and configured to communicate using the IEEE 802 transceiver in response to the signal” be adopted, the '970 accused products would satisfy this limitation under the doctrine of equivalents, inasmuch as [

] *See, e.g.,*  
CX-1306C (Stark WS) at Q812, Q1210-1211, Q1217, Q1220, Q2264, Q2476-2478, Q3120, Q3341-3342; CX-1306.1C (Stark Errata) at 1, 10.

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As discussed above, the claim term “a plurality of physical layer channels are available for assignment for communication” is construed to mean “two or more physical layer channels allocable by the subscriber unit for data communication,” and the claim term “a communication session above the physical layer is maintained when all assigned physical layer channels have been released” is construed to mean “a connection above the physical layer is maintained when the assigned physical layer channels are no longer in use by the subscriber unit.”

With respect to the claim limitations “wherein the cellular layered communication protocol includes a plurality of layers above a physical layer” and “a plurality of physical layer channels are available for assignment for communication with the cellular network,” both of the cellular technologies used by the ‘970 accused products, *i.e.*, WCDMA Release 6 (or later) and CDMA2000 EV-DO Revision A (or later), are “cellular layered communications protocols” that include “a plurality of layers above a physical layer.” CX-1306C (Stark WS) at Q1299-1300, Q2516-2518, Q3382-3383; CX-1306.1C (Stark Errata) at 2. Accordingly, the ‘970 accused products satisfy these limitations.

The parties do dispute whether the ‘970 accused products satisfy the limitation “a communication session above the physical layer is maintained when all assigned physical layer channels have been released.” *See* Compls. Br. at 274-86; Resps. Br. at 398-410.

Applying InterDigital’s proposed construction of the claim term, *i.e.*, “a connection above the physical layer is maintained when the assigned physical layer channels are no longer in use by the subscriber unit,” which was adopted above, the evidence demonstrates that the ‘970 accused products satisfy this claim limitation. Specifically, [

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In the '970 accused products, [ ] CX-1306 (Stark WS) at Q777; Bims Tr. 1314, 1315-1316. [ ] CX-1306C (Stark WS) at Q1334, Q2547, Q3416. [ ] See CX-1526C (Stark RWS) at Q1127 (discussing CX-4149 (AT&T PDP Connection)), Q1130 (discussing CX-4151 (Android PDP Connection Article)), Q1131 (discussing CX-4152 (Wind River PDP Connection)); [RX-4027C ]

Under InterDigital's proposed construction, assigned physical layer channels in the '970 accused products are "released" when they are no longer in use by the subscriber unit, *i.e.*, when all assigned physical layer channels are released. Applying the adopted claim construction, the relevant channels are those that are allocable by the subscriber unit for use in data transmission. See CX-1306C (Stark WS) at Q688. The accused E-DPDCH (Enhanced Dedicated Physical Data Channels) and Walsh Channels of the '970 accused products using WCDMA and CDMA2000, respectively, are the claimed physical channels. CX-1306C (Stark WS) at Q1306, Q1320; CX-1306.1C (Stark Errata) at 4; Bims Tr. 1268, 1274.

Turning specifically to the WCDMA '970 accused products, [ ] Bims Tr. 1271-1272. [ ] See Bims Tr. 1273-1274.

Testing of the accused products demonstrates that the devices are configured to maintain a communication session, *i.e.*, a PDP context, above the physical layer when all assigned

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physical layer channels are released (or when none are assigned). Specifically, representative accused products were tested for conformance with, and passed, the Service Request / RAB re-establishment / UE initiated / Single PDP context test defined in RX-3100 (Standard 34.123-1) at pages 2991-2993. Bims Tr. 1325. This testing confirms that the device under test performs certain operations using a preserved PDP context after (i) a connection release event, as well as (ii) when radio coverage is lost. Bims Tr. 1327; RX-3100 (Standard 34.123-1) at 2991-2993. The RRC connection release event releases the one RRC connection between the subscriber unit and the network, including all radio access bearers and all signaling radio bearers. Bims Tr. 1327-1328. At this time, any assigned E-DPDCH is also released. Bims Tr. 1321.

Conformance with the testing requires, among other things, that a PDP Context using background or interactive traffic class is preserved without modification after an RRC connection release event, as well as when radio coverage is lost. RX-3100 (Standard 34.123-1) at 2991-2992; CX-1306C (Stark WS) at Q3819; CX-1306.1C (Stark Errata) at 1. Conformance is determined by first establishing a PDP context with traffic class "background class," before a connection release event is emulated. RX-3100 (Standard 34.123-1) at 2992; CX-1306C (Stark WS) at Q3819; CX-1306.1C (Stark Errata) at 1. After the RRC connection release event, *i.e.*, the release of all radio access bearers and all signaling radio bearers, including any E-DPDCH, the device under test initiates an uplink transmission resulting in the setup of a radio access bearer for the active, preserved PDP context. Bims Tr. 1321, 1327-1328; RX-3100 (Standard 34.123-1) at 2992; CX-1306C (Stark WS) at Q3819; CX-1306.1C (Stark Errata) at 1. In other words, the test confirms that the subscriber not only can maintain a PDP Context when the physical layer channels are released, but it also confirms the subscriber unit can reestablish physical layer

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channels, *i.e.*, radio access bearers, using the preserved PDP Context. *See* RX-3100 (Standard 34.123-1) at 2992; CX-1306C (Stark WS) at Q3819; CX-1306.1C (Stark Errata) at 1.

In a second test scenario, for the same preserved PDP Context with traffic class “background class,” the device under test was made to experience an emulated four minute out-of-coverage event, *i.e.*, a period during which there are no physical layer channels in use between the subscriber unit and the network. Bims Tr. 1328-1329; CX-1306C (Stark WS) at Q3819; CX-1306.1C (Stark Errata) at 1. During this out-of-coverage event, the device releases its radio access bearers, *i.e.*, all physical layer channels, and enters idle mode. RX-3100 (Standard 34.123-1) at 2992; CX-1306C (Stark WS) at Q3819; CX-1306.1C (Stark Errata) at 1. Following emergence from the out-of-coverage event, the device under test initiates an uplink transmission resulting in the setup of a radio access bearer for the active, preserved PDP context. *See, e.g.*, CX-1306C (Stark WS) at Q3819; CX-1306.1C (Stark Errata) at 1. Thus, again, this testing confirms that the subscriber unit not only maintains a PDP Context when the physical layer channels are released, but it also confirms the subscriber unit reestablishes physical layer channels, *i.e.*, radio access bearers, using the preserved PDP Context. *See* RX-3100 (Standard 34.123-1) at 2992-2993; CX-1306C (Stark WS) at Q3819; CX-1306.1C (Stark Errata) at 1. [

] CX-1306C (Stark WS) at Q1348, Q1355, Q2561-2563, Q3425, Q3428-3430, Q3432, Q3441; CX-1306.1C (Stark Errata) at 1; CX-1308C (Walker WS) at Q157, Q172; CX-1307C (Goldberg WS) at Q705, Q745.

**2. Claim 2**

As set forth below, the evidence indicates that the '970 accused products satisfy all limitations of, and therefore infringe, asserted claim 2.

**a. The subscriber unit of claim 1,**

For the reasons discussed above, it has been shown that the '970 accused products satisfy the elements of claim 1

**b. wherein the IEEE 802 transceiver is configured to transmit TCP/IP data when the communication session is maintained and all assigned physical layer channels have been released.**

As discussed above, the '970 accused products are configured to maintain a communication session when all assigned physical layer channels are released or when none of the plurality of the physical layer channels is assigned. Moreover, the '970 accused products are configured to transmit TCP/IP data via an included second, or IEEE 802, transceiver.

[

RX-3998C

(

RX-4027C

]

[

] See CX-1308C (Walker WS) at

Q83-93 (describing WLAN use case), Q105-125 (describing cellular use case, including steps relating to WLAN connection).

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Respondents argue that the '970 accused products do not satisfy the additional limitation of claim 2 because "they do not satisfy the additional causal relationship required by the plain and ordinary meaning of these claims." Resps. Br. at 291-92. It was determined above, however, that the claim language itself indicates that the claim requires only that the claimed IEEE transceiver be capable of transmitting TCP/IP data via a WLAN connection at the same time a communication session is maintained and all assigned physical channels have been released. Accordingly, the '970 accused products satisfy this additional limitation of claim 2.

### 3. Claim 3

As set forth below, the evidence indicates that the '970 accused products satisfy all limitations of, and therefore infringe, asserted claim 3.

#### a. The subscriber unit of claim 1,

For the reasons discussed above, it has been shown that the '970 accused products satisfy the elements of claim 1.

#### b. wherein at least one of the plurality of layers above the physical layer is any one of a TCP layer, a IP layer, or a network layer.

The record evidence shows that each of the cellular layered communication protocols supported by the '970 accused products includes one or more of a TCP layer, a IP layer, or a network layer above the physical layer. *See, e.g.,* CX-1306C (Stark WS) at Q1524-1529; CX-1306.1C (Stark Errata) at 4. Respondents do not contest that this claim limitation is satisfied. *See* Resps. Br. at 418-19.

### 4. Claim 4

As set forth below, the evidence indicates that the '970 accused products satisfy all limitations of, and therefore infringe, asserted claim 4.

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**a. The subscriber unit of claim 1,**

For the reasons discussed above, it has been shown that the '970 accused products satisfy the elements of claim 1.

**b. wherein the cellular transceiver and the IEEE 802 transceiver are provided in a single unit.**

The record evidence shows that the '970 accused products include both a cellular transceiver and an IEEE 802 transceiver. As observed by Dr. Stark, the cellular and IEEE 802 transceivers of the '970 accused products are provided in a single unit, *i.e.*, a single handset or tablet. *See, e.g.*, CX-1306C (Stark WS) at Q1590-1593. Further evidence that the '970 accused products include a cellular and IEEE 802 transceiver in a single unit is evidenced by the ability of the devices to notify a user of a connection with one or more of a cellular network and a IEEE 802 WLAN. *Id.* Respondents do not contest that this claim limitation is satisfied. *See Resps. Br.* at 418-19.

**5. Claim 5**

As set forth below, the evidence indicates that the '970 accused products satisfy all limitations of, and therefore infringe, asserted claim 5.

**a. The subscriber unit of claim 1,**

For the reasons discussed above, it has been shown that the '970 accused products satisfy the elements of claim 1.

**b. wherein the subscriber unit is configured in a mobile telephone or personal digital assistant.**

Each of the '970 accused products includes one or more software applications configuring the devices to perform common personal digital assistant (PDA) functions including instant messaging, sending and receiving email, as well as managing a calendar and contacts.



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CX-1306C (Stark WS) at Q1653-1655; Q2700-2702; Q3605-3606; CX-1306.1C (Stark Errata) at 2, 3, 8; CX-0098 (Lumia 710 User Guide) at 31-34, 40-44, 62-63; CX-0688C (ZTE Warp Basics Guide) at 44-46, 53-59, 78; CX-0455C (M865 User Guide) at 22-26, 30-35, 53. Further, with few exceptions (*e.g.*, tablets), each of the '970 accused products is configured as a mobile phone. CX-1306C (Stark WS) at Q1653-1655; Q2700-2702; Q3605-3606; CX-1306C (Stark Errata) at 2, 3, 8; CX-0098 (Lumia 710 User Guide) at 29-31; CX-0688C (ZTE Warp Basics Guide) at 37-43; CX-0455C (M865 User Guide) at 17-22. Respondents do not contest that this claim limitation is satisfied. *See* Resps. Br. at 418-19.

**6. Claim 6**

As set forth below, the evidence indicates that the '970 accused products satisfy all limitations of, and therefore infringe, asserted claim 6.

**a. The subscriber unit of claim 1,**

For the reasons discussed above, it has been shown that the '970 accused products satisfy the elements of claim 1.

**b. wherein the signal is a beacon frame or probe response frame.**

The '970 accused products are configured to communicate with an IEEE 802.11 compliant WLAN. IEEE 802.11 compliant devices are configured to operate in Passive Scanning mode and/or Active Scanning mode. *See, e.g.*, CX-1306C (Stark WS) at Q1713-1714; CX-0390 (IEEE Std. 802.11-2007) at § 11.1.3. In Passive Scanning mode, the devices scan for Beacon frames. *Id.* In Active Scanning mode, these devices generate and transmit Probe Request frames and subsequently process received Probe Response frames. *See, e.g.*, CX-1306C (Stark WS) at Q1713-1714; CX-1306.1C (Stark Errata) at 4; CX-0390 (IEEE Std. 802.11-2007)

at § 11.1.3.2. Respondents do not contest that this claim limitation is satisfied. *See* Resps. Br. at 418-19.

**7. Claim 7**

As set forth below, the evidence indicates that the '970 accused products satisfy all limitations of, and therefore infringe, asserted claim 7.

**a. The subscriber unit of claim 1,**

For the reasons discussed above, it has been shown that the '970 accused products satisfy the elements of claim 1.

**b. wherein at least one of the plurality of physical layer channels is a data channel.**

The '970 accused products are configured to communicate with a cellular network via at least one physical layer data channel. *See, e.g.*, CX-1306C (Stark WS) at Q1780-1781.

Specifically, Dr. Stark testified that[

] *Id.* at Q1782-1784.

[

] *Id.* at Q1786-1787. Respondents do not

contest that this claim limitation is satisfied. *See* Resps. Br. at 418-19.

**8. Claim 8**

As set forth below, the evidence indicates that the '970 accused products satisfy all limitations of, and therefore infringe, asserted claim 8.

**a. The subscriber unit of claim 1,**

For the reasons discussed above, it has been shown that the '970 accused products satisfy the elements of claim 1.

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- b. wherein the cellular network is a licensed code division multiple access network and the WLAN is an unlicensed 802.11 network.**

The '970 accused products are configured to communicate with CDMA cellular and IEEE 802.11 networks. In the United States, frequency spectrum used for cellular communications is regulated, managed, and licensed pursuant to the Communications Act, while "WLAN [including IEEE 802.11] uses license-exempt spectrum bands [including 2.4 GHz or 5 GHz] regulated by FCC rules 47 C.F.R. Part 15." CX-0412 (FCC Webpage) at 2; CX-1306C (Stark WS) at Q1794-1795, Q2767-2768, Q3686-3687. Respondents do not contest that this claim limitation is satisfied. *See* Resps. Br. at 418-19.

**9. Claim 9**

As set forth below, the evidence indicates that the '970 accused products satisfy all limitations of, and therefore infringe, asserted claim 9.

- a. The subscriber unit of claim 1,**

For the reasons discussed above, it has been shown that the '970 accused products satisfy the elements of claim 1.

- b. wherein the cellular transceiver is a code division multiple access transceiver and the IEEE 802 transceiver is an 802.11 transceiver.**

The '970 Accused Products are configured to communicate with CDMA cellular and IEEE 802.11 networks. *See* CX-1306C (Stark WS) at Q826, Q830, Q835, Q1008, Q2249, Q2281, Q3137, Q3142, Q3147, Q3226; CX-1306.1C (Stark Errata) at 2. Consequently, the '970 accused products include "a code division multiple access transceiver" and "an 802.11 transceiver." Respondents do not contest that this claim limitation is satisfied. *See* Resps. Br. at 418-19.

**10. Claim 10**

As set forth below, the evidence indicates that the '970 accused products do not satisfy all limitations of asserted claim 10.

**a. A subscriber unit comprising:**

The preamble of claim 10 recites, “[a] subscriber unit comprising.” For the same reasons discussed above with reference to claim 1, the '970 accused products are subscriber units as recited in the preamble of claim 10.

**b. a first transceiver configured to communicate with a first wireless network;**

Claim 10 recites, “a first transceiver configured to communicate with a first wireless network.” As discussed above with reference to claim 1, each of the '970 accused products include a cellular transceiver configured to communicate with either a WCDMA Release 6 or a CDMA2000 EV-DO Revision A network.

**c. a second transceiver configured to communicate with an IEEE 802 compliant wireless network; and**

Claim 10 recites that the claimed subscriber unit includes “a second transceiver configured to communicate with an IEEE 802 compliant wireless network.” As discussed above with reference to claim 1, the '970 accused products include an IEEE 802 transceiver configured to communicate with an IEEE 802.11-based WLAN.

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- d. a processor coupled to the first transceiver and the second transceiver, and configured to operate a first protocol stack for the first wireless network and a second protocol stack for the IEEE 802 compliant wireless network, wherein a plurality of physical layer channels are available for assignment for communication with the first wireless network, and to maintain a communication session above a physical layer of the first protocol stack when none of the plurality of physical layer channels are assigned.

Claim 10 requires a “processor . . . configured to operate a first protocol stack for the first wireless network and a second protocol stack for the IEEE 802 compliant wireless network.”

The ‘970 accused products do not satisfy this requirement. [

] RX-3998C (Bims RWS)

at Q556, Q561. [

] See CX-1306C (Stark WS) at Q2061, Q2863, Q3801; Stark Tr.

491-492. Accordingly, ‘970 the accused products do not satisfy the “processor . . . configured to operate a first protocol stack for the first wireless network and a second protocol stack for the IEEE 802 compliant wireless network” limitation of claim 10.

Claim 10 also recites, “a processor . . . wherein a plurality of physical layer channels are available for assignment for communication with the first wireless network, and to maintain a communication session above a physical layer of the first protocol stack when none of the plurality of physical layer channels are assigned.” For the reasons stated above in the discussion of claim 1, the ‘970 accused products also meet this limitation of claim 10.

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11. **Claim 11**

a. **The subscriber unit of claim 10, further comprising:**

Inasmuch as the '970 accused products do not satisfy the limitations of independent claim 10, they also do not satisfy the limitations of dependent claim 11.

b. **a detector configured to detect the IEEE 802 compliant wireless network; and**

Claim 11 recites, "a detector configured to detect the IEEE 802 compliant wireless network." As discussed above with reference to claim 1, the '970 products include "a detector configured to detect the IEEE 802 compliant wireless network."

c. **a circuit configured to select the second transceiver in response to detection of the IEEE 802 compliant wireless network.**

Claim 11 recites, "a circuit configured to select the second transceiver in response to detection of the IEEE 802 compliant wireless network." As discussed above with reference to claim 1, the '970 Accused Products include "a circuit configured to select the second transceiver in response to detection of the IEEE 802 compliant wireless network."

12. **Claim 12**

a. **The subscriber unit of claim 11,**

Inasmuch as the '970 accused products do not satisfy the limitations of claim 11, they also do not satisfy the limitations of dependent claim 12.

b. **wherein detection of the IEEE 802 compliant wireless network is based on receipt of a beacon frame or probe response frame.**

The '970 accused products are configured to communicate with an IEEE 802.11 compliant WLAN. IEEE 802.11 compliant devices are configured to operate in Passive Scanning mode and/or Active Scanning mode. *See, e.g.,* CX-1306C (Stark WS) at Q1713-1714; CX-0390 (IEEE Std. 802.11-2007) at § 11.1.3. In Passive Scanning mode, the devices scan for

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Beacon frames. *Id.* In Active Scanning mode, these devices generate and transmit Probe Request frames and subsequently process received Probe Response frames. *See, e.g.*, CX-1306C (Stark WS) at Q1713-1714; CX-1306.1C (Stark Errata) at 4; CX-0390 (IEEE Std. 802.11-2007) at § 11.1.3.2. Therefore, the '970 accused products satisfy this additional limitation of claim 12.

**13. Claim 13**

**a. The subscriber unit of claim 10,**

Inasmuch as the '970 accused products do not satisfy the limitations of independent claim 10, they also do not satisfy the limitations of dependent claim 13.

**b. wherein the second transceiver is configured to transmit TCP/IP data when the communication session is maintained when none of the plurality of physical layer channels are assigned.**

As discussed above, the '970 accused products are configured to maintain a communication session when all assigned physical layer channels are released or when none of the plurality of the physical layer channels is assigned. Moreover, the '970 accused products are configured to transmit TCP/IP data via an included second, or IEEE 802, transceiver.

[

RX-3998C

RX-4027C

]

[

] *See* CX-1308C (Walker WS) at

Q83-93 [ ] Q105-125 [ ]

Respondents argue that the '970 accused products do not satisfy the additional limitation of claim 13 because "they do not satisfy the additional causal relationship required by the plain and ordinary meaning of these claims." Resps. Br. at 291-92. It was determined above, however, that the claim language itself indicates that this limitation requires only that the claimed second transceiver be capable of transmitting TCP/IP data via a WLAN connection at the same time a communication session is maintained and none of the plurality of physical layer channels is assigned. Accordingly, the '970 accused products satisfy this additional limitation of claim 13.

**14. Claim 14**

**a. The subscriber unit of claim 10,**

Inasmuch as the '970 accused products do not satisfy the limitations of independent claim 10, they also do not satisfy the limitations of dependent claim 14.

**b. wherein at least one of the plurality of layers above the physical layer is any one of a TCP layer, a IP layer, or a network layer.**

The record evidence shows that each of the cellular layered communication protocols supported by the '970 accused products includes one or more of a TCP layer, a IP layer, or a network layer above the physical layer. *See, e.g.,* CX-1306C (Stark WS) at Q1524-1529; CX-1306.1C (Stark Errata) at 4. Respondents do not contest that this claim limitation is satisfied. *See* Resps. Br. at 418-19.



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15. **Claim 15**

a. **The subscriber unit of claim 10,**

Inasmuch as the '970 accused products do not satisfy the limitations of independent claim 10, they also do not satisfy the limitations of dependent claim 15.

b. **wherein at least one of the plurality of physical layer channels is a data channel.**

The '970 accused products are configured to communicate with a cellular network via at least one physical layer data channel. *See, e.g.*, CX-1306C (Stark WS) at Q1780-1781.

Specifically, Dr. Stark testified that [

] *Id.* at Q1782-1784.

[

] *Id.* at Q1786-1787. Respondents do not

contest that this claim limitation is satisfied. *See* Resps. Br. at 418-19.

16. **Claim 16**

a. **The subscriber unit of claim 10,**

Inasmuch as the '970 accused products do not satisfy the limitations of independent claim 10, they also do not satisfy the limitations of dependent claim 16.

b. **wherein the first wireless network is a licensed code division multiple access network and the IEEE 802 compliant wireless network is an unlicensed IEEE 802.11 network.**

The '970 accused products are configured to communicate with CDMA cellular and IEEE 802.11 networks. In the U.S., frequency spectrum used for cellular communications is regulated, managed, and licensed pursuant to the Communications Act, while "WLAN [including IEEE 802.11] uses license-exempt spectrum bands [including 2.4 GHz or 5 GHz] regulated by FCC rules 47 C.F.R. Part 15." CX-0412 (FCC Webpage) at 2; CX-1306C (Stark

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WS) at Q1794-1795, Q2767-2768, Q3686-3687. Respondents do not contest that this claim limitation is satisfied. *See* Resps. Br. at 418-19.

**17. Claim 17**

**a. The subscriber unit of claim 10,**

Inasmuch as the '970 accused products do not satisfy the limitations of independent claim 10, they also do not satisfy the limitations of dependent claim 17.

**b. wherein the first transceiver is a code division multiple access transceiver and the second transceiver is an 802.11 transceiver.**

The '970 Accused Products are configured to communicate with CDMA cellular and IEEE 802.11 networks. *See* CX-1306C (Stark WS) at Q826, Q830, Q835, Q1008, Q2249, Q2281, Q3137, Q3142, Q3147, Q3226; CX-1306.1C (Stark Errata) at 2. Consequently, the '970 accused products include "a code division multiple access transceiver" and "an 802.11 transceiver." Respondents do not contest that this claim limitation is satisfied. *See* Resps. Br. at 418-19.

**18. Claim 18**

**a. The subscriber unit of claim 10,**

Inasmuch as the '970 accused products do not satisfy the limitations of independent claim 10, they also do not satisfy the limitations of dependent claim 18.

**b. wherein the first transceiver is a cellular transceiver.**

The '970 accused products are configured to communicate with CDMA cellular networks. *See* CX-1306C (Stark WS) at Q826, Q830, Q835, Q2281, Q3137, Q3142, Q3147; CX-1306.1C (Stark Errata) at 2. Consequently, the '970 accused products include "first transceiver" that is a "cellular transceiver." Respondents do not contest that this claim limitation is satisfied. *See* Resps. Br. at 418-19.

**19. Infringement of the Accused Products Upon Importation**

Respondents argue that, inasmuch as the '970 accused products do not directly infringe upon importation into the United States, they do not satisfy the importation requirement of section 337. *See* Resps. Br. at 412-14 (citing *Electronic Devices* at 13-14 (“[I]nfringement, direct or indirect, must be based on the articles as imported to satisfy the requirements of section 337.”)).

Respondents argue that, at the time of importation, “the WCDMA accused products require additional SIM card hardware before they can establish a packet data connection over a cellular network,” but that “there is no evidence that the WCDMA accused products are imported with a SIM card; in fact, the evidence indicates the opposite.” Resps. Br. at 412-13. It is further argued that, “Without a SIM card, the WCDMA accused products cannot establish a packet data connection as required by the asserted claims.” *Id.* at 3.

Respondents also argue that, “as imported, the accused products cannot communicate with a WLAN as the claims require without additional configuration.” Resps. Br. at 413. In particular, Respondents contend that “the accused products as imported are not configured to establish a connection to a WLAN,” and that “at least some of the accused products have the WLAN functionality disabled when they are imported.” *See id.* It is argued that, “[b]ecause the accused products must be manually configured after importation in order to be able to connect to and use a WLAN for data transfer, they cannot infringe claim 1 as imported.” *Id.* at 413-14.

In response, InterDigital argues that “the '970 Accused Products as imported are configured to connect to a WLAN.” Compls. Br. at 299. InterDigital further argues:

[T]he '970 Accused Products are configured to automatically and directly communicate with an IEEE 802 WLAN without manual configuration, thereby satisfying the asserted claim limitations. *Id.* For example, the

[  
] *Id.* [  
] *Id.* at  
¶ 1986-1987, 2958-2959, 3348, 4182. [  
]

] *See* CX-1308C  
(Walker) at ¶ 48, 77-78; Tr. (Walker) at 419:16-420:19, 424:19-425:1.  
Respondents do not dispute these facts. Having to power on the device,  
including powering on an included IEEE 802.11 transceiver in a mere two  
devices, does not modify the '970 Accused Products so as to be  
configured to communicate with an IEEE 802 WLAN. And Respondents'  
argument—which expressly acknowledges that the IEEE 802.11  
transceiver element is included and can be powered on—confirms they are  
imported so configured.

*Id.* (emphasis original).

InterDigital's position is persuasive. Notwithstanding Respondents' arguments, the record evidence demonstrates that the '970 accused products, as imported, are configured to connect to a WLAN. The act of powering-on an accused device, as well as the act of inserting a SIM card to connect the device to a cellular network, does not change the fact that the accused products as imported are pre-configured to connect to a cellular network.<sup>73</sup> It is therefore determined that the '970 accused products do satisfy the importation requirement of section 337.

## 20. Indirect Infringement

InterDigital also alleges that Respondents have violated section 337 by inducing and contributing to the infringement of the '970 patent. Compl. Br. at 300-03.

### a. Induced Infringement

As discussed above, the '970 accused products satisfy all limitations of asserted claims 1-10. Moreover, the record shows that Respondents' customers have used the '970 accused

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<sup>73</sup> InterDigital's analogy regarding the need to charge a cellular phone's battery before use is also instructive in this circumstance. *See* Compl. Br. at 409.

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products in the United States. *See, e.g.*, CX-1332C (Cronin Dep.) at 43; CX-1328 (Jiang Dep.) at 64-65; CX-1320C (Bright Dep.) at 18. Accordingly, claims 1-10 of the '970 patent are directly infringed by Respondents' U.S. customers who use the '970 accused products in the manner intended, *i.e.*, to establish cellular communications via a WCDMA Release 6 (or later) or CDMA2000 EV-DO Rev. A (or later) network. *See* RX-3998C (Bims RWS) at Q542-545.

InterDigital alleges that "Respondents actively induce this infringement by providing user manuals and retail support programs instructing end users how to use the '970 Accused Products in a manner that infringes the '970 Patent." Compl. Br. at 300-01 (citing CX-1332C (Cronin Dep.) at 52; CX-0098 (Nokia Lumia 710 User Guide) at 8-9, 36-37; CX-0104C (Nokia Lumia 800 User Guide) at 8-9, 41-42; CX-1190C (Nokia 808 Pureview User Guide) at 7-9, 108-109; CX-0688C (ZTE Warp Basics Guide) at 60-61; CX-0443 (Huawei Impulse 4G User Guide) at 8, 35-36; CX-0506C (Huawei myTouch Q User Manual) at 6, 31; CX-0455C (Huawei M865 User Guide) at 35-36).

Based on the record evidence, it is determined that Respondents prepare and provide specific instructions to end-users of the '970 accused products, and that these instructions teach users how to insert SIM cards to communicate with a cellular network and how to use the products to communicate with a WLAN. *See, e.g.*, CX-1332C (Cronin Dep.) at 52; CX-0098 (Nokia Lumia 710 User Guide) at 8-9, 36-37; CX-0104C (Nokia Lumia 800 User Guide) at 8-9, 41-42; CX-1190C (Nokia 808 Pureview User Guide) at 7-9, 108-109; CX-0688C (ZTE Warp Basics Guide) at 60-61; CX-0443 (Huawei Impulse 4G User Guide) at 8, 35-36; CX-0506C (Huawei myTouch Q User Manual) at 6, 31; CX-0455C (Huawei M865 User Guide) at 35-36.

In addition, the evidence shows that Respondents have had actual knowledge of the '970 patent, as well as InterDigital's preliminary claim charts, since InterDigital filed its complaint in

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this investigation on July 26, 2011. Since that time, Respondents have continued to import and sell the '970 accused products. *See* CX-1141C (Nokia's Responses to First Set of Requests for Admission); CX-1148C (Huawei's Responses to First Set of Requests for Admission); CX-1151C (ZTE's Responses to First Set of Requests for Admission). Therefore, it is determined that Respondents knowingly induce end-user customers to directly infringe claims 1-10 of the '970 patent.

### b. Contributory Infringement

As discussed above, end-user customers directly infringe claims 1-10 of the '970 patent when they insert a SIM card or enable EV-DO functionality on the '970 accused products, and Respondents had actual knowledge of the '970 patent no later than July 26, 2011. In addition, the '970 products supporting WCDMA Release 6 (or later) are specifically designed to be used with a SIM card and to operate on WCDMA networks. *See, e.g.*, CX-0098 (Nokia Lumia 710 User Guide) at 9; CX-1328C (Jiang Dep.) at 54. To the extent the '970 accused products supporting WCDMA Release 6 (or later) are combined with a SIM card, it is determined that they constitute a material component of the claimed invention. *See* CX-1306 (Stark WS) at Q4178. Similarly, the '970 accused products supporting CDMA2000 EV-DO Rev. A are specifically designed to operate on CDMA2000 networks. *See, e.g.*, CX-1328C (Jiang Dep.) at 52-53. It is further determined that, inasmuch as the '970 accused products supporting CDMA2000 EV-DO Rev. A do not require additional hardware for EV-DO functionality to be enabled, they constitute a material component of the claimed invention. *See* CX-1306 (Stark WS) at Q4180.

Based on the record evidence, it is also determined that there are no substantial non-infringing uses for the '970 accused products. Any use of the '970 accused products without

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a SIM card and/or EV-DO functionality enabled would deprive users of the benefit that the '970 accused products were intended to provide. Although Respondents' expert Dr. Bims testified that the '970 accused products have substantial non-infringing uses because the WLAN or cellular functionality may be disabled on certain devices, the mere fact that a device may be disabled or powered-off does not establish a non-infringing use. *See* RX-3998C (Bims RWS) at Q630. Moreover, Dr. Bims does not identify a specific, substantial non-infringing use of the '970 accused products when WLAN or cellular functionality is purportedly disabled. Therefore, it is determined that Respondents' importation and sale of the '970 accused products contribute to the direct infringement of claims 1-10 of the '970 patent.

### **E. Validity**

#### **1. Priority Date**

The '970 descends, through a chain of continuation and continuation-in-part applications, from U.S. Patent Application No. 09/400,136, which was filed on September 21, 1999, and which ultimately issued as U.S. Patent No. 6,526,034. *See* JX-0005. InterDigital argues that the '970 patent should be granted a priority date earlier than its effective filing date of September 21, 1999. Compls. Br. at 303-06. Specifically, InterDigital argues that the '970 patent is entitled to a priority date no later than April 6, 1999. *Id.*

In order to substantiate a claim of an invention date prior to the filing of the application, the inventor's claim "must be corroborated by evidence which shows that the inventor disclosed to others his completed thought expressed in such clear terms as to enable those skilled in the art to make the invention." *Spanson, Inc. v. U.S. Int'l Trade Comm'n*, 629 F.3d 1331, 1356 (Fed. Cir. 2010).

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InterDigital argues that the testimony of the '970 inventor, Mr. Gorsuch, [

CX-1269C

CX-1267C

] along with

the testimony of InterDigital's expert Dr. Stark, establish that Mr. Gorsuch conceived of his invention and disclosed his invention to Tantivy's patent prosecution counsel, Mr. David Thibodeau, by April 6, 1999. *See* Compls. Br. at 303-05.

[

CX-1314C

CX-1314.1C

CX-1526C

CX-1269C

]

With respect to the Thibodeau email, InterDigital argues as follows:

[A] handwritten note by Lisa Kolb, a Tantivy employee present at the April 6, 1999 meeting, on a copy of Mr. Thibodeau's April 6, 1999 email that states "David to write-up for Tom" confirms that by April 6, 1999, Mr. Gorsuch had disclosed his invention to Mr. Thibodeau; Mr. Thibodeau was to "write-up" the application of the first member of the '970 Patent family based on Mr. Gorsuch's (Tom's) disclosure. CX-1267C (Thibodeau 4/6/99 Email) at IDC-ITC-017582808; *see also* CX-1526C (Stark RWS) at ¶ 118-123; CX-1526.1C (Stark RWS Errata) at 4; CX-1314C (Gorsuch) at ¶ 29-48; CX-1314.1C (Gorsuch Errata) at 2. After the April 6, 1999 meeting, Mr. Gorsuch "didn't provide any further details needed to disclose [his] invention." CX-1314C (Gorsuch) at ¶ 48. Tantivy gave the application for the '970 patent a "high priority," as indicated in CX-1270C (Patent Application Index, 7/20/99) and CX-1271C (Patent Application Index, 8/16/99).

Compls. Br. at 303-04.

InterDigital further argues that:

[



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CX-1275C CX-1277C  
CX-1273C CX-1274C  
CX-1314C  
CX-1269C CX-1526C

]

Compls. Br. at 304.

At the hearing, InterDigital's expert Dr. Stark testified that CX-1269C (Presentation to U.S. West, 2/19/99), CX-1267C (Thibodeau 4/6/99 Email), CX-1270C (Patent Application Index, 7/20/99) and CX-1271C (Patent Application Index, 8/16/99) demonstrate that Mr. Gorsuch was in full possession of his invention by April 6, 1999, and that the application was diligently filed by September 21, 1999. *See* CX-1526C (Stark RWS) at Q113, Q114, Q118-143; CX-1526.1C (Stark RWS Errata) at 4.

Having examined the evidence adduced by InterDigital, it is determined that [ ] presentation does not set forth details of the WLAN functionality or the specific combination of cellular and WLAN elements claimed in the '970 patent. *See* RX-3519C (Bims WS) at Q309-347; RX-3998C (Bims RWS) at Q632-657. For example, Mr. Gorsuch testified that [ CX- ] shows WLAN features of the conceived dual mode device, but [

] *See* CX-1314C (Gorsuch WS) at Q78, Q80, Q136; RX-3998C (Bims RWS) at Q637. [

] is similarly misleading, inasmuch as the circuitry depicts communication with

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base stations, which are features of cellular systems, and not of WLANs. *See* RX-3998C (Bims RWS) at Q639-644. [

] Gorsuch Tr. 398-399, 404. Moreover,

Mr. Gorsuch testified that several specific claim elements are not disclosed [

] Gorsuch Tr. at 398-399, 404, 408; RX-3401C (Gorsuch Dep.) at 68-69.

As for the Thibodeau email (CX-1267C), the document itself is dated April 6, 1999, is heavily redacted, and contains a one-line reference to a meeting to discuss “Dual Mode TAU (iCDMA/WLAN).” *See* CX-1267C at IDC-ITC-017582787. This single line of text, without more, cannot corroborate Mr. Gorsuch’s claim that he had conceived of the ‘970 invention as early as April 6, 1999.

Therefore, based on the evidence and arguments put forth by InterDigital, it is determined that InterDigital has not shown that the ‘970 patent is entitled to a priority date earlier than September 21, 1999, which is the effective filing date of the ancestor application to the ‘970 patent.

**2. Anticipation and Obviousness**

Respondents allege that two prior art references, U.S. Patent No. 6,243,581 to Jawanda (“Jawanda ‘581 patent” or “Jawanda”) and U.S. Patent No. 6,681,259 to Lemiläinen and Haverinen (“Lemiläinen ‘259 patent” or “Lemiläinen”), teach or make obvious all limitations of the asserted claims of the ‘970 patent, inasmuch as they describe dual-mode units using GPRS or other prior art protocols. *See* Resps. Br. at 420.

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**a. The Jawanda '581 Patent Alone or in Combination with the GPRS Standards, Draft UMTS Standards, or IS-95/IS-657 Standards**

The record evidence demonstrates, by clear and convincing evidence, that the Jawanda '581 patent, alone or in combination with the GPRS Standards, draft UMTS Standards, and/or IS-95/IS-657 Standards, renders obvious the asserted claims of the '970 patent.<sup>74</sup>

The Jawanda '581 patent, on which Respondents rely for their invalidity case, qualifies as prior art to the '970 patent under 35 U.S.C. § 102(e), inasmuch as it was filed on December 11, 1998, which is even earlier than InterDigital's alleged conception date of April 6, 1999.

For their invalidity case, Respondents also rely on the following sections of the 1997 Release of the GPRS standards:

| Standard Section             | Exhibit | Publicly available by | Testimony from RX-3519C (Bims WS) |
|------------------------------|---------|-----------------------|-----------------------------------|
| GSM 02.60 v. 6.1.1 Rel. 1997 | RX-3498 | Nov. 1998             | Q. 933, 1168-75                   |
| GSM-03.02 v. 6.1.0 Rel. 1997 | RX-0092 | July 1998             | Q. 962                            |
| GSM 03.60 v. 6.1.1 Rel. 1997 | RX-0079 | Aug. 1998             | Q. 990                            |
| GSM 04.07 v. 6.1.0 Rel. 1997 | RX-0046 | July 1998             | Q. 955                            |
| GSM 04.08 v. 6.1.1 Rel. 1997 | RX-0091 | Aug. 1998             | Q. 948                            |
| GSM 04.60 v. 6.1.0 Rel. 1997 | RX-0047 | Aug. 1998             | Q. 969                            |
| GSM 04.64 v. 6.1.0 Rel. 1997 | RX-0093 | July 1998             | Q. 976                            |
| GSM 04.65 v. 6.1.0 Rel. 1997 | RX-0048 | July 1998             | Q. 983                            |
| GSM 05.01 v. 6.1.1 Rel. 1997 | RX-0045 | July 1998             | Q. 941                            |

See Resps. Br. at 429.

<sup>74</sup> To the extent that Respondents argue that Jawanda anticipates the asserted claims of the '970 patent, it is determined below that Jawanda does not explicitly or inherently teach the use of an IEEE 802.11 transceiver as required by the '970 claims. See RX-3519C (Bims WS) at Q555-558; GR12 Filing at 13 (identifying anticipation by Jawanda as an issue to be determined); Resps. Br. at 425 (heading arguing that Jawanda renders obvious the '970 claims, but not arguing anticipation), 452 (same). Therefore, it is determined that Jawanda does not anticipate the asserted '970 claims.

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Respondents further rely on the following sections of the draft UMTS standards documents and change requests:

| Standard Section          | Exhibit | Publicly available by | Testimony from RX-3519C (Bims WS) |
|---------------------------|---------|-----------------------|-----------------------------------|
| 3GPP 25.212 v. 2.0.0      | RX-0039 | June 1999             | Q. 1182-88                        |
| 3GPP 25.201 v. 2.1.0      | RX-0062 | June 1999             | Q. 1189-95                        |
| 3GPP 25.211 v. 2.1.0      | RX-0063 | June 1999             | Q. 1196-1202                      |
| 3GPP 23.121 v. 3.0.0      | RX-0085 | July 1999             | Q. 1203-09                        |
| 3GPP 25.101 v. 2.0.0      | RX-0086 | June 1999             | Q. 1210-16                        |
| 3GPP 24.008 v. 3.0.0      | RX-0087 | July 1999             | Q. 1217-23                        |
| 3GPP 25.301 v. 3.0.0      | RX-0088 | April 1999            | Q. 1224-30                        |
| 3GPP 25.213 v. 2.1.0      | RX-0089 | June 1999             | Q. 1231-37                        |
| 3GPP 25.302 v. 2.3.0      | RX-0090 | June 1999             | Q. 1238-44                        |
| S2-99712 (Change Request) | RX-0038 | August 20, 1999       | Q. 1245-50                        |

See Resps. Br. at 430.

The GPRS Standards documents, as well as the and Draft UMTS Standards documents and change requests, qualify as prior art printed publications inasmuch as they were widely available to the interested public prior to the earliest priority date for the '970 patent. Relevant case law specifies that a document that has been made available to interested members of the public qualifies as a "printed publication" under 35 U.S.C. § 102. *In re Hall*, 781 F.2d 897, 898-99 (Fed. Cir. 1986). A document is available when persons ordinarily skilled in the subject matter could obtain the document using reasonable diligence. *Id.* The documents relied on by Respondents were promulgated by standards setting organizations, and each document bears a date that indicates it was widely available to the interested public prior to the September 21, 1999 effective filing date of the '970 patent.

InterDigital questions whether these publications were available to the public in the relevant timeframe, but the record evidence does not provide any reason to doubt that these publications were indeed publicly available on the dates attributed to them. See Compls. Br. at

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308-13. Even InterDigital's expert Dr. Stark testified that, as a member of the interested public in 1999, he was able to get copies of the standards even though he was not a member of the relevant standards organization. Stark Tr. 2149-2151.

It is therefore determined that these standards documents are prior art publications with respect to the '970 patent.

Lastly, the IS-95 and IS-657 standards on which Respondents rely for invalidity are also prior art to the '970 patent. *See* RX-3519.2C (Bims Suppl. WS) at Q1848, Q1921.

\*\*\*

In their post-hearing brief, Respondents assigned alphanumeric identifiers, *e.g.*, "1A" and "10D" to the separate limitations of the '970 asserted claims, and provided a chart purporting to summarize the evidence demonstrating that the elements of the '970 claims "are taught or made obvious by Jawanda alone, or in obvious combination with relevant prior art." *See* Resps. Br. at 426. This chart is as follows:

| Claim Element                                | Summary of Proof of Anticipation/Obviousness   |
|--|--|
| 1 Preamble: subscriber unit                  | This is not a limitation; Jawanda teaches and makes obvious a subscriber unit  |
| 1A: cellular transceiver                     | [no constructions sought]: no dispute this is taught by Jawanda.   |
| 1B: IEEE 802 transceiver                     | Dr. Stark conceded Jawanda makes this limitation obvious   |
| 1C: WLAN detector                            | Under any construction this limitation is taught or made obvious by Jawanda  |
| 1D: circuit to use WLAN                      | [InterDigital construction]: not disputed that Jawanda teaches this limitation. [Respondent construction]: Jawanda teaches this limitation.  |
| 1E: plurality of layers above physical layer | [no construction sought]: not disputed this is taught by Jawanda alone or made obvious in combination with one of GPRS, UMTS, IS-95.   |
| 1F: plurality of channels available          | [Respondent construction]: not disputed this is taught by Jawanda inherently, or made obvious by Jawanda in combination with one of GPRS, IS-95, UMTS<br>[InterDigital construction]: made obvious by Jawanda in combination with either GPRS or UMTS. |

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| Claim Element                             | Summary of Proof of Anticipation/Obviousness  |
|---|---|
| 1G: maintain session                      | [InterDigital construction]: taught by Jawanda.<br>[Respondent construction]: taught by Jawanda.<br>[InterDigital infringement theory (PDP context is communication session)]: Obvious by Jawanda in combination with GPRS or UMTS. |
| 10 preamble: subscriber unit              | See claim 1 Preamble, above   |
| 10A: first transceiver                    | [no construction sought]: taught by Jawanda   |
| 10B: second transceiver                   | [no construction sought]: taught by Jawanda   |
| 10C: processor coupled                    | [InterDigital infringement theory (collection of hardware and software can be the "processor")]: taught by Jawanda  |
| 10D: channels available                   | See element 1F  |
| 10E: maintain session                     | See element 1G  |
| 2, 13: TCP/IP over WLAN                   | [no construction sought]: no dispute this is taught by Jawanda  |
| 3, 14: TCP/IP or network layer            | [no construction sought]: no dispute this is taught by Jawanda  |
| 4: single unit                            | [no construction sought]: obvious over Jawanda, conceded at hearing it would be obvious to enclose Jawanda system in single unit  |
| 5: mobile phone or PDA                    | [no construction sought]: obvious over Jawanda.   |
| 6: 12: beacon frame                       | [no construction sought]: not disputed this is taught by Jawanda  |
| 7, 15: data channel                       | [no construction sought]: not disputed this is taught by Jawanda  |
| 8, 16: licensed CDMA, unlicensed WLAN     | [no construction sought]: not disputed this is taught by Jawanda  |
| 9, 17: CDMA and 802.11                    | [no construction sought]: Jawanda teaches CDMA. Conceded at hearing that 802.11 is obvious over Jawanda   |
| 11: detector circuit, circuit to use WLAN | [no construction sought]: See element 1C, 1D  |
| 18: cellular transceiver                  | [no construction sought]: See element 1A  |

Resps. Br. at 426-27.

Respondents contend that "very little" of the information in the chart is disputed by the parties. *See* Resps. Br. at 425. Specifically, Respondents argue:

Dr. Stark has conceded that the following elements are disclosed or made obvious by Jawanda: a subscriber unit composed of separate devices or combined into single unit (preamble); an IEEE 802.11 transceiver (1A), a cellular transceiver (1B), a circuit to detect the presence of WLAN (1C), a circuit that uses WLAN when detected (1D), a session between two peer computers over a network using a cellular connection (1G); the

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session is at the top of the cellular protocol stack (1G), the session is preserved when the cellular connection is no longer used; (1G); GPRS had a layered communication protocol (1A), GPRS had multiple physical layer channels available for use to transmit data by the subscriber unit (1E), GPRS had a PDP context (1G), and GPRS maintained the PDP context when physical layer channels were not in use (1G).

*Id.* at 425-26.

Respondents further argue:

Dr. Stark admitted that at least the following limitations are either disclosed by or rendered obvious by Jawanda alone or in combination with GPRS, draft UMTS, or IS-95/657: 1 Preamble (Stark Tr. 2116:5-2117:17, 2125:2-2126:17), 1A and 18 (*id.* 2126:18-2127:5, 2168:10-24, 2120:10-15), 1B (*id.* 2126:4-17), 1C (*id.* 2125:2-2126:17, 2134:13-2135:6), 1D (*id.* 2134:13-2136:22), 1E (*id.* 2127:2-8), 1F and 10D (*id.* at 436:2-637:8, 348:17-22, 2127:18-2128:20), 4 (Stark Tr. 2118:19-2119:19, 2116:5-2117:17), and 11 (*id.* 2125:2-2126:17, 2134:13-2135:6, 2134:13-2136:22).

Resps. Br. at 426 n.10.

The specific disclosures of the references relied upon by Respondents are discussed in further detail on a claim-by-claim basis below.

**i. (Claim 1) A subscriber unit comprising:**

As an initial matter, Respondents argue that the preamble of claim 1 is not a limitation, and that “to invalidate this claim prior art need not anticipate it or make it obvious.” Resps. Br. at 427.

As discussed above, the term “subscriber unit” has not been construed. Nevertheless, even if “subscriber unit” were determined to be a limitation of claim 1, the evidence demonstrates clearly and convincingly that the Jawanda ‘581 patent either (i) teaches a subscriber unit, if a subscriber unit could be composed of discrete or separate devices connected using an existing conventional computer interface, or (ii) shows that a unitary subscriber unit would have been obvious to a person of ordinary skill in the art.

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The Jawanda '581 patent teaches a compound subscriber unit, which is also called a "mobile computer terminal," having a cellular and a wireless transceiver. RX-0032 (Jawanda '581 patent) at col. 6, lns. 22-35; col. 6, lns. 57-59. Jawanda shows that the mobile computer terminal can consist of a mobile terminal 14 and the mobile phone 16 of Figure 1, coupled by an RS-232 connection, which is "an existing conventional computer interface." *Id.* at col. 3, lns. 27-65. As InterDigital's expert Dr. Stark testified, it would have been obvious in light of Jawanda to add a card to a laptop for data transmission, producing the result depicted in Figure 5 of the '970 patent. Stark Tr. 2116-2117, 2125-2126.

**ii. (Claim 1) a cellular transceiver configured to communicate with a cellular network via a cellular layered communication protocol;**

The parties do not dispute that the Jawanda '581 patent teaches a mobile computer terminal that includes this element, inasmuch as InterDigital's expert Dr. Stark testified to such at the hearing. *See, e.g.*, Stark Tr. 2126-2127, 2168, 2120. The Jawanda '581 patent discloses a mobile phone 16 in Figure 1, and a mobile phone inherently includes a cellular transceiver. The mobile phone can communicate with WWAN 110, *i.e.*, the Wireless Wide Area Network, which is the cellular network, "according to any currently available or future wireless data protocol such as code division multiple access (CDMA), CDPD, or GPRS." RX-0032 (Jawanda '581 patent) at col. 3, lns. 1-9; col. 4, lns. 31-44. The cellular phone protocols existing at the time of the Jawanda '581 patent, including GPRS, draft UMTS and IS-95/IS-657, all used a layered communication protocol. RX-3519C (Bims WS) at Q999-1009, Q1272-1274; RX-3519.2C (Bims Suppl. WS) at Q 1788-1789. Thus, the Jawanda '581 patent inherently discloses the layered communication protocols of those standards. Also, one of skill in the art at the relevant timeframe knew that the prevailing cell phone protocols provide cellular layered communication



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protocols, so that this limitation would have been obvious based on the Jawanda '581 patent alone even if were not inherently disclosed. RX-3519C (Bims WS) at Q539-547.

InterDigital argues that the respective standards relied on by Respondents' expert Dr. Bims are not a single publication, such that the combinations relied on by Dr. Bims to show invalidity of the '970 patent constitute multiple references. *See* InterDigital Br. at 313-16. The evidence demonstrates, however, that one of ordinary skill in the art would treat these disclosures as a single cohesive standard. *See* RX-3519C (Bims WS) at Q296-297, Q1177, Q1406, Q1662; RX-3519.2C (Bims Suppl. WS) at Q1848, Q1921). Even if InterDigital were correct, the motivation to combine the selected standards documents for a given cell phone standard is compelling because the documents are designed to work together as a coherent reference. RX-3519C (Bims WS) at Q296-297, Q1177, Q1407, Q1662; RX-3519.2C (Bims Suppl. WS) at Q1848, Q1921. The standards sections can be considered different chapters of a construction manual for building a standard-compliant cell phone. *Id.* Moreover, even Dr. Stark conceded that, in order to build a standard-compliant cell phone, the builder must comply with all the relevant mandatory standard sections. Stark Tr. 2163. Therefore, it would not only be obvious, but also necessary, for a person of ordinary skill to read all the related sections of the standard together as an integrated whole. RX-3519C (Bims WS) at Q296-297, Q1177, Q1407, Q1662; RX-3519.2C (Bims Suppl. WS) at Q1848, Q1921).

Moreover, the standards documents Dr. Bims relies on specifically reference one another. For example, the GPRS standards document list of normative references, which is at page six of exhibit RX-0092 (GSM 03.02 v. 6.1.0 Rel. 1997), specifically refers to section 3.60, which is RX-0079 (GSM 03.60 v. 6.1.0 Rel. 1997). In turn, the list of normative references on pages nine through ten of RX- 0079 (GSM 03.60 v. 6.1.0 Rel. 1997) specifically refers to standard sections

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4.07, 4.08; 4.60, 4.64, 4.65, and 2.60, which are exhibits RX-0046 (GSM 04.07 v. 6.1.0 Rel. 1997), RX-0047 (GSM 04.60 v. 6.1.0 Rel. 1997), RX-0048 (GSM 04.65 v. 6.1.0 Rel. 1997), RX-0091 (GSM 04.08 v. 6.1.1 Rel. 1997), RX-0093 (GSM 04.64 v. 6.1.0 Rel. 1997), and RX-3498 (GSM 02.60 v. 6.1.1 Rel. 1997). The other document Dr. Bims relies on, RX-0045 (GSM 05.01 v. 6.1.1 Rel. 1997), is a general description of the “Physical layer on the radio path,” and is thus critical to defining and understanding the GPRS physical layer channels referenced in the other documents. Furthermore, the list of normative references on page five of RX-0045 (GSM 05.01 v. 6.1.1 Rel. 1997) specifically refers to section 4.08, which is RX-0091 (GSM 04.08 v. 6.1.1 Rel. 1997). Dr. Stark agrees that normative references listed in a standards document must be read to understand that document. Stark Tr. 2162-2163. Collectively, the documents discussed above are all necessary to understand the assignment and use of physical layer channels as well as the PDP context of the GSM/GPRS standard.<sup>75</sup>

Inasmuch as the standards documents are meant to be read together by designers of cell phones and contain internal cross-references identifying specific documents and sections, there is a powerful motivation to combine and use these documents together. Specifically, each standards document is part of a standard release, each one specifically identifies other documents within the release with which it should be combined, and it is effectively impossible for a person of ordinary skill in the art to build a conforming device without combining those references.

Stark Tr. 2163-2165.

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<sup>75</sup> The same is true of the Draft UMTS standards relied on by Dr. Bims. They are the specific sections of the UMTS standard available at the time of the '970 patents, and are necessary for understanding the relevant functioning of the UMTS physical layer channels and the PDP context at that time.

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Returning to a discussion of the Jawanda '581 patent, this reference discloses that the mobile phone 16 in Figure 1 can communicate “according to *any currently available or future wireless data protocol* such as code division multiple access (CDMA), CDPD, or GPRS.”<sup>1</sup> RX-0032 at col. 3, lns. 1-9 (emphasis added). The GPRS, draft UMTS, and IS-95/IS-657 standards constitute “currently available or future wireless data protocol[s]” as set forth in Jawanda. For instance, GPRS is explicitly listed. Jawanda also lists CDMA explicitly, and the only CDMA system in use in the United States at the time was IS-95/IS-657. RX-3519C (Bims WS) at Q546-547, Q594, Q611. Further, the draft UMTS standard is a follow-on to GPRS. It would have been an obvious design choice for a person of ordinary skill in the art to design the cell phone system disclosed in Jawanda such that it complied with any of these three then-existing, well-known cell phone standards. RX-3519C (Bims WS) at Q594, Q605, Q611, Q615. *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007) (“When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp.”). Therefore, with the motivation set forth in Jawanda to use a cell phone protocol for transmitting data, a person of ordinary skill in the art would have found it obvious to read and use the cell phone standards describing data transmission channels and data communications as set forth in the standard sections relied on by Dr. Bims.

- iii. **(Claim 1) an IEEE 802 transceiver configured to communicate with a wireless local area network (WLAN) via an IEEE 802 layered communication protocol;**

The Jawanda '581 patent discloses the use of a WLAN transceiver. *See* CX-1526C (Stark RWS) at Q329; RX-3519C (Bims WS) at Q548-561). InterDigital's expert Dr. Stark

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admitted that it would have been obvious for the WLAN to be an 802.11 network if one knew of the 802.11 standard. Stark Tr. 2126. Dr. Stark further testified that a person of ordinary skill would be presumed to know about the 802.11 standard. *Id.* 2107.

**iv. (Claim 1) a detector configured to detect a signal from the WLAN; and**

The Jawanda '581 patent discloses this limitation. In particular, Figure 4 of the Jawanda '581 patent and the accompanying text teaches that the mobile terminal can detect the presence of a WLAN. *See* RX-0032 (Jawanda '581 patent) at col. 5, lns. 20-27; Fig. 4. The Jawanda '581 patent further describes detecting a signal from the WLAN: "[T]he determination illustrated at block 106 can be made by WLAN interface 96 . . . [by] periodically determining whether an 'advertisement' message has been received by wireless LAN adapter 64 from wireless network adapter 20." *Id.* at col. 4, ln. 61 – col. 5, ln. 9. The Jawanda '581 patent therefore inherently teaches circuitry to carry out this detecting function. Moreover, Dr. Stark also testified that Jawanda discloses such a detector. Stark Tr. 2134-213.

**v. (Claim 1) a circuit coupled to the cellular transceiver and the IEEE 802 transceiver and configured to communicate using the IEEE 802 transceiver in response to the signal;**

There is no dispute that the Jawanda '581 patent discloses this claim limitation under the adopted construction of this claim term. *See* CX-1526C (Stark RWS) at Q 339; RX-3519C (Bims WS) at Q 577-585.

If, however, Respondents' proposed construction of this claim limitation were adopted, it is determined that the Jawanda '581 patent would nevertheless disclose this limitation. The only significant difference between Respondents' and InterDigital's proposed constructions is that Respondents' construction requires that the subscriber unit automatically connect to a WLAN in

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response to detecting a WLAN signal. In other words, the connection is in response to the signal, and not in response to an intervening act by the user. Dr. Stark admits that Jawanda discloses exactly this, *i.e.*, a circuit that is configured to communicate using the IEEE 802 transceiver “seamlessly,” or without the user noticing. Stark Tr. 2134-2136.

As shown in Figure 4, in response to detecting the WLAN in box 106, the system will switch the physical connection on which the communication session is taking place from the cellular transceiver path to the WLAN transceiver path, and establish a WLAN connection. RX-0032 at Fig. 4. As discussed above, Dr. Stark testified at the hearing that it would be obvious that the WLAN could be an IEEE 802 WLAN.<sup>76</sup> Accordingly, the Jawanda ‘581 patent teaches this limitation under Respondents’ proposed construction.<sup>77</sup>

**vi. (Claim 1) wherein the cellular layered communication protocol includes a plurality of layers above a physical layer,**

InterDigital’s expert does not dispute that the Jawanda ‘581 patent discloses this limitation. *See, e.g.*, CX-1526C (Stark RWS) at Q329. The Jawanda ‘581 patent discloses this

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<sup>76</sup> There is no dispute that Jawanda teaches the other elements of this limitation. The mobile terminal has a circuit (the processor 52 in Figure 2) that is running software that makes the switch to the WLAN in response to detecting the beacon signal indicating a WLAN is present. “In addition to application 90, mobile terminal 14 executes communication software including network access arbitrator 92 . . . network access arbitrator 92 routes datagrams output by application 90 to either CAI 94 or WLAN interface 96.” This circuit is thus coupled to both transceivers. RX-0032 at col. 4, lns. 2-14. Furthermore, it is inherent that there is hardware and/or software to carry out the establishment of the WLAN connection in response to detecting the signal shown in Fig. 4, and it is inherent that, in order to route data over either transceiver, this hardware and/or software must be coupled to both transceivers. RX-3519C (Bims WS) at Q581-585.

<sup>77</sup> InterDigital also argues that this limitation is satisfied under the doctrine of equivalents should Respondents’ proposed construction be adopted. *See* Compls. Br. at 272-73. Inasmuch as it is determined that the ‘970 accused products literally infringe this limitation under Respondents’ proposed construction, InterDigital’s doctrine of equivalents argument will not be addressed.

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limitation in two ways. First, it explicitly discloses the use of multiple protocol layers.<sup>78</sup>

Moreover, it would have been obvious to combine the Jawanda '581 patent with any one of the GPRS, draft UMTS, or IS-95/IS-657 standards, inasmuch as these standards all had a plurality of layers above a physical layer. RX-3519C (Bims WS) at Q 586-615; RX-3519.2C (Bims Suppl. WS) at Q1788-1789. Further, Dr. Stark testified at the hearing that GPRS teaches this limitation. Stark Tr. 2127.

**vii. (Claim 1) and a plurality of physical layer channels are available for assignment for communication with the cellular network**

Applying the construction of this claim term adopted above, this limitation is made obvious by the Jawanda '581 patent in combination with either the GPRS, the Draft UMTS, or IS-95/IS-657 Standards.

As an initial matter, InterDigital's expert Dr. Stark testified that "allocation," as used in the adopted construction, means the same thing as "use." Stark Tr. 498-499. GPRS and UMTS both provide two or more channels to a subscriber unit to use to transmit data. RX-3519C (Bims WS) at Q623, Q628-629. Additionally, Dr. Stark testified that it was obvious to have an IS-95 subscriber unit use two or more channels to communicate data, and that GPRS teaches a plurality of channels available for a subscriber unit to use to transmit data. Stark Tr. 438, 2127-2128. Thus, this limitation is obvious in light of either the GPRS or IS-95 standards, even under Respondents' construction.

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<sup>78</sup> Jawanda teaches Cellular Access Interface ("CAI"), which is a physical layer that transmits a control signal via a control channel and transmits datagrams via at least one data channel. RX-0032 at col. 3, ln. 66 – col. 4, ln. 19; col. 4, lns. 31-60; Fig. 3. Figures 1 and 3 show that the cellular functionality includes multiple independent blocks, and that communication between these elements would take place on different protocol layers. RX-3519C (Bims WS) at Q594-596.

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Moreover, the Draft UMTS Standards disclose this element. Those standards determine the number of channels (zero or more) assigned to a Layer 1 connection based on the number of Transport Blocks in the Transport Block Set. RX-3519C (Bims WS) at Q628-630. InterDigital's expert Dr. Stark does not dispute this fact. *See* CX-1526C (Stark RWS) at Q330-338) (making no response to Dr. Bims' proof that the draft UMTS standards disclose plural uplink channels).

In the event that Respondents' proposed construction for this claim limitation were adopted, InterDigital does not dispute that Jawanda would teach this limitation either alone or in combination with GPRS, IS-95, or UMTS. CX-1526C (Stark RWS) at Q329; RX-3519C (Bims WS) at Q 616-631. The Jawanda '581 patent teaches explicitly a plurality of physical layer channels. RX-3519C (Bims WS) at Q617-618. Jawanda also teaches this limitation inherently by disclosing use of GPRS or CDMA. *Id.* at Q617, Q619-627; RX-3519.2C (Bims Suppl. WS) at Q1823-28). As discussed above, it would have been obvious to combine Jawanda with any one of the GPRS, draft UMTS, or IS-95/IS-657 standards. Moreover, Dr. Stark confirmed that in IS-95 and GPRS, the base station assigns the physical layer channels. Stark Tr. at 436-637; *see* RX-3519C (Bims WS) at Q618-630.

**viii. (Claim 1) and a communication session above the physical layer is maintained when all assigned physical layer channels have been released.**

Respondents have shown, clearly and convincingly, that Jawanda teaches this limitation under the adopted construction of this claim limitation. RX-3519C (Bims WS) at Q632-644.

Jawanda, similar to the asserted '970 patent, teaches that a communication session can be established between two devices over a network using either a cellular or WLAN communication path. Specifically, Figure 3 of Jawanda shows an application 90, running on mobile terminal 14,

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and communicating with application 91 running on a remote terminal 24. RX-0032 at col. 4, lns. 2-14. Network Access Arbitrator 92, also running on terminal 14, chooses between two physical communication paths, *i.e.*, the cellular access interface (CAI 94) or the wireless local area network interface (WLAN I/F 96), to transmit and receive datagrams during the communication session. *Id.*; *see* RX-3519C (Bims WS) at Q33-37, Q639.

Jawanda further teaches that the mobile computer terminal can “seamlessly” maintain the existing communication session undisturbed while switching the physical connection from a cellular network to a WLAN. RX-0032 at col. 5, lns. 34-39; Fig. 4; RX-3519C (Bims WS) at Q638-639; Stark Tr. 2131. After the handoff, maintaining the cellular connection is optional. RX-0032 at Fig. 4 (box 112); col. 5, ln. 64 – col. 6, ln. 1; RX-3519C (Bims WS) at Q 644. Accordingly, once the session switches to using the WLAN connection, the cellular connection can be maintained without being used. RX-3519C (Bims WS) at Q644. Therefore, this claim limitation is satisfied under the construction adopted above.

Moreover, Jawanda in combination with the GPRS, Draft UMTS, or IS-95/IS-657 Standards either inherently discloses this element or renders it obvious under InterDigital’s infringement contentions and infringement theories based on the PDP context. These standards contain the same PDP context functionality InterDigital contends satisfies this limitation for infringement. *See* RX-3519C (Bims WS) at Q44-49, Q178, Q640-642, Q1053-1055, Q1343-1347. As Dr. Stark testified at the hearing, a PDP context in a GPRS-compliant network must be activated when data is to be sent. Stark Tr. 2144. Dr. Stark also testified that a GPRS mobile station can retain a PDP context in the “active” state indefinitely when all previously assigned physical layer data transmission channels are not in use. Stark Tr. 2145-2146.



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As Dr. Bims has testified, UMTS is based on GPRS, and it also has a PDP context that is maintained when the cell phone is not using the data channels to transmit data. RX-3519C (Bims WS) at Q 642, Q1178-1181. This feature was adopted by 3GPP before the effective filing date of the '970 patent. *See* RX-3519C (Bims WS) at Q642, Q1245-1252, Q1343-1347; RX-0038 (3GPP S2-99712).

As for the IS-95/IS-657 Standards, they disclose this limitation for reasons similar to those discussed above. *See* RX-3519.2C (Bims Suppl. WS) at Q1840-1848.

In the event Respondents' proposed construction were adopted for this claim limitation, Jawanda would nevertheless teach this limitation. As discussed above, Jawanda teaches maintaining the communication session between applications 90 and 91 on the two terminals 14 and 24 when the physical connection is changed from a cellular path to the WLAN path. Prior to this switch, the application-layer session is at the top of the cellular protocol stack, and thus is a "higher layer in the cellular layered communication protocol" as required by Respondents' proposed construction. Stark Tr. 2131-2133, 2140-2141, 2168-2169; RX-3519C (Bims WS) at Q276.

As shown in Figure 4, and as Dr. Stark testified, the transfer of datagrams at the application level is "seamlessly" handed off from the cellular path to the WLAN path. In other words, by substituting the WLAN path for the cellular path it appears to the application layer that the physical layer connection is preserved, inasmuch as the application session is not disturbed, *i.e.*, the applications can continue to send or receive data grams without interruption. The cellular connection can optionally be terminated. If so, *i.e.*, the cell phone hangs up, then all cellular physical layer channels are no longer being used and are released. RX-3519C (Bims WS) at Q38-42, Q639; Stark Tr. 2140-2141. This satisfies Respondents' proposed construction

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that “the appearance to higher layers in the cellular layered communications protocol of an active physical layer connection is maintained when all physical layer channels have been released.” In particular, the “physical layer channels” referenced in claim 1 are those in the cellular layered protocol that are released when the cell phone hangs up.

- ix. (Claim 2) wherein the IEEE 802 transceiver is configured to transmit TCP/IP data when the communication session is maintained and all assigned physical layer channels have been released.**

The Jawanda ‘581 patent inherently discloses this additional limitation of claim 2 when it discloses the use of Mobile IP and RFC 2002 from the Internet Engineering Task Force, as well as the design option of only transmitting data to the WLAN network while having a concurrent connection to the cellular and WLAN networks. RX-3519C (Bims WS) at Q645-652, Q716. A person of ordinary skill in the art would understand that the use of Mobile IP implies capability to transmit TCP/IP data across a wireless network. *Id.*; RX-0032 at col. 6, lns. 1-20.

- x. (Claim 3) wherein at least one of the plurality of layers above the physical layer is any one of a TCP layer, a IP layer, or a network layer.**

The Jawanda ‘581 patent inherently discloses the additional limitation of claim 3 when it discloses the use of underlying cellular standards such as GPRS and CDMA, as well as Mobile IP and RFC 2002 from the Internet Engineering Task Force. RX-3519C (Bims WS) at Q653-658, Q717; RX-3519.2C (Bims Suppl. WS) at Q1858-1860. A person of ordinary skill in the art would understand that the use of Mobile IP implies transmission of data using an IP layer, which is a network layer, and the capability to transmit a TCP layer across a wireless network. *Id.* at Q648-650.

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**xi. (Claim 4) wherein the cellular transceiver and the IEEE 802 transceiver are provided in a single unit.**

The Jawanda '581 patent discloses or renders the additional limitation in this claim obvious. RX-3519C (Bims WS) at Q659-671. Claim 1 of Jawanda claims a "mobile computer terminal" that comprises both a WLAN and a cellular transceiver, is able to communicate data using either transceiver, and uses the WLAN transceiver to communicate when it detects the availability of a WLAN. RX-0032 at col. 6, lns. 24-42. Figure 1 of Jawanda shows that this system includes a mobile terminal 14 and a cellular telephone 16 coupled by an RS-232 connector. RX-0032 at Fig. 1. All of the elements are coupled into one functional unit as shown in Figure 2, and together comprise a "single unit." See RX-3519C (Bims WS) at Q666-669.

Furthermore, the teachings of Jawanda render this claim limitation obvious to a person of ordinary skill in the art. InterDigital's expert Dr. Stark testified that a person of ordinary skill would have known that the system shown in Jawanda could have been implemented by using a PCMCIA card inserted into the laptop to provide wireless or cellular transceivers in the same laptop unit, and that there was "nothing novel" about this configuration. Stark Tr. 2116-2117, 2118-2119.

**xii. (Claim 5) wherein the subscriber unit is configured in a mobile telephone or personal digital assistant.**

Jawanda renders the additional limitation of this claim obvious. See RX-3519C (Bims WS) at Q 672-675. As shown above for claim 4, it would have been obvious to combine the components of the system described in Jawanda in a single housing such as a portable computer. Aside from size and computing power, there is no functional difference between a personal digital assistant and a portable computer. RX-3519C (Bims WS) at Q666-669, Q674-675). Such

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differences are merely a design choice driven by the availability of small components, price and demand. *Id.* Therefore, this claim limitation is rendered obvious in light of Jawanda.

**xiii. (Claim 6) wherein the signal is a beacon frame or probe response frame.**

Jawanda discloses the additional limitation of claim 6. RX-3519C (Bims WS) at Q676-681, Q715. As shown for claim 1, the Jawanda explicitly teaches that detection of the WLAN is performed by receiving an “advertisement” message from the WLAN, which is the claimed “beacon frame” of claim 6. Furthermore, as shown above, it would have been obvious to combine the system taught in Jawanda with an IEEE 802.11 WLAN. The IEEE 802.11 Standard discloses a beacon frame. RX-0097 (IEEE 802.11-1997) at §11.1.2.2; RX-3519C (Bims WS) at Q562-576, Q678-681.

**xiv. (Claim 7) wherein at least one of the plurality of physical layer channels is a data channel.**

The Jawanda ‘581 patent inherently discloses the claim 7 limitation “at least one of the plurality of physical layer channels is a data channel” when it discloses datagrams transmitted across the wireless network. RX-3519C (Bims WS) at Q682-686, Q718; RX-0032 at col. 4, lns. 35-47. Furthermore, the prior art GPRS and CDMA standards disclosed in Jawanda teach using a data channel. *Id.* at Q686; RX-3519.2C (Bims Suppl. WS) at Q1864-1866.

**xv. (Claim 8) wherein the cellular network is a licensed code division multiple access network and the WLAN is an unlicensed 802.11 network.**

Jawanda renders obvious this additional claim limitation. RX-3519C (Bims WS) at Q687-694, Q719-720. As discussed above, Jawanda discloses a licensed CDMA network. RX-3519C (Bims WS) at Q691; RX-0032 at col. 3, lns. 6-9. It would have been obvious for a person of ordinary skill in the art to combine the teachings of Jawanda with the IEEE 802.11

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Standard. *See* RX-3519C (Bims WS) at Q689. The IEEE 802.11 Standard states that its intended use is for unlicensed ISM applications. RX-0097 (IEEE 802.11-1997 Standard) at §15.1; RX-3519C (Bims WS) at Q690.

**xvi. (Claim 9) wherein the cellular transceiver is a code division multiple access transceiver and the IEEE 802 transceiver is an 802.11 transceiver.**

Jawanda renders obvious this additional claim limitation. RX-3519C (Bims WS) at Q687-694, Q719-720. As discussed above, Jawanda discloses a licensed CDMA network. RX-3519C (Bims WS) at Q691; RX-0032 at col. 3, lns. 6-9. It would have been obvious for a person of ordinary skill in the art to combine the teachings of Jawanda with the IEEE 802.11 Standard. *See* RX-3519C (Bims WS) at Q689. The IEEE 802.11 Standard states that its intended use is for unlicensed ISM applications. RX-0097 (IEEE 802.11-1997 Standard) at §15.1; RX-3519C (Bims WS) at Q690.

**xvii. (Claim 10) A subscriber unit comprising:**

Jawanda teaches or renders obvious this limitation for the reasons stated above with respect to the discussion of claim 1. *See* RX-3519C (Bims WS) at Q695-703; RX-3519.2C (Bims Suppl. WS) at Q1873-1884.

**xviii. (Claim 10) a first transceiver configured to communicate with a first wireless network;**

Jawanda teaches or renders obvious this limitation for the reasons stated above with respect to the discussion of claim 1. *See* RX-3519C (Bims WS) at Q695-703; RX-3519.2C (Bims Suppl. WS) at Q1873-1884.

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- xix. (Claim 10) a second transceiver configured to communicate with an IEEE 802 compliant wireless network; and**

Jawanda teaches or renders obvious this limitation for the reasons stated above with respect to the discussion of claim 1. *See* RX-3519C (Bims WS) at Q704-706.

- xx. (Claim 10) a processor coupled to the first transceiver and the second transceiver, and configured to operate a first protocol stack for the first wireless network and a second protocol stack for the IEEE 802 compliant wireless network,**

The evidence shows that the Jawanda '581 patent discloses this element. *See* RX-3519C (Bims WS) at Q707-710. Under the claim construction for this limitation adopted above, all that is required is "hardware and/or software coupled to the first and second transceivers and capable of operating a first protocol stack for the first wireless network and a second protocol stack for the IEEE 802 compliant wireless network." *See* CX-1306C (Stark WS) at Q743. Given this interpretation of the claim, the protocol stacks on the two transceivers in the Jawanda system are operated by hardware alone, or hardware and software, and it is necessarily true that a collection of hardware and software must be "coupled" to the two transceivers in order to transmit or receive data. *See, e.g.,* RX-3519C (Bims WS) at Q710; RX-0032 at col. 3, lns. 29-55.

- xxi. (Claim 10) wherein a plurality of physical layer channels are available for assignment for communication with the first wireless network, and to maintain a communication session above a physical layer of the first protocol stack when none of the plurality of physical layer channels are assigned.**

Jawanda teaches or renders obvious this limitation for the reasons stated above with respect to the discussion of the claim 1 limitation "a communication session above the physical layer is maintained when all assigned physical layer channels have been released." *See* RX-3519C (Bims WS) at Q 711-713; RX-3519.2C (Bims Suppl. WS) at Q 1905-1921.

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- xxii. (Claim 11) a detector configured to detect the IEEE 802 compliant wireless network; and a circuit configured to select the second transceiver in response to detection of the IEEE 802 compliant wireless network.**

Jawanda discloses or renders obvious the additional limitations of this claim for the same reasons stated in the discussion of the corresponding elements of claim 1: (i) a cellular transceiver configured to communicate with a cellular network via a cellular layered communication protocol; (ii) a detector configured to detect a signal from the WLAN; and (iii) a circuit coupled to the cellular transceiver and the IEEE 802 transceiver and configured to communicate using the IEEE 802 transceiver in response to the signal. *See* RX-3519C (Bims WS) at Q539-547, Q562-576, Q577-585 Q714, Q721.

- xxiii. (Claim 12) wherein detection of the IEEE 802 compliant wireless network is based on receipt of a beacon frame or probe response frame.**

Jawanda discloses the additional limitation of claim 12. RX-3519C (Bims WS) at Q676-681, Q715. As shown for claim 1, the Jawanda explicitly teaches that detection of the WLAN is performed by receiving an “advertisement” message from the WLAN, which is the claimed “beacon frame” of claim 12. Furthermore, as shown above, it would have been obvious to combine the system taught in Jawanda with an IEEE 802.11 WLAN. The IEEE 802.11 Standard discloses a beacon frame. RX-0097 (IEEE 802.11-1997) at §11.1.2.2; RX-3519C (Bims WS) at Q562-576, Q678-681.

- xxiv. (Claim 13) wherein the second transceiver is configured to transmit TCP/IP data when the communication session is maintained when none of the plurality of physical layer channels are assigned.**

The Jawanda ‘581 patent inherently discloses this additional limitation of claim 13 when it discloses the use of Mobile IP and RFC 2002 from the Internet Engineering Task Force, as

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well as the design option of only transmitting data to the WLAN network while having a concurrent connection to the cellular and WLAN networks. RX-3519C (Bims WS) at Q645-652, Q716. A person of ordinary skill in the art would understand that the use of Mobile IP implies capability to transmit TCP/IP data across a wireless network. *Id.*; RX-0032 at col. 6, lns. 1-20.

**xxv. (Claim 14) wherein at least one of the plurality of layers above the physical layer is any one of a TCP layer, a IP layer, or a network layer.**

The Jawanda '581 patent inherently discloses the additional limitation of claim 14 when it discloses the use of underlying cellular standards such as GPRS and CDMA, as well as Mobile IP and RFC 2002 from the Internet Engineering Task Force. RX-3519C (Bims WS) at Q653-658, Q717; RX-3519.2C (Bims Suppl. WS) at Q1858-1860. A person of ordinary skill in the art would understand that the use of Mobile IP implies transmission of data using an IP layer, which is a network layer, and the capability to transmit a TCP layer across a wireless network. *Id.* at Q648-650.

**xxvi. (Claim 15) wherein at least one of the plurality of physical layer channels is a data channel.**

The Jawanda '581 patent inherently discloses the claim 15 limitation "at least one of the plurality of physical layer channels is a data channel" when it discloses datagrams transmitted across the wireless network. RX-3519C (Bims WS) at Q682-686, Q718; RX-0032 at col. 4, lns. 35-47. Furthermore, the prior art GPRS and CDMA standards disclosed in Jawanda teach using a data channel. *Id.* at Q686; RX-3519.2C (Bims Suppl. WS) at Q1864-1866.



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**xxvii. (Claim 16) wherein the first wireless network is a licensed code division multiple access network and the IEEE 802 compliant wireless network is an unlicensed IEEE 802.11 network.**

Jawanda renders obvious this additional claim limitation. RX-3519C (Bims WS) at Q687-694, Q719-720. As discussed above, Jawanda discloses a licensed CDMA network. RX-3519C (Bims WS) at Q691; RX-0032 at col. 3, lns. 6-9. It would have been obvious for a person of ordinary skill in the art to combine the teachings of Jawanda with the IEEE 802.11 Standard. *See* RX-3519C (Bims WS) at Q689. The IEEE 802.11 Standard states that its intended use is for unlicensed ISM applications. RX-0097 (IEEE 802.11-1997 Standard) at §15.1; RX-3519C (Bims WS) at Q690.

**xxviii. (Claim 17) wherein the first transceiver is a code division multiple access transceiver and the second transceiver is an 802.11 transceiver.**

Jawanda renders obvious this additional claim limitation. RX-3519C (Bims WS) at Q687-694, Q719-720. As discussed above, Jawanda discloses a licensed CDMA network. RX-3519C (Bims WS) at Q691; RX-0032 at col. 3, lns. 6-9. It would have been obvious for a person of ordinary skill in the art to combine the teachings of Jawanda with the IEEE 802.11 Standard. *See* RX-3519C (Bims WS) at Q689. The IEEE 802.11 Standard states that its intended use is for unlicensed ISM applications. RX-0097 (IEEE 802.11-1997 Standard) at §15.1; RX-3519C (Bims WS) at Q690.

**xxix. (Claim 18) wherein the first transceiver is a cellular transceiver.**

Jawanda discloses or renders obvious the additional limitation of this claim for the same reasons stated in the discussion of the corresponding elements of claim 1: (i) a cellular transceiver configured to communicate with a cellular network via a cellular layered

communication protocol; (ii) a detector configured to detect a signal from the WLAN; and (iii) a circuit coupled to the cellular transceiver and the IEEE 802 transceiver and configured to communicate using the IEEE 802 transceiver in response to the signal. *See* RX-3519C (Bims WS) at Q539-547, Q562-576, Q577-585 Q714, Q721.

**b. The Jawanda '581 Patent in Combination with the IEEE 802.11-1997 Standard Alone or with Any One of the GPRS Standards, the Draft UMTS Standards, or the IS-95/IS-657 Standards**

As discussed above, the Jawanda '581 patent alone or in combination with any one of the GPRS Standards, the Draft UMTS Standards, or the IS-95/IS-657 Standards renders obvious all of the asserted '970 patent claims. Additionally, Jawanda itself in combination with the IEEE 802.11-1997 standard renders all asserted claims of the '970 patent obvious. *See* RX-3519C (Bims WS) at Q21, Q512-712. The Jawanda Patent inherently discloses all the cellular-related claim limitations by teaching that the cellular functionality can be compliant with the GPRS or CDMA (IS-95/IS-657) standards. *See id.* at Q544-547. The principal claim limitation from the '970 patent that Jawanda does not explicitly or inherently teach requires the use of an IEEE 802.11 transceiver to provide the WLAN functionality discussed in Jawanda. *See id.* at Q555-558. Such a combination, however, is obvious based solely on Jawanda and the IEEE 802.11 standard.

As noted in the '970 patent itself, the IEEE 802.11 standard was the “newly accepted standard” for WLANs. JX-0005 at col. 2, lns. 26-33. A person of ordinary skill in the art would have been motivated to use the “newly accepted” IEEE 802.11 standard for WLANs in conjunction with the WLAN transceiver, inasmuch as this would allow the Jawanda mobile

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terminal to communicate with any 802.11 WLAN it encounters when moving from place to place. *See* RX-3519C (Bims WS) at Q551-558.

Inasmuch as InterDigital's expert Dr. Stark claims that certain dependent claims of the '970 patent are not anticipated or rendered obvious by the Jawanda patent because those claims require IEEE 802.11-specific functionality, the combination of the Jawanda Patent and the IEEE 802.11 standard inherently discloses those limitations. *See* CX-1526C (Stark RWS) at Q359-361; RX-3519C (Bims WS) at Q551-576, Q645-652, Q676-681, Q687-694, Q714, Q719-720. For example, claim 6 further claims that the "signal" indicating the presence of a WLAN in claim 1 is a beacon frame or probe response frame. As noted in the '970 patent itself, the use of a beacon frame to indicate the presence of a WLAN is inherently taught in the IEEE 802.11 standard. *See* JX-0005 at col. 9, lns. 1-4; RX-3519C (Bims WS) at Q 676-681. Therefore, the combination of Jawanda and the IEEE 802.11 standard also renders obvious this claim limitation, as well as similar limitations in claims 8, 9, 12, 16, and 17. *Id.* at Q676-681, Q687-694, Q714, Q719-720.

**c. The Jawanda '581 Patent in Combination with the Lemiläinen '259 Patent and Any One of the GPRS Standards, the Draft UMTS Standards, or the IS-95/IS-657 Standards**

As discussed above, the Jawanda '581 patent alone or in combination with any one of the GPRS Standards, the Draft UMTS Standards or the IS-95/IS-657 Standards renders obvious all of the asserted '970 patent claims.

The Lemiläinen '259 patent also teaches a dual mode terminal having both a cellular transceiver and an IEEE 802.11 transceiver to permit data communication over either selected transceiver. It would have been obvious to combine Jawanda with Lemiläinen, inasmuch as this combination is motivated by the fact that both references address the problem of providing

alternative data communication paths for optimal transmission speed. RX-3519C (Bims WS) at Q558-560, Q833-835. Both permit switching from a cellular transceiver to a WLAN transceiver when one is available to obtain higher data transmission speed. *Id.* It would have been obvious to use improvements taught by Lemiläinen, such as the use of a transceiver compliant with the IEEE 802.11 standard, for the WLAN transceiver in the Jawanda mobile computer terminal. *Id.*

For instance, the additional limitation of dependent claim 6 requires that the “signal” indicating the presence of a WLAN in claim 1 is a beacon frame or probe response frame. As noted in the ‘970 patent itself, the use of a beacon frame to indicate the presence of a WLAN is taught in IEEE 802.11. JX-0005 at col. 9, lns. 1-4. Therefore, the combination of Jawanda and the Lemiläinen ‘259 patent, which teaches the use of an IEEE 802.11 transceiver, also makes this claim requirement obvious.<sup>79</sup>

**d. The Lemiläinen ‘259 Patent Alone or Combination with Any One of the GPRS Standards, the Draft UMTS Standards, or the IS-95/IS-657 Standards**

The evidence shows, clearly and convincingly, that the Lemiläinen ‘259 patent also renders obvious all the elements of claims 1 and 10 of the ‘970 patent, both alone or in combination with any one of the GPRS Standards, the Draft UMTS Standards, or the IS-95/IS-657 Standards. *See* RX-3519C (Bims WS) at Q722-924; RX-3519.2C (Bims Suppl. WS) at Q1807-1809, Q1897-1904, Q1943-1946. The Lemiläinen ‘259 patent qualifies as prior art under 35 U.S.C. § 102(e)(2) inasmuch it is a U.S. Patent that issued from an application filed

<sup>79</sup> The parties dispute whether Respondents disclosed its arguments regarding the combination of Jawanda with Lemiläinen in its pre-hearing brief. *See* GR12 Filing at 13. A review of Respondents’ pre-hearing brief shows that these arguments were disclosed, for example, at page 616, on which Respondents explained that “the Lemiläinen 259 Patent (RX-0034) anticipates the independent claims of the 970 Patent, and renders all of the claims obvious alone or in combination with other art including the Jawanda 581 Patent, the GPRS Standards, the IS-95/IS-657 Standards, and the Draft UMTS Standards.”

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on May 10, 1999, which predates the effective filing date of the '970 patent. RX-0034 (Lemiläinen '259 patent).

At a high level, Lemiläinen discloses a dual mode device, such as a GPRS/IEEE 802.11 device, that can communicate with multiple types of wireless networks, choose a wireless network, and then configure itself to select which network to use “without terminating active connections.” RX-0034 at col. 3, lns. 23-24; RX-3519C (Bims WS) at Q728-775. Lemiläinen also explains that the dual mode device changes between different connection types “in such a way that the user does not even notice the transition.” RX-0034 at col. 3, lns. 25-26.

As a dual mode cellular/IEEE 802.11 device, much of the same analysis that applied to the Jawanda '581 patent (RX-0032) applies equally to the Lemiläinen '259 patent (RX-0034). *Compare* RX-3519C (Bims WS) at Q512-721, *with id.* at Q722-924 (discussing Jawanda and Lemiläinen, respectively). For example, both patents disclose that the cellular functionality in a dual-mode cellular/WLAN device can be compliant with the GPRS standards. *Compare* RX-0032 (Jawanda) at col. 3, lns. 1-3, *with* RX-0034 (Lemiläinen) at col. 4, lns. 14-32. Lemiläinen, moreover, expressly discloses that the WLAN functionality can be compliant with the IEEE 802.11 standard. RX-0034 (Lemiläinen) at Fig. 4; col. 4, lns. 14-32; *see* RX-3519C (Bims WS) at Q743-751. Additionally, Lemiläinen also expressly discloses a dual-mode subscriber unit that consists of a single device. Accordingly, Lemiläinen renders obvious each of the asserted independent claims of the '970 patent, as well as asserted dependent claims 2-7 and 11-15.

Asserted dependent claims 8-9 and 16-17 require CDMA functionality, which is not disclosed by Lemiläinen either expressly or inherently. Nevertheless, the evidence shows those claims are rendered obvious based on combinations of Lemiläinen with any one of the several

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references that disclose CDMA functionality, including the Draft UMTS standards and the IS-95/IS-657 standards. *See, e.g.*, RX-3519C (Bims W) at Q531-538, Q788-795, Q871, Q875, Q923-924.

The below table was included in the Respondents' post-hearing brief, and purports to identify how each limitation of each asserted claim is disclosed or rendered obvious by Lemiläinen. As discussed above, InterDigital's expert Dr. Stark does not dispute that many of these limitations are taught in the prior art. The remaining limitations will be discussed in more detail below.

| Claim Element                                | Summary of Proof of Anticipation/Obviousness  |
|--|---|
| 1 Preamble: subscriber unit                  | RX-0034 (Lemiläinen Patent) at 2:66-3:4, 4:14-19, Figs 1-2, 6; RX-3519C (Bims WS) at Q. 728-33; conceded at hearing (Stark Tr. 2118:19-2119:19); not a limitation   |
| 1A: cellular transceiver                     | RX-0034 (Lemiläinen Patent) at 1:39-2:4, 4:19-32, 4:61-5:21, 9:41-50, Figs. 1-2, 6; RX-3519C (Bims WS) at Q. 734-42; not disputed   |
| 1B: IEEE 802 transceiver                     | RX-0034 (Lemiläinen Patent) at 4:20-32, 4:61-5:5, 6:15-28, 7:55-8:4, 9:14-32, Figs. 1-2, 4, 6; RX-3519C (Bims WS) at Q. 743-51); not disputed   |
| 1C: WLAN detector                            | RX-0034 (Lemiläinen Patent) at 7:55-8:4, 10:31-51; RX-3519C (Bims WS) at Q. 752-66; not disputed  |
| 1D: circuit to use WLAN                      | <i>See below. See also</i> RX-0034 (Lemiläinen 259 Patent) at 2:7-3:4, 3:14-41, 4:14-5:32, 10:34-11:6, 12:57-13:42, Figs. 2-3c, 8a; RX-3519C (Bims WS) at Q. 767-75; not disputed under InterDigital's proposed construction  |
| 1E: plurality of layers above physical layer | RX-0034 (Lemiläinen 259 Patent) at 5:5-32, 6:25-56, 7:61-67, 7:29-36, 4:20-32; RX-3519C (Bims WS) at Q. 776-95; not disputed  |
| 1F: plurality of channels available          | <i>See below. Inherent in</i> Lemiläinen; also obvious in combination with GPRS, UMTS, or IS-95/IS-657. <i>See also</i> RX-0034 (Lemiläinen 259 Patent) at 6:29-49, 7:20-28, 4:20-32, 4:61-5:14, 5:19-21; RX-3519C (Bims WS) at Q. 796-821; RX-3519.2C (Bims Suppl. WS) at Q. 1823-28; Stark Tr. 438:17-22; not disputed under Respondents' proposed construction |
| 1G: maintain session                         | <i>See below. See also</i> RX-0034 (Lemiläinen 259 Patent) at 3:7-13, 4:14-32, 8:62-9:13, 11:52-56, 12:57-13:11, 13:33-42, Figs. 1-2, 6; RX-3519C (Bims WS) at Q. 822-36; RX-3519.2C (Bims Suppl. WS) at Q. 1840-48.  |
| 10 preamble: subscriber unit                 | <i>See</i> 1 Preamble; <i>see also</i> RX-3519C (Bims WS) at Q. 877-81.   |
| 10A: first transceiver                       | <i>See</i> 1A; <i>see also</i> RX-3519C (Bims WS) at Q. 882-90.   |

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|   |   |
|---|---|
| 10B: second transceiver                   | <i>See</i> 1B; <i>see also</i> RX-3519C (Bims WS) at Q. 891-99.   |
| 10C: processor coupled                    | RX-0034 (Lemiläinen 259 Patent) at 4:33-5:27, 10:53-11:6, Figs. 3a-c, 7-8a; RX-3519C (Bims WS) at Q. 900-08; not disputed   |
| 10D: channels available                   | <i>See</i> 1F; <i>see also</i> RX-3519C (Bims WS) at Q. 909-13.   |
| 10E: maintain session                     | <i>See</i> 1G; <i>see also</i> RX-3519C (Bims WS) at Q. 914-15.   |
| 2, 13: TCP/IP over WLAN                   | RX-0034 (Lemiläinen 259 Patent) at 6:15-278, 8:62-9:13; RX-3519C (Bims WS) at Q. 837-42, 919; not disputed  |
| 3, 14: TCP/IP or network layer            | RX-0034 Lemiläinen 259 Patent at 5:22-31, 6:25-56, 6:64-7:24, 8:4-6, Fig. 4; RX-3519C (Bims WS) at Q. 843-46, 920; not disputed   |
| 4: single unit                            | RX-0034 Lemiläinen 259 Patent at Fig. 2, 4:14-32, 1:36-46, 1:59-66; RX-3519C (Bims WS) at Q. 847-54; not disputed   |
| 5: mobile phone or PDA                    | RX-0034 Lemiläinen 259 Patent at 5:5-12, 1:39-2:4; RX-3519C (Bims WS) at Q. 855-57; not disputed  |
| 6: 12: beacon frame                       | <i>See</i> below. <i>See also</i> RX-0034 (Lemiläinen 259 Patent) at 10:31-39, 13:25-26, 10:34-36, 13:16-36; RX-3519C (Bims WS) at Q. 680-81, 743-66, 858-64, 917-18; CX-1314C (Gorsuch WS) at Q. 115; RX-0097 (IEEE 802.11 Std.) §§ 7.2.3.1, 11.1. |
| 7, 15: data channel                       | RX-0034 Lemiläinen 259 Patent at 4:61-5:14, 6:29-49, 7:20-28, 9:8-12, Abstract, 1:59-66.; RX-3519C (Bims WS) at Q. 865-68, 921; not disputed  |
| 8, 16: licensed CDMA, unlicensed WLAN     | obvious over Lemiläinen 259 Patent in combination with any one of the knowledge of one of ordinary skill in the art, the GPRS standards, UMTS draft standards, and the IS-95/IS-657 standards; RX-3519C (Bims WS) at Q. 869-72, 922; not disputed   |
| 9, 17: CDMA and 802.11                    | obvious over Lemiläinen 259 Patent in combination with any one of the knowledge of one of ordinary skill in the art, the GPRS standards, UMTS draft standards, and the IS-95/IS-657 standards; RX-3519C (Bims WS) at Q. 873-76, 923; not disputed   |
| 11: detector circuit, circuit to use WLAN | <i>See</i> 1C, 1D; <i>see also</i> RX-3519C (Bims WS) at Q. 916.  |
| 18: cellular transceiver                  | <i>See</i> 1A; <i>see also</i> RX-3519C (Bims WS) at Q. 924.  |

Resps. Br. at 457-58.

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- i. **(Claim 1) a circuit coupled to the cellular transceiver and the IEEE 802 transceiver and configured to communicate using the IEEE 802 transceiver in response to the signal;**

InterDigital's expert Dr. Stark does not dispute that Lemiläinen discloses this limitation under the construction of this claim limitation adopted above, but does contend that there is no disclosure in the Lemiläinen '259 patent of "automatically" connecting directly to a WLAN when such a connection is possible. CX-1526C (Stark RWS) at Q383-390. Lemiläinen does, however, describe switching from communicating with a cellular network to a WLAN network once it moves within range of the WLAN without intervening intervention from a user:

A reason for the connection change can also be that the terminal A enters the operation range of such a data network which the user has given a higher priority than the data network active at that moment. The terminal A is, for example, connected to a GSM mobile communication network and the user of the terminal arrives in an office where a wireless local area network is available.

RX-0034 at col. 12, ln. 57 – col. 13, ln. 42.

Lemiläinen explains that the appropriate network selection takes place "without the initiator of the communication having to know to which data transmission network the terminal is coupled at a given time." RX-0034 at col. 3, lns. 37-41. This is the same "automatic" connection required under Respondents' proposed construction of this claim limitation. Accordingly, Lemiläinen discloses this limitation.

- ii. **(Claim 1) and a plurality of physical layer channels are available for assignment for communication with the cellular network**

Applying the construction of this claim limitation adopted above, and as explained in connection with Jawanda, is disclosed in the functionality implicit in a GPRS device. Under the GPRS standards, a phone can use between one and eight traffic channels to transfer uplink



information. While a network identifies the channels available for use, the mobile station ultimately decides whether or not to transmit information on these channels. *See, e.g.*, RX-0034 (Lemiläinen) at col. 4, lns. 14-32; RX-3519C (Bims WS) at Q740, Q749, Q780-781. Also, as described above in the context of the Jawanda Patent, Dr. Stark testified that GPRS handsets could transmit on up to five uplink channels. Stark Tr. 2127-2128.

To the extent that this limitation is not inherent in the disclosure of Lemiläinen, it would be obvious to one of ordinary skill in the art to combine the teachings of Lemiläinen with the multi-channel uplink capabilities of GPRS. Lemiläinen itself provides strong motivation to combine, specifically identifying the GPRS standard and its high-speed capabilities. Finally, this limitation would also be obvious in light of the UMTS draft standards, which are higher-speed successors to the GPRS standard explicitly disclosed in Lemiläinen, or the IS-95/IS-657 standards. *See* RX-3519C (Bims WS) at Q792-795; RX-3519.2C (Bims Suppl. WS) at Q1823-1828; Stark Tr. 438.<sup>80</sup>

**iii. (Claim 1) and a communication session above the physical layer is maintained when all assigned physical layer channels have been released.**

The Lemiläinen '259 patent teaches this element in two different ways. First, it expressly discloses using GPRS functionality in a dual-mode device, thereby inherently disclosing this element. *See, e.g.*, RX-3519C (Bims WS) at Q829-830. Second, the Lemiläinen '259 patent also discloses maintaining connections even after releasing the physical layer channels of one network and changing to another network. RX-3519C (Bims WS) at Q828-829, Q836.

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<sup>80</sup> For the same reasons set forth in this section, Lemiläinen also discloses the claim 10 limitation "wherein a plurality of physical layer channels are available for assignment for communication with the first wireless network."

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As described above in the context of Jawanda, Dr. Stark testified that GPRS phones would maintain a PDP context both in between and after transmissions. Stark Tr. 2144-2146. Lemiläinen therefore inherently discloses this claim limitation through its reliance on the GPRS standards for cellular connectivity. Additionally, this limitation would be obvious in light of the Lemiläinen patent combined with either the Draft UMTS or IS-95/IS-657 Standards for similar reasons. RX-3519C (Bims WS) at Q796-821; RX-3519.2C (Bims Suppl. WS) at Q1840-1848.

Lemiläinen also discloses maintaining a communications session when terminating a connection with a cellular network, thereby releasing assigned physical layer channels, by rerouting network layer information through an IEEE 802.11 WLAN. RX-3519C (Bims WS) at Q828-829. For example, Lemiläinen describes shifting “an active connection from one data network to another.” RX-0034 at col. 12, ln. 57 – col. 13, ln. 42. That connection consists of a connection made at the TCP protocol layer, which is the same layer as the network layer identified in the ‘970 patent. Compare RX-0034 (Lemiläinen) at col. 13, lns. 8-9, with JX-0005 (‘970 patent) at col. 5, lns. 17-21; col. 6, lns. 20-29. Inasmuch as the connection at the TCP layer is maintained, data can be transmitted to or from the subscriber unit using the same IP address, and “the communication network used at a given time can be changed without terminating active connections.” RX-0034 at col. 3, lns. 22-24.<sup>81</sup>

**iv. (Claim 6) wherein the signal is a beacon frame or probe response frame**

Lemiläinen teaches this element in two ways. First, it expressly discloses using IEEE 802.11 compliant functionality in a dual-mode device, thereby inherently disclosing this element.

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<sup>81</sup> For the same reasons set forth in this section, Lemiläinen also discloses the claim 10 limitation “and to maintain a communication session above a physical layer of the first protocol stack when none of the plurality of physical layer channels are assigned.”

See, e.g., RX-3519C (Bims WS) at Q680-681, Q743-766, Q861-862. Second, Lemiläinen discloses the use of WLAN registration messages, which a person of ordinary skill in the art would recognize as corresponding to beacon frames. RX-3519C (Bims WS) at Q860.<sup>82</sup>

**e. The Draft UMTS Standards in Combination with the Lemiläinen ‘259 Patent**

The evidence also shows that the asserted ‘970 patent claims are rendered obvious in view of the Draft UMTS standards in combination with the Lemiläinen ‘259 patent. As discussed above, the Draft UMTS Standards disclose a dual-mode cellular/WLAN device that switches between the cellular network and WLAN. RX-3519C (Bims WS) at Q1280-1309.

While the Draft UMTS standards do not expressly disclose a dual-mode UMTS/IEEE 802.11 device, such a combination would have been obvious to one of skill in the art based on the Lemiläinen ‘259 patent. RX-3519C (Bims WS) at Q1279-1310. In particular, the Draft UMTS Standards include an express teaching of combining cellular functionality with WLAN functionality in a single device and switching between them. RX-3519C (Bims WS) at Q1280-1309. Moreover, one of skill in the art would recognize IEEE 802.11 networks as substitutes for the HIPERLAN2 networks referenced in the Draft UMTS standards, inasmuch as both share similar data rates and mobility features. *Id.* at Q1275-1309, Q1408.

**f. The Draft UMTS Standards in Combination with the IEEE 802.11 Standard**

The evidence adduced by Respondents also show that the Draft UMTS Standards and IEEE 802.11 standards render the ‘970 patent claims obvious. RX-3519C (Bims WS) at Q1178-1179, Q1279-1283. As explained above, the Draft UMTS Standards disclose a

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<sup>82</sup> For the same reasons set forth in this section, Lemiläinen also discloses the claim 11 limitation “wherein detection of the IEEE 802 compliant wireless network is based on receipt of a beacon frame or probe response frame.”

dual-mode WCDMA/WLAN device that uses the HIPERLAN2 standard. The purpose of the dual-mode device in the Draft UMTS Standards is to provide higher data rates when the WLAN is available, *i.e.*, in “hotspot environments.” *Id.* Q1281. That dual-mode device described by the Draft UMTS Standards discloses all the elements of the asserted ‘970 patent claims, with the sole exception of WLAN functionality that is explicitly compliant with the IEEE 802.11 standard. *Id.* at Q1178-1409. Replacing the HIPERLAN2 functionality disclosed in the Draft UMTS Standards with the alternative IEEE 802.11 functionality would have been obvious to one of skill in the art. *Id.* at Q1282-1309. Accordingly, the combination of the Draft UMTS Standards and IEEE 802.11 standards renders obvious the asserted ‘970 patent claims.

**g. Secondary Considerations of Nonobviousness**

InterDigital argues that secondary indicia support a finding of nonobviousness, including skepticism in the industry, unexpected results, commercial success, long-felt but unsolved need, licensing by others, and simultaneous development by others. *See* Compl. Br. at 339-44. InterDigital’s arguments are not persuasive, inasmuch as the evidence adduced by InterDigital does not establish the requisite nexus between the secondary considerations and the ‘970 patent. In addition, the evidence does not support InterDigital’s proposed findings of teaching away, commercial success, long-felt need and failure of others, unexpected results, licensing, and simultaneous development by others.

As an initial matter, none of the evidence adduced by InterDigital with respect to secondary considerations provides a nexus to any allegedly novel aspects of the asserted claims of the ‘970 patent, but rather is directed to dual-mode phones generally. *See* RX-3519C (Bims WS) at Q675-1751. It is therefore determined that InterDigital’s evidence fails to satisfy the requirement that it have a nexus to the claimed ‘970 invention.

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With respect to InterDigital's claim that there was skepticism in the industry and an alleged teaching away from the '970 invention, the evidence shows that any skepticism in the industry was based on the financial feasibility of a dual-mode phone, and not on technical feasibility. *See* RX-3519C (Bims WS) at Q1675-1696; RX-3401C (Gorsuch Dep.) at 76-77. Inasmuch as this economic skepticism on behalf of cellular operators shows certainty as to the technical feasibility, and not skepticism, the evidence weighs in favor of a finding of obviousness. *See* RX-3519C (Bims WS) at Q1688; *see also id.* at Q1697-1700 (addressing whether the prior art teaches away).

InterDigital has not shown any nexus between the claimed '970 inventions and the evidence it proffers to show commercial success. InterDigital relies on the commercial success of the iPhone 4 and iPhone 4S, as well as on general reports about the market penetration of dual-mode devices, but none of this evidence has a sufficient nexus to the asserted claims of the '970 patent. *See* RX-3519C (Bims WS) at Q1701-1718. It is argued that the commercial success of the iPhone 4 and iPhone 4S was driven by the invention claimed in the '970 patent because many users wanted to take advantage of the additional speeds the iPhones provided through HSUPA and EV-DO Rev. A. *See* CX-1314C (Gorsuch WS) at Q203-209. InterDigital has not shown, however, that the mass adoption of the iPhones in question were due to their HSUPA or EV-DO capabilities, instead of the many other features that drove iPhone success. *See* RX-3519C (Bims WS) at Q1713-1714. Therefore, InterDigital has not demonstrated that the commercial success of products incorporating a dual-mode capability is necessarily linked to the '970 inventions.

As for InterDigital's allegations that there was a long-felt need in the industry for the solutions provided in the '970 patent, as well as a failure of others to achieve a dual-mode

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device, the evidence shows that, at the time of the '970 invention, cellular operators were in fact opposed to heterogeneous networks. CX-1526C (Stark RWS) at Q1010-1011; *see* RX-3519C (Bims WS) at Q1719-1726. Moreover, InterDigital's designated witness testified that he was not aware of any specific failure of others in the industry with respect to the '970 claimed inventions. RX-3406C (Gorsuch Dep.) at 188-191. Accordingly, InterDigital has not shown either a long-felt need or failure by others.

The evidence also does not support InterDigital's claim of unexpected results. In fact, record evidence demonstrates that the claimed '970 invention works exactly as one of ordinary skill in the art would have expected it to work in 1999. RX-3519C (Bims WS) at Q1739. Therefore, InterDigital has not shown unexpected results.

The record evidence fails to show that any third party agreed to license InterDigital's patent portfolio based on the '970 patent or any related patent. *See* RX-3519C (Bims WS) at Q1741-1751. The fact that the '970 patent or a related patent was identified as part of licensing discussions does not by itself demonstrate the required nexus between the '970 patent and the license. Therefore, the evidence that the '970 patent has been licensed does not weigh in favor of a finding of nonobviousness.

InterDigital's final argument relating to secondary considerations of nonobviousness, that of simultaneous development by others, is also not persuasive. Specifically, there are multiple prior art references that disclose the concepts of the '970 patent, and each reference appears to have independently developed around the timeframe of InterDigital's alleged conception of the '970 patent. *See* RX-3519C (Bims WS) at Q1752-1759,

## VIII. Domestic Industry

### A. General Principles of Law

A violation of section 337(a)(1)(B), (C), (D), or (E) can be found “only if an industry in the United States, with respect to the articles protected by the patent, copyright, trademark, mask work, or design concerned, exists or is in the process of being established.” 19 U.S.C.

§ 1337(a)(2). Section 337(a) further provides:

(3) For purposes of paragraph (2), an industry in the United States shall be considered to exist if there is in the United States, with respect to the articles protected by the patent, copyright, trademark, mask work, or design concerned—

(A) significant investment in plant and equipment;

(B) significant employment of labor or capital; or

(C) substantial investment in its exploitation, including engineering, research and development, or licensing.

19 U.S.C. § 1337(a)(3).

These statutory requirements consist of an economic prong (which requires certain activities)<sup>83</sup> and a technical prong (which requires that these activities relate to the intellectual property being protected). *Certain Stringed Musical Instruments and Components Thereof*, Inv. No. 337-TA-586, Comm’n Op. at 13 (May 16, 2008) (“*Stringed Musical Instruments*”). The

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<sup>83</sup> The Commission practice is usually to assess the facts relating to the economic prong at the time that the complaint was filed. See *Certain Coaxial Cable Connectors and Components Thereof and Products Containing Same*, Inv. No. 337-TA-560, Comm’n Op. at 39 n.17 (Apr. 14, 2010) (“We note that only activities that occurred before the filing of a complaint with the Commission are relevant to whether a domestic industry exists or is in the process of being established under sections 337(a)(2)-(3).”) (citing *Bally/Midway Mfg. Co. v. U.S. Int’l Trade Comm’n*, 714 F.2d 1117, 1121 (Fed. Cir. 1983)). In some cases, however, the Commission will consider later developments in the alleged industry, such as “when a significant and unusual development occurred after the complaint has been filed.” See *Certain Video Game Systems and Controllers*, Inv. No. 337-TA-743, Comm’n Op., at 5-6 (Jan. 20, 2012) (“[I]n appropriate situations based on the specific facts and circumstances of an investigation, the Commission may consider activities and investments beyond the filing of the complaint.”).

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burden is on the complainant to show by a preponderance of the evidence that the domestic industry requirement is satisfied. *Certain Multimedia Display and Navigation Devices and Systems, Components Thereof, and Products Containing Same*, Inv. No. 337-TA-694, Comm'n Op. at 5 (July 22, 2011) (“*Navigation Devices*”).

“With respect to section 337(a)(3)(A) and (B), the technical prong is the requirement that the investments in plant or equipment and employment in labor or capital are actually related to ‘articles protected by’ the intellectual property right which forms the basis of the complaint.” *Stringed Musical Instruments* at 13-14. “The test for satisfying the ‘technical prong’ of the industry requirement is essentially same as that for infringement, i.e., a comparison of domestic products to the asserted claims.” *Alloc, Inc. v. Int’l Trade Comm’n*, 342 F.3d 1361, 1375 (Fed. Cir. 2003). “With respect to section 337(a)(3)(C), the technical prong is the requirement that the activities of engineering, research and development, and licensing are actually related to the asserted intellectual property right.” *Stringed Musical Instruments* at 13.

With respect to the economic prong, and whether or not section 337(a)(3)(A) or (B) is satisfied, the Commission has held that “whether a complainant has established that its investment and/or employment activities are significant with respect to the articles protected by the intellectual property right concerned is not evaluated according to any rigid mathematical formula.” *Certain Printing and Imaging Devices and Components Thereof*, Inv. No. 337-TA-690, Comm'n Op. at 27 (Feb. 17, 2011) (“*Printing and Imaging Devices*”) (citing *Certain Male Prophylactic Devices*, Inv. No. 337 TA-546, Comm'n Op. at 39 (Aug. 1, 2007)). Rather, the Commission examines “the facts in each investigation, the article of commerce, and the realities of the marketplace.” *Id.* “The determination takes into account the nature of the



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investment and/or employment activities, ‘the industry in question, and the complainant’s relative size.’” *Id.* (citing *Stringed Musical Instruments* at 26).

With respect to section 337(a)(3)(C), whether an investment in domestic industry is “substantial” is a fact-dependent inquiry for which the complainant bears the burden of proof. *Stringed Musical Instruments* at 14. There is no minimum monetary expenditure that a complainant must demonstrate to qualify as a domestic industry under the “substantial investment” requirement of this section. *Id.* at 25. There is no need to define or quantify an industry in absolute mathematical terms. *Id.* at 26. Rather, “the requirement for showing the existence of a domestic industry will depend on the industry in question, and the complainant’s relative size.” *Id.* at 25-26.

When a complainant relies on licensing<sup>84</sup> to demonstrate the existence of a domestic industry pursuant to section 337(a)(3)(C), the Commission has explained the showing required of the complainant as follows:

Complainants who seek to satisfy the domestic industry requirement by their investments in patent licensing must establish that their asserted investment activities satisfy three requirements of section 337(a)(3)(C). First, the statute requires that the investment in licensing relate to “its exploitation,” meaning an investment in the exploitation of the asserted patent. 19 U.S.C. § 1337(a)(3)(C) . . . . Second, the statute requires that the investment relate to “licensing.” 19 U.S.C. § 1337(a)(3)(C) . . . . Third, any alleged investment must be domestic, i.e., it must occur in the United States. 19 U.S.C. § 1337(a)(2), (a)(3). Investments meeting these requirements merit consideration in our evaluation of whether a complainant has satisfied the domestic industry requirement. Only after determining the extent to which the complainant’s investments fall within these statutory parameters can we evaluate whether complainant’s qualifying investments are “substantial,” as required by the statute. 19 U.S.C. § 1337(a)(3)(C). If a complainant’s activity is only partially

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<sup>84</sup> A recent Federal Circuit opinion confirms that a finding of domestic industry under section 337(a)(3)(C) can be supported by licensing activities alone. *InterDigital Commc’ns, LLC v. Int’l Trade Comm’n*, 690 F.3d 1318, 1329-30 (Fed. Cir. 2012).

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related to licensing the asserted patent in the United States, the Commission examines the strength of the nexus between the activity and licensing the asserted patent in the United States.

*Navigation Devices* at 7-8 (footnotes omitted).

In *Navigation Devices*, the Commission held that, “[w]here the complainant’s licensing activities and investments involve a group of patents or a patent portfolio, the complainant must present evidence that demonstrates the extent of the nexus between the asserted patent and the complainant’s licensing activities and investments.” *Navigation Devices* at 9. The Commission provided a non-exhaustive list of factors it may consider to establish the strength of the nexus, including (1) the number of patents in the portfolio, (2) the relative value contributed by the asserted patent to the portfolio, (3) the prominence of the asserted patent in licensing discussions, negotiations and any resulting license agreement, and (4) the scope of technology covered by the portfolio compared to the scope of the asserted patent. *Id.* at 10. “A showing that the asserted patent is relatively important within the portfolio is not required to show a nexus between that patent and the licensing activities . . . but may be one indication of the strength of the nexus.” *Id.* at 11.

For the purposes of satisfying the domestic industry requirement a patentee can rely on the activities of a licensee. *See, e.g., Certain Electronic Devices, Including Handheld Wireless Communications Devices*, Inv. Nos. 337-TA-673, 337-TA-667, Order No. 49C at 4-5 (Oct. 15, 2009).

**B. InterDigital’s Domestic Investments**

**1. 3G Licensing Investments**

The record evidence shows that InterDigital licenses its patents on a portfolio-wide basis. CX-1313C (Brezski WS) at Q43; CX-1311C (Putnam WS) at Q121; CX-1312C (Ditty WS) at

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Q122. InterDigital does not track, in the ordinary course of business, expenditures related to licensing specific patents or patent families. CX-1313C (Brezski WS) at Q23-24. InterDigital's Chief Financial Officer, Mr. Richard Brezski, sought to determine InterDigital's expenditures related to licensing its 3G patents, which include licensing the patents asserted in this investigation. To do so, Mr. Brezski first calculated the percentage of time that relevant InterDigital employees devoted to InterDigital's 3G licensing efforts. *Id.* at Q24.

Estimation of InterDigital's 3G licensing investments was a two-step process. CX-1313C (Brezski WS) at Q24. For the first step, more than twenty InterDigital personnel involved in licensing were contacted and asked to estimate the percentage of time they spent on 3G licensing from 2008 through the first half of 2009. *Id.* at Q25-29; CX-1287C (compilation of email responses from InterDigital employees) at IDC-ITC-300001564-97. Those employees included:

[

] CX-1313C (Brezski WS) at Q26. Mr. Brezski consolidated those estimates into one spreadsheet and verified the reasonableness of those estimates with Larry Shay, who heads InterDigital's licensing department. *Id.* at Q28-30; CX-1284C (spreadsheet showing licensing efforts costs for InterDigital employees 2008-1H 2009) at IDC-ITC-300001554-55. Mr. Brezski's compilation of those estimates, as well as Mr. Shay's verification of their reasonableness, were uncontested at the hearing. Brezski Tr. at 630 (forgoing cross-examination of Mr. Brezski).

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For the second step, Mr. Brezski interviewed by telephone or in person InterDigital's personnel involved in licensing from the second half of 2009 through 2011. CX-1313C (Brezski WS) at Q31-32. Mr. Brezski asked the employees for: (i) their job title and description, (ii) their department or group, (iii) the name of their supervisor or manager, (iv) the names of employees they supervise, (v) their telephone extension, (vi) when they started at their current position, (vii) what prior positions (if any) they held, (viii) the identity of each major area in which they work, (ix) a short description of their 3G licensing responsibilities, (x) what records they maintained regarding their 3G licensing activities, and (xi) an estimated percentage of time spent on 3G licensing activities from July 1, 2009 through December 31, 2010. *Id.* at Q36. Mr. Brezski created a spreadsheet to consolidate the responses to those interviews, and later updated it to include employee estimations for time spent on 3G licensing from 2010 through 2011. *Id.* at Q33, Q36; CX-1286C (licensing efforts notes for InterDigital employees from second half of 2009-2011) at IDC-ITC-3000001559-63.

For an estimate of time spent on 3G licensing during the time period from the second half of 2009 through 2011, Mr. Brezski interviewed employees

] CX-1313C (Brezski WS) at Q35.

The employees were asked to estimate their time spent on 3G licensing activities, which included "activities designed to exploit InterDigital's 3G patents through licensing." CX-1313C (Brezski WS) at Q37. For example, InterDigital employees included in their estimates activities