**IN THE UNITED STATES DISTRICT COURT**
**FOR THE EASTERN DISTRICT OF TEXAS**
**MARSHALL DIVISION**

| | | |
|---|---|---|
| AX WIRELESS LLC, | § | |
| | § | |
| *Plaintiff*, | § | C.A. No. 2:22-cv-00277-JRG-RSP |
| v. | § | (Lead Case) |
| | § | |
| DELL INC., and DELL TECHNOLOGIES INC. | § | |
| | § | |
| | § | |
| *Defendants.* | § | |

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|---|---|---|
| AX WIRELESS LLC | § | |
| | § | |
| *Plaintiff*, | § | C.A. No. 2:22-cv-00279-JRG-RSP |
| v. | § | (Member Case) |
| | § | |
| HP INC. | § | |
| | § | |
| *Defendant.* | § | |
| | § | |

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**DEFENDANTS' P.R. 3-3 INVALIDITY CONTENTIONS**
**AND INELIGIBILITY CONTENTIONS**

**AX Wireless, LLC**
**Exhibit AXW-2023**
**Intel v. AX Wireless**
**IPR2023-01135**

## TABLE OF CONTENTS

Page


I. Introductory Statement ..... 1

II. Asserted Patents and Claims ..... 2

III. Claim Construction ..... 4

IV. P.R. 3-3(a) – Identification of Prior Art ..... 6

A. Prior Art for ’262 Patent ..... 6

1. Prior Art Patents for ’262 Patent ..... 6

2. Prior Art Publications for ’262 Patent ..... 7

3. Derivation Under 35 U.S.C. § 102(f) ..... 8

B. Prior Art for ’566 Patent ..... 9

1. Prior Art Patents for ’566 Patent ..... 9

2. Prior Art Publications for ’566 Patent ..... 11

3. Derivation Under 35 U.S.C. § 102(f) ..... 12

C. Prior Art for ’361 Patent ..... 13

1. Prior Art Patents for ’361 Patent ..... 13

2. Prior Art Publications for ’361 Patent ..... 14

3. Derivation Under 35 U.S.C. § 102(f) ..... 14

D. Prior Art for ’707 Patent ..... 15

1. Prior Art Patents for ’707 Patent ..... 15

2. Prior Art Publications for ’707 Patent ..... 17

3. Derivation Under 35 U.S.C. § 102(f) ..... 17

E. Prior Art for ’449 Patent ..... 18

1. Prior Art Patents for ’449 Patent ..... 18

2. Prior Art Publications for ’449 Patent ..... 19

3. Derivation Under 35 U.S.C. § 102(f) ..... 20

F. Prior Art for ’459 Patent ..... 21

1. Prior Art Patents for ’459 Patent ..... 21

2. Prior Art Publications for ’459 Patent ..... 22

3. Derivation Under 35 U.S.C. § 102(f) ..... 23

G. Prior Art for ’272 Patent ..... 24

1. Prior Art Patents for ’272 Patent ..... 24

2. Prior Art Publications for ’272 Patent ..... 25
3. Derivation Under 35 U.S.C. § 102(f)..... 25
H. Prior Art for ’146 Patent ..... 26
1. Prior Art Patents for ’146 Patent..... 26
2. Prior Art Publications for ’146 Patent ..... 28
3. Derivation Under 35 U.S.C. § 102(f)..... 29
V. State of the Art and Obviousness ..... 30
A. General Motivations for Making Combinations of Prior Art ..... 31
B. Exemplary Combinations and Motivations for Making Combinations of Prior Art ..... 35
1. Exemplary Combinations for Claims 1-4, 8-12, 16-17, 21-28, 32 of the ’262 Patent; Claims 1-6, 10-16, 20-21, 25-36, 40 of the ’566 Patent..... 36
2. Exemplary Combinations for Claims 1-3, 5, 7-8 of the ’361 Patent, Claims 1-3, 5, 7-11, 13 of the ’707 Patent, Claims 1-3, 5, 7-11, 13 of the ’449 Patent, Claims 1-3, 5, 7-11, 13 of the ’459 Patent, and Claims 1-3, 5, 7-9, 11-13, 15, 17-19 of the ’272 Patent ..... 41
3. Exemplary Combinations for Claims 1-10 of the ’146 Patent..... 43
C. Secondary Considerations..... 46
VI. P.R. 3-3(c) – Claim Charts ..... 46
VII. P.R. 3-3(d) – Invalidity Under 35 U.S.C. § 112..... 47
VIII. Patent Ineligibility Under 35 U.S.C. § 101 ..... 57

## EXHIBITS AND ATTACHMENTS

| | |
|---|---|
| **Exhibits A1 – A13** | Invalidity Claim Charts for Primary References for ’262 Patent |
| **Exhibits B1 – B11** | Invalidity Claim Charts for Primary References for ’566 Patent |
| **Exhibits C1 – C10** | Invalidity Claim Charts for Primary References for ’361 Patent |
| **Exhibits D1 – D8** | Invalidity Claim Charts for Primary References for ’707 Patent |
| **Exhibits E1 – E10** | Invalidity Claim Charts for Primary References for ’449 Patent |
| **Exhibits F1 – F10** | Invalidity Claim Charts for Primary References for ’459 Patent |
| **Exhibits G1 – G9** | Invalidity Claim Charts for Primary References for ’272 Patent |
| **Exhibits H1 – H15** | Invalidity Claim Charts for Primary References for ’146 Patent |
| **Attachment A** | Subject-Matter Eligibility Contentions for ’262 Patent |
| **Attachment B** | Subject-Matter Eligibility Contentions for ’566 Patent |
| **Attachment C** | Subject-Matter Eligibility Contentions for ’361 Patent |
| **Attachment D** | Subject-Matter Eligibility Contentions for ’707 Patent |
| **Attachment E** | Subject-Matter Eligibility Contentions for ’449 Patent |
| **Attachment F** | Subject-Matter Eligibility Contentions for ’459 Patent |
| **Attachment G** | Subject-Matter Eligibility Contentions for ’272 Patent |
| **Attachment H** | Subject-Matter Eligibility Contentions for ’146 Patent |

Pursuant to P.R. 3-3, the Court's Docket Control Order (Dkt. 48) and its Standing Order Regarding Subject Matter Eligibility Contentions, Defendants Dell Inc., Dell Technologies Inc., and HP Inc. (collectively, "Defendants") hereby provide these P.R. 3-3 Invalidity Contentions ("Invalidity Contentions") and Subject-Matter Ineligibility Contentions ("Ineligibility Contentions") to Plaintiff AX Wireless LLC ("Plaintiff" or "AXW").

## I. INTRODUCTORY STATEMENT

These Invalidity and Ineligibility Contentions are based on Defendants' current knowledge and understanding of U.S. Patent Nos. 9,584,262 ("'262 Patent"); 9,614,566 ("'566 Patent"); 9,973,361 ("'361 Patent"); 10,079,707 ("'707 Patent"); 10,291,449 ("'449 Patent"); 10,554,459 ("'459 Patent"); 10,917,272 ("'272 Patent"); and 11,212,146 ("'146 Patent") (collectively, "the Asserted Patents") and the prior art, along with Defendants' understanding of Plaintiff's infringement allegations and apparent claim interpretations based on those allegations, as set forth in Plaintiff's Disclosure of Asserted Claims and Infringement Contentions ("Infringement Contentions"). These Invalidity and Ineligibility Contentions should not be construed to waive any objections to Plaintiff's Infringement Contentions or as an admission that the Infringement Contentions were adequate or that Plaintiff's apparent claim interpretations are correct, have merit, or should be adopted. Indeed, Plaintiff's Infringement Contentions are deficient and fail to describe the accused functionality and Plaintiff's interpretation of the claim language in a manner that would allow Defendants to fully respond, including in these invalidity contentions. Defendants expressly reserve the right to amend these contentions based on amendments to Plaintiff's Infringement Contentions or when Plaintiff specifies its theories with greater clarity. Additionally, and as further explained below, where these Invalidity Contentions disclose that a prior art reference meets a claim limitation, such position may be based on Plaintiff's apparent

claim interpretations in its Infringement Contentions; Defendants do not necessarily agree that such interpretations are correct, have merit, or should be adopted.

Defendants' investigation of the Asserted Patents, their file histories, and the prior art is ongoing, and Defendants expressly reserve the right to supplement these Invalidity and Ineligibility Contentions based on further discovery and in a manner consistent with the Federal Rules of Civil Procedure, the Local Patent Rules for the Eastern District of Texas, and any Docket Control Order, or otherwise in accordance with any order or direction of this Court or agreement of the parties. Defendants' ongoing investigation includes, but is not limited to, serving subpoenas on prior artists and inventors regarding prior art, seeking additional information related to the references and prior art systems disclosed in these Invalidity and Ineligibility Contentions, seeking additional information regarding Plaintiff's Infringement Contentions and the products and services accused of infringement, seeking information regarding any prior sales and/or uses by the original assignees of the Asserted Patents, and seeking expert testimony. Defendants also reserve the right to rely on any prior art identified or disclosed by non-parties to this action that are involved in a suit or action involving one or more of the Asserted Patents, as well as any prior art produced or disclosed during the course of this litigation. Additionally, Defendants have not yet had the benefit of taking the depositions of the named inventors or those that worked with the named inventors, or of the named inventors, authors, and entities listed on any references or systems identified in these Invalidity Contentions.

## II. ASSERTED PATENTS AND CLAIMS

Plaintiff asserts the following claims from the Asserted Patents (collectively, "the Asserted Claims"):

| Asserted Patent | Asserted Claims |
|---|---|
| 9,584,262 | 1-4, 8-12, 16-17, 21-28, 32 |

| Asserted Patent | Asserted Claims |
|---|---|
| 9,614,566 | 1-6, 10-16, 20-21, 25-36, 40 |
| 9,973,361 | 1-3, 5, 7-8 |
| 10,079,707 | 1-3, 5, 7-11,13 |
| 10,291,449 | 1-3, 5, 7-11, 13 |
| 10,554,459 | 1-3, 5, 7-11, 13 |
| 10,917,272 | 1-3, 5, 7-9, 11-13, 15, 17-19 |
| 11,212,146 | 1-10 |

Plaintiff appears to allege a priority date of August 21, 2009, for all of the Asserted Patents based on the filing of provisional application SN 61/235,909. Reference to any "asserted priority date" should not be construed to mean that Defendants agree that the Asserted Patents are in fact entitled to such priority date(s),[1] or that Plaintiff has provided proper notice as to its contentions for priority dates.

P.R. 3-2(b) requires Plaintiff to produce, contemporaneously with its Disclosure of Asserted Claims and Infringement Contentions," "[a]ll documents evidencing the conception, reduction to practice, design, and development of each claimed invention, which were created on or before the date of application for the patent in suit or the priority date identified pursuant to P.R. 3-1(e), whichever is earlier." Other than copies of the Asserted Patents and their file histories, Plaintiff did not produce any documents pursuant to P.R. 3-2(b). Defendants thus understand that Plaintiff is not asserting an invention date, or conception, reduction to practice, design, and/or development of the claimed invention, prior to the asserted priority dates identified above. To the

[1] Defendants contend that the Asserted Patents are not entitled to the priority date of the provisional application SN 61/235,909 at least because the provisional application does not meet 35 U.S.C. § 112 requirements for any of the Asserted Claims. For example, the provisional application suffers from the same deficiencies of the '262 Specification as explained in the "Invalidity Under 35 U.S.C. § 112" section as well as additional deficiencies.

extent Plaintiff later alleges that any such activities occurred prior to the priority dates identified above, Defendants reserve the right to object to such belated changes in position and/or to supplement these Invalidity Contentions to address any such contention, including by identifying and/or charting additional prior art that may become relevant in view of such assertion. Likewise, to the extent Plaintiff successfully establishes an invention date before any of the prior-art references relied on by Defendants, then those references serve as evidence of secondary considerations of obviousness, particularly, contemporaneous invention by others. To the extent Plaintiff alleges that any prior art relied on in these Invalidity Contentions does not actually qualify as prior art to the Asserted Patent, Defendants reserve the right to rebut those allegations (*e.g.*, by demonstrating an earlier critical date for the challenged prior art and/or a later priority date and/or date of invention for a particular Asserted Claim). Defendants also reserve the right to rely on additional documents, information, and evidence to demonstrate public availability or public availability by a certain date of a prior art reference or to rebut any efforts by Plaintiff to allege any reference was not publicly available or publicly available by a certain date or otherwise available as prior art.

For purposes of these contentions, Defendants address those claims specifically asserted by Plaintiff. Defendants reserve the right to amend or supplement this disclosure as necessary in view of any changes or amendments made, for any reason, to Plaintiff's infringement theories, infringement contentions, or Asserted Claims, including to Plaintiff's asserted priority and/or invention date(s).

## III. CLAIM CONSTRUCTION

To the extent these Invalidity Contentions rely on or otherwise embody particular constructions of terms or phrases in the Asserted Claims, Defendants are not conceding that any such constructions are proper. For purposes of these Invalidity Contentions, Defendants may adopt

alternative claim construction positions. In particular, portions of these Invalidity Contentions, including the claim charts attached as Exhibits and Attachments, may be based on the underlying claim constructions and/or interpretations in Plaintiff's Infringement Contentions, to the extent such constructions and/or interpretations are understood by Defendants. Defendants do not concede that any such constructions or interpretations by Plaintiff are proper or correct, and expressly reserve the right to contest any such constructions.

Throughout the attached Exhibits and Attachments, Defendants provide examples of where references disclose subject matter recited in preambles, without regard to whether the preambles are properly considered to be limitations of the Asserted Claims. Defendants reserve the right to argue, at the appropriate stage of this case, that the preambles are or are not limitations. Further, the fact that Defendants provide examples of any limitation does not mean that Defendants believe that the limitation is defined, is supported by a written description in the specification, is enabled, or otherwise comports with the requirements of the patent statute, including, but not limited to, 35 U.S.C. § 112.

Nothing disclosed herein is an admission or acknowledgement that any of Defendants' products or services infringes any of the Asserted Claims. Defendants reserve the right to supplement, modify, or otherwise amend these Invalidity Contentions, including based on the Court's claim construction rulings or opinions or the parties' positions or arguments taken in connection with the claim construction process. Moreover, Defendants reserve the right to rely on any disclosures in the accompanying P.R. 3-4(b) production as it believes necessary in view of positions Plaintiff may take with respect to the scope and meaning of the Asserted Claims.

## IV. P.R. 3-3(a) – IDENTIFICATION OF PRIOR ART[2,3]

### A. Prior Art for ’262 Patent

#### 1. Prior Art Patents for ’262 Patent

| Patent | Date of Issue/Publication | Filing Date |
|---|---|---|
| US2010/0260159 titled “Physical layer frame format for WLAN” to Zhang et al. (“Zhang ’159”) | October 14, 2010 | April 12, 2010 |
| U.S. Patent 7,599,332 titled “Modified preamble structure for IEEE 802.11a extensions to allow for coexistence and interoperability between 802.11a devices and higher data rate, MIMO or otherwise extended devices” to Zelst et al. (“Zelst”) | October 6, 2009 | May 27, 2005 |
| U.S. 2008/0212696 titled “Radio-Communication Device and Radio-Communication Method” to Takahashi et al. (“Takahashi”) | September 4, 2008 | November 14, 2007 |
| U.S. 2005/0169261 titled “Method of signaling the length of OFDM WLAN packets” to Williams et al. (“Williams”) | August 4, 2005 | August 5, 2004 |
| U.S. 8,018,975 titled “Method and system for performing synchronization in OFDM systems” to Ma et al. (“Ma”) | September 13, 2011 | October 2, 2006 |

[2] Defendants also hereby identify any systems or products that embody the technology described in any patent or publication identified in these Invalidity Contentions. Defendants reserve the right to rely on any documents or other evidence regarding any such systems.

[3] Additionally, Defendants identify and incorporate by reference all prior art references identified during the prosecution history of the asserted patents, including any reference cited on the face of the asserted patents, any references disclosed by the applicants during prosecution in information disclosure statements, and any references identified or cited by the examiner as part of any office action relating to the asserted patents or to the applications which ultimately lead to the issuance of the asserted patents.

| Patent | Date of Issue/Publication | Filing Date |
|---|---|---|
| U.S. 9,313,067 titled "Mult—bandwidth communication system using a shared broadband processor" to Soliman ("Soliman") | April 12, 2016 | August 14, 2007 |
| U.S. 8,675,754 titled "Hybrid modulation schemes used in data communication" to Yonge et al. ("Yonge") | March 18, 2014 | August 19, 2010 |
| U.S. 7,349,436 titled "Systems and methods for high-throughput wideband wireless local area network communications" to Maltsev et al. ("Maltsev") | March 25, 2008 | September 30, 2003 |
| U.S. 7,903,755 titled "Method and apparatus for preamble training with shortened long training field in a multiple antenna communication system" to Mujtaba ("Mujtaba") | March 8, 2011 | August 6, 2007 |

### 2. Prior Art Publications for '262 Patent

| Publication | Author | Publication Date |
|---|---|---|
| The 802.11n MIMO-OFDM Standard for Wireless LAN and Beyond ("Van Nee"). | Van Nee et al, Wireless Personal Communications volume 37, pages445–453 (2006) | June 2, 2006 |
| ITU-T Recommendation G.9960 - Draft generation home Networking transceivers (the "G.9960 Draft") | Telecommunication Standardization Sector of the International Telecommunication Union (ITU) | August 17, 2009 |
| G.hn: Extended PHY frame header, ITU-T SGJ 5/Q4 09XC-119 ("Schrum") | Sid Schrum, Intellon Corporation | July 27, 2009 |
| G.hn: Using Two Symbols for the Header of a PHY frame on Coax" ITU-T SGJ 5/Q4 09XC-l 19 ("Kol") | Boaz Kol, Copergate | July 27, 2009 |
| G.hn: 09CC-R12 HomePlug AV interoperability updates" | Les Brown, Infineon Technologies USA | August 20, 2009 |

| Publication | Author | Publication Date |
|---|---|---|
| ITU-T 09CC-062R1 (”Brown”) | | |
| IEEE P802.11 Wireless LANs Joint Proposal: High throughput extension to the 802.11 Standard: PHY (“2006 802.11n Joint PHY Proposal”) | Document No. IEEE 802.11-05/1102r4 | January 13, 2006 |
| IEEE 802.11 Wireless LANs TGn Sync Proposal Technical Specification (“2005 802.11n TGn Sync Specification”) | Document No. IEEE 802.11-04/0889r6 | May 18, 2005 |
| PHY Updates to TGn Sync Proposal (“2005 TGn Sync PHY Updates”) | Document No. IEEE 802.11-05/418r0 | May 16, 2005 |
| TGn Sync Complete Proposal (“2005 TGn Sync Proposal”) | Document No. IEEE 802.11-04/888r9 | March 4, 2005 |
| WWiSE Proposal: High Throughput Extension to the 802.11 Standard (“WWiSE 2005”) | Document No. IEEE 802.11-05/0149r5 | March 18, 2005 |
| TGn Sync Proposal (“TGnSync 2004”) | Document No. IEEE 802.11-04/888r0 | August 13, 2004 |

**3. Derivation Under 35 U.S.C. § 102(f)**

P.R. 3-2(b) requires Plaintiff to produce, contemporaneously with its Disclosure of Asserted Claims and Infringement Contentions,” “[a]ll documents evidencing the conception, reduction to practice, design, and development of each claimed invention, which were created on or before the date of application for the patent in suit or the priority date identified pursuant to P.R. 3-1(e), whichever is earlier.” Other than copies of the Asserted Patents and their file histories, Plaintiff did not produce any documents pursuant to P.R. 3-2(b) regarding the alleged invention, conception, or reduction to practice of the Asserted Claims. To the extent discovery reveals that AX Wireless; any related subsidiaries or entities; either of the named inventors of the Asserted Patents, Mr. Marcos Tzannes and/or Mr. Joon Bae Kim; Applied Transform and/or or any other entities affiliated with either of the named inventors improperly derived the alleged inventions or

any part of the alleged inventions pursuant to pre-AIA U.S.C. § 102(f) from another person or entity, Defendants reserve the right to amend their invalidity contentions with the name(s) of the person(s) or entities from whom and the circumstances under which the alleged inventions or any part(s) of the alleged inventions were derived. 35 U.S.C. § 102(f) states that "[a] person shall be entitled to a patent unless … he did not himself invent the subject matter sought to be patented." To succeed on an improper derivation claim, a patent challenger may show: (1) prior conception by another, and (2) communication of that conception to a named inventor. *Gambro Lundia AB v. Baxter Healthcare Corp.*, 110 F.3d 1573, 1576 (Fed. Cir. 1997). For example, Defendants intend to seek discovery on the development and conception of IEEE's drafts and proposals for various 802.11 standards, including the 802.11ax standard, as well as any communications and participation of the named inventors and/or the above-referenced affiliated entities in relevant standard setting bodies such as the IEEE and/or the WiFi Alliance.

## B. Prior Art for '566 Patent

### 1. Prior Art Patents for '566 Patent

| Patent No. | Date of Issue/Publication | Filing Date |
|---|---|---|
| US2010/0260159 titled "Physical layer frame format for WLAN" to Zhang et al. ("Zhang '159") | October 14, 2010 | April 12, 2010 |
| U.S. Patent 7,599,332 titled "Modified preamble structure for IEEE 802.11a extensions to allow for coexistence and interoperability between 802.11a devices and higher data rate, MIMO or otherwise extended devices" to Zelst et al. ("Zelst") | October 6, 2009 | May 27, 2005 |
| U.S. 2008/0212696 titled "Radio-Communication Device and Radio-Communication Method" to | September 4, 2008 | November 14, 2007 |

| Patent No. | Date of Issue/Publication | Filing Date |
|---|---|---|
| Takahashi et al. (“Takahashi”) | | |
| U.S. 2005/0169261 titled “Method of signaling the length of OFDM WLAN packets” to Williams et al. (“Williams”) | August 4, 2005 | August 5, 2004 |
| U.S. 8,018,975 titled “Method and system for performing synchronization in OFDM systems” to Ma et al. (“Ma”) | September 13, 2011 | October 2, 2006 |
| U.S. 9,313,067 titled “Mult—bandwidth communication system using a shared broadband processor” to Soliman (“Soliman”) | April 12, 2016 | August 14, 2007 |
| U.S. 8,675,754 titled “Hybrid modulation schemes used in data communication” to Yonge et al. (“Yonge”) | March 18, 2014 | August 19, 2010 |
| U.S. 7,349,436 titled “Systems and methods for high-throughput wideband wireless local area network communications” to Maltsev et al (“Maltsev”) | March 25, 2008 | September 30, 2003 |
| U.S. 7,903,755 titled “Method and apparatus for preamble training with shortened long training field in a multiple antenna communication system” to Mujtaba (“Mujtaba”) | March 8, 2011 | August 6, 2007 |
| US2016/0056991 titled “Method and apparatus for generating a PHY data unit” to Zhang et al. (“Zhang ’991) | February 25, 2016 | November 2, 2015 |

## 2. Prior Art Publications for ’566 Patent

| Publication | Author | Publication Date |
|---|---|---|
| The 802.11n MIMO-OFDM Standard for Wireless LAN and Beyond (“Van Nee”). | Van Nee et al, Wireless Personal Communications volume 37, pages445–453 (2006) | June 2, 2006 |
| ITU-T Recommendation G.9960 - Draft generation home Networking transceivers (the “G.9960 Draft”) | Telecommunication Standardization Sector of the International Telecommunication Union (ITU) | August 17, 2009 |
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| G.hn: Using Two Symbols for the Header of a PHY frame on Coax” ITU-T SGJ 5/Q4 09XC-l 19 (“Kol”) | Boaz Kol, Copergate | July 27, 2009 |
| G.hn: 09CC-R12 HomePlug AV interoperability updates” ITU-T 09CC-062R1 (”Brown”) | Les Brown, Infineon Technologies USA | August 20, 2009 |
| IEEE P802.11 Wireless LANs Joint Proposal: High throughput extension to the 802.11 Standard: PHY (“2006 802.11n Joint PHY Proposal”) | Document No. IEEE 802.11-05/1102r4 | January 13, 2006 |
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| WWiSE Proposal: High Throughput Extension to the 802.11 Standard (“WWiSE 2005”) | Document No. IEEE 802.11-05/0149r5 | March 18, 2005 |
| TGn Sync Proposal (“TGnSync 2004”) | Document No. IEEE 802.11-04/888r0 | August 13, 2004 |

### 3. Derivation Under 35 U.S.C. § 102(f)

P.R. 3-2(b) requires Plaintiff to produce, contemporaneously with its Disclosure of Asserted Claims and Infringement Contentions," "[a]ll documents evidencing the conception, reduction to practice, design, and development of each claimed invention, which were created on or before the date of application for the patent in suit or the priority date identified pursuant to P.R. 3-1(e), whichever is earlier." Other than copies of the Asserted Patents and their file histories, Plaintiff did not produce any documents pursuant to P.R. 3-2(b) regarding the alleged invention, conception, or reduction to practice of the Asserted Claims. To the extent discovery reveals that AX Wireless; any related subsidiaries or entities; either of the named inventors of the Asserted Patents, Mr. Marcos Tzannes and/or Mr. Joon Bae Kim; Applied Transform and/or or any other entities affiliated with either of the named inventors improperly derived the alleged inventions or any part of the alleged inventions pursuant to pre-AIA U.S.C. § 102(f) from another person or entity, Defendants reserve the right to amend their invalidity contentions with the name(s) of the person(s) or entities from whom and the circumstances under which the alleged inventions or any part(s) of the alleged inventions were derived. 35 U.S.C. § 102(f) states that "[a] person shall be entitled to a patent unless … he did not himself invent the subject matter sought to be patented." To succeed on an improper derivation claim, a patent challenger may show: (1) prior conception by another, and (2) communication of that conception to a named inventor. *Gambro Lundia AB v. Baxter Healthcare Corp.*, 110 F.3d 1573, 1576 (Fed. Cir. 1997). For example, Defendants intend to seek discovery on the development and conception of IEEE's drafts and proposals for various 802.11 standards, including the 802.11ax standard, as well as any communications and participation of the named inventors and/or the above-referenced affiliated entities in relevant standard setting bodies such as the IEEE and/or the WiFi Alliance.

## C. Prior Art for ’361 Patent

### 1. Prior Art Patents for ’361 Patent

| Patent No. | Date of Issue/Publication | Filing Date |
|---|---|---|
| U.S. 8,675,754 titled “Hybrid modulation schemes used in data communication” to Yonge et al. (“Yonge”) | March 18, 2014 | August 19, 2010 |
| U.S. 7,349,436 titled “Systems and methods for high-throughput wideband wireless local area network communications” to Maltsev et al (“Maltsev”) | March 25, 2008 | September 30, 2003 |
| U.S. 7,903,755 titled “Method and apparatus for preamble training with shortened long training field in a multiple antenna communication system” to Mujtaba (“Mujtaba”) | March 8, 2011 | August 6, 2007 |
| US2010/0260159 titled “Physical layer frame format for WLAN” to Zhang et al. (“Zhang ’159”) | October 14, 2010 | April 12, 2010 |
| US2016/0255178 titled “Method of detecting packet bandwidth in a wireless OFDM network with multiple overlapped frequency bands” to Kim (“Kim 2016”) | September 1, 2016 | May 6, 2016 |
| U.S. 2008/0212696 titled “Radio-Communication Device and Radio-Communication Method” to Takahashi et al. (“Takahashi”) | September 4, 2008 | November 14, 2007 |
| US2004/0151109 titled “Time-frequency interleaved orthogonal frequency division multiplexing ultra wide band physical layer” to Batra et al. (“Batra”) | August 5, 2004 | October 18, 2003 |
| U.S. 8,565,326 titled “System and method for bit allocation | October 22, 2013 | April 16, 2009 |

| Patent No. | Date of Issue/Publication | Filing Date |
|---|---|---|
| and interleaving" to Kao et al. ("Kao") | | |
| US2016/0056991 titled "Method and apparatus for generating a PHY data unit" to Zhang et al. ("Zhang '991) | February 25, 2016 | November 2, 2015 |

**2. Prior Art Publications for '361 Patent**

| Publication | Author | Publication Date |
|---|---|---|
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| TGn Sync Proposal ("TGnSync 2004") | Document No. IEEE 802.11-04/888r0 | August 13, 2004 |
| PHY Updates to TGn Sync Proposal ("2005 TGn Sync PHY Updates") | Document No. IEEE 802.11-05/418r0 | May 16, 2005 |
| TGn Sync Complete Proposal ("2005 TGn Sync Proposal") | Document No. IEEE 802.11-04/888r9 | March 4, 2005 |
| WWiSE Proposal: High Throughput Extension to the 802.11 Standard ("WWiSE 2005") | Document No. IEEE 802.11-05/0149r5 | March 18, 2005 |

**3. Derivation Under 35 U.S.C. § 102(f)**

P.R. 3-2(b) requires Plaintiff to produce, contemporaneously with its Disclosure of Asserted Claims and Infringement Contentions," "[a]ll documents evidencing the conception, reduction to practice, design, and development of each claimed invention, which were created on or before the date of application for the patent in suit or the priority date identified pursuant to P.R. 3-1(e), whichever is earlier." Other than copies of the Asserted Patents and their file histories,

Plaintiff did not produce any documents pursuant to P.R. 3-2(b) regarding the alleged invention, conception, or reduction to practice of the Asserted Claims. To the extent discovery reveals that AX Wireless; any related subsidiaries or entities; either of the named inventors of the Asserted Patents, Mr. Marcos Tzannes and/or Mr. Joon Bae Kim; Applied Transform and/or or any other entities affiliated with either of the named inventors improperly derived the alleged inventions or any part of the alleged inventions pursuant to pre-AIA U.S.C. § 102(f) from another person or entity, Defendants reserve the right to amend their invalidity contentions with the name(s) of the person(s) or entities from whom and the circumstances under which the alleged inventions or any part(s) of the alleged inventions were derived. 35 U.S.C. § 102(f) states that "[a] person shall be entitled to a patent unless … he did not himself invent the subject matter sought to be patented." To succeed on an improper derivation claim, a patent challenger may show: (1) prior conception by another, and (2) communication of that conception to a named inventor. *Gambro Lundia AB v. Baxter Healthcare Corp.*, 110 F.3d 1573, 1576 (Fed. Cir. 1997). For example, Defendants intend to seek discovery on the development and conception of IEEE's drafts and proposals for various 802.11 standards, including the 802.11ax standard, as well as any communications and participation of the named inventors and/or the above-referenced affiliated entities in relevant standard setting bodies such as the IEEE and/or the WiFi Alliance.

**D. Prior Art for '707 Patent**

**1. Prior Art Patents for '707 Patent**

| Patent No. | Date of Issue/Publication | Filing Date |
|---|---|---|
| U.S. 8,675,754 titled "Hybrid modulation schemes used in data communication" to Yonge et al. ("Yonge") | March 18, 2014 | August 19, 2010 |
| U.S. 7,349,436 titled "Systems and methods for high-throughput wideband wireless local area network | March 25, 2008 | September 30, 2003 |

| Patent No. | Date of Issue/Publication | Filing Date |
|---|---|---|
| communications" to Maltsev et al ("Maltsev") | | |
| U.S. 7,903,755 titled "Method and apparatus for preamble training with shortened long training field in a multiple antenna communication system" to Mujtaba ("Mujtaba") | March 8, 2011 | August 6, 2007 |
| US2010/0260159 titled "Physical layer frame format for WLAN" to Zhang et al. ("Zhang '159") | October 14, 2010 | April 12, 2010 |
| US2016/0255178 titled "Method of detecting packet bandwidth in a wireless OFDM network with multiple overlapped frequency bands" to Kim ("Kim 2016") | September 1, 2016 | May 6, 2016 |
| U.S. 2008/0212696 titled "Radio-Communication Device and Radio-Communication Method" to Takahashi et al. ("Takahashi") | September 4, 2008 | November 14, 2007 |
| US2004/0151109 titled "Time-frequency interleaved orthogonal frequency division multiplexing ultra wide band physical layer" to Batra et al. ("Batra") | August 5, 2004 | October 18, 2003 |
| U.S. 8,565,326 titled "System and method for bit allocation and interleaving" to Kao et al. ("Kao") | October 22, 2013 | April 16, 2009 |
| US2016/0056991 titled "Method and apparatus for generating a PHY data unit" to Zhang et al. ("Zhang '991) | February 25, 2016 | November 2, 2015 |

### 2. Prior Art Publications for ’707 Patent

| Publication | Author | Publication Date |
|---|---|---|
| IEEE P802.11 Wireless LANs Joint Proposal: High throughput extension to the 802.11 Standard: PHY (“2006 802.11n Joint PHY Proposal”) | Document No. IEEE 802.11-05/1102r4 | January 13, 2006 |
| IEEE 802.11 Wireless LANs TGn Sync Proposal Technical Specification (“2005 802.11n TGn Sync Specification”) | Document No. IEEE 802.11-04/0889r6 | May 18, 2005 |
| TGn Sync Proposal (“TGnSync 2004”) | Document No. IEEE 802.11-04/888r0 | August 13, 2004 |
| PHY Updates to TGn Sync Proposal (“2005 TGn Sync PHY Updates”) | Document No. IEEE 802.11-05/418r0 | May 16, 2005 |
| TGn Sync Complete Proposal (“2005 TGn Sync Proposal”) | Document No. IEEE 802.11-04/888r9 | March 4, 2005 |
| WWiSE Proposal: High Throughput Extension to the 802.11 Standard (“WWiSE 2005”) | Document No. IEEE 802.11-05/0149r5 | March 18, 2005 |

### 3. Derivation Under 35 U.S.C. § 102(f)

P.R. 3-2(b) requires Plaintiff to produce, contemporaneously with its Disclosure of Asserted Claims and Infringement Contentions,” “[a]ll documents evidencing the conception, reduction to practice, design, and development of each claimed invention, which were created on or before the date of application for the patent in suit or the priority date identified pursuant to P.R. 3-1(e), whichever is earlier.” Other than copies of the Asserted Patents and their file histories, Plaintiff did not produce any documents pursuant to P.R. 3-2(b) regarding the alleged invention, conception, or reduction to practice of the Asserted Claims. To the extent discovery reveals that AX Wireless; any related subsidiaries or entities; either of the named inventors of the Asserted Patents, Mr. Marcos Tzannes and/or Mr. Joon Bae Kim; Applied Transform and/or or any other

entities affiliated with either of the named inventors improperly derived the alleged inventions or any part of the alleged inventions pursuant to pre-AIA U.S.C. § 102(f) from another person or entity, Defendants reserve the right to amend their invalidity contentions with the name(s) of the person(s) or entities from whom and the circumstances under which the alleged inventions or any part(s) of the alleged inventions were derived. 35 U.S.C. § 102(f) states that "[a] person shall be entitled to a patent unless … he did not himself invent the subject matter sought to be patented." To succeed on an improper derivation claim, a patent challenger may show: (1) prior conception by another, and (2) communication of that conception to a named inventor. *Gambro Lundia AB v. Baxter Healthcare Corp.*, 110 F.3d 1573, 1576 (Fed. Cir. 1997). For example, Defendants intend to seek discovery on the development and conception of IEEE's drafts and proposals for various 802.11 standards, including the 802.11ax standard, as well as any communications and participation of the named inventors and/or the above-referenced affiliated entities in relevant standard setting bodies such as the IEEE and/or the WiFi Alliance.

## E. Prior Art for '449 Patent

### 1. Prior Art Patents for '449 Patent

| Patent No. | Date of Issue/Publication | Filing Date |
|---|---|---|
| U.S. 8,675,754 titled "Hybrid modulation schemes used in data communication" to Yonge et al. ("Yonge") | March 18, 2014 | August 19, 2010 |
| U.S. 7,349,436 titled "Systems and methods for high-throughput wideband wireless local area network communications" to Maltsev et al ("Maltsev") | March 25, 2008 | September 30, 2003 |
| U.S. 7,903,755 titled "Method and apparatus for preamble training with shortened long training field in a multiple antenna | March 8, 2011 | August 6, 2007 |

| Patent No. | Date of Issue/Publication | Filing Date |
|---|---|---|
| communication system" to Mujtaba ("Mujtaba") | | |
| US2010/0260159 titled "Physical layer frame format for WLAN" to Zhang et al. ("Zhang '159") | October 14, 2010 | April 12, 2010 |
| US2016/0255178 titled "Method of detecting packet bandwidth in a wireless OFDM network with multiple overlapped frequency bands" to Kim ("Kim 2016") | September 1, 2016 | May 6, 2016 |
| U.S. 2008/0212696 titled "Radio-Communication Device and Radio-Communication Method" to Takahashi et al. ("Takahashi") | September 4, 2008 | November 14, 2007 |
| US2004/0151109 titled "Time-frequency interleaved orthogonal frequency division multiplexing ultra wide band physical layer" to Batra et al. ("Batra") | August 5, 2004 | October 18, 2003 |
| U.S. 8,565,326 titled "System and method for bit allocation and interleaving" to Kao et al. ("Kao") | October 22, 2013 | April 16, 2009 |
| US2016/0056991 titled "Method and apparatus for generating a PHY data unit" to Zhang et al. ("Zhang '991) | February 25, 2016 | November 2, 2015 |

### 2. Prior Art Publications for '449 Patent

| Publication | Author | Publication Date |
|---|---|---|
| IEEE P802.11 Wireless LANs Joint Proposal: High throughput extension to the 802.11 Standard: PHY ("2006 802.11n Joint PHY Proposal") | Document No. IEEE 802.11-05/1102r4 | January 13, 2006 |
| IEEE 802.11 Wireless LANs TGn Sync Proposal Technical | Document No. IEEE 802.11-04/0889r6 | May 18, 2005 |

| Publication | Author | Publication Date |
|---|---|---|
| Specification ("2005 802.11n TGn Sync Specification") | | |
| TGn Sync Proposal ("TGnSync 2004") | Document No. IEEE 802.11-04/888r0 | August 13, 2004 |
| PHY Updates to TGn Sync Proposal ("2005 TGn Sync PHY Updates") | Document No. IEEE 802.11-05/418r0 | May 16, 2005 |
| TGn Sync Complete Proposal ("2005 TGn Sync Proposal") | Document No. IEEE 802.11-04/888r9 | March 4, 2005 |
| WWiSE Proposal: High Throughput Extension to the 802.11 Standard ("WWiSE 2005") | Document No. IEEE 802.11-05/0149r5 | March 18, 2005 |

### 3. Derivation Under 35 U.S.C. § 102(f)

P.R. 3-2(b) requires Plaintiff to produce, contemporaneously with its Disclosure of Asserted Claims and Infringement Contentions," "[a]ll documents evidencing the conception, reduction to practice, design, and development of each claimed invention, which were created on or before the date of application for the patent in suit or the priority date identified pursuant to P.R. 3-1(e), whichever is earlier." Other than copies of the Asserted Patents and their file histories, Plaintiff did not produce any documents pursuant to P.R. 3-2(b) regarding the alleged invention, conception, or reduction to practice of the Asserted Claims. To the extent discovery reveals that AX Wireless; any related subsidiaries or entities; either of the named inventors of the Asserted Patents, Mr. Marcos Tzannes and/or Mr. Joon Bae Kim; Applied Transform and/or or any other entities affiliated with either of the named inventors improperly derived the alleged inventions or any part of the alleged inventions pursuant to pre-AIA U.S.C. § 102(f) from another person or entity, Defendants reserve the right to amend their invalidity contentions with the name(s) of the person(s) or entities from whom and the circumstances under which the alleged inventions or any part(s) of the alleged inventions were derived. 35 U.S.C. § 102(f) states that "[a] person shall be entitled to a patent unless … he did not himself invent the subject matter sought to be patented."

To succeed on an improper derivation claim, a patent challenger may show: (1) prior conception by another, and (2) communication of that conception to a named inventor. *Gambro Lundia AB v. Baxter Healthcare Corp.*, 110 F.3d 1573, 1576 (Fed. Cir. 1997). For example, Defendants intend to seek discovery on the development and conception of IEEE's drafts and proposals for various 802.11 standards, including the 802.11ax standard, as well as any communications and participation of the named inventors and/or the above-referenced affiliated entities in relevant standard setting bodies such as the IEEE and/or the WiFi Alliance.

## F. Prior Art for '459 Patent

### 1. Prior Art Patents for '459 Patent

| Patent No. | Date of Issue/Publication | Filing Date |
|---|---|---|
| U.S. 8,675,754 titled "Hybrid modulation schemes used in data communication" to Yonge et al. ("Yonge") | March 18, 2014 | August 19, 2010 |
| U.S. 7,349,436 titled "Systems and methods for high-throughput wideband wireless local area network communications" to Maltsev et al ("Maltsev") | March 25, 2008 | September 30, 2003 |
| U.S. 7,903,755 titled "Method and apparatus for preamble training with shortened long training field in a multiple antenna communication system" to Mujtaba ("Mujtaba") | March 8, 2011 | August 6, 2007 |
| US2010/0260159 titled "Physical layer frame format for WLAN" to Zhang et al. ("Zhang '159") | October 14, 2010 | April 12, 2010 |
| US2016/0255178 titled "Method of detecting packet bandwidth in a wireless OFDM network with multiple overlapped frequency bands" to Kim ("Kim 2016") | September 1, 2016 | May 6, 2016 |

| Patent No. | Date of Issue/Publication | Filing Date |
|---|---|---|
| U.S. 2008/0212696 titled "Radio-Communication Device and Radio-Communication Method" to Takahashi et al. ("Takahashi") | September 4, 2008 | November 14, 2007 |
| US2004/0151109 titled "Time-frequency interleaved orthogonal frequency division multiplexing ultra wide band physical layer" to Batra et al. ("Batra") | August 5, 2004 | October 18, 2003 |
| U.S. 8,565,326 titled "System and method for bit allocation and interleaving" to Kao et al. ("Kao") | October 22, 2013 | April 16, 2009 |
| US2016/0056991 titled "Method and apparatus for generating a PHY data unit" to Zhang et al. ("Zhang '991) | February 25, 2016 | November 2, 2015 |

**2. Prior Art Publications for '459 Patent**

| Publication | Author | Publication Date |
|---|---|---|
| IEEE P802.11 Wireless LANs Joint Proposal: High throughput extension to the 802.11 Standard: PHY ("2006 802.11n Joint PHY Proposal") | Document No. IEEE 802.11-05/1102r4 | January 13, 2006 |
| IEEE 802.11 Wireless LANs TGn Sync Proposal Technical Specification ("2005 802.11n TGn Sync Specification") | Document No. IEEE 802.11-04/0889r6 | May 18, 2005 |
| TGn Sync Proposal ("TGnSync 2004") | Document No. IEEE 802.11-04/888r0 | August 13, 2004 |
| PHY Updates to TGn Sync Proposal ("2005 TGn Sync PHY Updates") | Document No. IEEE 802.11-05/418r0 | May 16, 2005 |
| TGn Sync Complete Proposal ("2005 TGn Sync Proposal") | Document No. IEEE 802.11-04/888r9 | March 4, 2005 |
| WWiSE Proposal: High Throughput Extension to the | Document No. IEEE 802.11-05/0149r5 | March 18, 2005 |

| Publication | Author | Publication Date |
|---|---|---|
| 802.11 Standard ("WWiSE 2005") | | |

### 3. Derivation Under 35 U.S.C. § 102(f)

P.R. 3-2(b) requires Plaintiff to produce, contemporaneously with its Disclosure of Asserted Claims and Infringement Contentions," "[a]ll documents evidencing the conception, reduction to practice, design, and development of each claimed invention, which were created on or before the date of application for the patent in suit or the priority date identified pursuant to P.R. 3-1(e), whichever is earlier." Other than copies of the Asserted Patents and their file histories, Plaintiff did not produce any documents pursuant to P.R. 3-2(b) regarding the alleged invention, conception, or reduction to practice of the Asserted Claims. To the extent discovery reveals that AX Wireless; any related subsidiaries or entities; either of the named inventors of the Asserted Patents, Mr. Marcos Tzannes and/or Mr. Joon Bae Kim; Applied Transform and/or or any other entities affiliated with either of the named inventors improperly derived the alleged inventions or any part of the alleged inventions pursuant to pre-AIA U.S.C. § 102(f) from another person or entity, Defendants reserve the right to amend their invalidity contentions with the name(s) of the person(s) or entities from whom and the circumstances under which the alleged inventions or any part(s) of the alleged inventions were derived. 35 U.S.C. § 102(f) states that "[a] person shall be entitled to a patent unless … he did not himself invent the subject matter sought to be patented." To succeed on an improper derivation claim, a patent challenger may show: (1) prior conception by another, and (2) communication of that conception to a named inventor. *Gambro Lundia AB v. Baxter Healthcare Corp.*, 110 F.3d 1573, 1576 (Fed. Cir. 1997). For example, Defendants intend to seek discovery on the development and conception of IEEE's drafts and proposals for various 802.11 standards, including the 802.11ax standard, as well as any communications and participation of the named inventors and/or the above-referenced affiliated entities in relevant

standard setting bodies such as the IEEE and/or the WiFi Alliance.

## G. Prior Art for ’272 Patent

### 1. Prior Art Patents for ’272 Patent

| Patent No. | Date of Issue/Publication | Filing Date |
|---|---|---|
| U.S. 8,675,754 titled “Hybrid modulation schemes used in data communication” to Yonge et al. (“Yonge”) | March 18, 2014 | August 19, 2010 |
| U.S. 7,349,436 titled “Systems and methods for high-throughput wideband wireless local area network communications” to Maltsev et al (“Maltsev”) | March 25, 2008 | September 30, 2003 |
| U.S. 7,903,755 titled “Method and apparatus for preamble training with shortened long training field in a multiple antenna communication system” to Mujtaba (“Mujtaba”) | March 8, 2011 | August 6, 2007 |
| US2010/0260159 titled “Physical layer frame format for WLAN” to Zhang et al. (“Zhang ’159”) | October 14, 2010 | April 12, 2010 |
| US2016/0255178 titled “Method of detecting packet bandwidth in a wireless OFDM network with multiple overlapped frequency bands” to Kim (“Kim 2016”) | September 1, 2016 | May 6, 2016 |
| U.S. 2008/0212696 titled “Radio-Communication Device and Radio-Communication Method” to Takahashi et al. (“Takahashi”) | September 4, 2008 | November 14, 2007 |
| US2004/0151109 titled “Time-frequency interleaved orthogonal frequency division multiplexing ultra wide band physical layer” to Batra et al. (“Batra”) | August 5, 2004 | October 18, 2003 |

| Patent No. | Date of Issue/Publication | Filing Date |
|---|---|---|
| U.S. 8,565,326 titled "System and method for bit allocation and interleaving" to Kao et al. ("Kao") | October 22, 2013 | April 16, 2009 |
| US2016/0056991 titled "Method and apparatus for generating a PHY data unit" to Zhang et al. ("Zhang '991) | February 25, 2016 | November 2, 2015 |

**2. Prior Art Publications for '272 Patent**

| Publication | Author | Publication Date |
|---|---|---|
| IEEE P802.11 Wireless LANs Joint Proposal: High throughput extension to the 802.11 Standard: PHY ("2006 802.11n Joint PHY Proposal") | Document No. IEEE 802.11-05/1102r4 | January 13, 2006 |
| IEEE 802.11 Wireless LANs TGn Sync Proposal Technical Specification ("2005 802.11n TGn Sync Specification") | Document No. IEEE 802.11-04/0889r6 | May 18, 2005 |
| TGn Sync Proposal ("TGnSync 2004") | Document No. IEEE 802.11-04/888r0 | August 13, 2004 |
| PHY Updates to TGn Sync Proposal ("2005 TGn Sync PHY Updates") | Document No. IEEE 802.11-05/418r0 | May 16, 2005 |
| TGn Sync Complete Proposal ("2005 TGn Sync Proposal") | Document No. IEEE 802.11-04/888r9 | March 4, 2005 |
| WWiSE Proposal: High Throughput Extension to the 802.11 Standard ("WWiSE 2005") | Document No. IEEE 802.11-05/0149r5 | March 18, 2005 |

**3. Derivation Under 35 U.S.C. § 102(f)**

P.R. 3-2(b) requires Plaintiff to produce, contemporaneously with its Disclosure of Asserted Claims and Infringement Contentions," "[a]ll documents evidencing the conception, reduction to practice, design, and development of each claimed invention, which were created on or before the date of application for the patent in suit or the priority date identified pursuant to

P.R. 3-1(e), whichever is earlier." Other than copies of the Asserted Patents and their file histories, Plaintiff did not produce any documents pursuant to P.R. 3-2(b) regarding the alleged invention, conception, or reduction to practice of the Asserted Claims. To the extent discovery reveals that AX Wireless; any related subsidiaries or entities; either of the named inventors of the Asserted Patents, Mr. Marcos Tzannes and/or Mr. Joon Bae Kim; Applied Transform and/or or any other entities affiliated with either of the named inventors improperly derived the alleged inventions or any part of the alleged inventions pursuant to pre-AIA U.S.C. § 102(f) from another person or entity, Defendants reserve the right to amend their invalidity contentions with the name(s) of the person(s) or entities from whom and the circumstances under which the alleged inventions or any part(s) of the alleged inventions were derived. 35 U.S.C. § 102(f) states that "[a] person shall be entitled to a patent unless … he did not himself invent the subject matter sought to be patented." To succeed on an improper derivation claim, a patent challenger may show: (1) prior conception by another, and (2) communication of that conception to a named inventor. *Gambro Lundia AB v. Baxter Healthcare Corp.*, 110 F.3d 1573, 1576 (Fed. Cir. 1997). For example, Defendants intend to seek discovery on the development and conception of IEEE's drafts and proposals for various 802.11 standards, including the 802.11ax standard, as well as any communications and participation of the named inventors and/or the above-referenced affiliated entities in relevant standard setting bodies such as the IEEE and/or the WiFi Alliance.

## H. Prior Art for '146 Patent

### 1. Prior Art Patents for '146 Patent

| Patent No. | Date of Issue/Publication | Filing Date |
|---|---|---|
| U.S. 10,637,706 titled "Transmission method and transmission apparatus for packet format detection" to Huang et al. ("Huang") | April 28, 2020 | March 22, 2018 |

| Patent No. | Date of Issue/Publication | Filing Date |
|---|---|---|
| U.S. 10,122,563 titled "Orthogonal Frequency Division Multiplex Data Unit Generation and Decoding" to Sun et al. ("Sun") | November 6, 2018 | June 17, 2016 |
| U.S. 8,276,054 titled "Wireless communication system, wireless communication apparatus, wireless communication method, and computer program to Morioka et al. ("Morioka"). | September 25, 2012 | May 8, 2008 |
| JP 2005/223388 titled "Wireless communication apparatus and program" to Nakagawa et al. ("Nakagawa"). | August 18, 2005 | February 3, 2004 |
| U.S. 2006/0050705 titled "Distinguishing between protocol packets in a wireless communication system" to Kim. ("Kim"). | March 9, 2006 | August 5, 2005 |
| U.S. 8,018,975 titled "Method and system for perfroming synchronization in OFDM systems" to Ma et al. ("Ma") | September 13, 2011 | October 2, 2006 |
| U.S. 7,903,755 titled "Method and apparatus for preamble training with shortened long training field in a multiple antenna communication system" to Mujtaba ("Mujtaba") | March 8, 2011 | August 6, 2007 |
| U.S. 2005/0141407 titled "Multiple-antenna communication systems and methods for communicating in wireless local area networks that include single-antenna communication devices" to Sandhu ("Sandhu"). | June 30, 2005 | December 30, 2003 |

| Patent No. | Date of Issue/Publication | Filing Date |
|---|---|---|
| U.S. 7,599,332 titled "Modified preamble structure for IEEE 802.11a extensions to allow for coexistence and interoperability between 802.11a devices and higher data rate, MIMO or otherwise extended devices" to Zelst et al. ("Zelst") | October 6, 2009 | May 27, 2005 |
| U.S. 7,961,696 titled "Preambles in OFDMA system" to Ma et al. ("Ma '696") | July 23, 2007 | June 14, 2011 |
| U.S. 8,675,754 titled "Hybrid modulation schemes used in data communication" to Yonge et al. ("Yonge") | March 18, 2014 | August 19, 2010 |
| U.S. 2010/0054223 titled "Physical Layer Data Unit Format" to Zhang et al. (Zhang '223 App) | August 26, 2009 | March 4, 2010 |

**2. Prior Art Publications for '146 Patent**

| Publication | Author | Publication Date |
|---|---|---|
| 40/20 MHz Interoperability for Robust, High Performance and Compatible 802.11n Systems ("40/20 MHz Interoperability for 802.11n Systems") | Document No. IEEE 802.11-04/0772r0 | July 2004 |
| IEEE 802.11 Wireless LANs TGn Sync Proposal Technical Specification ("2005 802.11n TGn Sync Specification") | Document No. IEEE 802.11-04/0889r6 | May 18, 2005 |
| TGn Sync Proposal ("TGnSync 2004") | Document No. IEEE 802.11-04/888r0 | August 13, 2004 |
| WWiSE Proposal: High Throughput Extension to the 802.11 Standard ("WWiSE 2005") | Document No. IEEE 802.11-05/0149r5 | March 18, 2005 |
| IEEE 802.11ax Standard ("Wi-Fi 6 Standard") | Institute of Electrical and Electronics Engineers | September 1, 2020 |

### 3. Derivation Under 35 U.S.C. § 102(f)

P.R. 3-2(b) requires Plaintiff to produce, contemporaneously with its Disclosure of Asserted Claims and Infringement Contentions," "[a]ll documents evidencing the conception, reduction to practice, design, and development of each claimed invention, which were created on or before the date of application for the patent in suit or the priority date identified pursuant to P.R. 3-1(e), whichever is earlier." Other than copies of the Asserted Patents and their file histories, Plaintiff did not produce any documents pursuant to P.R. 3-2(b) regarding the alleged invention, conception, or reduction to practice of the Asserted Claims. To the extent discovery reveals that AX Wireless; any related subsidiaries or entities; either of the named inventors of the Asserted Patents, Mr. Marcos Tzannes and/or Mr. Joon Bae Kim; Applied Transform and/or or any other entities affiliated with either of the named inventors improperly derived the alleged inventions or any part of the alleged inventions pursuant to pre-AIA U.S.C. § 102(f) from another person or entity, Defendants reserve the right to amend their invalidity contentions with the name(s) of the person(s) or entities from whom and the circumstances under which the alleged inventions or any part(s) of the alleged inventions were derived. 35 U.S.C. § 102(f) states that "[a] person shall be entitled to a patent unless … he did not himself invent the subject matter sought to be patented." To succeed on an improper derivation claim, a patent challenger may show: (1) prior conception by another, and (2) communication of that conception to a named inventor. *Gambro Lundia AB v. Baxter Healthcare Corp.*, 110 F.3d 1573, 1576 (Fed. Cir. 1997). For example, Defendants intend to seek discovery on the development and conception of IEEE's drafts and proposals for various 802.11 standards, including the 802.11ax standard, as well as any communications and participation of the named inventors and/or the above-referenced affiliated entities in relevant standard setting bodies such as the IEEE and/or the WiFi Alliance.

## V. STATE OF THE ART AND OBVIOUSNESS

The references identified above, as further described in the Exhibits, each disclose, either expressly or inherently, every element of the Asserted Claims of the identified Asserted Patent, thereby anticipating those claims and/or rendering obvious such Asserted Claims (including in combination with the knowledge of a person of ordinary skill in the art). To the extent Plaintiff contends that any reference does not anticipate or render obvious the Asserted Claims as set forth above, it would have been obvious to combine or modify that reference with concepts from other prior art, as explained throughout these Invalidity Contentions. In particular, for each limitation of the Asserted Claims that Plaintiff contends is not met by a particular reference, Defendants contend that the limitation (and claim as a whole) is obvious based on a combination of that particular reference with (1) any other primary reference disclosing that limitation, (2) the references identified in Section V.B below, (3) any statements made in the intrinsic record of such Asserted Patent, and/or (4) the knowledge of one of ordinary skill in the art (as explained in additional detail below).

Defendants do not yet have the benefit of Plaintiff's positions regarding the prior art in the current litigation, including what element(s), if any, Plaintiff contends are not disclosed by each prior art reference, whether Plaintiff contends that a reference is not in fact prior art, and whether Plaintiff contends that a person of ordinary skill in the art would not be motivated to combine specific references. Defendants reserve the right to supplement these obviousness positions (including identifying additional prior art combinations and the associated reasons to combine) in view of such positions and/or as discovery in the case, including expert discovery, progresses.

The information discussed in the prior art raised in these Invalidity Contentions (including all referenced listed in the P.R. 3-3(a) – Identification of Prior Art) forms part of the background knowledge of a person of ordinary skill in the art at the time each of the Asserted Patents was filed

and would have been used in determining whether and how to combine references to achieve the claimed invention(s), as discussed herein.[4] Indeed, the existence, nature, and content of each prior art reference, including the prior art references cited here, provide further evidence regarding the knowledge of a person of ordinary skill in the art at the relevant time. Defendants expressly reserve the right to rely on each of the prior art references, systems, concepts, and technologies discussed in these Invalidity Contentions, including to demonstrate that a particular claim element was known at the time of the Asserted Patents to a person of ordinary skill in the art, to show that the differences between a claimed invention and a prior art reference would have been obvious to a person of ordinary skill in the art, and to establish that a person of ordinary skill in the art would have been motivated to combine teachings of one or more references to achieve a claimed invention.

### A. General Motivations for Making Combinations of Prior Art

Defendants believe that no showing of a specific motivation to combine prior art is required to combine the references disclosed in the attached charts; there was a reason to make each combination, each combination of art would have produced no unexpected results, and each combination at most would simply represent a known alternative to one of ordinary skill in the art. *See KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 414–18 (2007) (rejecting the Federal Circuit's "rigid" application of the teaching, suggestion, or motivation to combine test instead espousing an "expansive and flexible" approach). As the Supreme Court has held, a person of ordinary skill in the art is "a person of ordinary creativity, not an automaton" and "in many cases a person of

[4] *See Randall Mfg. v. Rea*, 733 F.3d 1355, 1362 (Fed. Cir. 2013) (stating that "the knowledge [of a person of ordinary skill in the art] is part of the store of public knowledge that must be consulted when considering whether a claimed invention would have been obvious").

ordinary skill in the art will be able to fit the teachings of multiple patents together like a pieces of a puzzle." *Id*. at 420–21.

Nevertheless, in keeping with the Local Patent Rules, in addition to the information contained elsewhere in these contentions, Defendants identify exemplary combinations, motivations, and reasons to combine the cited art. Multiple teachings, suggestions, and/or reasons to modify any of the references and/or to combine any two or more of the references come from many sources, including the prior art (specific and as a whole), common knowledge, common sense, predictability, expectations, industry trends, design incentives or need, market demand or pressure, market forces, obvious to try, the nature of the problem faced, and/or knowledge possessed by one of ordinary skill in the art.[5] In addition, the patentee admits in the intrinsic record, including the specification and prosecution history of the Asserted Patents, that many of the claimed features were conventional and known in the art.

In general, a claimed invention is unpatentable if the differences between it and the prior art "are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art." 35 U.S.C. § 103(a); *Graham v. John Deere Co.*, 383 U.S. 1, 13–14 (1966). The ultimate determination of whether an invention is or is not obvious is a legal conclusion based on underlying factual inquiries including: "(1) the scope and content of the prior art; (2) the differences between the prior art and the claims; (3) the level of ordinary skill in the art at the time of invention; and (4) objective evidence of nonobviousness." *Miles Labs., Inc. v. Shandon, Inc.*, 997 F.2d 870, 877 (Fed. Cir. 1993).

*KSR International Co. v. Teleflex Inc., et al.,* 550 U.S. 398 (2007) ("*KSR*"), reaffirmed *Graham*, holding that a claimed invention can be obvious even if there is no teaching, suggestion,

[5] Defendants reserve the right to present qualified expert testimony on any or all of these items.

or motivation for combining the prior art to produce that invention. In determining whether a claim is obvious, "[o]ften, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue." *Id.* at 418. In determining whether a claim is obvious, "a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ." *Id.* When prior art elements are combined according to known methods to yield predictable results, the claimed invention is obvious. *Id.* at 417. In addition, "[o]ne of the ways in which a patent's subject matter can be proved obvious is by noting that there existed at the time of the invention a known problem for which there was an obvious solution encompassed by the patent's claims." *Id.* at 419–20. "Under the correct analysis, any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed." *Id.* at 420.

Any suggested obviousness combinations set forth herein are in the alternative to Defendants' anticipation contentions and are not to be construed to suggest that any reference included in any combination is not anticipatory in its own right or is not the basis for a single-reference obviousness defense. In particular, Defendants are currently unaware of the extent, if any, to which Plaintiff will contend that certain limitations of the Asserted Claims are not disclosed in the art identified by Defendants as anticipatory. To the extent an issue arises with respect to any such claim limitation, Defendants reserve the right to identify other references and combinations, which may make obvious the allegedly missing limitation in the disclosed system or method.

The rationale to combine or modify prior art references is significantly stronger when the references seek to solve the same problem, come from the same field, and correspond well. *In re Inland Steel Co.*, 265 F.3d 1354, 1362–64 (Fed. Cir. 2001). In view of the Supreme Court's *KSR* decision, the PTO issued, and updated, a set of Examination Guidelines. *See* Examination Guidelines for Determining Obviousness Under 35 U.S.C. § 103 in view of the Supreme Court Decision in *KSR International Co. v. Teleflex, Inc.*, 72 Fed. Reg. 57526 (October 10, 2007); Examination Guidelines Update: Development in the Obviousness Inquiry After *KSR v. Teleflex*, 75 Fed. Reg. 53643-60 (September 2010); *see also* MPEP § 2141 (https://www.uspto.gov/web/offices/pac/mpep/s2141.html) (accessed July 6, 2022). These Guidelines summarized the *KSR* decision and subsequent case law, as well as identified various rationales for finding a claim obvious, including those based on other precedents. Those rationales include:

(1) Combining prior art elements according to known methods to yield predictable results;

(2) Simple substitution of one known element for another to obtain predictable results;

(3) Use of known technique to improve similar devices (methods, or products) in the same way;

(4) Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results;

(5) "Obvious to try" – choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success;

(6) Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations would have been predictable to one of ordinary skill in the art; and

(7) Some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

Defendants contend that one or more of these rationales apply in considering the obviousness of the Asserted Claims of the Asserted Patents.

To the extent that prior art identified by Defendants as anticipatory are found not to anticipate the Asserted Claims: (1) the prior art establishes that the claimed subject matter was obvious to a person of ordinary skill in the art at the time of the alleged invention; (2) the claims are nevertheless unpatentable because the Asserted Claims contain nothing that goes beyond "ordinary innovation"; (3) no Asserted Claim goes beyond combining known elements to achieve predictable results (particularly in the predictable art(s) of the Asserted Patent) or does more than choose between clear alternatives known to those of skill in the art; and/or (4) the prior art renders the Asserted Claims obvious either alone or in combination with each other or one or more of the other references identified in these Invalidity Contentions.

Motivation to make the proposed combinations of prior art references and knowledge of one skilled in the art generally exists within the references themselves as well as within the knowledge of one skilled in the art in the relevant time frame.

**B. Exemplary Combinations and Motivations for Making Combinations of Prior Art**

As explained above, Defendants contend that a person of ordinary skill in the art would have been motivated to combine any of the primary references in these Invalidity Contentions with (1) any other primary reference, (2) the references identified in Section V.B below, (3) any statements made in the intrinsic record of the Asserted Patents, and/or (4) the knowledge of one of ordinary skill in the art. By way of example only, Defendants provide the following exemplary combinations and some of the reasons a person of ordinary skill in the art would be motivated to combine references.

The illustrative combinations described below render the asserted claims of the Asserted Patents invalid as obvious under 35 U.S.C. § 103. Defendants' contention that these combinations render these claims obvious under 35 U.S.C. § 103 are in no way an admission or suggestion that any reference or system/product does not independently anticipate the asserted claims under 35

U.S.C. § 102. Nor does the inclusion of the exemplary combinations below exclude other combinations of prior art. To the extent that any prior art reference or system/product described in these contentions is found not to disclose a limitation of these claims, it would have been obvious to a person of ordinary skill in the art to combine that reference or system/product with any other reference or system/product described in these contentions to meet the limitation, and such persons would have been motivated to do so. Defendants incorporate by reference any statements and reasons set forth by the Examiner during prosecution of the Asserted Patents and related patent applications as to why it would have been obvious to modify or combine references or systems/products to achieve the limitations of these claims. As discussed above, the below list is a non-exhaustive subset of combinations. Defendants reserve the right to use any reference or system/product described in these contentions in combination with any other reference or system/product described in these contentions. A person or ordinary skill in the art at the time of the alleged invention also would have had a reasonable expectation of success in implementing the combinations.

**1. Exemplary Combinations for Claims 1-4, 8-12, 16-17, 21-28, 32 of the '262 Patent; Claims 1-6, 10-16, 20-21, 25-36, 40 of the '566 Patent**

A clear motivation existed in the art at the time of inventions to combine references related to the use of header bits in OFDM-based data packet communication systems, such as U.S. Patent Application Publication No. 2005/0169261 (Williams), "ITU-T Recommendation G.9960 - Draft generation home Networking transceivers" ("the G.9960 Draft"), and/or IEEE 802.11 Wireless LANs TGn Sync Proposal Technical Specification, Document No. IEEE 802.11-04/0889r6 (May 18, 2005) ("2005 802.11n TGn Sync Specification") to address any problems that the asserted patents sought to solve. For example, the '262 Patent "relates to communications systems." '262 patent at 1:20-21. The '262 Patent acknowledges that prior art "[c]onventional multi-user

communications system use frame-based (or packet-based) transmission to communication [sic] between two or more users over a shared channel based on Orthogonal Frequency Division Multiplexing (OFDM)" and that "[a]n example of such a system includes IEEE 802.11 (Wireless LAN), IEEE 802.16 (WiMAX), and ITU G.9960 (G.hn)." *Id*. at 28-37. The '262 Patent's further description of prior art explains the understanding at the time that, in a data packet, "[t]he header contains important control information for the receiver to decode the payload properly, and also provides information about the packet length for virtual carrier sensing. Hence, it is essential to decode the header reliably. In G.9960, which . . . should be familiar to those skilled in the art, the header containing $PHY_H$ bits (header information block) is carried over one or two OFDM symbols (D=1 or 2), and within each symbol, multiple header information blocks are repeated over the entire frequency band." *Id*. at 1:43-52. The references relate to the same or substantially similar subject matter in the same technical field as the asserted patents. For example, like the asserted patents, Williams relates to "signaling the length of orthogonal frequency division multiplexing [OFDM] wireless local area network packets." Williams ¶ [0004]. Similarly, the G.9960 Draft and 2005 802.11n TGn Sync Specification disclose uses of repeated header bits in OFDM-based data packet communication systems. *See, e.g.,* G.9960 Draft at 4, 24, 28, 31, 53, 64; 2005 802.11n TGn Sync Specification at 70-76, 83-94.

A POSITA would have been motivated, with a reasonable expectation of success, to also look to other references that teach standard improvement techniques in data packet header structures such as those disclosed by U.S. Patent Nos. 8,0189,75 (Ma) and/or 9,313,067 (Soliman), "G.hn: Extended PHY frame header," ITU-T SGJ 5/Q4 09XC-119 by Sid Schrum at Intellon Corporation ("Schrum"), "G.hn: Using Two Symbols for the Header of a PHY frame on Coax" ITU-T SGJ 5/Q4 09XC-l 19 by Boaz Kol at CoperGate ("Kol"), "G.hn: 09CC-R12 HomePlug AV

interoperability updates" ITU-T 09CC-062R1 by Les Brown at Infineon Technologies USA ("Brown"), PHY Updates to TGn Sync Proposal, Document No. IEEE 802.11-05/418r0 (May 16, 2005) ("2005 TGn Sync PHY Updates"), TGn Sync Complete Proposal, Document No. IEEE 802.11-04/888r9 (March 4, 2005)("2005 TGn Sync Proposal Presentation"), U.S. Patent Publication No. 2010/0260159 ("Zhang '159"), U.S. Patent No. 7,599,332 ("Zelst"), and/or the common knowledge of the POSITA or other prior art identified above. For example, Ma relates to "cellular wireless communication systems employing OFDM or OFDM-like technology, and to physical layer packet and preamble designs." Ma at 1:14-18. Ma discloses "a MIMO-OFDM frame format having a header symbol format in which subcarriers of a header symbol are divided into a non-contiguous set of subcarriers for each of a plurality of antennas" where the frame begins "with two identical header OFDM symbols during which contents of the pilot channel sub-carriers are repeated and contents of the synchronization channel sub-carriers are repeated." *Id*. at 7:54-67. As another example, Soliman relates to using different frequency bands within wireless communication systems such as "those compliant with IEEE 802.11g, 802.11a, IEEE 802.11n, and ultra-wideband (UWB)." Soliman at 1:13-24. Soliman discloses that 802.11n "divides the 2.4 GHz spectrum into 11 overlapping, staggered channels whose center frequencies are 5 megahertz (MHz) apart. A 20 MHZ channel is divided into 56 subcarriers, with a subcarrier spacing of 0.3125 MHz, or 40 MHz channels with 112 subcarriers." *Id.* at 2:1-9. Zhang '159 discloses the use of overlapping frequencies including "20 MHz, 40 MHz, 120 MHz, 160 MHz, or any suitable bandwidth." Zhang '159 ¶¶ [0074]–[0075]. Zelst similarly discloses using MIMO on "multiple 20 MHz channels (e.g., 40, 60, 80, or 100 MHz channels)." Zelst at 5:2-21. Other references similarly disclose relevant subject matter. As additional motivations to combine, many references were authored/invented by the same individuals, distributed to the same people, and/or

intended for the same standard specification(s). Therefore, a POSITA would have been motivated, with a reasonable expectation of success, to improve data packet header designs as disclosed in, for example, Williams, the G.9960 Draft, and/or the 2005 802.11n TGn Sync Specification by utilizing references teaching standard improvement techniques in data packet header designs including Ma, Soliman, Schrum, Kol, Brown, the 2005 TGn Sync PHY Updates, the 2005 TGn Sync Proposal Presentation, and/or the common knowledge of the POSITA, or other prior art identified above.

Further, a clear motivation existed in the art at the time of inventions to combine references related to the use of header bits in OFDM-based data packet communication systems, such as Williams, the G.9960 Draft, and/or the 2005 802.11n TGn Sync Specification to address any problems that the asserted patents sought to solve. For example, the '566 Patent "relates to communications systems." '566 patent at 1:22-23. The '566 Patent acknowledges that prior art "[c]onventional multi-user communications system use frame-based (or packet-based) transmission to communication [sic] between two or more users over a shared channel based on Orthogonal Frequency Division Multiplexing (OFDM)" and that "[a]n example of such a system includes IEEE 802.11 (Wireless LAN), IEEE 802.16 (WiMAX), and ITU G.9960 (G.hn)." *Id*. at 30-39. The '566 Patent's further description of prior art explains the understanding at the time that, in a data packet, "[t]he header contains important control information for the receiver to decode the payload properly, and also provides information about the packet length for virtual carrier sensing. Hence, it is essential to decode the header reliably. In G.9960, which . . . should be familiar to those skilled in the art, the header containing PHYH bits (header information block) is carried over one or two OFDM symbols (D=1 or 2), and within each symbol, multiple header information blocks are repeated over the entire frequency band." *Id*. at 1:45-54. These references

relate to the same or substantially similar subject matter in the same technical field as the asserted patents. For example, like the asserted patents, Williams relates to "signaling the length of orthogonal frequency division multiplexing [OFDM] wireless local area network packets." Williams ¶ [0004]. Similarly, the G.9960 Draft and 2005 802.11n TGn Sync Specification disclose uses of repeated header bits in OFDM-based data packet communication systems. *See, e.g.*, G.9960 Draft at 4, 24, 28, 31, 53, 64; 2005 802.11n TGn Sync Specification at 70-76, 83-94.

A POSITA would have been motivated, with a reasonable expectation of success, to also look to other references that teach standard improvement techniques in data packet header structures such as those disclosed by Ma and/or Soliman, Schrum, Kol, Brown, the 2005 TGn Sync PHY Updates, the 2005 TGn Sync Proposal Presentation, Zhang '159, Zelst, and/or the common knowledge of the POSITA, or other prior art identified above. For example, Ma relates to "cellular wireless communication systems employing OFDM or OFDM-like technology, and to physical layer packet and preamble designs." Ma at 1:14-18. Ma discloses "a MIMO-OFDM frame format having a header symbol format in which subcarriers of a header symbol are divided into a non-contiguous set of subcarriers for each of a plurality of antennas" where the frame begins "with two identical header OFDM symbols during which contents of the pilot channel sub-carriers are repeated and contents of the synchronization channel sub-carriers are repeated." *Id*. at 7:54-67. As another example, Soliman relates to using different frequency bands within wireless communication systems such as "those compliant with IEEE 802.11g, 802.11a, IEEE 802.11n, and ultra-wideband (UWB)." Soliman at 1:13-24. Soliman discloses that 802.11n "divides the 2.4 GHz spectrum into 11 overlapping, staggered channels whose center frequencies are 5 megahertz (MHz) apart. A 20 MHZ channel is divided into 56 subcarriers, with a subcarrier spacing of 0.3125 MHz, or 40 MHz channels with 112 subcarriers." *Id.* at 2:1-9. Zhang '159

discloses the use of overlapping frequencies including "20 MHz, 40 MHz, 120 MHz, 160 MHz, or any suitable bandwidth." Zhang '159 ¶¶ [0074]–[0075]. Zelst similarly discloses using MIMO on "multiple 20 MHz channels (e.g., 40, 60, 80, or 100 MHz channels)." Zelst at 5:2-21. Other references similarly disclose relevant subject matter. As additional motivations to combine, many references were authored/invented by the same individuals, distributed to the same people, and/or intended for the same standard specification(s). Therefore, a POSITA would have been motivated, with a reasonable expectation of success, to improve data packet header designs as disclosed in, for example, Williams, the G.9960 Draft, and/or the 2005 802.11n TGn Sync Specification by utilizing references that teach standard improvement techniques in data packet header designs including Ma, Soliman, Schrum, Kol, Brown, the 2005 TGn Sync PHY Updates, the 2005 TGn Sync Proposal Presentation, and/or the common knowledge of the POSITA, or other prior art identified above.

### 2. Exemplary Combinations for Claims 1-3, 5, 7-8 of the '361 Patent, Claims 1-3, 5, 7-11, 13 of the '707 Patent, Claims 1-3, 5, 7-11, 13 of the '449 Patent, Claims 1-3, 5, 7-11, 13 of the '459 Patent, and Claims 1-3, 5, 7-9, 11-13, 15, 17-19 of the '272 Patent

A clear motivation existed in the art at the time of the purported inventions to combine references related to the use of multiple and/or repeated header bits in OFDM-based data packet communications systems, such as the TGn Sync Proposal 2005, TGnSync 2004, the "WWiSE Proposal: High Throughput Extension to the 802.11 Standard, Document No. IEEE 802.11-05/0149r5" (March 18, 2005) ("WWiSE 2005"), the "IEEE P802.11 Wireless LANs Joint Proposal: High throughput extension to the 802.11 Standard: PHY," Document No. IEEE 802.11-05/1102r4 (January 13, 2006) ("2006 802.11n Joint PHY Proposal"), U.S. Patent No. 7,903,755 to Mujtaba ("Mujtaba"), U.S. Patent Application Publication No. 2016/0056991 to Zhang et al. ("Zhang '991"), Zhang '159, and U.S. Patent No. 8,675,754 to Yonge, III et al. ("Yonge") to

address any problems that the asserted Family B patents sought to solve. For example, the '449 Patent "relates to communications systems." '449 patent at 1:28-29. The '449 Patent acknowledges that prior art "[c]onventional multi-user communications system[s] use frame-based (or packet-based) transmission to communication [sic] between two or more users over a shared channel based on Orthogonal Frequency Division Multiplexing (OFDM)" and that "[a]n example of such a system includes IEEE 802.11 (Wireless LAN), IEEE 802.16 (WiMAX), and ITU G.9960 (G.hn)." *Id*. at 1:36-45. The '449 Patent's further description of prior art explains the understanding at the time that, in a data packet, "[t]he header contains important control information for the receiver to decode the payload properly, and also provides information about the packet length for virtual carrier sensing. Hence, it is essential to decode the header reliably." For example, "[i]n G.9960, which . . . should be familiar to those skilled in the art, the header containing PHYH bits (header information block) is carried over one or two OFDM symbols (D=1 or 2), and within each symbol, multiple header information blocks are repeated over the entire frequency band." *Id*. at 1:51-60. In addition, the references relate to similar subject matter in the same technical field as the asserted patents. For example, like the asserted patents, TGn Sync Proposal 2005, TGnSync 2004, and WWiSE 2005 disclose use of repeated header bits in OFDM-based data packet communication systems. *See, e.g.*, TGn Sync Proposal 2005 at 70-76, 83-94; TGnSync 2004 at slides 12-20; WWiSE 2005 at 58-60, 67-69.

A POSITA would have been motivated, with a reasonable expectation of success, to also look to other references that teach standard improvement techniques in data packet header structures such as those disclosed by the 2006 802.11n Joint PHY Proposal, Mujtaba, Younge, and/or the common knowledge of the POSITA, or other prior art identified above. For example, Mujtaba "relates generally to multiple antenna wireless communication systems, and more

particularly, to preamble training techniques for a multiple antenna communication system," and is in response to a need for "a method and system for performing channel estimation and training in a MIMO-OFDM system that is compatible with current IEEE 802.11a/g standard (SISO) systems." Mujtaba at 1:15-18, 2:22-28. Mujtaba discloses that a "header format includes a preamble having at least one legacy long training field and an extended portion having at least N additional long training fields on each of the N transmit antennas, wherein one or more of said at least N additional long training fields are comprised of only one OFDM symbol. The extended portion optionally comprises one or more repeated OFDM symbols for frequency offset estimation." *Id.* at 2:35-43. As another example, TGnSync 2004 discloses multi-part, repeating header fields, as well as the use of two channels with overlapping bandwidths. TGnSync 2004 at slides 16-20, 23-26. As additional motivations to combine, many references were authored/invented by the same individuals, distributed to the same people, and/or intended for the same standard specification(s). Therefore, a POSITA would have been motivated, with a reasonable expectation of success, to improve data packet header designs as disclosed in, for example, WWiSE 2005, TGn Sync Proposal 2005, TGnSync 2004 and/or the 2006 802.11n Joint PHY Proposal by utilizing references that teach standard improvement techniques in data packet header designs including Mujtaba, Younge, TGnSync 2004, and/or the common knowledge of the POSITA, or other prior art identified above.

**3. Exemplary Combinations for Claims 1-10 of the '146 Patent**

A clear motivation existed in the art at the time of inventions to combine references related to the use of header-based repetition in OFDM-based data packet communication systems, such as U.S. Patent No. 10,637,706 (Huang), U.S. Patent No. 10,122,563 (Sun), and/or 40/20 MHz Interoperability for Robust, High Performance and Compatible 802.11n Systems, Document No. IEEE 802.11-04/0772r0 (July 2004) ("40/20 MHz Interoperability for 802.11n Systems") to

address any problems that the asserted patents sought to solve. For example, the '146 patent relates to "multiple header information blocks which are repeated over the frequency band." '146 patent at 1:58-64. The '146 Patent acknowledges that prior art "[c]onventional multi-user communications system[s] use frame-based (or packet-based) transmission to communication [sic] between two or more users over a shared channel based on Orthogonal Frequency Division Multiplexing (OFDM)" and that "[a]n example of such a system includes IEEE 802.11 (Wireless LAN), IEEE 802.16 (WiMAX), and ITU G.9960 (G.hn)." *Id*. at 40-49. The '146 Patent's description of prior art explains the understanding at the time that, in a data packet, "[t]he header contains important control information for the receiver to decode the payload properly, and also provides information about the packet length for virtual carrier sensing. Hence, it is essential to decode the header reliably." For example, "[i]n G.9960, which…should be familiar to those skilled in the art, the header containing $PHY_H$ bits (header information block) is carried over one or two OFDM symbols (D=1 or 2), and within each symbol, multiple header information blocks are repeated over the entire frequency band." *Id*. at 1:55-64. In addition, the references relate to the same or substantially similar subject matter in the same technical field as the asserted patents. For example, like the asserted patents, Huang relates to a "transmission method and transmission apparatus that allows a receiver to receive and decode packets in an efficient fashion when the receiver can receive packets in different formats." Huang at 1:56-59. Similarly, Sun discloses "[a]t least some of the OFDM symbols of the OFDM data unit are decoded according to a first communication protocol indicated by the determination of whether the candidate signal field corresponds to the repetition of the legacy signal field." Sun at Abstract.

A POSITA would have been motivated, with a reasonable expectation of success, to also look to other references that teach decoding repeated transmission packet headers in different formats, such as those disclosed by U.S. Patent Nos. 8,276,054 (Morioka), JP2005223388A

(Nakagawa), U.S. Patent No. 8,675,754 (Yonge), U.S. Patent No. 7,903,755 (Mujtaba), U.S. Patent Application Publication No. 2010/0260159 to Zhang et al. ("Zhang '159"); and/or the common knowledge of a POSITA. For example, Morioka relates to a "wireless communication system including a first communication station configured to operate according to a first communication protocol; and a second communication station capable of operating according to both the first communication protocol and a second communication protocol." Morioka at 4:16-22. Morioka further discloses "[w]hen the second communication station transmits a packet according to the second communication protocol, at least a first signal field compliant with the first communication protocol and a second signal field compliant with the second communication protocol are attached to a header of the packet, the first signal field including a parity bit." *Id*. at 5:28-34. As another example, Nakagawa discloses "a wireless communication device and a program according to the present invention include a header transmission number detection unit that detects repeated transmission number information of a header, and header transmission number information detected by the header transmission number detection unit." Nakagawa at ¶ [0010]. Yonge discloses a "method for transmitting information between stations in a network, the method comprising: modulating main information on portions of a signal according to a first level of a hierarchical modulation scheme associated with a constellation; and modulating auxiliary information on portions of a signal according to a second level of the hierarchical modulation scheme associated with a sub-constellation of the constellation; wherein the signal includes multiple copies of the auxiliary information with each copy being modulated on a respective portion of the signal." Yonge at 5:13-23. Mujtaba discloses a "header format [that] includes a legacy preamble having at least one legacy long training field and an extended portion having at least N additional long training fields on each of the N transmit antennas, wherein one or more of the at least N additional long training fields are comprised of only one Orthogonal Frequency

Division Multiplexing (OFDM) symbol." Mujtaba at Abstract. Other references similarly disclose relevant subject matter. As additional motivations to combine, many references were author/invented by the same individuals, distributed to the same people, and/or intended for the same standard specification(s). Therefore, a POSITA would have been motivated, with a reasonable expectation of success, to improve data packet header designs disclosed in, for example, Morioka, Nakagawa, Yonge, Mujtaba, and/or the common knowledge of the POSITA.

### C. Secondary Considerations

A patentee bears the burden of production with respect to evidence of secondary considerations of non-obviousness. *ZUP, LLC v. Nash Mfg., Inc.*, 896 F.3d 1365, 1373 (Fed. Cir. 2018). As of the date of these Invalidity Contentions, Plaintiff has not identified any secondary considerations of non-obviousness. Defendants reserve all rights to respond to any secondary considerations of non-obviousness raised by Plaintiff, including by updating, modifying, and/or adding to these Invalidity Contentions. Defendants are not aware of any unexpected results (none is mentioned in the Asserted Patents or their file history), long felt need, commercial success (or any nexus to any allegedly successful commercial embodiment), or awards for the Asserted Patents. Indeed, as shown in these Invalidity Contentions, dozens of other companies and individuals described, built, and/or patented the exact same concepts in the Asserted Patents before Plaintiff ever did—often many years before. Even where others' inventions occurred at approximately the same time as the alleged invention in the Asserted Patents, such simultaneous invention further demonstrates the obviousness of the Asserted Patents.

## VI. P.R. 3-3(c) – CLAIM CHARTS

The attached claim charts (Exhibits A1–H15 and Attachments A–H) are based, in whole or in part, on Plaintiff's asserted theories of infringement in this case, to the extent discernible from Plaintiff's Infringement Contentions. As an initial matter, all portions of each prior art

reference cited in each of the attached claim charts are relied upon to support the disclosure of each patent claim limitation, as all portions provide general support. Representative descriptions and supporting citations are nevertheless provided, but are merely exemplary; they do not necessarily reflect every instance where a particular claim term or claim limitation may be disclosed in or taught by the prior art reference. References to figures or drawings refer to the figures/drawings themselves, as well as to any accompanying text or text necessary to understand the figures or drawings. References to text refers to the text itself, as well as the accompanying figures or drawings that accompany the text. Defendants reserve the right to rely on additional, or different, portions of the prior art references, other publications and expert testimony to establish what these references would have taught one of ordinary skill in the art, or in what manner they would have motivated a particular combination of references. Defendants reserve the right to rely on any and all documents that describe or relate to prior art systems, including relying on the system itself. Defendants also reserve the right to rely on the testimony of the authors, named inventors, or anyone else with knowledge of the prior art references and systems identified herein, as well as expert testimony regarding any such references or systems.

## VII. P.R. 3-3(d) – INVALIDITY UNDER 35 U.S.C. § 112

Defendants provide the following grounds for invalidity under 35 U.S.C. § 112. Defendants' investigation of the Asserted Patents is ongoing, and Defendants reserve the right to amend or supplement these disclosures based on further investigation and in a manner consistent with the Federal Rules of Civil Procedure, the Local Patent Rules for the Eastern District of Texas, and the Docket Control Order, or otherwise in accordance with any order or direction of this Court or agreement of the parties. Further, Plaintiff's Infringement Contentions fail to provide sufficient detail to fully understand its proposed application of the Asserted Claims, and Defendants reserve the right to assert additional grounds for invalidity under 35 U.S.C. § 112 in response to Plaintiff's

claim interpretations. Defendants also reserve the right to supplement, modify, or otherwise amend these grounds for invalidity under 35 U.S.C. § 112 based on the Court's claim construction rulings or opinions or the parties' positions or arguments taken in connection with the claim construction process.

The specifications of the Asserted Patents do not provide adequate written description to support the scope of the claims asserted by Plaintiff in furtherance of its infringement theories or any reasonably understood scope of the claims. Title 35 U.S.C. § 112[6] paragraph 1 requires a specification to contain "a written description of the invention." To fulfill the written description requirement, the specification "must clearly allow persons of ordinary skill in the art to recognize that [the inventor] invented what is claimed." *Ariad Pharm., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (citation omitted). To satisfy the written description requirement, "the applicant must 'convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention,' and demonstrate that by disclosure in the specification of the patent." *Carnegie Mellon Univ. v. Hoffmann-La Roche Inc.*, 541 F.3d 1115, 1122 (Fed. Cir. 2008) (quoting *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1563–64 (Fed. Cir. 1991)). The Asserted Patents do not meet that requirement for the reasons described in the below chart, which Defendants reserve the right to amend.

Additionally, the Asserted Patents do not enable the claim scopes contained in Plaintiff's Preliminary Infringement Contentions. § 112 paragraph 1 requires a specification to describe "the manner and process of making and using [the invention], in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains … to make and use the

[6] Because the Asserted Claims are alleged to have a priority date before September 16, 2012, Defendants apply pre-AIA 35 U.S.C. § 112.

[invention]." The enablement requirement is separate from and in addition to the written description requirement. *Ariad*, 598 F.3d at 1344. This "requirement is satisfied when one skilled in the art, after reading the specification, could practice the claimed invention without undue experimentation." *AK Steel Corp. v. Sollac & Ugine*, 344 F.3d 1234, 1244 (Fed. Cir. 2003) (citation omitted); *see Wyeth & Cordis Corp. v. Abbott Labs.*, 720 F.3d 1380, 1385–86 (Fed. Cir. 2013). The Asserted Patents do not meet that requirement for the reasons described in the below chart, which Defendants reserve the right to amend.

Certain of the Asserted Claims are invalid for failing to comply with the definiteness requirement of § 112. Defendants note that their charting of a prior art reference for a claim or limitation that Defendants contend is invalid for lack of definiteness in no way represents an admission or concession that the scope of the claim or limitation is definite or ascertainable. § 112 paragraph 2 requires that a patent claim "particularly point[] out and distinctly claim[] the subject matter which the applicant regards as his invention." Claim terms that fail to inform those skilled in the art "with reasonable certainty . . . about the scope of the invention" fail the definiteness requirement of Section 112 paragraph 2. *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901 (2014).

The patent laws of the United States prohibit claiming an invention through functional terms as way to capture every way of performing a function. Claim terms that recite an invention using functional terms are invalid as indefinite, except for those adequately claimed and supported in accordance with § 112 paragraph 6. Under paragraph 6, an element in a claim may be expressed as a "means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof."

"The standard [for determining whether Section 112 paragraph 6 applies] is whether the words of the claim are understood by persons of ordinary skill in the art to have a sufficiently definite meaning as the name for structure." *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1349 (Fed. Cir. 2015). Although use of the word "means" in a claim creates a "presumption that § 112, ¶ 6 applies," "[w]hen a claim term lacks the word 'means,' the presumption can be overcome and § 112, para. 6 will apply if the challenger demonstrates that the claim term fails to recite sufficiently definite structure or else recites function without reciting sufficient structure for performing that function." *Id.* at 1348–49 (internal quotation marks omitted).

A non-exhaustive exemplary list of claims and claim limitations that are invalid under § 112 is below. Defendants reserve the right to amend this list and may identify additional or different terms that are invalid under § 112 in accordance with the schedule in this case for identifying terms for construction.

| **Claim Limitation** | **Grounds for Invalidity under 35 U.S.C. § 112** |
|---|---|
| "demodulate . . . the first number of OFDM symbols to determine the first plurality of header bits, wherein at least one header bit of the first plurality of header bits in the first packet is repeated on a plurality of OFDM subcarriers" ('262 Patent, claim 1)<br><br>"a demodulator . . . operable to demodulate the first number of OFDM symbols to determine the first header portion, wherein at least one header bit of the first header portion in the first packet is repeated on a plurality of OFDM subcarriers" ('262 Patent, claim 9)<br><br>"demodulating . . . the first number of OFDM symbols to determine the first plurality of header bits, wherein at least one header bit of the first plurality of header bits in the first packet is repeated on a plurality of OFDM subcarriers" ('262 Patent, claim 17)<br><br>"demodulating . . . the first number of OFDM symbols to determine the first header portion, wherein at least one header | lacks enablement and written description under § 112 ¶ 1 (e.g., the '262 Specification describes a demodulation module 240 for demodulating header bits from OFDM symbols (6:65-66) and a Domain Master for determining a MAP frame (6:16-17), but does not describe or enable a demodulator that determines a plurality of header bits, at least one of which is repeated on a plurality of OFDM subcarriers); indefinite under § 112 ¶ 2 (e.g., unclear to a POSITA what is meant by "demodulating . . . OFDM symbols to determine . . . header bits" since the '262 Specification describes at 6:64-66 that the header bits are the subject being |

| Claim Limitation | Grounds for Invalidity under 35 U.S.C. § 112 |
|---|---|
| bit of the first header portion in the first packet is repeated on a plurality of OFDM subcarriers" ('262 Patent, claim 25) | demodulated, as opposed to the OFDM symbols). |
| "receive, in a second wider frequency band, . . . a second packet comprising a second number of OFDM symbols, less than the first number of OFDM symbols, that carry a second plurality of header bits, different than the first plurality of header bits" ('262 Patent, claim 1)<br><br>"the wireless OFDM communications receiver further operable to receive a second packet in a second wider frequency band, wherein the second packet comprises a second header portion received on a second number of OFDM symbols, less than the first number of OFDM symbols, and wherein the second header portion is different than the first header portion" ('262 Patent, claim 9)<br><br>"receiving, in a second wider frequency band, . . . a second packet comprising a second number of OFDM symbols, less than the first number of OFDM symbols, that carry a second plurality of header bits, different than the first plurality of header bits" ('262 Patent, claim 17)<br><br>"receiving, a second packet in a second wider frequency band, . . . wherein the second packet comprises a second header portion received on a second number of OFDM symbols, less than the first number of OFDM symbols, and wherein the second header portion is different than the first header portion" ('262 Patent, claim 25) | lacks enablement and written description under § 112 ¶ 1 (e.g., the '262 Specification describes a first MAP frame with a bit field that contains an integer (D), where D indicates a number of header OFDM symbols that carry header bits, and a second frame having a plurality of header bits using D header OFDM symbols (8:41-54), but does not describe or enable a second packet comprising a second number of OFDM symbols, less than the first number of OFDM symbols, that carry a second plurality of header bits, different than the first plurality of header bits); indefinite under § 112 ¶ 2 (e.g., unclear to a POSITA what is meant by "a second wider frequency band" which is not properly compared to the "first narrower frequency band" in at least some of the asserted claim). |
| "demodulate . . . the second number of OFDM symbols to determine the second plurality of header bits" ('262 Patent, claim 1)<br><br>"the demodulator further operable to demodulate the second number of OFDM symbols to determine the second header portion" ('262 Patent, claim 9)<br><br>"demodulating . . . the second number of OFDM symbols to determine the second plurality of header bits" ('262 Patent, claim 17)<br><br>"demodulate . . . the second number of OFDM symbols to determine the second header portion" ('262 Patent, claim 25) | lacks enablement and written description under § 112 ¶ 1 (e.g., the '262 Specification describes a demodulation module 240 for demodulating header bits from OFDM symbols (6:65-66) and a Domain Master for determining a MAP frame (6:16-17), but does not describe or enable a demodulator that determines a plurality of header bits, at least one of which is repeated on a plurality of OFDM subcarriers); indefinite under § 112 ¶ 2 (e.g., unclear to a POSITA what is meant |

| Claim Limitation | Grounds for Invalidity under 35 U.S.C. § 112 |
|---|---|
| | by "demodulating . . . OFDM symbols to determine . . . header bits" since the '262 Specification describes at 6:64-66 that the header bits are the subject being demodulated, as opposed to the OFDM symbols). |
| "the first narrower and second wider frequency bands have one or more overlapping frequency regions" ('262 Patent, claims 1, 9, 17, 25; '566 Patent, claims 1, 11, 21, 31) | lacks enablement and written description under § 112 ¶ 1 (e.g., the '262 Specification describes that G.9960 has defined two overlapped baseband bandplans, 50 MHz-PB and 100 MHz-PB, but does not otherwise describe or enable that he first narrower and second wider frequency bands have one or more overlapping frequency regions). |
| "the at least one repeated header bit increases reliability of the first packet in the first narrower frequency band" ('262 Patent, claims 2, 10, 23, 26; '566 Patent, claims 2, 12, 29, 32) | lacks enablement and written description under § 112 ¶ 1 (e.g., the '262 Specification describes repeating header bits in 2 OFDM symbols to increase reliability, but does not describe or enable repeating header bits on multiple subcarriers of each OFDM symbol to increase reliability); indefinite under § 112 ¶ 2 (e.g., unclear to a POSITA what is meant by increased reliability here as the Asserted Patents do not offer more clarity). |
| "the at least one repeated header bit provides additional diversity to increase a likelihood of correctly decoding header information of the first packet in the first narrower frequency band" ('262 Patent, claims 3, 11, 24, 27; '566 Patent, claims 3, 13, 30, 33) | lacks enablement and written description under § 112 ¶ 1 (e.g., the '262 Specification describes repeating header bits in 2 OFDM symbols to increase diversity, but does not describe or enable repeating header bits on multiple subcarriers of each OFDM symbol to increase diversity); indefinite under § 112 ¶ 2 (e.g., unclear to a POSITA what is meant by increased diversity here as the |

| Claim Limitation | Grounds for Invalidity under 35 U.S.C. § 112 |
|---|---|
| | Asserted Patents do not offer more clarity). |
| "wherein the second wider frequency band is two times wider than the first narrower frequency band" ('262 Patent, claims 4, 12, 22, 28; '566 Patent, claims 4, 14, 26, 34) | lacks enablement and written description under § 112 ¶ 1 |
| "at least one header bit of the first plurality of header bits in the first packet is repeated on a plurality of OFDM subcarriers" ('566 Patent, claims 1, 21)<br><br>"at least one header bit of the first header portion in the first packet is repeated on a plurality of OFDM subcarriers" ('566 Patent, claims 11, 31) | lacks enablement and written description under § 112 ¶ 1; indefinite under § 112 ¶ 2 |
| "wherein the second number of OFDM symbols is less than the first number of OFDM symbols and wherein the second plurality of header bits is different than the first plurality of header bits" ('566 Patent, claims 1, 21)<br><br>"wherein the second number of OFDM symbols is less than the first number of OFDM symbols and wherein the second header portion is different than the first header portion" ('566 Patent, claims 11, 31) | lacks enablement and written description under § 112 ¶ 1; indefinite under § 112 ¶ 2 |
| "the wireless OFDM communications transmitter further operable to transmit in a second wider frequency band, the second packet comprising the second number of OFDM symbols" ('566 Patent, claim 1)<br><br>"the wireless OFDM communications transmit further operable to transmit the second packet in a second wider frequency band" ('566 Patent, claim 11)<br><br>"transmitting, in a second band wider frequency band, by the transmitter using wireless OFDM communications, the second packet comprising the second number of OFDM symbols" ('566 Patent, claim 21)<br><br>"transmitting, by the wireless OFDM communications transmit, the second packet in a second wider frequency band" ('566 Patent, claim 31) | lacks enablement and written description under § 112 ¶ 1; indefinite under § 112 ¶ 2 |
| "the second wider frequency band is four times wider than the first narrower frequency band" ('566 Patent, claims 5, 15, 27, 35) | lacks enablement and written description under § 112 ¶ 1 |

| Claim Limitation | Grounds for Invalidity under 35 U.S.C. § 112 |
|---|---|
| "the second wider frequency band is eight times wider than the first narrower frequency band" ('566 Patent, claim 6, 16, 28, 36) | lacks enablement and written description under § 112 ¶ 1 |
| "the [first/second] header field indicates that the type of packet" ('361 patent, claim 7, 8; '707 patent, claim 7, 8; '459 patent, claim 7, 8) | indefinite under § 112 ¶ 2 |
| "[transmitted/received] in a different order" ('361 patent, claim 1; '707 patent, claim 1, 9; '449 patent, claim 1, 9; '459 patent, claim 1, 9; '272 patent, claim 1, 11) | indefinite under § 112 ¶ 2 |
| "The wireless transceiver of claim 1, wherein the first header field indicates the type of packet" ('361 Patent, claim 7; '707 Patent, claim 7;'449 Patent, claim 7; '459 Patent, claim 7)<br><br>"The wireless transceiver of claim 1, wherein the second header field indicates that the type of packet" ('361 Patent, claim 8; '707 Patent, claim 8;'449 Patent, claim 8; '459 Patent, claim 8) | lacks enablement and written description under § 112 ¶ 1 |
| "wherein the first channel bandwidth is at least two times wider than the second channel bandwidth" ('449 Patent, claims 1, 9; '459 Patent, claims 1, 9) | lacks enablement and written description under § 112 ¶ 1 |
| "a demodulator operable to demodulate a first OFDM symbol followed by a second OFDM symbol, wherein the first OFDM symbol is used to receive the first part of the first header field and the second OFDM symbol is used to receive the second part of the first header field" ('707 Patent, claim 1; '459 Patent, claim 1)<br><br>"demodulating, by a demodulator, a first OFDM symbol followed by a second OFDM symbol, wherein the first OFDM symbol is used to receive the first part of the first header field and the second OFDM symbol is used to receive the second part of the first header field;" ('707 Patent, claim 9; '459 Patent, claim 9)<br><br>"the demodulator further operable to demodulate a first OFDM symbol followed by a second OFDM symbol followed by a third OFDM symbol followed by a fourth OFDM symbol, wherein the first OFDM symbol is used to receive the first part of the second header field, the second OFDM symbol is used to receive the second part of the second header field, the third OFDM symbol is used to receive the third part of the second header field, the fourth OFDM symbol is used to receive the fourth part of the second header field" ('707 Patent, claim 1; '459 Patent, claim 1) | lacks enablement and written description under § 112 ¶ 1 |

| Claim Limitation | Grounds for Invalidity under 35 U.S.C. § 112 |
|---|---|
| "demodulating, by the demodulator, a first OFDM symbol followed by a second OFDM symbol followed by a third OFDM symbol followed by a fourth OFDM symbol, wherein the first OFDM symbol is used to receive the first part of the second header field, the second OFDM symbol is used to receive the second part of the second header field, the third OFDM symbol is used to receive the third part of the second header field, the fourth OFDM symbol is used to receive the fourth part of the second header field" ('707 Patent, claim 9; '459 Patent, claim 9) | |
| "wherein the wireless receiver distinguishes the second packet format from the first packet format by detecting, from the received wireless packet, the second header field which repeats the first header field" ('146 Patent, claim 1)<br><br>"wherein the wireless receiver determines the received wireless packet as the second packet format when the second header field is detected from the wireless packet" ('146 Patent, claim 2)<br><br>"wherein the wireless receiver determines the received wireless packet as the first packet format when the second header field is not detected from the wireless packet" ('146 Patent, claim 3)<br><br>"wherein the second packet format is distinguished from the first packet format by detecting, from the received wireless packet, the second header field which repeats the first header field" ('146 Patent, claim 6)<br><br>"wherein the received wireless packet is determined as the second packet format when the second header field is detected from the wireless packet" ('146 Patent, claim 7)<br><br>"wherein the received wireless packet is determined as the first packet format when the second header field is not detected from the wireless packet" ('146 Patent, claim 8) | lacks enablement and written description under § 112 ¶ 1 |
| "a demodulator configured to demodulate [demodulating] the received wireless packet" ('146 Patent, claim 1, 6) | Indefinite under § 112 ¶ 2 |
| "the wireless receiver distinguishes [distinguished] the second packet format from the first packet format" ('146 Patent, claim 1, 6) | Indefinite under § 112 ¶ 2 |
| "detecting, from the received wireless packet, the second header field" ('146 Patent, claim 1, 6) | Indefinite under § 112 ¶ 2 |

Defendants will provide additional analysis regarding its contentions regarding 35 U.S.C.§ 112 in accordance with the schedule in this case and the Court's Patent Rules.

If written description support has not been found for a claim of the Asserted Patents, such claim is not entitled to a priority date earlier than the date on which the claim was first presented. For example, claims 1-3 and 6-8 of the '146 Patent are not entitled to a priority date earlier than September 9, 2021, the date on which such claims were first presented, because the specification of the '146 Patent does not support detecting duplicate header fields to distinguish between different packet formats.

Further, claims 1 and 9 of the '449 and '459 Patents, claims 1-6, 11-16, 21, and 26-36 of the '566 Patent, and claims 1-4, 9-12, 17, and 22-28 of the '262 Patent are not entitled to a priority date before March 30, 2016, when claims reciting a single network with modes having different channel bandwidths first appeared in the prosecution history, because the specification the '449, '459, '566, and '262 Patents failed to describe those limitations.

In the event that the Court finds that the asserted claims are invalid for lack of written description and the priority date for the '146 Patent is found to be September 9, 2021, then the prior art references in the following claim charts may be considered as prior art:

**Exhibit H9** (146 Invalidity Chart (Sun))

**Exhibit H2** (146 Invalidity Chart (Huang))

**Exhibit H12** (146 Invalidity Chart (Wi-Fi 6))

In the event that the Court finds that the asserted claims are invalid for lack of written description and the priority date for the '449, '459, '262, and '566 Patents is found to be March 30, 2016, then the following prior art reference should be considered as prior art: US2016/0056991 titled "Method and apparatus for generating a PHY data unit" to Zhang et al.

("Zhang '991), which was filed on November 2, 2015, and published on February 25, 2016.

## VIII. PATENT INELIGIBILITY UNDER 35 U.S.C. § 101

Each of the Asserted Patents fail to meet the requirements of 35 U.S.C. § 101—namely the Asserted Claims of the Asserted Patents are directed to an abstract idea and are, therefore, not patentable subject matter. The Attachments A–H contain detailed explanations to support patent ineligibility. Furthermore, the Asserted Claims of the Asserted Patents recite well-understood, routine, and conventional activity within the fields of the Asserted Patents. *See generally Intellectual Ventures I LLC v. Capital One Fin. Corp.*, 850 F.3d 1332, 1338 (Fed. Cir. 2017) ("To determine whether the exception applies, the Supreme Court has set forth a two-step inquiry. Specifically, a court must determine: (1) whether the claim is directed to a patent-ineligible concept, i.e., a law of nature, a natural phenomenon, or an abstract idea; and if so, (2) whether the elements of the claim, considered both individually and as an ordered combination, add enough to transform the nature of the claim into a patent eligible application.").[7] For *Mayo/Alice* Step 1, the Federal Circuit has identified "two inquiries of significance" when determining whether computer-related claims are directed towards eligible subject matter at Step 1: "[1] whether the focus of the claimed advance is on a solution to a problem specifically arising in the realm of computer networks or computers; and [2] whether the claim is properly characterized as identifying a specific improvement in computer capabilities or network functionality . . . ." *TecSec, Inc. v. Adobe Inc.*, 978 F.3d 1278, 1293 (Fed. Cir. 2020) (internal citations and quotations omitted).

In conducting the *Mayo/Alice* two-step analysis, a representative claim may be used for claims that are "substantially similar and linked to the same abstract idea." *Content Extraction &*

[7] As further discovery occurs, Defendants' patent eligibility theories may develop further. Defendants reserve the right to amend these theories before trial.

*Transmission LLC v. Wells Fargo Bank, Nat'l Ass'n*, 776 F.3d 1343, 1348 (Fed. Cir. 2014); *Smart Sys. Innovations, LLC v. Chicago Transit Auth.*, 873 F.3d 1364, 1368 n.7 (Fed. Cir. 2017) (concluding that claims "should rise or fall together" when they "contain only minor differences in terminology but require performance of the same basic process") (internal quotation omitted). Likewise, the Asserted Claims of the Asserted Patents are similarly linked to the same abstract idea and therefore are equally ineligible under § 101.

This Court applies a burden-shifting framework, in which "[t]he party asserting invalidity may overcome the presumption of independent validity by offering a substantial rationale for treating a claim as representative." *PPS Data, LLC v. Jack Henry & Assocs.*, 404 F.Supp.3d 1021, 1029-30 (E.D. Tex. 2019) (Gilstrap, J.). "Once the defendant has made a prima facie case the burden shifts to the plaintiff to identify limitations that are present in the asserted claims but that are not represented by the allegedly representative claim." *Id.* at 1031-32. Further, "the representativeness inquiry must be 'directly tethered to the claim language.'" *Id.* at 1030-31 (quoting *Solutran, Inc. v. Elavon, Inc.*, 931 F.3d 1161, 1168 (Fed. Cir. 2019)).

Pursuant to this Court's Standing Order Regarding Subject-Matter Eligibility Contentions Applicable to All Patent Infringement Cases Assigned to Chief District Judge Rodney Gilstrap (the "Standing Order"), Defendants set forth its positions regarding subject matter eligibility for each of the Asserted Patents in Attachments A-H.

Dated: January 23, 2023

/s/ *Matthew W. Hindman*

Sarah E. Piepmeier (SBN 227094)
PERKINS COIE LLP
505 Howard Street, Suite 1000
San Francisco, CA 94105
Tel: (415) 344-7000
Fax: (415) 344-7050
Email: spiepmeier@perkinscoie.com

Janice L. Ta (SBN 24075138)
Dakota P. Kanetzky (SBN 24116599)
PERKINS COIE LLP
405 Colorado St., Suite 1700
Austin, TX 78701
Tel: (737) 256-6100
Fax: (737) 256-6300
Email: JTa@perkinscoie.com
Email: DKanetzky@perkinscoie.com

Matthew W. Hindman (SBN 247707)
PERKINS COIE LLP
3150 Porter Drive
Palo Alto, CA 94304-1212
Tel: (650) 838-4372
Fax: (650) 838-4350
Email: mhindman@perkinscoie.com

Michael E. Jones (SBN 10929400)
Shaun W. Hassett (SBN 24074372)
POTTER MINTON, P.C.
102 North College
500 Plaza Tower
Tyler, TX 75702
Tel: (903) 597-8311
Fax: (903) 593-0846
mikejones@potterminton.com
Email: shaunhassett@potterminton.com

Deron R. Dacus (SBN 00790553)
THE DACUS FIRM, PC
821 ESE Loop 323, Suite 430
Tyler, TX 75701
Tel: (903) 705-1117
Fax: (903) 581-2543
Email: ddacus@dacusfirm.com

*Attorneys for Defendants Dell Corporation and Dell Technologies Inc.*

/s/ *Barry K. Shelton*
Barry K. Shelton
bshelton@winston.com
TX Bar No. 24055029
WINSTON & STRAWN LLP
2121 North Pearl Street, Suite 900
Dallas, TX 75201
Telephone: (214) 453-6500
Facsimile: (214) 453-6400

Christopher T. Gresalfi
(admitted *Pro Hac Vice*)
cgresalfi@winston.com
Winston & Strawn LLP
200 Park Avenue
New York, NY 10166-4193
Telephone: (212) 294-6852
Facsimile: (212) 294-4700

Melissa, R. Smith
State Bar No. 24001351
GILLAM & SMITH, LLP
303 S. Washington Avenue
Marshall TX 75670
Tel: (903) 934-840
Fax: (903) 934-9257
melissa@gillamsmithlaw.com

*Attorneys for Defendant HP Inc.*



AXW-2023-064

## CERTIFICATE OF SERVICE

I hereby certify that on January 23, 2023, the foregoing was served upon all counsel of record who have consented to electronic service.

*/s/ Matthew W. Hindman*
Matthew W. Hindman