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Paper 10
Entered: February 14, 2024

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

INTEL CORPORATION,
Petitioner,

v.

AX WIRELESS, LLC,
Patent Owner.

IPR2023-01136
Patent 10,079,707 B1

Before KRISTEN L. DROESCH, TERRENCE W. McMILLIN, and JOHN D. HAMANN, *Administrative Patent Judges*.

McMILLIN, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

A. Background and Summary

Intel Corporation ("Petitioner")[1] filed a Petition for *inter partes* review of claims 1–3, 5, 7–11, and 13 (the "challenged claims") of U.S. Patent No. 10,079,707 B1 (Ex. 1001, "the '707 patent"). Paper 2 ("Pet.") at 1, 4. AX Wireless, LLC ("Patent Owner")[2] filed a Preliminary Response. Paper 6 ("Preliminary Response" or "Prelim. Resp.").

With our authorization, Petitioner filed a Preliminary Reply to Patent Owner's Preliminary Response (Paper 8 ("Reply")) and Patent Owner filed a Preliminary Sur-reply (Paper 9 ("Sur-reply")). The Preliminary Reply and Preliminary Sur-reply were limited to addressing the issue of discretionary denial under 35 U.S.C. § 314(a) (2018).

We have authority to determine whether to institute an *inter partes* review. 35 U.S.C. § 314 (2018); 37 C.F.R. § 42.4(a) (2020) ("The Board institutes the trial on behalf of the Director."). The standard for institution is set forth in 35 U.S.C. § 314(a), which provides that *inter partes* review may not be instituted unless "there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." After considering the Petition, the Preliminary Response, the Preliminary Reply, the Preliminary Sur-reply, and the evidence of record, we institute an *inter partes* review as to the challenged claims of the '707 patent on the grounds presented.

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[1] Petitioner identifies "Petitioner, as well as Dell Inc., Dell Technologies Inc., and Lenovo Group Ltd." as the real parties-in-interest to this proceeding. Pet. 74.

[2] Patent Owner identifies "AX Wireless, LLC and its corporate parent, IdeaHub, Inc." as the real parties-in-interest to this proceeding. Paper 4 at 1.

B. Related Proceedings

The parties identify the following district court matters related to the '707 patent: *AX Wireless LLC, v. Dell Inc., and Dell Technologies Inc.*, 2-22-cv-00277 (E.D. Tex.) ("the Dell litigation"); *AX Wireless LLC, v. Lenovo Group Ltd.*, 2-22-cv-00280 (E.D. Tex.) ("the Lenovo Group litigation"); *AX Wireless LLC, v. HP Inc.*, 2-22-cv-00279 (E.D. Tex.); and *AX Wireless LLC, v. Acer Inc.* 2-23-cv-00041 (E.D. Tex.). Pet. 74; Paper 4 at 1.

Petitioner has also filed *inter partes* reviews challenging the following patents asserted in the district court cases: U.S. Patent Nos. 9,584,262, 9,614,566, 9,973,361, 10,291,449, 10,554,459, 10,917,272, and 11,212,146. Paper 4 at 1.

C. The '707 Patent (Ex. 1001)

The '707 patent relates to "exemplary methods, systems, means, protocols and computer-readable storage media, . . . directed toward header repetition in a communications environment." Ex. 1001, 1:27–30. By way of background, the '707 patent states that "[c]onventional multi-user communications system[s] use frame-based (or packet-based) transmission to communicat[e] between two or more users over a shared channel based on Orthogonal Frequency Division Multiplexing (OFDM)," such as "IEEE 802.11 (Wireless LAN), IEEE 802.16 (WiMAX), and ITU G.9960 (G.hn)." *Id.* at 1:35–40, 1:42–44.

"A packet is usually formed by a preamble, header, and payload . . . ." *Id.* at 1:40–41. According to the '707 patent, it is "essential to decode the header reliably" because "[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."

Id. at 1:50–53. In this regard, the '707 patent notes that in G.9960, "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 1:53–62 (citing Editor for G.9960, "ITU-T Recommendation G.9960: Next generation wire-line based home networking transceivers—Foundation," ITU-T SG15/Q4, January 2009).

The '707 patent discloses a technique "allowing different values of D in a single domain where nodes are operating in different portions of frequency bands." *Id.* at 2:13–15. "If D is fixed to 2, then it increases reliability for the narrowband devices, but may also unnecessarily increase overhead for the wide-band devices." *Id.* at 2:23–26. Hence, the '707 patent is "directed to techniques to accommodate different repetitions schemes (D=1, . . . , D_{MAX} and H=1, . . . , H_{MAX}) in a single domain, and still allow devices to communicate with one another," where "D_{MAX} and H_{MAX} can be 2 or larger than 2." *Id.* at 2:27–31.

Figure 1 of the '707 Patent is reproduced below.

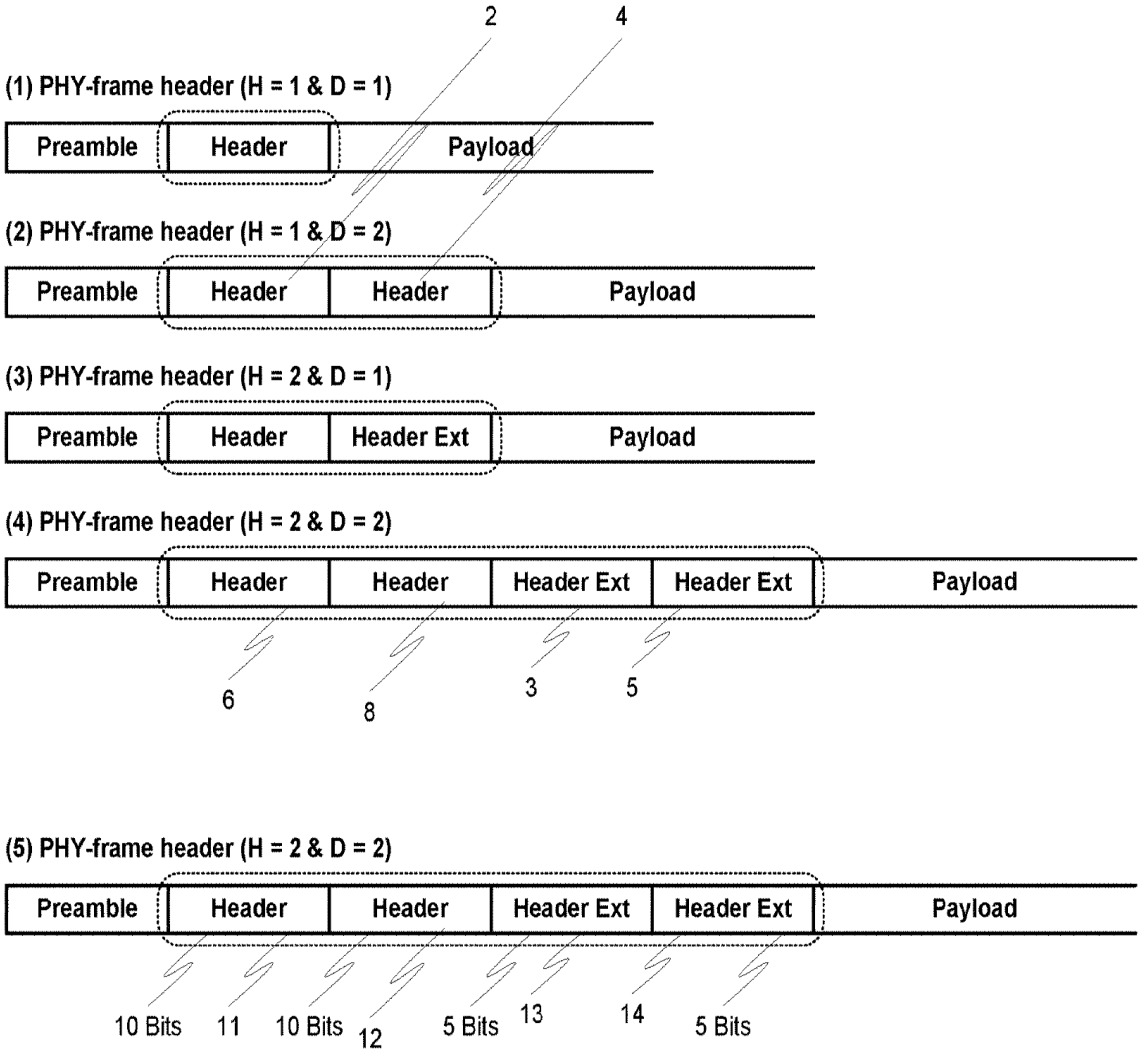


Fig. 1

Figure 1 depicts "various header repetition schemes . . . where D, H=1 or 2." *Id.* at 2:32–33. Specifically:

> in the first example, H=1 and D=1 with a preamble followed by a header followed by a payload. In a second example H=1 and D=2, with the preamble followed by header 2 that is repeated as header 4, which is followed by the payload. As discussed, the repeated header can be repeated in full or in part. In the third example, H=2 and D=1, such that the preamble is followed by a header which is followed by an extended header and the

> payload. In the fourth example, H=2 and D=2 such that header 6 is repeated as header 8, and the extended header 3 is repeated as extended header 5, which is followed by the payload. As discussed, the repeated portions may be exact duplicates.

Id. at 5:50–62. According to the '707 patent, "the label 'Header Ext' emphasizes the fact that it may contain different header information than the 'Header.'" *Id.* at 2:36–38; *see also id.* at 5:64–6:12.

D. Challenged Claims

Petitioner challenges claims 1–3, 5, 7–11, and 13 of the '707 patent. Pet. 1. The challenged claims include two independent claims: claim 1 directed to a "wireless OFDM (Orthogonal Frequency Division Multiplexing) transceiver," and claim 9 directed to a "method of operating a wireless OFDM (Orthogonal Frequency Division Multiplexing) transceiver." Ex. 1001, 12:47–48, 13:52–53. Claim 1 recites:

> **[1P]** A wireless OFDM (Orthogonal Frequency Division Multiplexing) transceiver comprising:
> **[1A]** a wireless OFDM communications receiver operable to receive, over a wireless communication channel, a first packet type comprising a first header field, **[1B]** wherein the first header field comprises two parts, a first part comprising a first set of header bits of the first header field and a second part comprising a second set of header bits of the first header field, **[1C]** wherein the first set of header bits of the first header field is different than the second set of header bits of the first header field; and
> **[1D]** a demodulator operable to demodulate a first OFDM symbol followed by a second OFDM symbol, **[1E]** 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;
> **[1F]** the wireless OFDM communications receiver further operable to receive, over the wireless communications channel, a second packet type comprising a second header field, **[1G]** wherein the second header field comprises four

parts, a first part comprising a first set of header bits of the second header field, a second part comprising a second set of header bits of the second header field, a third part comprising a third set of header bits of the second header field and a fourth part comprising a fourth set of header bits of the second header field,

[1H] wherein the first set of header bits of the second header field is the same as the second set of header bits of the second header field, wherein the third set of header bits of the second header field is the same as the fourth set of header bits of the second header field,

[1I] 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, **[1J]** 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,

[1K] wherein the second set of header bits of the second header field received using the second OFDM symbol are received in a different order than the first set of header bits of the second header field received using the first OFDM symbol, and

[1L] wherein the fourth set of header bits of the second header field received using the fourth OFDM symbol are received in a different order than the third set of header bits of the second header field received using the third OFDM symbol.

Id. at 12:47–13:32 (annotated with Petitioner's bracketing and labels (Pet. 77–78)).

E. The Asserted Grounds

Petitioner challenges claims 1–3, 5, 7–11, and 13 of the '707 patent based on the grounds set forth in the table below.

Claim(s) Challenged	35 U.S.C. §	References
1–3, 5, 7–11, 13	103[3]	Hansen[4], July 2005 WWiSE[5]
1–3, 5, 7–11, 13	103	Hansen, July 2005 WWiSE, Choi[6]

Pet. 4. Petitioner also relies on the Declaration of Dr. Thomas LaPorta (Ex. 1003), which provides evidence in support of the contentions in the Petition. Patent Owner submitted the Declaration of Dr. Zygmunt Haas (Ex. 2001), which provides evidence in support of the contentions in the Preliminary Response.

II. OBVIOUSNESS ANALYSIS

A. Principles of Law

Under 35 U.S.C. § 103(a), "[a] patent claim is unpatentable if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007) (similar language). "[W]hen a patent claims a

[3] The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) ("AIA"), amended 35 U.S.C. § 103, was effective on March 16, 2013. The '707 patent claims priority through a series of continuations to an application filed August 20, 2010, and also claims the benefit of a provisional application filed August 21, 2009. Ex. 1001, codes (60), (63), 1:7–22. Because the date of priority claimed is before the effective date of the applicable AIA amendment, we apply the pre-AIA version of § 103 for purposes of institution. Our decision to institute would not be different under the AIA version of § 103.

[4] US 2006/0182017 A1, published Aug. 17, 2006 (Ex. 1005).

[5] Kose et al., *WWiSE Proposal: High throughput extension to the 802.11 Standard*, IEEE P802.11 Wireless LANs (dated Mar. 18, 2005) (Ex. 1006).

[6] US 2005/0243774 A1, published Nov. 3, 2005 (Ex. 1008).

structure already known in the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result." *KSR*, 550 U.S. at 416 (citing *United States v. Adams*, 383 U.S. 39, 50–51 (1966)). The question of obviousness involves resolving underlying factual determinations including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and when presented (4) objective evidence of non-obviousness (not presented here). *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

B. Level of Ordinary Skill in the Art

Petitioner contends:

> A POSITA at the time of the purported invention would have had at least a master's degree in electrical engineering or similar discipline, and/or two to three years of experience working or conducting research in the field of wireless communication protocols, or an equivalent combination of education and experience.

Pet. 9 (citing Ex. 1003 ¶ 62).

At this stage, Patent Owner does not dispute Petitioner's assessment of the level of ordinary skill. Prelim. Resp. 2.

Determining the level of ordinary skill in the art involves various factors, including the "type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field." *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (citation omitted). The prior art of record also reflects the level of ordinary skill in the art. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

For purposes of this Decision, we adopt the assessment offered by Petitioner, as it is consistent with the '707 patent and the asserted prior art.[7]

C. Claim Construction

In *inter partes* reviews, the Board construes claims using the same claim construction standard employed in a civil action under 35 U.S.C. § 282(b). 37 C.F.R. § 42.100(b) (2020). Under the principles set forth by our reviewing court, the "words of a claim 'are generally given their ordinary and customary meaning,'" as would have been understood by a person of ordinary skill in the art in question at the time of the invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). "In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence." *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17).

Petitioner contends that "Petitioner does not believe it is necessary for the Board to expressly construe any term for the purpose of this IPR proceeding." Pet. 10 (citing *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)). Patent Owner also contends that "[n]o construction is necessary at this time." Prelim. Resp. 3.

At this stage, no need exists to construe any claim terms expressly to resolve the parties' disputes. *See Nidec Motor Corp. v. Zhongshan Broad*

[7] No matter how designated in this Decision, any determination (except our decision to institute trial) is preliminary and non-binding. We wish to have the full record as developed during trial before rendering any binding determination, finding, or conclusion.

Ocean Motor Co., 868 F.3d 1013, 1017 (Fed. Cir. 2017) ("[W]e need only construe terms 'that are in controversy, and only to the extent necessary to resolve the controversy.'" (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

D. Detailed Discussion of the Grounds

Petitioner asserts that claims 1–3, 5, 7–11, and 13 would have been obvious under 35 U.S.C. § 103 based on Hansen and July 2005 WWiSE; and claims 1–3, 5, 7–11, and 13 would have been obvious based on Hansen, July 2005 WWiSE, and Choi. Pet. 10–72. Patent Owner disagrees. Prelim. Resp. 3–57. Patent Owner argues that July 2002 WWiSE is not a prior art printed publication. *Id.* at 3–11. Patent Owner presents its additional non-obviousness arguments in the context of arguing against Petitioner's contentions with regard to motivation to combine the cited references in the manner set forth in the Petition. *See* Prelim. Resp. 24 ("[Petitioner]'s POSA Would Not Have Made the Proposed Hansen and July 2005 WWiSE Combination") (emphasis omitted), 57 ("[A] POSA would not be motivated to combine Hansen, July 2005 WWiSE, and Choi to arrive at the challenged claims.").

We begin our analysis by providing a summary of the asserted references and then consider the contentions of the parties.

1. Hansen (Ex. 1005)

Hansen is titled "Method and System for Compromise Greenfield Preambles for 802.11N." Ex. 1005, code (54). By way of background, Hansen notes that "IEEE 802.11 task group N (TGn) has been chartered to develop a standard to enable WLAN devices to achieve throughput rates beyond 100 Mbits/s," which "may be documented in IEEE resolution 802.11n." *Id.* ¶ 8. In comparison, "current existing 802.11 standards, such

as 802.11(a),(b),(g), . . . may support up to 54 Mbps data rates." *Id.* ¶ 9. "The IEEE resolution 802.11n may enable WLAN devices compatible with IEEE 802.11[ ]n to also interoperate with IEEE 802.11 devices that are not compatible with IEEE 802.11n." *Id.* ¶ 32. "WLAN devices that are compatible with IEEE 802.11 but are not compatible with IEEE 802.11[ ]n may be referred to as legacy IEEE 802.11 WLAN devices." *Id.*

Hansen describes "greenfield access mode" and "mixed mode access" for WLAN devices that are compatible with IEEE 802.11n as follows:

> WLAN devices that are compatible with IEEE 802.11n and communicate with other IEEE 802.11n compatible WLAN devices in an IEEE basic service set (BSS) of which no legacy IEEE 802.11 WLAN devices are currently members may be capable of communicating in a greenfield access mode. When utilizing greenfield access, communications between the WLAN devices may utilize capabilities specified in IEEE 802.11n that may not be accessible to legacy WLAN devices. WLAN devices that are compatible with IEEE 802.11n, and that communicate with IEEE 802.11n compatible WLAN devices in an IEEE BSS, of which legacy IEEE 802.11 WLAN devices are currently members, may utilize mixed mode access.

Id.

According to Hansen, "[a] plurality of proposals is emerging as candidates for incorporation in IEEE resolution 802.11n," including "proposals from, the worldwide spectrum efficiency (WWiSE) group, and TGn Sync." *Id.* ¶¶ 9, 33. "The WWiSE proposals may comprise a plurality of enhancements to legacy IEEE 802.11 WLAN devices for incorporation in IEEE 802.11n WLAN devices." *Id.* ¶ 34. According to Hansen, "[c]urrent proposals from TGn Sync may not provide a mechanism to support greenfield access," and "mixed mode access communications based on

current TGn Sync may be required to comprise information that may not be required in greenfield access communications." *Id.* ¶ 33.

Hansen discloses "[v]arious embodiments of the invention [that] may enable a greenfield access mode in IEEE 802.11n WLAN systems compared to an alternative approach that may not provide methods for greenfield access." *Id.* ¶ 27; *see also id.* ¶¶ 21 ("FIG. 5a shows exemplary training fields and header fields for greenfield access in accordance with a WWiSE proposal for N_{ss}=2, in accordance with an embodiment of the invention."), 24 ("FIG. 6a shows exemplary training fields and header fields with trailing signal field for greenfield access for N_{ss}>2, in accordance with an embodiment of the invention."), 77, 87, Figs. 5a, 6a. According to Hansen:

> The utilization of greenfield access may reduce the portion of time required to transmit data due to overhead comprising preamble fields and header fields. This may enable higher data throughput rates to be achieved. This may further enable more robust transmission of data by enabling comparable data rates to be maintained while reducing the coding rate of encoded transmitted data. The reduction of the coding rate may enable comparable data rates to be maintained for transmission via RF channels characterized by lower SNR while still achieving desired target levels of packet error rates.

Id.

Hansen also discloses that "mixed mode access may be achieved while reducing a portion of time required for transmitting data due to overhead comprising preamble fields and header fields." *Id.* ¶ 28; *see also id.* ¶¶ 18 ("FIG. 4a shows exemplary training fields and header fields for mixed mode access in accordance with a TGn Sync proposal that may be utilized in connection with an embodiment of the invention."), 26 ("FIG. 7 shows exemplary training fields and header fields for mixed mode access for

N_{ss}>2, in accordance with an embodiment of the invention."), 61, 111, Figs. 4a, 7.

Figure 2b is reproduced below and illustrates "an exemplary block diagram of a transceiver comprising a transmitter and a receiver in a MIMO [multiple input, multiple output] system, which may be utilized in accordance with an embodiment of the invention." *Id.* ¶ 15; *see also id.* ¶ 41.

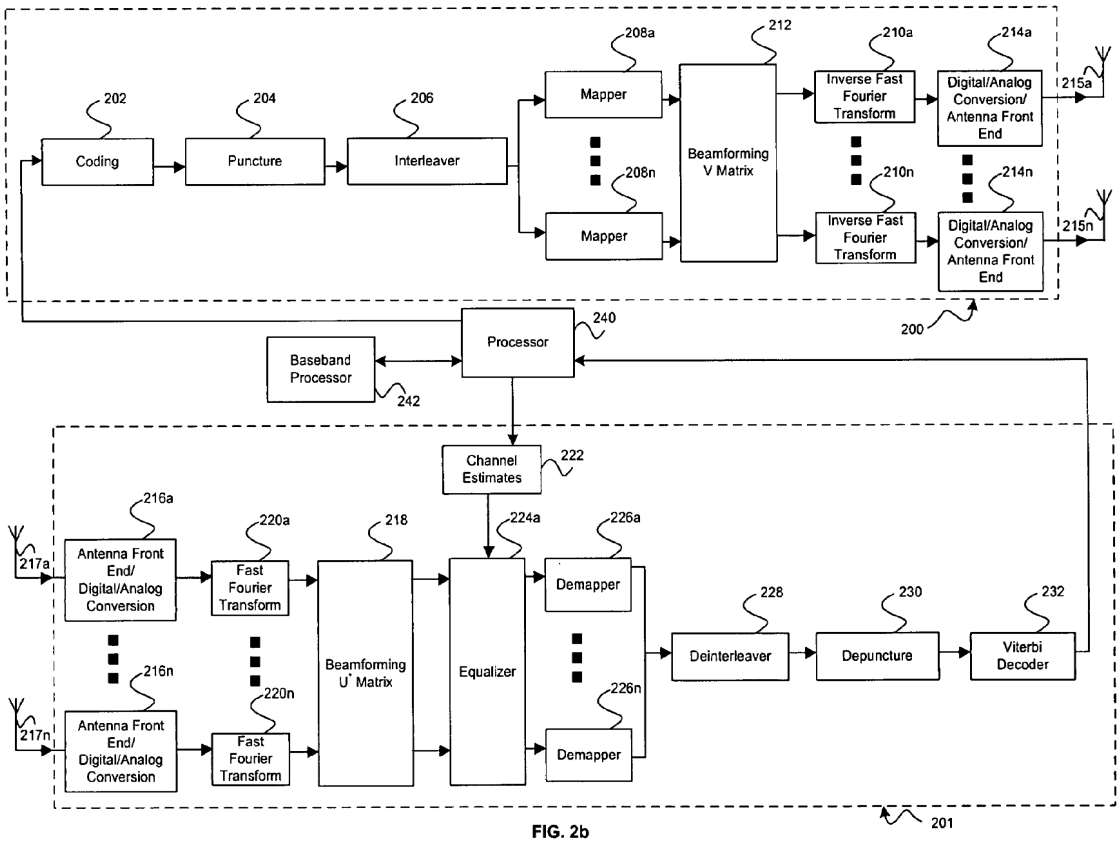


FIG. 2b

Figure 2b depicts "a transmitter 200 a receiver 201, a processor 240, a baseband processor 242, a plurality of transmitter antennas 215a, . . . , 215n, and a plurality of receiver antennas 217a, . . . , 217n." *Id.* ¶ 41.

2. July 2005 WWiSE (Ex. 1006)

a. Summary

July 2005 WWiSE[8] is a document titled "WWiSE Proposal: High throughput extension to the 802.11 Standard," and includes "[c]hanges and additions to IEEE Std. 802.11-1999 (Reaff 2003), as amended by published amendments IEEE802.11a, IEEE802.11g, IEEE802.11h and IEEE802.11i and by IEEE draft standard 802.11e/D9.0 [that] are provided to support a new high throughput physical layer (PHY) for operation in the 2.4 and 5 GHz bands." Ex. 1006, 1.

July 2005 WWiSE "specifies the PHY entity for a multiple input multiple output orthogonal frequency division multiplexing (MIMO-OFDM) system and the additions that have to be made to the base standard to accommodate the MIMO-OFDM PHY." *Id.* at 55:6–8. July 2005 WWiSE defines the protocol functions for the MIMO-OFDM PHY layer as follows:

> a) A PHY convergence function, which adapts the capabilities of the physical medium dependent (PMD) system to the PHY service. This function is supported by the physical layer convergence procedure (PLCP), which defines a method of mapping the IEEE 802.11 PHY sublayer service data units (PSDU) into a framing format suitable for sending and receiving user data and management information between two or more stations using the associated PMD system.
>
> b) A PMD system whose function defines the characteristics and method of transmitting and receiving data through a

[8] "WWiSE" stands for the World Wide Spectrum Efficiency organization, an industry association.

> wireless medium between two or more stations, each using the MIMO-OFDM PHY.

Id. at 55:39–46. July 2005 WWiSE "provides a convergence procedure by which PSDUs are converted to and from PPDUs at the transmitter and receiver." *Id*. at 58:5–6. "During transmission, the PSDU shall be appended with a PLCP preamble and header to create the PPDU. At the receiver, the PLCP preamble and header are processed to aid in the demodulation and delivery of the PSDU." *Id*. at 58:6–8.

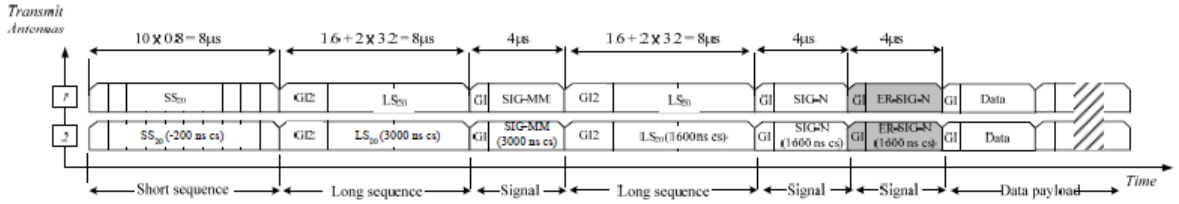
According to July 2005 WWiSE, "Extended Range (ER) capable devices are devices which support the optional Extended Range MCS, in addition to the Normal Range (NR) MCS, and the long SIG-N field format . . . ." *Id*. at 50:9–10; *see also id*. at 15:12 ("MCS Modulation and Coding Scheme").

> Due to the optional nature of the ER MCS, and considering the problem of backwards compatibility with pre-802.11n devices, the AP may decide to transmit a beacon using an NR MCS. This beacon will be referred to as an NR beacon. However, for ER stations to benefit from the larger BSA, the ER capable AP may also transmit a second beacon, using an ER MCS, which is referred to as an ER beacon. ER beacons allow ER devices to find the AP and associate with it even when they are outside of the NR range.

Id. at 50:15–20.

July 2005 WWiSE specifies that "[t]he SIGNAL-N field (SIG-N) is separately defined for a mandatory standard configuration and an optional 'extended communication range' configuration (ER) . . . ." *Id*. at 69:10–11. "In the mandatory standard configuration, SIG-N is composed of a single MIMO-OFDM symbol that provides all length and configuration parameters associated with a MIMO-OFDM PPDU." *Id*. at 69:13–14. "In the extended communication range configuration (ER), SIG-N is composed of two

consecutive MIMO-OFDM symbols: The SIG-N MIMO-OFDM symbol is followed by a second MIMO-OFDM symbol, denoted as ER-SIG-N." *Id.* at 69:16–18. For example, Figure 8 is reproduced below, illustrating "MIMO-OFDM Training structure for N_{TX}=2, 20 MHz, mixed-mode operation," wherein "[t]he shaded field indicates the optional duplicate SIG-N for extended range communication." *Id.* at 67:6–7, Fig. 8.



b. Prior Art Status

Petitioner argues that July 2005 WWiSE "is prior art under 35 U.S.C. pre-AIA §102(b) because the document was available and accessible to the public on July 9, 2005." Pet. 1–2. Patent Owner argues that Petitioner "failed to demonstrate public accessibility of July 2005 WWiSE—and thus all of its proposed grounds fail." Prelim. Resp. 11.

It has long been recognized that the touchstone as to whether an asserted reference qualifies as prior art is public accessibility. *See In re Hall*, 781 F.2d 897, 899 (Fed. Cir. 1986). "[A]t the institution stage, the petition must identify, with particularity, evidence sufficient to establish a reasonable likelihood that the reference was publicly accessible before the critical date of the challenged patent and therefore that there is a reasonable likelihood that it qualifies as a printed publication." *Hulu, LLC v. Sound View Innovations, LLC*, IPR2018-01039, Paper 29, 13 (PTAB Dec. 20, 2019) (precedential).

Petitioner relies on the Declaration of James L. Lansford, Ph.D. (Ex. 1007) to support its allegations that July 2005 WWiSE qualifies as prior

art.[9] *See* Pet. 1–4 (Section III.A.2.). The first paragraph of this section in the Petition provides the following background for July 2005 WWiSE:

> July 2005 WWiSE was a submission made to Task Group n ("TGn") of the IEEE 802.11 Wireless Local Area Networks ("WLAN") Working Group. During the 2004-2005 timeframe, IEEE Working Group members could provide submissions. (INTEL-1007, ¶15.) Members made these submissions through the IEEE 802 Wireless World website, http://802wirelessworld.com. (INTEL-1007, ¶16; INTEL-1038 (New Participant Orientation Slides), 35-37; INTEL-1039 (July 2004 Meeting Minutes), 5.)

Id. at 2. With regard to public accessibility of July 2005 WWiSE, the Petition states:

> All submissions were accessible to any member of the public after free registration through the Wireless World website. (INTEL-1007, ¶18; INTEL-1038 (New Participant Orientation Slides), 25-30 (describing process of becoming a member).) After creating an account, an individual could view the "Working Group Document Listing" and download any submissions that had been uploaded. (INTEL-1038 (New Participant Orientation Slides), 35; INTEL-1007, ¶18.) Submissions were also publicly available to any member of the public via FTP at ftp.wirelessworld.com. (INTEL-1007, ¶19; INTEL-1038 (New Participant Orientation Slides), 35 (describing process for creating a free account).) The FTP server's address and login credentials were also publicly available. (INTEL-1007, ¶19, *citing* INTEL-1033 and INTEL-1034)).
>
> In mid-2007, the IEEE's current Mentor website ("Mentor") replaced the Wireless World website. (INTEL-1007, ¶21.) Prior submissions uploaded to the Wireless World server were added to Mentor shortly after its

[9] Dr. Lansford testifies to "hav[ing] held numerous leadership positions in IEEE 802 over the last 25 years," and much relevant corporate and academic employment. Ex. 1007 ¶¶ 5–13.

> creation. (INTEL-1007, ¶21.) The uploaded documents retained their original submission upload dates. (INTEL-1007, ¶21.) Mentor and all its documents have been freely available to members of the public since soon after its creation in 2007 and before August 21, 2009. (INTEL-1007, ¶21.) Entries in Mentor were and remain searchable by year, task group, title, or other parameters. (INTEL-1007, ¶22.)
>
> July 2005 WWiSE was uploaded to the IEEE database on July 9, 2005, at which time it would have been available to interested members of the public through the Wireless World website or by FTP. (INTEL-1007, ¶¶18-29, 24.) After mid-2007 and before August 21, 2009, July 2005 WWiSE would have been available to interested members of the public through Mentor. (INTEL-1007, ¶¶18-18 [sic], 21, 24.) Interested members of the public would have been aware of the proposals made to IEEE by WWiSE because they were frequently discussed in 2004 and 2005 in industry publications. (*See, e.g.,* INTEL-1021, INTEL-1027, INTEL-1035; INTEL-1036; INTEL-1037.)

Id. at 2–3. Petitioner contends that, "[f]or at least these reasons, July 2005 WWiSE was publicly accessible prior to the earliest possible priority date of the '707 patent to a person of ordinary skill in the art ('POSITA') exercising reasonable diligence." *Id.* at 3–4.

Patent Owner argues:

> To be clear, July 2005 WWiSE was not a published standard, a draft standard, or even a working draft. It was merely one of many thousands of submissions to one of many dozens of working groups addressing the 802.11 standard. AXW-2003 (898 pages of 100 submissions per page in 802.11, with roughly 21,700 of those submissions before the relevant 2009 date); AXW-2004 (showing *over 100* working groups addressing the 802.11 standard). The TGn working group *alone* received approximately 4,600 submissions before the relevant date in 2009. AXW-2005 (excerpt showing a search for all submissions to the TGn working group results in 46 pages of

> results, with 100 submissions on each page except the final page 46). [Petitioner] failed to establish that the reasonably diligent POSA looking for extended-range teachings would have found July 2005 WWiSE among all of these documents.

Prelim. Resp. 4–5.

Petitioner alleges and provides evidence that July 2005 WWiSE was posted to, and continuously publicly available from, sources maintained by IEEE from July, 2005, until the earliest priority date of the '707 patent. Petitioner further alleges and provides evidence that any interested member of the public could access July 2005 WWiSE during this time period. Although Patent Owner contends that July 2005 WWiSE could not have been located by a skilled artisan, Petitioner's evidence shows that July 2005 WWiSE was made available to members of the TGn Task Group of the IEEE 802.11 WLAN Working Group without any restrictions of confidentiality or limits on dissemination. And, Petitioner provides evidence that interested members of the public would have known to look for July 2005 WWiSE because the proposals made to IEEE in this time frame were frequently discussed in industry publications. In addition, we note that July 2005 WWiSE lists over fifty contributors that were associated with a wide variety of technology companies in this space. Ex. 1006, 2–4. The parties may want to consider during trial, and in accordance with our Rules, whether this evidences or otherwise supports public availability.

We determine that Petitioner has established the public accessibility of July 2005 WWiSE sufficiently for purposes of institution.

3. Choi (Ex. 1008)

Choi is titled "Repetition Coding for a Wireless System." Ex. 1008, code (54). According to Choi, "[i]n a typical system . . . , bits representing a

set of data that is to be communicated are convolutionally encoded or otherwise transformed into values." *Id.* ¶ 13. "To provide extended range, each value that is sent is repeated several times by the transmitter." *Id.* Choi discloses that "[e]ach encoded value is repeated and transmitted," and "[p]referably, the values are repeated in the frequency domain, but the values may also be repeated in the time domain." *Id.* Figure 1B of Choi is reproduced below.

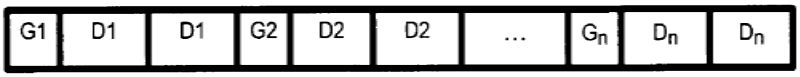


FIG. 1B

Figure 1B depicts "the data portion of a modified 802.11a/g OFDM packet where each symbol is repeated twice (r=2)." *Id.* ¶ 5.

"The receiver combines each of the signals that correspond to the repetition coded values and then uses the combined signal to recover the values." *Id.* ¶ 14. Choi discloses that "[t]he signals from different subchannels are weighted according to the quality of each subchannel," and "[a] combined subchannel weighting is provided to a Viterbi detector to facilitate the determination of the most likely transmitted sequence." *Id.*

According to Choi, "[t]he system can be improved and the need for data padding at the transmitter and data buffering at the receiver can be eliminated by redesigning the interleaver so that it operates on bits output from the repetition encoder." *Id.* ¶ 25. Figure 3A is reproduced below, providing "a diagram illustrating a transmitter system with a repetition encoder placed before the input of an interleaver designed to handle repetition coded bits." *Id.* ¶ 8; *see also id.* ¶ 26.

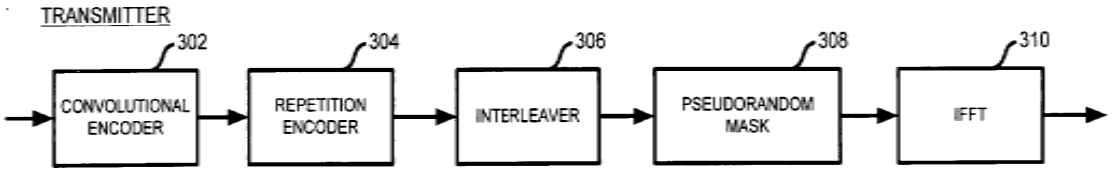


FIG. 3A

Figure 3A depicts that "[i]ncoming data is convolutionally encoded by convolutional encoder 302," and "[t]he output of convolutional encoder 302 is repetition coded by repetition encoder 304." *Id.* Figure 3B of Choi is reproduced below.

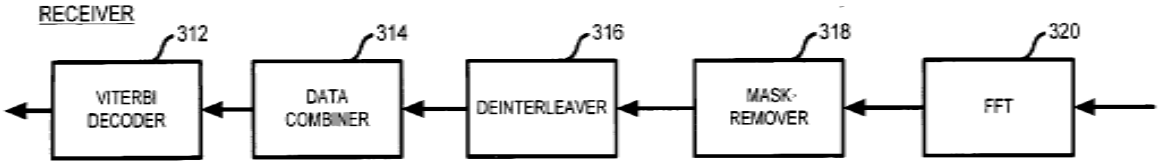


FIG. 3B

Figure 3B depicts "a receiver system for receiving a signal transmitted by the transmitter system depicted in FIG. 3A." *Id.* ¶ 9; *see also id.* ¶ 27.

4. Alleged Obviousness in View of Hansen and July 2005 WWiSE

a. Claim 1

Petitioner asserts that the combined teachings of Hansen and July 2005 WWiSE render the subject matter of claim 1 of the '707 patent obvious. *See* Pet. 4, 26–57. Patent Owner asserts that the subject matter of claim 1 would not have been obvious over Hansen in view of July 2005 WWiSE, because a skilled artisan would not have made the combination as set forth in the Petition. *See* Prelim. Resp. 11–56. For the reasons that follow, we are persuaded that Petitioner establishes sufficiently for purposes of institution that the subject matter of independent claim 1 would have been obvious over the combination of Hansen and July 2005 WWiSE and, on this basis, institute *inter partes* review.

Our element-by-element analysis of claim 1 is set forth below.

[1P] A wireless OFDM (Orthogonal Frequency Division Multiplexing) transceiver comprising:

Petitioner does not take a position on whether the preamble of claim 1 is limiting. Pet. 26 ("Petitioner does not acquiesce that the preamble is limiting. Regardless, the combination of Hansen and July 2005 WWiSE discloses [the preamble]."). Petitioner contends that Hansen teaches all the elements of the preamble. Pet. 26–28 (citing Ex. 1003 ¶¶ 99–101; Ex. 1005 ¶¶ 15, 48–51, Fig. 2b). Hansen discloses "a transceiver comprising a transmitter and a receiver." Ex. 1005 ¶ 15. Both the transmitter and the receiver implement wireless orthogonal frequency division multiplexing (OFDM). *See id.* at ¶¶ 48, 51. At this stage, we need not determine whether the preamble of claim 1 is limiting as Petitioner has shown sufficiently for purposes of institution that Hansen teaches all the elements of the preamble of claim 1.

[1A] a wireless OFDM communications receiver operable to receive, over a wireless communication channel, a first packet type comprising a first header field,

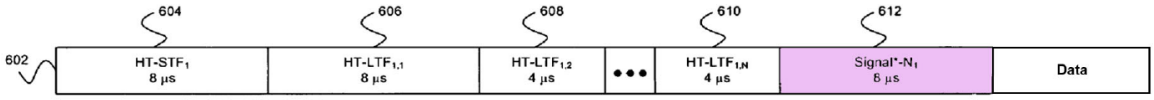
As discussed immediately above with regard to the preamble of claim 1, Petitioner has shown that Hansen discloses a receiver that implements wireless OFDM communications. With specific regard to the wireless OFDM receiver element of this limitation, Petitioner points to the receiver portion 201 of Hansen's transceiver depicted in Figure 2b and described in the related explanation as teaching that element. Pet. 30–32 (citing Ex. 1003 ¶¶ 107–110; Ex. 1005 ¶¶ 15, 31, 39, 50, 56, 59, Fig. 2b).

With regard to the wireless communication channel element, the Petition states:

> Hansen's AFE/ADC [antenna front end/analog/digital conversion] blocks 216 utilize an antenna to receive RF [radio frequency] signals over an RF channel. (INTEL-1005, ¶¶50, 59 ("in connection with the reception of signals via an RF channel"), 56 (referring to "data received via the RF channel"); *see also*, INTEL-1005, ¶31 (describing wireless communication "via an RF channel" by the system), ¶15 (referring to the system of Figure 2b as a "transceiver").)

Id. at 32.

Petitioner contends that Hansen discloses a first packet[10] type having a first header, in the form of a physical layer protocol data unit ("PPDU"), having preamble 302, header 304, and data 306.[11] *Id.* at 28 (citing Ex. 1005 ¶ 59). Petitioner refers to Hansen's first packet type as a "NR [Near Range] greenfield PPDU." *Id.* at 29. The Petition includes a demonstrative figure (based on Figures 3a and 6a of Hansen (*see id.*)), reproduced below, to illustrate this first packet type.



NR Greenfield PPDU ("*First Packet Type*")
(Combined Hansen Figure 3a and Excerpt from Figure 6a)

[10] The '707 patent states that "[a] packet is usually formed by a preamble, header, and payload." Ex. 1001, 1:39–40.

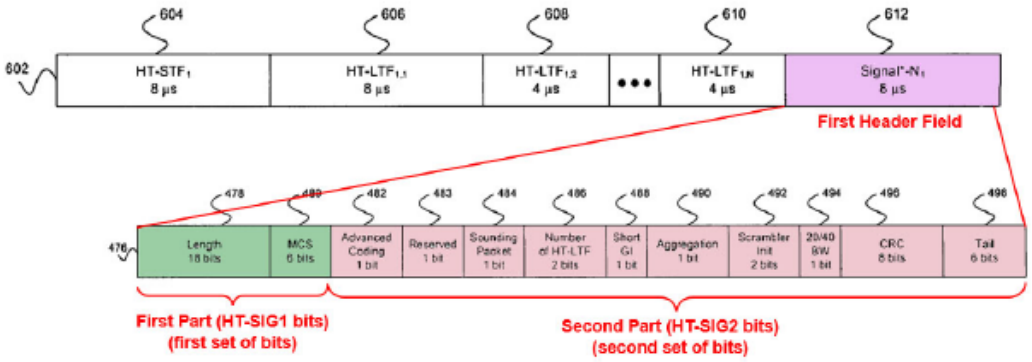
[11] Although the Petition primarily relies on Hansen as teaching this limitation, the Petition states, "July 2005 WWiSE similarly describes a PPDU as having a preamble, header, and data." Pet. 28 (citing Ex. 1006, 58:17-60:4 (illustrating PPDU frame formats).).

Id. (citing Ex. 1003 ¶ 106). This demonstrative figure depicts Petitioner's conception of how Hansen teaches a first packet type as recited in claim 1. Petitioner has shown sufficiently for purposes of institution that Hansen teaches all the elements of this limitation of claim 1.

> *[1B] wherein the first header field comprises two parts, a first part comprising a first set of header bits of the first header field and a second part comprising a second set of header bits of the first header field,*

As noted with regard to the immediately preceding limitation, Petitioner contends that Hansen discloses a first packet type in the form of a PPDU having a first header field. *Id.* at 28 (citing Ex. 1005 ¶ 59). With regard to this limitation, the Petition states that "the PPDU includes a Signal*-N field . . . which Hansen refers to as a 'header field'" (*id.* at 34 (citing Ex. 1005 ¶¶ 20, 67, 97)) and that "Signal*-N is therefore '*a first header field*' of the NR greenfield PPDU ('*first packet type*') (*id.* (citing Ex. 1003, ¶¶ 114–116; Ex. 1005 ¶ 59)). The Petition includes a demonstrative figure (based on Figures 4c and 6a of Hansen (*see id.* at 35)), reproduced below, to illustrate that "[t]he Signal*-N field (prior to coding and modulation) comprises 48 total bits corresponding to 2 transmitted OFDM symbols" (*id.* (citing Ex. 1003 ¶¶ 117–118; Ex. 1005 ¶¶ 62, 67–68,

87, 97)).



Excerpt of Hansen, Figure 6a (top); Figure 4c (bottom)

Id. This demonstrative figure depicts Petitioner's conception of how the cited art teaches that "the first 24 bits of HT-SIG (Signal*-N) correspond to a first transmitted OFDM symbol (HT-SIG1 symbol) and the second 24 bits of the HT-SIG field correspond to the second transmitted OFDM symbol (HT-SIG2 symbol)." *Id.* Petitioner has shown sufficiently for purposes of institution that Hansen teaches all the elements of this limitation of claim 1.

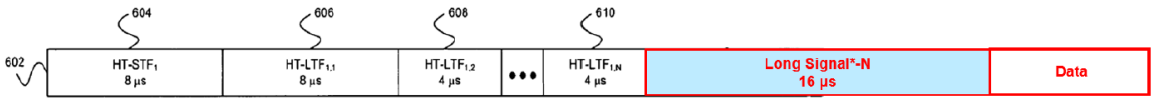
> *[1C] wherein the first set of header bits of the first header field is different than the second set of header bits of the first header field; and*

As discussed with regard to the immediately preceding limitation, the Petition describes and depicts that the first set of header bits of the first header field is different than the second set of header bits of the first header field. *See also* Pet. 36–37 (citing Ex. 1003 ¶ 122). Petitioner has shown sufficiently for purposes of institution that Hansen teaches all the elements of this limitation of claim 1.

[1F] [12] *the wireless OFDM communications receiver further operable to receive, over the wireless communications channel, a second packet type comprising a second header field,*

As discussed above in relation to limitation 1A, Petitioner points to the receiver portion 201 of Hansen's transceiver depicted in Figure 2b and described in the related explanation for teaching the wireless OFDM communications receiver. Pet. 30–32 (citing Ex. 1003 ¶¶ 107–110; Ex. 1005 ¶¶ 15, 31, 39, 50, 56, 59, Fig. 2b). Petitioner contends that the combination of Hansen and July 2005 WWiSE teaches a second packet type, an ER (extended range) greenfield PPDU, comprising a header field. *Id.* at 28–29 (citing Ex. 1003 ¶¶ 103–106; Ex. 1005 ¶ 59). With regard to Hansen, Petitioner relies on the same teachings for the second packet type as for the first packet type as discussed above with relation to limitation 1A. *Id.* at 28–33. With regard to July 2005 WWiSE, Petitioner relies on the teachings related to "ER 'capable devices . . . which support the optional Extended Range MCS, in addition to the Normal Range (NR) MCS, and the long SIG-N field format.'" *Id.* at 32–33 (quoting Ex. 1006, 50:9–10; *see also id.* at 50:12 ("ER frames shall be transmitted with the long SIG-N field format")). The Petition includes a demonstrative figure (based on Figures 3a and 6a of Hansen as modified by July 2005 WWiSE (*see id.* at 29)), reproduced below, to illustrate this second packet type.

[12] In the Petition, the limitations are taken up for discussion out of the order in which they are recited in claim 1. *See* Pet. 26–57. In order to follow the presentation in the Petition (particularly relating to limitations 1D, 1E, 1I, 1J that are grouped together and called the "'Demodulator' Limitations" (*see* Pet. 47)), we also discuss the limitations in a different order than recited in claim 1.



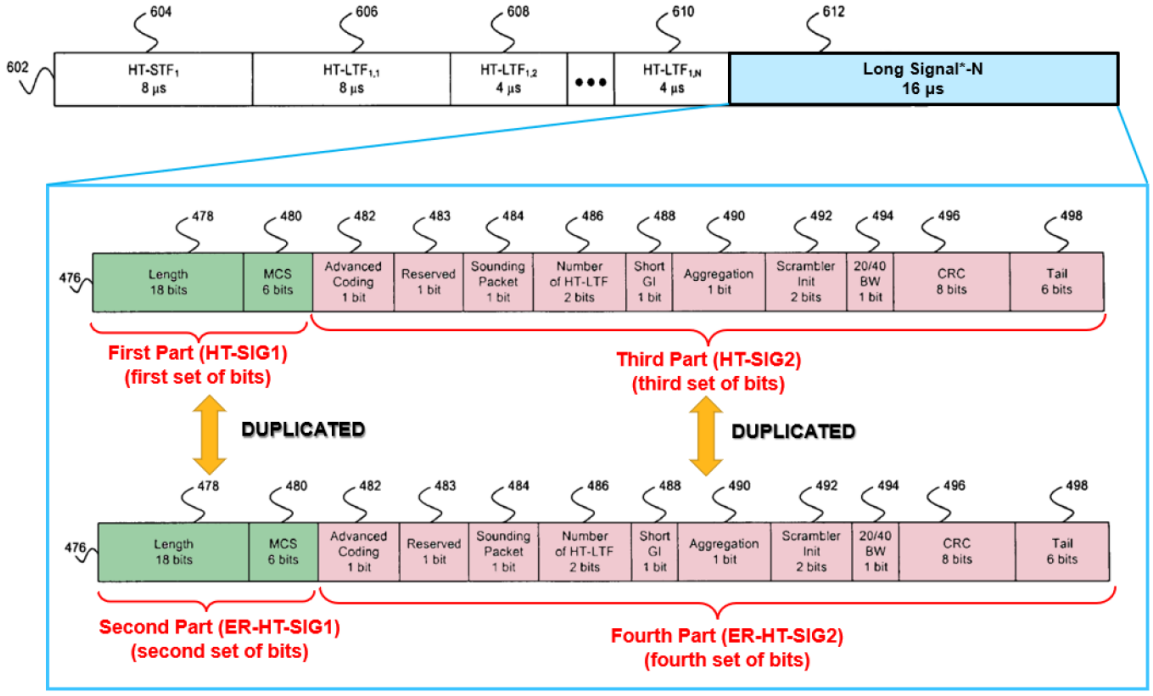
ER Greenfield PPDU ("*Second Packet Type*")
(Combined Hansen Figure 3a and Excerpt for Figure 6a
as modified by July 2005 WWiSE)

Id. (citing Ex. 1003 ¶ 106). This demonstrative figure depicts Petitioner's conception of how Hansen and July 2005 WWiSE teach a second packet type as recited in claim 1. Petitioner has shown sufficiently for purposes of institution that Hansen and July 2005 WWiSE teach all the elements of this limitation of claim 1.

> *[1G] wherein the second header field comprises four parts, a first part comprising a first set of header bits of the second header field, a second part comprising a second set of header bits of the second header field, a third part comprising a third set of header bits of the second header field and a fourth part comprising a fourth set of header bits of the second header field,*

As discussed above with regard to the immediately preceding limitation, Petitioner contends that "'Long Signal*-N' is a '*second header field*' of the ER greenfield PPDU ('*second packet type*')" (Pet. 39 (citing Ex. 1003 ¶ 127)) and further contends that "[t]he repetition of the two parts of Signal*-N results in a four-part header having two HT-SIG1 parts (HT-SIG1/ER-HT-SIG1) and two HT-SIG2 parts (HTSIG2/ER-HT-SIG2)" (*id.*). And, "[t]hus, the 'Long Signal*-N' ('*second header field*') of the ER greenfield PPDU includes '*four parts*.'" *Id.* (citing Ex. 1003 ¶ 128). The Petition includes a demonstrative figure (based on Hansen as modified by July 2005 WWiSE (*see id.* at 40–41 (citing Ex. 1005 ¶¶ 67–68; Ex. 1006, 67:1-69:3, 69:16-18, Figs. 7, 9, 11, 13, 15 (showing duplicated headers for

ER greenfield operation))), reproduced below, to illustrate the second header field and its four parts.



Id. (citing Ex. 1003 ¶ 126–133). This demonstrative figure depicts Petitioner's conception of how Hansen and July 2005 WWiSE teach a second header field with four parts as recited in claim 1. Petitioner has shown sufficiently for purposes of institution that Hansen and July 2005 WWiSE teach all the elements of this limitation of claim 1.

> *[1H] wherein the first set of header bits of the second header field is the same as the second set of header bits of the second header field, wherein the third set of header bits of the second header field is the same as the fourth set of header bits of the second header field,*

As discussed with regard to the immediately preceding limitation, the Petition describes and depicts that the first set of header bits of the second header field is the same as the second set of header bits of the second header field and the third set of header bits of the second header field is the same as

the fourth set of header bits of the second header field. *See also* Pet. 41–42 (citing Ex. 1003 ¶ 134). Petitioner has shown sufficiently for purposes of institution that the cited art teaches all the elements of this limitation of claim 1.

As noted above, in the Petition, limitations 1D, 1E, 1I, and 1J are grouped together and called the "'Demodulator' Limitations." *See* Pet. 47. In order to follow the presentation in the Petition, we also consider the following limitations together:

> *[1D] a demodulator operable to demodulate a first OFDM symbol followed by a second OFDM symbol,*
>
> *[1E] 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;*
>
> *[1I] 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,*
>
> *[1J] 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,*

Petitioner relies on Hansen as teaching a demodulator operable to demodulate OFDM symbols. *See* Pet. 47–50 (citing Ex. 1003 ¶¶ 147–157). In the detailed description of Figure 2b (*see also id.* at 49), Hansen states:

> In the receiver 201, the plurality antenna front end and A to D conversion blocks 216a, . . . , 216n may receive analog RF signals via an antenna. . . . Each FFT [Fast Fourier Transform]

> block 220a, . . . , 220n may receive a signal from an antenna front end and A to D conversion block 216a, . . . , 216n, independently applying an n-point FFT technique, **demodulating** the signal by a plurality of carrier signals based on then sub-band frequencies utilized in the transmitter 200. The **demodulated** signals may be mathematically integrated over one sub band frequency period by each of the plurality of FFT blocks 220a, . . . , 220n to extract n symbols contained in each of the plurality of **OFDM** signals received by the receiver 201.

Ex. 1005 ¶¶ 50–51 (emphasis added). Petitioner contends that Hansen teaches that "FFT block 220 is therefore a 'demodulator' operable to demodulate OFDM symbols." Pet. 50 (citing Ex. 1003 ¶¶ 148–150). With regard to the receiver receiving the symbols and their parts, the Petition provides that "each FFT receives the same signal corresponding to the transmitted Signal*-N header field." *Id.* (citing Ex. 1003 ¶ 152; Ex. 1005 ¶¶ 67, 97; Ex. 1006, 70:18-21)). The Petition states that "July 2005 WWiSE teaches that header field is transmitted simultaneously from all TX [transmitter] antennas in all modes" (Pet. 47–48 (citing Ex. 1006, 70:18-21 ("The SIG-N MIMO OFDM symbol is transmitted simultaneously from all TX antennas in all modes")) and, "[a]ccordingly, each antenna . . . receives the same signal associated with the header and passes the same header signal to the FFT blocks 220" (*id.* at 48 (citing Ex. 1003 ¶ 148). Petitioner has shown sufficiently for purposes of institution that the cited art teaches all the elements of these limitations of claim 1.

In the Petition, limitations 1K and 1L are grouped together and called the "'Received in a Different Order' Limitations." *See* Pet. 54–55. In order to follow the presentation in the Petition, we also consider the following limitations together:

[1K] wherein the second set of header bits of the second header field received using the second OFDM symbol are received in a different order than the first set of header bits of the second header field received using the first OFDM symbol, and

[1L] wherein the fourth set of header bits of the second header field received using the fourth OFDM symbol are received in a different order than the third set of header bits of the second header field received using the third OFDM symbol.

For these limitations, Petitioner relies on July 2005 WWiSE's description of "an OFDM subcarrier frequency premutation for the repeated ER-SIG-N." Pet. 55 (citing Ex. 1003 ¶¶ 158–163; Ex. 1006 ¶ 69). Petitioner contends that:

> A POSITA would understand that applying July WWiSE's frequency permutation to the repeated symbols (ER-HT-SIG1 and ER-HT-SIG2) but not to the original HT-SIG1 and HT-SIG2 symbols would cause the modulated bits associated with the repeated symbols to be output from the FFT (the demodulator) in a different order than their non-repeated counterparts, consistent with the '707 patent's disclosures.[13]

Id. at 57 (citing Ex. 1003 ¶ 162). Petitioner has shown sufficiently for institution that the cited art teaches all the elements of these limitations of claim 1.

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[13] With regard to the '707 patent's disclosure, the Petition states:

> Outside of the claims, the '707 patent does not mention or describe the **reception** of header bits of one symbol in a different order than the same header bits repeated in a different symbol. At most, the '707 patent teaches that "the header bits are **demodulated** from the D OFDM symbols in the same order or in a **different order**" which indicates the header bits were received on different OFDM subcarriers.

Pet. 55 (citing Ex. 1001, 9:44–46).

In summary, we determine that Petitioner has shown sufficiently for purposes of institution that the combination of Hansen and July 2005 WWiSE teaches all the limitations of claim 1.

b. Motivation to Combine Hansen and July 2005 WWiSE

Petitioner contends a "POSITA would have been motivated to combine the teachings of Hansen with the teachings of July 2005 WWiSE." Pet. 19 (citing Ex. 1003 ¶ 87). Specifically, Petitioner contends "a POSITA would have been motivated to combine July 2005 WWiSE's ER communication teachings . . . with Hansen's 'compromise' greenfield PPDU . . . to support both NR and ER capabilities in a single greenfield-compatible device" (*id.* (citing Ex. 1003 ¶ 87)) and "a POSITA would have been motivated to incorporate July 2005 WWiSE's ER capability into Hansen's greenfield PPDU to extend the range of successful communication between devices" (*id.* at 22 (citing Ex. 1003 ¶ 93)).

In support, Petitioner argues that both Hansen and July 2005 WWiSE include express suggestions to combine their teachings. Petitioner contends that "Hansen repeatedly suggests the combination" by "defin[ing] a compromise proposal based on aspects of both January 2005 WWiSE and the TGN Sync proposal[s]" submitted to the IEEE TGn Group working on the 802.11n standard. Pet. 21 (citing Ex. 1005, code (54) (Title) ("Method and System for Compromise Greenfield Preambles for 802.11n"), ¶¶ 7, 11, 27). The Petition states:

> Based on Hansen's suggestion to bridge the gap between the WWiSE and TGn Sync industry groups, a POSITA would have been motivated to combine July 2005 WWiSE with Hansen to incorporate the newly introduced aspects of the July 2005 WWiSE proposal, including support for the ER [extended range] capability, into the Hansen's greenfield PPDU.

Id. (citing Ex. 1003, ¶¶ 91–92; Ex. 1006, 1, 31, 46–48, 50, 67–70). Petitioner also contends that others in the field recognized the need to combine the proposals of the industry in defining the standard. *Id.* ("[O]thers in the field recognized the critical need to merge these two competing proposals to reach a final version of the 802.11n standard.") (citing Ex. 1021, 1; Ex. 1027, 1; Ex. 1028, 1).

Petitioner contends that "July 2005 WWiSE expressly suggests the benefit of including an ER capability" and "a POSITA would have been motivated to incorporate July 2005 WWiSE's ER capability into Hansen's greenfield PPDU to extend the range of successful communication between devices." Pet. 22 (citing Ex. 1003 ¶ 93; Ex. 1006, 50:15 ("A characteristic of ER MCS is that they have a longer range than NR MCS.")). The Petition states:

> An ER capability is particularly beneficial in WLAN systems in which a potential exists for the receiver to move a significant distance from the transmitter. (INTEL-1003, ¶93, *citing* INTEL-1030, 21-22.) As the distance between transmitter and receiver increases, the communications channel is subjected to increased fading. (INTEL-1003, ¶93.) The ER capability of July 2005 WWiSE achieves communications at a greater distance through the introduction of diversity into its transmitted frames (PPDU). Specifically, as discussed in §V.A.2, July 2005 WWiSE uses both temporal diversity (repeated header field) and frequency diversity (frequency permutation on duplicated version of header field) to provide ER capability. This introduction of two additional forms of diversity makes the header (Signal-N) field more decodable for a given signal power, improving the receiver gain and allowing weaker signals to be received and decoded more effectively. (INTEL-1003, ¶93.) A POSITA would have therefore been motivated to combine July 2005 WWiSE's ER capability into

> Hansen's system to achieve better coverage at a greater distance.

Id. We determine that Petitioner's showing that a skilled artisan would have been motivated to combine the relevant teachings of Hansen and July 2005 WWiSE based on the express suggestions in these references supporting their combination is reasonable and supported.

Petitioner also argues:

> [A] POSITA would have been motivated to combine Hansen and July 2005 WWiSE because **the combination is merely the application of a known technique** (July 2005 WWiSE's ER capability) **to a known device** (device with Hansen's "compromise" greenfield PPDU) **ready for improvement** and **use of a known technique** (July 2005 WWiSE's ER capability) **to improve similar devices** (device with Hansen's "compromise" greenfield PPDUs) **in the same way** (providing ER capability). *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 415-421 (2007). The addition of ER capability to Hansen would have been seen by a POSITA as an improvement to a device using Hansen's "compromise" greenfield PPDU because ER extends the range of reliable communication between a transmitter and receiver by providing diversity to overcome environmental conditions (e.g., fading and/or noise). (INTEL-1003, ¶95.) A POSITA would have applied the known improvement (ER capability of July 2005 WWiSE) in the same way to Hansen because Hansen's "compromise" greenfield PPDU has a similar structure to the greenfield PPDU disclosed in WWiSE. (INTEL-1003, ¶95; *compare* INTEL-1005, Figure 5a *with* INTEL-1006, Figure 007.)

Pet. 23–24 (emphasis added). This argument is reasonable and supported.

And, Petitioner argues, "the combination further **merely combines prior art elements according to known methods**." Pet. 24 (citing *KSR*,

550 U.S. at 416) (emphasis added). In support of this argument, the Petition states:

> The combination repeats the header field and uses a one-bit reserved sub-field to indicate whether ER operation is enabled. (INTEL-1003, ¶96.) A POSITA would have known how to make these modifications to Hansen's "compromise" greenfield PPDU because the addition of fields and the use of reserved fields was commonly done to support modifications or customizations to a standard such as IEEE 802.11 long before August 21, 2009. (INTEL-1003, ¶96.) For example, both Hansen and July 2005 WWiSE discuss modifications to the existing 802.11a PPDU, including the addition of fields. (INTEL-1003, ¶96.) A POSITA would have also known how to integrate the frequency permutation of July 2005 WWiSE because assignment of data bits to OFDM subcarriers was a basic aspect of OFDM before August 2009. (INTEL-1003, ¶96.)

Id. at 24–25. This argument is reasonable and supported.

With regard to reasonable expectation of success, the Petition provides:

> The results of the combination of Hansen and July 2005 WWiSE would have been predictable and a POSITA would have had a reasonable expectation of success in the combination. (INTEL-1003, ¶97.) Both Hansen and July 2005 WWiSE describe PPDUs for use in the 802.11n standard being developed by IEEE. (*See, e.g.* INTEL-1005, Figure 6a; INTEL-1006, Figure 007.) Existing 802.11 standards, which both Hansen and July 2005 WWiSE build upon, would have been extremely well-known to a POSITA by August 21, 2009. (INTEL-1003, ¶97.) And as discussed above, the combination adds fields to a message, uses a reserved field to signal that ER operation is enabled (the REXT bit), and performs a frequency permutation on a symbol. (INTEL-1003, ¶97.) Because such modifications were known and in fact commonplace when dealing with evolving communications technologies, the results of such modifications would have been predictable, and a

> POSITA would have been had a reasonable expectation that the combination would operate successfully. (INTEL-1003, ¶97.)

Pet. 25. This argument is reasonable and supported.

In summary, we determine that the articulation of reasons supporting motivation to combine the relevant teachings of Hansen and July 2005 WWiSE as set forth in the Petition is sufficient to support institution.

c. Patent Owner's Arguments

As noted above, Patent Owner argues that "[Petitioner]'s POSA Would Not Have Made the Proposed Hansen and July 2005 WWiSE Combination." Prelim. Resp. 24 (emphasis omitted). Patent Owner summarizes its argument as follows:

> The Petition plucks just the repeated header of the Extended Range mode from July 2005 WWiSE, and blindly adds it to Hansen, without considering any of the details surrounding the combination. As explained below, [Petitioner] (1) ignores the range-enhancing features Hansen already has, as well as the differences between Hansen and July 2005 WWiSE; (2) cherry-picks the use of repeated headers from July 2005 WWiSE without considering how or why it is used; and (3) fails to recognize that in its proposed combination, a receiving device would not know whether it is receiving a normal range or extended range PPDU, and therefore would not be able to properly receive PPDUs. Considering these details—absent hindsight—a POSA would not have been motivated to arrive at the claimed inventions as [Petitioner] posits.

Id.[14] For the reasons set forth below, even in light of Patent Owner's arguments to the contrary, we determine that the Petition has sufficient merit to support institution of trial.

[14] Patent Owner's arguments regarding the "details" of the cited art suggest that showing a motivation to combine the relevant teachings of the cited art

To begin, Patent Owner does not dispute that July 2005 WWiSE does disclose a repeated header in its extended range mode or dispute that Hansen teaches the remaining limitations of claim 1.[15] *See generally* Prelim. Resp. And, Patent Owner fails to directly address Petitioner's contention that both Hansen and July 2005 WWiSE expressly suggest their combination. As noted above, we determine that the Petition's showing as to motivation to combine the relevant teachings of Hansen and July 2005 WWiSE is reasonable and supported.

We also note that Patent Owner appears to acknowledge that a skilled artisan would have recognized the benefit of extending the operating range of a wireless OFDM transceiver and Patent Owner does not suggest that a skilled artisan would not be motivated to consider ways to extend the range as much as possible. And, although Patent Owner points to other methods of extending the range that are used in the cited art (i.e., beamforming and

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requires a showing that all the "details" of the cited art beyond the relevant teachings be consistent. This is more than the law of obviousness requires. *Omega Patents, LLC. v. BMW of North America, LLC*, No. 2022-2012, 2024 WL 22780, at 3 (Fed. Cir. January 22, 2024) ("Obviousness is determined based on 'what the combined *teachings* of the references would have suggested to those having ordinary skill in the art' and 'does not require an actual, physical substitution of elements.'") (quoting *In re Mouttet*, 686 F.3d 1322, 13332–33 (Fed. Cir. 2012)).

[15] Patent Owner and its declarant, Dr. Haas, acknowledge that repeating headers was known and that adding repeated headers to Hansen was within the capability of a skilled artisan. *See* Prelim. Resp. 38 ("Indeed, since basic repetition was known, a POSA would have understood that, since basic repetition was known, if additional range extension would have been desirable, Hansen could have added repeated headers.") (citing Ex. 2001 ¶ 141).

diversity),[16] Patent Owner does not argue or provide any evidence that these methods are incompatible with incorporating July 2005 WWiSE's ER capability into Hansen's greenfield PPDU to extend the range of successful communication between devices. Overall, we determine that the presentation in the Petition has greater merit than the contrary arguments in the Preliminary Response.

Patent Owner argues that "[b]ecause Hansen already has improved range performance, a POSA would not look to July 2005 WWiSE for anything more." Prelim. Resp. 25. We do not find the premise of this argument to be valid. If improved range performance was recognized as beneficial, we do not understand, and Patent Owner has not adequately established, why a skilled artisan would not look for additional known ways to improve range performance such as repetition. In addition, we note that it is not necessary that the modification to Hansen based on teachings in July 2005 WWiSE is "the *best* option, only that it be a *suitable* option." *Par Pharm., Inc. v. TWI Pharms., Inc.*, 773 F.3d 1186, 1198 (Fed. Cir. 2014).

Patent Owner presents arguments relating to specific technical differences between Hansen and July 2005 WWiSE that Petitioner allegedly fails to consider. *See* Prelim. Resp. 26–31. Patent Owner argues that Petitioner "ignores significant technical differences between Hansen and July 2005 WWiSE regarding range capabilities" (*id.* at 25) and "ignores the

[16] Patent Owner's declarant, Dr. Haas, testifies that "a POSA would have understood that wireless is a series of tradeoffs, and there are numerous approaches to improving range such as repetition, beamforming, antenna diversity, MIMO, changing code rates, changing modulation modes, changing carrier frequency, changing transmit power, changing RF hardware, etc." Ex. 2001 ¶ 141.

critical differences between how the header bits are sent in Hansen and July 2005 WWiSE" (*id.* at 26). The basis of this argument is that July 2005 WWiSE uses less robust modulation for its header than Hansen. *See id.* at 26–31. The Preliminary Response states that, "[a] POSA would have understood the legacy 802.11 standards at the time of invention and would thus have understood from Hansen's explanation that the Signal*-N field is rate ½ coded and transmitted using BPSK modulation, consistent with the legacy 802.11 devices referenced in Hansen" (*id.* at 26) and "[b]y contrast, July 2005 WWiSE uses less robust QPSK modulation for its header" (*id.* at 27). Patent Owner contends:

> This underscores what a POSA would have known—the higher order QPSK of July 2005 WWiSE has worse range performance than the lower order BPSK of Hansen. AXW-2001 ¶¶44, 116-18. And the repetition in July 2005 WWiSE, at best, puts it back on par with Hansen's BPSK—it does not improve it. AXW-2001 ¶119.

Id. at 30–31. Patent Owner does not explain why, if July 2005 WWiSE has less robust modulation that results in worse range performance, its header would not benefit from, and have greater range performance, when incorporated into the header of Hansen. Patent Owner supports this argument with citations to the Declaration of Zygmut Haas, Ph.D. (Ex. 2001) and Petitioner supports its combination of the references with citations to the Declaration of Thomas LaPorta, Ph.D. (Ex. 1003). At this stage of the proceeding, we determine that Petitioner's argument and evidence, even when considered in light of Patent Owner's argument and evidence, has sufficient merit to support institution of trial. Petitioner has not yet been provided with the opportunity to respond to this highly technical argument and we feel that we would benefit from the development

of the trial record before making any final decision on this issue (if presented by the full trial record).

Patent Owner argues that Hansen already has the range-extending features of beamforming (*see* Prelim. Resp. 31) and diversity (*id.* at 32), and this "would suggest to a POSA that there is no reason to combine" Hansen and July 2005 WWiSE (*id.* at 31 (citing Ex. 2001 ¶ 31)) or suggest Petitioner has used hindsight in forming the asserted combination (*id.* at 32). Again, at this stage, we do not find much merit in these arguments as Patent Owner fails to explain, or provide evidence that, a skilled artisan would not combine the teachings of the cited references in an attempt to achieve greater range than the range provided by the separate teachings of either reference.

Patent Owner argues, "the extended range in July 2005 WWiSE would add redundancy to the greenfield PPDU reducing overall throughput—directly contrary to the teachings of Hansen to reduce overhead and improve throughput." Prelim. Resp. 25. In support of this argument, the Preliminary Response provides:

> Hansen explains that a greenfield PPDU—which the Petition relies on—provides benefits, including use of "more robust transmission" with "comparable data rates" by *eliminating* portions of the PPDU overhead. INTEL-1005 [0027]; *see also, e.g.*, *id.* Abstract, [0033], [0072]-[0075], [0096]; AXW-2001 ¶¶92-93. [Petitioner] never addresses this either. Absent a compelling reason to do so, a POSA would not have added redundant bits to Hansen's greenfield PPDU overhead—as [Petitioner]'s combination does—against Hansen's teachings. AXW-2001 ¶123.

Id. at 34. But, Petitioner provides a facially good reason to add the redundant bits—to extend the range of communications. And, in the

combination proposed by Petitioner, the bits that Hansen proposes to eliminate (the preamble and header bits used for legacy or mixed media communications that may not be necessary for greenfield access communication as taught in Hansen (*see, e.g.*, Ex. 1005 ¶ 33)) can still be eliminated. At least at this stage, we do not find much merit in this argument.

Patent Owner argues that Petitioner "Cherry-Picks One Feature Out of July 2005 WWiSE While Failing to Consider the Prior Art References for All Their Teachings." Prelim. Resp. 34 (emphasis omitted). Specifically, Patent Owner alleges that Petitioner "fails to demonstrate a motivation to pluck just the repeated header bits out of July 2005 WWiSE while ignoring the rest of its teachings, which would greatly complicate any purported combination" (*id.* at 37 (citing Ex. 2001 ¶ 129)) and "[t]hus, [Petitioner] has failed to articulate any reason a POSA would have combined Hansen and July 2005 WWiSE only to add repeated header bits" (*id.* at 39). But, as shown above, these allegations are incorrect. Petitioner has provided a showing on motivation to combine the relevant teachings of Hansen and July 2005 WWiSE that we determine, even in light of Patent Owner's contrary arguments, to be sufficient for institution. *See* Pet. 19–25.

Patent Owner also argues that Petitioner "Arrives at the Claimed OFDM Symbol Ordering Only Through Hindsight" and Petitioner "Fails to Provide Any Rational Reasons to Combine Hansen with July 2005 WWiSE as in the Petition." Prelim. Resp. 39, 44 (emphasis omitted). But, here again, Petitioner has articulated several reasons why a skilled artisan would have been motivated to combine the teachings of Hansen with the teachings of July 2005 WWiSE as in the Petition without relying on hindsight. *See*

Pet. 19–25. We determine that the Petition presents sufficient motivation to combine to support institution of trial.

d. Summary for Claim 1

Contrary to Patent Owner's arguments, we determine that Petitioner has shown a reasonable likelihood of establishing that (1) July 2005 WWiSE is a prior art printed publication and (2) the subject matter of claim 1 is unpatentable as obvious in view of the combination of Hansen and July 2005 WWiSE. On that basis, we are persuaded that Petitioner has demonstrated a reasonable likelihood of prevailing in showing that at least one of the claims challenged in the petition is unpatentable and that *inter partes* review should be instituted.[17]

e. Claim 9

Independent claim 9 recites limitations similar to the limitations recited in device claim 1, except that claim 9 is directed to a method of operating a transceiver. *Compare* Ex. 1001, 12:47-13:32, *with id*. at 13:52–14:35; *see also* Pet. 58 ("Claim 9 is substantially the same as claim 1 with the primary difference being that claim 1 is recited as a system claim whereas claim 9 is recited as a method claim."). Petitioner relies on its showing for claim 1 in challenging claim 9. *See* Pet. 58–60. Patent Owner does not present any arguments specifically directed to claim 9. *See*

[17] Thus, we have determined that there is a reasonable likelihood that the Petitioner will prevail with respect to at least one of the claims challenged in the Petition pursuant to 35 U.S.C. § 314 and that *inter partes* review should be instituted. Accordingly, we institute as to all the challenged claims and all the challenges raised in the Petition. 37 C.F.R. §42.108(a) ("When instituting *inter partes* review, the Board will authorize the review to proceed on all of the challenged claims and on all grounds of unpatentability asserted for each claim.").

generally Prelim. Resp. For the same reasons as those explained above addressing claim 1, Petitioner shows sufficiently that the limitations of claim 9 are taught or suggested by the combination of Hansen and July 2005 WWiSE and that a motivation to combine the relevant teachings of these references exists. Accordingly, we are persuaded that Petitioner has demonstrated a reasonable likelihood of prevailing in showing that claim 9 is unpatentable over the combination of Hansen and July 2005 WWiSE.

f. Claims 2, 3, 5, 7, 8, 10, 11, and 13

Petitioner provides an element-by-element analysis showing that all the additional elements recited in dependent claims 2, 3, 5, 7, 8, 10, 11, and 13 are taught by Hansen and July 2005 WWiSE. *See* Pet. 60–64. Patent Owner does not present any arguments specifically directed to claims 2, 3, 5, 7, 8, 10, 11, and 13. *See generally* Prelim. Resp. We have considered Petitioner's showing as to these dependent claims (and, as shown above, independent claims 1 and 9 from which they depend) and we are persuaded that Petitioner has demonstrated a reasonable likelihood of prevailing in showing that claims 2, 3, 5, 7, 8, 10, 11, and 13 are unpatentable.

5. Alleged Obviousness in View of Hansen, July 2005 WWiSE, and Choi

Petitioner contends that the combination of Hansen, July 2005 WWiSE, and Choi renders claims 1–3, 5, 7–11, and 13 of the '707 patent obvious. *See* Pet. 4, 64–72. The Petition states that, "[s]hould [Patent Owner] contend the combination of Hansen and July 2005 WWiSE does not suggest limitations [1J]/[9J] (the order of symbol demodulation), these limitations are explicitly disclosed by Choi." Pet. 64–65. Patent Owner does not contend that the combination of Hansen and July 2005 WWiSE does not suggest limitations 1J/9J. *See generally* Prelim. Resp.

Nonetheless, we consider whether Petitioner has shown that the challenged claims are obvious in view of Hansen, July 2005 WWiSE, and Choi.

For its showing that Hansen, July 2005 WWiSE, and Choi teach all the limitations of the claims, Petitioner relies on its showing that Hansen and July 2005 WWiSE teach all the limitations of the claims except limitations 1J and 9J. *See* Pet. 70–72. Limitations 1J and 9J are identical and recite:

> *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*

Ex. 1001, 13:16–22, 14:19–25. For limitations 1J and 9J, Petitioner cites paragraphs 18 and 26 of Choi (Ex. 1008). Pet. 71. The Petition provides:

> The coded HT-SIG1, output first, is provided to the repetition encoder where it is duplicated to generate a second instance of coded HT-SIG1. (*See* INTEL-1008, ¶¶26, 18 (repetition applied to a coded block corresponding to an OFDM symbol).) The coded HT-SIG2 is next provided to the repetition encoder where it is duplicated to generate a second instance of coded HT-SIG2. (*See* INTEL-1008, ¶26.) The coded and repeated blocks sequentially traverse the transmission chain, resulting in the following order of transmitted symbols: HTSIG1 symbol, ER-HT-SIG1 symbol, HT-SIG2 symbol, and ER-HT-SIG2 symbol. (*See* INTEL-1008, ¶26.)

Id. Patent Owner does not dispute Petitioner's contention that Choi teaches the order of symbol demodulation limitations 1J/9J. Prelim. Resp. 57 ("assuming Choi discloses the claimed header ordering"). We determine that Petitioner establishes sufficiently for institution that the combination of

Hansen, July 2005 WWiSE, and Choi teaches or suggests all the limitations of the challenged claims.

With regard to motivation to combine the relevant teachings of Hansen, July 2005 WWiSE, and Choi, the Petition provides a description of Choi and its relevant teachings (Pet. 65–66) and states:

> A POSITA would have been motivated to combine Choi's repetition coding teachings with the combined system of Hansen and July 2005 WWiSE. (INTEL-1003, ¶¶189-192.) Specifically, a POSITA would have been motivated to integrate a repetition encoder into the transmission portion of Hansen's transceiver, as taught by Choi and illustrated below. (INTEL-1003, ¶189.) Although Choi teaches repetition of "data" generally, a POSITA would have understood that Choi's technique would be applicable to other fields carrying data such as the header. (INTEL-1003, ¶189, *citing* INTEL-1014, ¶83 (describing repetition of the header), INTEL-1018, 51:1331-1358 (disclosing a repetition encoder for header field); INTEL-1001, 1:54-56 (admitting the G.9960 specification is prior art and "should be familiar to those skilled in the art").)
>
> * * *
>
> A POSITA would have been motivated to combine Hansen, July 2005 WWiSE, and Choi because July 2005 WWiSE sets forth specifications for including repeating a header field in its PPDUs but does not provide details regarding how to implement such repetition in the transmission or reception portions of a transceiver. (INTEL-1003, ¶190.) . . . a POSITA would have been motivated to perform repetition post-coding in the combination of Hansen and July 2005 WWiSE for efficiency reasons. (INTEL-1003, ¶190.) A POSITA would have therefore been motivated to search for references disclosing repetition coding post-coding/pre-modulation and would have been led to Choi because Choi is in the same field of endeavor as the '707 patent, Hansen, and July 2005 WWiSE —wireless transmission and reception using OFDM. (*Id.*)
>
> Choi also expressly motivates the combination. (INTEL-1003, ¶191.) First, Choi discloses that its disclosures are applicable to IEEE 802.11 standards, including 802.11a, b, g,

> and a/g. (*See* INTEL-1008, ¶¶2, 17.) Second, Choi explicitly suggests the use of its repetition coding in systems having extended range capabilities, such as the system in the combination of Hansen and July 2005 WWiSE. (INTEL-1008, ¶¶2, 15; INTEL-1003, ¶195; *See* §V.A.3.) Third, Choi teaches that its repetition coding is beneficial for communication "in noisy environments", which is a common concern for WLAN systems. (INTEL-1008, ¶2; INTEL-1003, ¶191.) Each of these suggestions would have motivated a POSITA to combine Choi's repetition coding with Hansen and July 2005 WWiSE. (INTEL-1003, ¶191.)
>
> Finally, the combination is simply the combination of prior art elements (Hansen's "compromise" greenfield PPDU, WWiSE's ER capabilities, and Choi's repetition encoding) according to known methods to yield predictable results. The combination integrates Choi's repetition encoder in the transmission chain after coding and prior to interleaving. (INTEL-1003, ¶192.) A POSITA would have understood how to integrate the repetition encoder in the transmission chain because transceiver design includes and incorporates the integration of other components such as puncturing between the coder and interleaver. (*See, e.g.,* INTEL-1005, Figure 2b.) (*Id.*) The results of the combination would have been predictable and there would be a reasonable expectation of success in the combination because post-coding repetition encoders were proposed in other standards including G.9960. (*See Id.*; INTEL-1018, 51:1331-1358 (disclosing a repetition encoder for header field).).)

Id. at 66–70. Petitioner presents a showing that a skilled artisan would have been motivated to combine the relevant teachings of Hansen, July 2005 WWiSE, and Choi that is sufficient to support institution of trial. *See id.*

Patent Owner relies on its arguments relating to motivation to combine presented with regard to the combination of Hansen and July 2005 WWiSE, discussed above, for this combination of references. *See* Prelim. Resp. 56 ("[T]he addition of Choi cures none of the failings described in the

previous section with respect to combining Hansen and July 2005 WWiSE.") (citing Ex. 2001 ¶ 149). We determine that these arguments are unavailing for the reasons discussed above.

Patent Owner also argues that Hansen and Choi are different types of systems and "a POSA would have had no reason to resort to repetition coding and decreased throughput as in Choi to increase range." Prelim. Resp. 56 (citing Ex. 2001 ¶150). But, if increased range is a benefit as Petitioner contends and Patent Owner does not dispute, this potential benefit would motivate a skilled artisan to "combine Choi's repetition coding teachings with the combined system of Hansen and July 2005 WWiSE" as argued by Petitioner. *See* Pet. 66 (citing Ex. 1003, ¶¶ 189–192).

Petitioner has shown that the combination of Hansen, July 2005 WWiSE, and Choi teaches or suggests all the limitations of the challenged claims and that a skilled artisan would have been motivated to combine the relevant teachings of these references as argued in the Petition. Petitioner's showing that Hansen, July 2005 WWiSE, and Choi render obvious claims 1–3, 5, 7–11, and 13 of the '707 patent is sufficient for institution.

III. DISCRETIONARY INSTITUTION, 35 U.S.C. § 314(A)

Patent Owner contends the Board should exercise its discretion to deny institution under 35 U.S.C. § 314, citing the discretionary-denial factors articulated in *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, 2020 WL 2126495 (PTAB Mar. 20, 2020) (precedential) ("*Fintiv*"). *See* Prelim. Resp. 58–63. More specifically, Patent Owner contends that all of the *Fintiv* factors weigh in favor of discretionary denial in view of the two parallel district court proceedings involving Petitioner's real parties-in-interest Dell and Lenovo. *See id.*

Under § 314(a), the Director has discretion to deny institution of an *inter partes* review, and that discretion has been delegated to the Board. *See* 37 C.F.R. § 42.4(a) ("The Board institutes the trial on behalf of the Director."); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2140 (2016) ("[T]he agency's decision to deny a petition is a matter committed to the Patent Office's discretion."); *SAS Inst. v. Iancu*, 138 S. Ct. 1348, 1356 (2018) ("[Section] 314(a) invests the Director with discretion on the question whether to institute review . . . ." (emphasis omitted)); *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1367 (Fed. Cir. 2016) ("[T]he PTO is permitted, but never compelled, to institute an IPR proceeding.").

The Board may, in the interest of fairness and the efficient use of Board resources, deny institution under § 314(a) where there are parallel district-court proceedings involving the same or substantially the same parties and invalidity challenges. *Fintiv*, Paper 11 at 5–6, 12–13 (setting out six nonexclusive factors that the Board may consider in determining whether to deny institution because of a parallel district-court proceeding). "These factors relate to whether efficiency, fairness, and the merits support the exercise of authority to deny institution in view of an earlier trial date in the parallel proceeding." *Id.* at 6.

Our analysis under *Fintiv* is guided by the USPTO Director's Memorandum titled *Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation* (June 21, 2022)[18] ("*Fintiv* Memo"). The *Fintiv* Memo sets forth, *inter alia*, that the

[18] *Available at* https://www.uspto.gov/sites/default/files/documents/interim_proc_discretionary_denials_aia_parallel_district_court_litigation_memo_20220621_.pdf

Board will not discretionarily deny institution under § 314(a) when a petitioner submits a so-called *Sotera* stipulation, i.e., the petitioner "stipulates not to pursue in a parallel district court proceeding the same grounds as in the petition or any grounds that could have reasonably been raised in the petition." *Fintiv* Memo 7 (citing *Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12 (PTAB Dec. 1, 2020). A *Sotera* stipulation mitigates concerns of potentially conflicting PTAB and district-court decisions and duplicative efforts between the district court and PTAB. *Id.*

In the Reply, Petitioner notes that it is not a party to any proceeding brought by Patent Owner, but named Dell and Lenovo as real parties-in-interest. *See* Reply 1. Petitioner filed stipulations from its real parties-in-interest Dell and Lenovo, in which each of Dell and Lenovo state that they "will not pursue in this litigation the grounds raised or any other grounds that could have reasonably been raised before the PTAB in that instituted proceeding." Exs. 1041, 1042. Petitioner further notes that Patent Owner brought four separate district court proceedings asserting the '707 Patent against Dell, Lenovo, as well as against HP Inc. ("HP") and Acer Inc. ("Acer"). *See* Reply 1. According to Petitioner, "[t]he *Sotera* stipulations from Dell and Lenovo remove any overlap between the present IPR and the Dell and Lenovo litigations." *Id.* Petitioner asserts, "[g]iven the *Sotera* stipulations and the *Fintiv* Memo guidance, the Board should decline to exercise its discretion to deny institution." *Id.* at 1–2.

In light of the mandatory *Fintiv* guidance regarding *Sotera* stipulations discussed above, we decline to exercise discretion under § 314(a) to deny institution of *inter partes* review. The *Sotera* stipulations

filed by Petitioner's real parties-in-interest Dell and Lenovo mitigate the concerns of potentially conflicting PTAB and district court decisions as to the disputes between Petitioner, Dell, and Lenovo, and Patent Owner.

In the Sur-reply, Patent Owner asserts that, despite Dell's and Lenovo's stipulations, the Petition still includes the same grounds that will be presented in the district court because real party-in-interest Dell and HP submitted joint invalidity contentions with the same grounds as those presented in this Petition. *See* Sur-reply 1. Patent Owner points out that Petitioner "does not contend that HP . . . is bound in any way by Dell's stipulation." *Id.* Patent Owner asserts that the Director's *Fintiv* memorandum does not directly address this situation, but "is instead directed to the situation where the petitioner (rather than a collection of RPIs and privies) is the defendant in one parallel [district] court proceeding (rather than multiple related proceedings), and the petitioner (rather than its RPIs and privies) submits a stipulation." *Id.* (citing *Fintiv* Memo 7). Patent Owner suggests that HP is a real party-in-interest or privy on the basis that Petitioner "supplies HP, just as it supplies Dell and Lenovo." *Id.* (citing Ex. 2036, 5). Moreover, Patent Owner points out that Acer has submitted invalidity contentions that include the same grounds as the Petition. *See* Sur-reply 1. Patent Owner suggests Acer also a real party-in-interest or privy on the basis that Petitioner "also supplies Acer." *Id.*; *see id.* at 2 (citing Ex. 2033, Ex. 2034, 3).

Patent Owner asserts that Petitioner bears the burden of showing that institution is warranted but never explains why the HP district court proceedings or Acer's district court proceedings "do not raise the same 'concerns of inefficiency and the possibility of conflicting decisions' as the

Dell and Lenovo" district court proceedings. Sur-reply 2 (citing *Fintiv* Memo 7 (quoting *Fintiv* 12)). According to Patent Owner, Petitioner "insinuates that HP (and Acer) are *not* privies or RPIs in a cryptic footnote citing the original *Fintiv* decision (Reply 1 n.1), but carefully avoids stating so in a transparent attempt to avoid its routine discovery obligations."

As an initial matter, for the first time in the Sur-reply, Patent Owner contends that we should exercise discretion to deny institution on the basis of the HP district court proceeding and the Acer district court proceeding. Patent Owner did not previously address discretionary denial on the basis of these district court proceedings, but instead addressed "the two parallel district court proceedings involving . . . Dell and Lenovo." Prelim. Resp. 58; *see id.* at 58–59. Patent Owner's arguments are belated and outside the proper scope of a proper sur-reply, and should not be considered. "Generally, a reply or sur-reply may only respond to arguments raised in the preceding brief." Patent Trial and Appeal Board Consolidated Trial Practice Guide (Nov. 2019) ("CTPG")[19] 74 (citing 37 C.F.R. § 42.23). It "does not mean to proceed in a new direction with a new approach as compared to the positions taken in a prior filing." *Id.*

In any event, even if we were to consider Patent Owner's belated arguments, Patent Owner does not direct us to evidence to support its argument that HP and Acer are real parties-in-interest or privies. Nor does Patent Owner direct us to evidence demonstrating any involvement or control by HP or Acer in this proceeding. Thus, HP and/or Acer's actions,

[19] Available at https://www.uspto.gov/sites/default/files/documents/tpgnov.pdf?MURL=TrialPracticeGuideConsolidated

including whether they raise these same grounds of unpatentability in their respective district court proceedings, should not be imputed to Petitioner.

In sum, because Petitioner filed *Sotera* stipulations by Dell and Lenovo, we decline to exercise discretion to deny institution under § 314(a).

IV. CONCLUSION

For the foregoing reasons, we determine that the information presented in the Petition establishes a reasonable likelihood that Petitioner would prevail in showing at least one of claims 1–3, 5, 7–11, and 13 of the '707 patent is unpatentable under 35 U.S.C. § 103.

V. ORDER

Upon consideration of the record before us, it is:

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review of claims 1–3, 5, 7–11, and 13 of U.S. Patent No. 10,079,707 B1 is instituted with respect to all grounds set forth in the Petition; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4(b), *inter partes* review of U.S. Patent No. 10,079,707 B1 shall commence on the entry date of this Order, and notice is hereby given of the institution of a trial.

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