

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

INTEL CORPORATION,
Petitioner,

v.

AX WIRELESS, LLC.,
Patent Owner.

IPR2023-01137
Patent 10,291,449 B2

Before TERRENCE W. McMILLIN, JOHN D. HAMANN, and
MICHAEL T. CYGAN, *Administrative Patent Judges*.

CYGAN, *Administrative Patent Judge*.

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

I. INTRODUCTION

A. *Background and Summary*

Intel Corporation (“Petitioner”) filed a Petition requesting an *inter partes* review of claims 1–3, 5, 7–11, and 13 of U.S. Patent No. 10,291,449 B2 (Ex. 1001, “the ’449 patent”). Paper 2 (“Pet.”). AX Wireless, LLC. (“Patent Owner”) filed a Preliminary Response to the Petition. Paper 6 (“Prelim. Resp.”). The Petition is supported by declarations from Dr. Thomas LaPorta and Dr. James Lansford. Ex. 1003 (“LaPorta Declaration”); Ex. 1007 (“Lansford Declaration”). The Preliminary Response is supported by a declaration by Dr. Zygmunt Haas. Ex. 2001 (“Haas Declaration”).

We have authority to determine whether to institute an *inter partes* review. *See* 35 U.S.C. § 314 (2018); 37 C.F.R. § 42.4(a) (2023). The standard for instituting an *inter partes* review is set forth in 35 U.S.C. § 314(a), which provides that an *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.” For the reasons given below, on this record Petitioner has established a reasonable likelihood that it would prevail in showing the unpatentability of claims 1–3, 5, 7–11, and 13 of the ’449 patent. Accordingly, we institute an *inter partes* review as to claims 1–3, 5, 7–11, and 13 of the ’449 patent on all asserted grounds of unpatentability.

B. *Real Parties in Interest*

Petitioner identifies itself, Intel Corporation, Dell, Inc., Dell Technologies, Inc., and Lenovo Group Ltd. as real parties-in-interest. Pet. 79. Patent Owner identifies AX Wireless, Inc., and its corporate parent, IdeaHub, Inc., as real parties-in-interest. Paper 4, 1.

C. Related Matters

The parties represent that the '449 patent is involved in *AX Wireless LLC, v. Dell Inc., and Dell Technologies Inc.*, 2:22-cv-00277-RWS-RSP (EDTX); *AX Wireless LLC, v. Lenovo Group Ltd.*, 2:22-cv-00280-RWS-RSP (EDTX); *AX Wireless LLC, v. HP Inc.*, 2:22-cv-00279-JRG-RSP (EDTX); *AX Wireless LLC, v. Acer Inc.*, 2:23-cv-00041-JRG-RSP (EDTX). Paper 4, 1; Pet. 79.

Patent Owner represents that Petitioner has also filed IPRs challenging other patents asserted in the district court cases, namely U.S. Patent Nos. 9,584,262 ("262 patent"), 9,614,566 ("566 patent"), 10,079,707 ("707 patent"), 9,973,361 ("361 patent"), 10,554,459 ("459 patent"), 10,917,272 ("272 patent"), and 11,212,146 ("146 patent"). Paper 4, 1.

D. The '449 Patent

The '449 patent is titled "Transmitter Method and Apparatus for Variable Header Repetition in a Wireless OFDM Network With Different Channel Bandwidths." Ex. 1001, code (54). The '449 patent issued from Application No. 16/125,206, filed on September 7, 2018, and claims priority, via continuation applications and a national stage entry, to Provisional Application No. 61/235,909, filed on August 21, 2009. *Id.* at codes (21), (22), (60), (63).

The '449 patent relates to communications system using a shared channel based on Orthogonal Frequency Division Multiplexing ("OFDM"). *Id.* at 1:36–41. OFDM divides the transmission frequency band into multiple subcarriers, with each subcarrier individually modulating one or more bits. *Id.* at 1:45–50. OFDM may involve a packet, which is "usually formed by a preamble, header, and payload, and transmitted using time-

sharing or contention-based media access methods. *Id.* at 1:41–43. The ’449 patent describes IEEE [Institute for Electrical and Electronics Engineers] 802.01 (Wireless LAN) as an example of such a system. *Id.* at 1:43–45.

Because the header contains important information for decoding the payload, it is essential to decode the header reliably. *Id.* at 1:51–54. The ’449 patent describes “various ways of communicating a header repetition scheme in a system so that various nodes are aware of the scheme used.” Prelim. Resp. 2 (citing Ex. 1001, 2:47–3:61). One described method modulates header bits onto two OFDM symbols, in a different order. Ex. 1001, 7:54–63.

E. Illustrative Claim

Claim 1 is illustrative, and recites as follows:¹

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

[1A] a wireless OFDM communications transmitter operable to generate a first packet type for transmission in a first channel bandwidth,

[1B] the first packet type comprising a first header field, 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] an encoder and a modulator operable to generate a first OFDM symbol followed by a second OFDM symbol,

¹ Bracketed numbering added as per the Petition.

[1E] wherein the first OFDM symbol is used to transmit the first part of the first header field and the second OFDM symbol is used to transmit the second part of the first header field;

[1F] the wireless OFDM communications transmitter further operable to transmit the first packet type over a wireless communication channel,

[1G] the wireless OFDM communications transmitter further operable to generate a second packet type for transmission in a second channel bandwidth,

[1H] the second packet type comprising a second header field, 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,

[1I] 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,

[1J] the encoder and the modulator further operable to generate a first OFDM symbol followed by a second OFDM symbol followed by a third OFDM symbol followed by a fourth OFDM symbol,

[1K] wherein the first OFDM symbol is used to transmit the first part of the second header field, the second OFDM symbol is used to transmit the second part of the second header field, the third OFDM symbol is used to transmit the third part of the second header field, the fourth OFDM symbol is used to transmit the fourth part of the second header field,

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

[1M] wherein the fourth set of header bits of the second header field transmitted using the fourth OFDM symbol are transmitted in a different order than the third set of header bits of the second header field transmitted using the third OFDM symbol, and

[1N] the wireless OFDM communications transmitter further operable to transmit the second packet type over the wireless communication channel.

[1O] wherein the first channel bandwidth is at least two times wider than the second channel bandwidth.

F. Evidence

Petitioner relies on the following patent document evidence.

Name	Patent Document	Exhibit
Hansen	US 2006/0182017 A1	1005
Choi	US 2005/0243774 A1	1008

Petitioner relies on the following non-patent literature evidence.

Name	Non-Patent Literature Title	Author	Exhibit
WWiSE	WWiSE Proposal: High throughput extension to the 802.11 Standard	Kose, Cenk, and Fischer, Matthew	1006

Patent Owner argues that WWiSE has not been shown to be publicly available, and consequently, has not been shown to be prior art. Prelim. Resp. 3. We address Petitioner’s assertions in light of Patent Owner’s arguments.

Petitioner, through testimony of Dr. Lansford, asserts the following facts supporting public availability of WWiSE. WWiSE “was available and accessible to the public on July 9, 2005.” Pet. 2 (citing Ex. 1007 ¶ 24). On that date, WWiSE was received by Task Group n (“TGn”) of the IEEE 802.11 Wireless Local Area Networks (“WLAN”) Working Group via a submission made to its Wireless World website, “<http://802wirelessworld.com>.” *Id.* (citing Ex. 1007 ¶¶ 15–16; Ex. 1038, 35–37; Ex. 1039, 5). Via

that website, WWiSE was accessible to the public by viewing the “Working Group Document Listing” and downloading the document. *Id.* (citing Ex. 1038, 25–30, 35; Ex. 1007 ¶ 18). Until mid-2007, WWiSE resided on an FTP server, ftp.wirelessworld.com, whose address and login credentials were publicly available. *Id.* (citing Ex. 1007 ¶ 19). Subsequently, documents on that FTP server were added to IEEE’s current website, “Mentor.” *Id.* at 3 (citing Ex. 1007 ¶ 21). Documents on Mentor have been freely available to members of the public, and searchable by year, task group, title, or other parameters. *Id.* (citing Ex. 1007 ¶ 22). Interested members of the public would have been aware of WWiSE, and other proposals made to IEEE by the WWiSE consortium authors, “because they were frequently discussed in 2004 and 2005 in industry publications.” *Id.* (citing Ex. 1021; Ex. 1027; Ex. 1035; Ex. 1036; Ex. 1037).

The touchstone in determining whether a reference constitutes a printed publication is whether it was publicly accessible at the critical time. *SRI Int’l v. Internet Security Systems, Inc.*, 511 F.3d 1186, 1194 (Fed. Cir. 2008). Public accessibility exists where the reference document “has been disseminated or otherwise made available to the extent that persons interested and ordinarily skilled in the subject matter or art exercising reasonable diligence, can locate it.” *Id.* (quoting *Bruckelmyer v. Ground Heaters, Inc.*, 445 F.3d 1374, 1378 (Fed. Cir. 2006)). Patent Owner argues that a relevant person of ordinary skill using reasonable diligence would not reasonably have located the paper residing on the TGn ftp site. Prelim. Resp. 3–4. We discern three potential avenues for public availability in the assertions set forth by Petitioner: (1) availability to the members of TGn through the Wireless World website; (2) availability to others through the ftp

site; and (3) availability to others through Mentor. We address each in turn, taking into account Patent Owner's arguments.

1. Members of TGn

Patent Owner addresses public availability of WWiSE to the TGn members in a footnote, stating,

For good reason, Intel does not argue that July 2005 WWiSE was presented to the TGn working group and that would have been sufficient. *See Samsung*, 929 F.3d at 1371-72 (distribution to 250-member working group of skilled artisans was insufficient); *SRI*, 511 F.3d at 1196-97 (distribution to the review committee was insufficient).

Prelim. Resp. 7 n.4 (citing *Samsung Elecs. Co. v. Infobridge Pte. Ltd.*, 929 F.3d 1363, 1369 (Fed. Cir. 2019), and *SRI Int'l, Inc. v. Internet Sec. Sys., Inc.*, 511 F.3d 1186, 1196–97 (Fed. Cir. 2008)). However, the *Samsung* and *SRI* cases are distinguishable on their facts.

In *Samsung*, the committee was the author of the document, and therefore distribution among the committee members was not considered public availability because the document had not been distributed outside its authors. That is not the case here, because WWiSE was submitted to, not authored by, the TGn working group. As Patent Owner points out, WWiSE was “one of myriad submissions for the working group to debate whether to incorporate into a working draft” and it was “*not* incorporated into the 802.11n standard” that was eventually published by the TGn working group. Prelim. Resp. 5. Because WWiSE was “for the working group to debate,” in Patent Owner's words, WWiSE was purposed for accessibility to the TGn working group, an entity that did not author WWiSE. *Samsung* is therefore inapposite to the facts here.

With respect to dissemination of WWiSE among its proposal team, we note that WWiSE lists, in addition to its two named authors, over fifty contributors that were associated with a wide variety of technology companies in this space. Ex. 1006, 2–4. Regarding such dissemination, the Federal Circuit in *Samsung* stated that it could not on the record before it say that the Board erred in treating other group members who knew of the project like faculty advisers or in-house employees so that a reference was not publicly accessible. *See Samsung*, 929 F.3d at 1372. The parties may want to consider during trial, and in accordance with our Rules, whether the dissemination among authors in this case meaningfully differs from that in *Samsung*.

In *SRI*, the court analogized the placement of a pre-publication draft awaiting peer review on an FTP server as “placing posters at an unpublicized conference with no attendees,” with no record that it “was accessible to anyone other than the peer-review committee.” *SRI*, 511 F.3d at 1197. Here, there is ample evidence that membership in the working group, attendance at its meetings, and access to its documents was available to the public. *See* Ex. 1007 ¶ 14 (meetings open to public); 15 (submissions presented at meetings and available to all participants); 18 (“an interested member of the public could visit the 802wirelessworld website, click the ‘become a member’ link . . . and download any submissions that had been uploaded.”). Unlike *SRI*, WWiSE was not intended for a select group of people to review prior to its publication; instead, WWiSE was intended for public debate among the working group members to influence their choices for the new 802.11n standard. *See* Ex. 2001 ¶¶ 89 (WWiSE presentation in July 2005 presented to TGn meeting), 90 (“[t]he completed 802.11n

standard . . . does contain aspects from the various TGn Sync and WWiSE proposals”). *SRI* is therefore also inapposite to the facts here.

Of greater significance to the facts at hand is the court’s analysis in *GoPro, Inc. v. Contour IP Holding LLC*, 908 F.3d 690 (Fed. Cir. 2018). In *GoPro*, the court stated, “our case law directs us to also consider the nature of the conference or meeting; whether there are restrictions on public disclosure of the information; expectations of confidentiality; and expectations of sharing the information.” *Id.* at 694 (citing *Medtronic v. Barry*, 891 F.3d 1368, 1382 (Fed. Cir. 2018)); *see also Valve Corp. v. Ironburg Inventions Ltd*, 8 F.4th 1364, 1375 (Fed. Cir. 2021) (public accessibility indicated where “a publication’s purpose is ‘dialogue with the intended[public] audience’”). In *GoPro*, the court noted that the trade show at issue, “not unlike conferences . . . is directed to individuals interested in the commercial and developmental aspects of products.” The *GoPro* court determined that, although its trade show was open only to dealers rather than the general public, the document at issue “was disseminated with no restrictions and was intended to reach the general public.” *GoPro, Inc.*, 908 F.3d at 695.

Like *GoPro*, WWiSE was disseminated with no expectation of confidentiality, as it was available to be shared by the TGn members through unrestricted download and by sharing the publicly available ftp site location and access credentials. Ex. 1017 ¶ 19. Public disclosure was encouraged, not restricted, as evidenced by the public nature of the TGn meetings at which proposals such as WWiSE were discussed by the working group. *Id.* ¶¶ 14, 17, 19. Moreover, the WWiSE proposals were known to the public as one of two finalist proposals considered for adoption as the new standard. Ex. 2001 ¶ 67; Ex. 2015, 311 (“As the standards war is fought across the

globe at IEEE meetings,” “support has coalesced around two main proposals, from groups named TGnSync and WWiSE.”). Also like *GoPro*, the relevant audience was involved in the meeting, because the TGn group members and attendees of the 802.11 working group meetings were engineers, researchers, and business persons interested in networking technologies, including wireless local area networking (WLAN) technologies. Ex. 1007 ¶ 14; *see also* Ex. 2015, 311 (stating, “quite a few manufacturers of electronic devices that might use 802.11 (Cisco, Nokia, Nortel, Philips, Samsung, Sanyo, Sony, and Toshiba) have also become part of the effort”).

Based on the above facts, we determine that Petitioner has sufficiently shown, for purposes of institution, facts showing that WWiSE, at the critical time, was disseminated or otherwise made available to the extent that persons interested and ordinarily skilled in the subject matter or art exercising reasonable diligence, could have located it. We note that a document “need not be easily searchable after publication if it was sufficiently disseminated at the time of its publication.” *Medtronic*, 891 F.3d at 1381. Consequently, we determine that Petitioner has shown public availability of WWiSE based upon the availability of WWiSE among the TGn members.

We further disagree with Patent Owner’s assumption that Petitioner did not sufficiently assert public availability based upon the presentation of WWiSE to the TGn working group. Petitioner asserted that WWiSE was publicly available on the date that it was submitted to that working group, and then provided facts to establish that the public may join that working group and download submissions such as the WWiSE submission. Our consideration of public availability is necessarily based upon all of the

relevant facts presented. *See SRI*, 511 F.3d at 1198 (“This court vacates and remands for a more thorough determination of the [public] accessibility . . . based on additional evidence”).

Thus, we determine that dissemination to the working group provided sufficient public availability to support Petitioner’s assertion that WWiSE is prior art. For purposes of informing further briefing, we also address public availability based on access to the ftp and Mentor storage of WWiSE.

2. *FTP*

Patent Owner argues that a relevant person of ordinary skill using reasonable diligence would not reasonably have located the paper residing on the TGn ftp site. Prelim. Resp. 3–5. First, Patent Owner argues that a person of ordinary skill in the art “exercising reasonable diligence in seeking information regarding extending the range of a header field in a system such as Hansen’s” would not have visited the ftp site on which WWiSE was stored upon submission to TGn. Prelim. Resp. 6.

The facts on the current record do not support Patent Owner’s argument. With regard to whether one seeking to extend the range of a header field in a system such as Hansen’s would have visited TGn’s site, the record reflects significant public discussion of WWiSE proposals. A book submitted by Patent Owner titled, “802.11 Wireless Networks, The Definitive Guide,” contains significant discussion of a WWiSE proposal, including its header fields, and states that “some horse trading will likely result in a few WWiSE features being incorporated,” although “the proposals themselves may have changed quite a bit since the drafts upon which this chapter was based were written.” Ex. 2015, 312, 323–323. Dr. Haas testifies that “proposals from TGn Sync and WWiSE (short for ‘World-Wide Spectrum Efficiency’) emerged as leading candidates.” Ex.

2001 ¶ 67. Thus, the record reflects significant public awareness of WWiSE proposals in the IEEE 802.11n community.

Dr. Haas further states that Hansen “places the context of its disclosure into the TGn working group” and explains that a number of proposals had emerged, including from TGn Sync, to which Hansen desired the addition of greenfield access as its primary goal. *Id.* ¶ 91; *see* Ex. 1005 ¶ 33. Hansen also refers to proposals from WWiSE, for which Hansen relies for greenfield access teachings. Ex. 1005 ¶¶ 33, 79. Hansen specifically points to a WWiSE proposal as the source of its desired header field. *Id.* ¶ 79. Thus, Hansen itself guides its readers to WWiSE proposals as relevant information to WLAN header fields.

A reader would have been guided to the ftp site on which such proposals were publicly available. The address of the ftp site was publicly available; for example, it was referenced in both U.S. Patent 7,415,074 and a paper published in ACM SIGCOMM Computer Communication Review. Ex. 1007 ¶ 19. The former document addresses MIMO use in IEEE 802.11n, and the latter addresses TGn itself; both of which address features relevant to those considered by Hansen, and could have led the person of ordinary skill in the art to the TGn ftp site. *Id.*, Appendix C, 1:20–26; Appendix D, 91. The ftp site’s login credentials were obtainable through a free account. *Id.*

Thus, discussion of WWiSE in the 802.11n community and in Hansen would have led a person of skill in the relevant art seeking information on header fields for greenfield access directly to “a WWiSE proposal” made to the TGn working group, and consequently, to its ftp site on which WWiSE proposals were stored. In view of the current record evidence, we do not

agree that a person of ordinary skill in the art would not have been led to TGn's ftp site to seek information on proposals submitted by WWiSE.

Once at TGn's website, a person having ordinary skill in the art would need to be able to locate WWiSE proposals exercising reasonable diligence. Patent Owner argues that a reasonable person of skill in the art would not have "played archeologist with Intel's alleged sites, painstakingly combing through thousands upon thousands of submissions of dubious relevancy, manually reading rejected submissions and proposals in search of a portion of an extended-range feature omitted from the draft and final 802.11n standard." Prelim. Resp. 5–6. Dr. Haas testifies that ftp sites "generally allow a user to see and navigate a directory structure, as well as upload or download files, depending on permissions. They are not used like websites where information is posted in a form immediately loaded by a web browser." Ex. 2001, 54 n.4.

An ftp structure itself does not necessarily present an impenetrable barrier to locating a document stored thereon. Addressing a similar situation, the Federal Circuit indicated that a hierarchical organization in which the name of the hierarchical levels indicated its topics, permitted a document to be found "easily." *Suffolk Technol., LLC v. AOL, Inc.*, 752 F.3d 1358, 1365 (Fed. Cir. 2018) ("Suffolk overstates the difficulty in locating the Post after publication. Usenet newsgroups were organized in a hierarchical manner, as evidenced by the name of the newsgroup at issue—comp.infosystems.www.authoring.cgi. Thus, someone interested in CGI could easily locate a list of posts in this newsgroup."). Further, in *SRI*, the court stated that "the FTP server directory structure (/pub/emerald/) of a well-known institution in the intrusion detection community and the

acronym of ‘ndss98.ps’ might have hinted at the path to” the document at issue. *SRI*, 511 F.3d at 1197.

However, the current record does not indicate how a non-member, accessing the ftp site with provided information and in search of WWiSE proposals, could have located WWiSE using reasonable efforts. The record does not indicate any naming conventions in the ftp structure that would facilitate such a search. Dr. Lansford merely states that a person “could view the ‘Working Group Document Listing’ and download any submissions that had been uploaded.” Ex. 1007 ¶ 18. Neither Dr. Lansford nor the “New Participant Orientation” document on which he relies explains whether the document name in the ftp system would indicate that it is a WWiSE proposal; at best, the document name is shown to contain the year and working group. Ex. 1007, Appx A, 10. On the contrary, the depiction of the directory structure shown in the “New Participant Orientation” document shows top-level directories under 802.11 of “archive,” “drafts,” “INCOMING-Pre-03-500-Documents-Only,” “pre-meeting,” and “work.” *Id.*, Appx A, 38. None of these directories appear, on their face, to guide a user towards finding submissions by WWiSE.

Patent Owner further argues that WWiSE was “merely one of many thousands of submissions to one of many dozens of working groups addressing the 802.11 standard.” Prelim. Resp. 4. However, “even relatively obscure documents qualify as prior art so long as the relevant public has a means of accessing them.” *GoPro*, 908 F.3d at 693 (Fed. Cir. 2018); *see also Valve*, 8 F.4th at 1376 (stating, “if an examiner,” “through a ‘brief . . . search,’” “could access the article before the priority date, so could the general public”). Thus, the presence of other documents does not impede the availability of WWiSE so long as the relevant audience could

locate it. However, we take the number of documents under consideration in the absence of any other indexing or locating feature. Patent Owner indicates that the TGn working group received approximately 4,600 submissions before the relevant date in 2009. Prelim. Resp. 4 (citing Ex. 2005). Here, the large number of submissions weighs against the ability of a person to locate a document in a generically-name server directory and having an unknown name.

Patent Owner also argues that “there is no evidence that anyone outside the working group regularly visited the alleged sites and accessed July 2005 WWiSE.” Prelim. Resp. 4. However, a showing of actual retrieval is not required for public accessibility. *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1560, 1569 (Fed. Cir. 1988) (“Accessibility goes to the issue of whether interested members of the relevant public could obtain the information if they wanted to. If accessibility is proved, there is no requirement to show that particular members of the public actually received the information.”). In the absence of any other indexing or locating feature, such evidence of retrieval could support public accessibility. *Massachusetts Institute of Technology v. AB Fortia*, 774 F.2d 1104, 1108–09 (Fed. Cir. 1985). However, no such evidence exists on the current record.

At this stage, and on the current record, Petitioner has not shown that a person having ordinary skill in the art, guided by discussion in the pertinent art and in Hansen to seek WWiSE documents submitted to the 802.11 working group, could have located WWiSE using reasonable efforts on the ftp site.

3. *Mentor*

Patent Owner argues that a relevant person of ordinary skill using reasonable diligence would not reasonably have located the paper residing

on the Mentor website. Prelim. Resp. 6–9. First, Patent Owner argues that “there is no evidence that Mentor was searchable at the relevant time, other than Dr. Lansford’s conclusory (and thus insufficient) statement that it was.” *Id.* at 7. Patent Owner points out that although Dr. Lansford “states that he previously downloaded files . . . he never testified that he performed a search of any type at the relevant time.” *Id.* (citing Ex. 1007 ¶¶ 21–22).

Because we find public accessibility through dissemination of WWiSE to the working group members, we need not determine this issue for purposes of institution. We note, however, that Dr. Lansford stated that all documents were uploaded to Mentor shortly after its creation, and that he personally used the website between 2007 and 2009, and that he regularly accessed documents through Mentor during that time. Ex. 1007 ¶¶ 21–22. Dr. Lansford also indicates that he has a long history of experience with IEEE 802.11 WLAN Working group, as a member and through his employment at various companies and as a lecturer in that field. *Id.* ¶¶ 5–10. Nevertheless, at this stage, Dr. Lansford’s testimony does not directly support Petitioner’s assertion that “[e]ntries in Mentor *were and* remain searchable.” Pet. 3 (citing Ex. 1007 ¶ 22) (emphasis added).

Patent Owner further argues that Mentor was not searchable by subject matter, but only by fields such as year, working group, document control number, title, and author/affiliation. Prelim. Resp. 7–8 (citing Ex. 2007; Ex. 1007 ¶ 21). Patent Owner argues that even if Mentor was searchable at the critical time, the available search parameters were insufficient for public accessibility because they lack the ability to search the text of the documents or their subject matter. *Id.* at 8–9. Patent Owner argues that although Mentor may be searched by the term “WWiSE,” that term does not indicate that it contains extended range teachings, and would

result in over 70 documents. *Id.* at 10 (citing Ex. 1007, Appx K). Patent Owner argues that a reasonably diligent person of ordinary skill in the art would not have combed through those 70 results searching for extended range techniques, particularly because neither Hansen nor the adopted 802.11n standard included such techniques as proposed by Intel. *Id.*

Petitioner's assertions rely upon guidance to a person seeking to extend the range of the 802.11 standard, in the form of Hansen and discussion in industry publications, that proposals by the WWiSE group addressed improvements to 802.11n, such that the final WWiSE proposal was one of two remaining proposals for selection as the baseline for the new standard. Pet. 3, 11; Ex. 1036, 1. The record includes a contemporaneous article indicating that at least one WWiSE proposal to be considered by TGN contained range extension features. Ex. 1036, 1 ("Enhancements that improve robustness and range," "Advanced forward-error-correction coding option to facilitate maximum coverage and range," "Provisions for advanced features that improve data rate and range"). The record also indicates that the book "801.11 Wireless Networks, The Definitive Guide" discussed WWiSE's use of duplicate Signal-N fields to retain backwards compatibility in a mixed mode with older OFDM stations, which was a focus of Hansen. Ex. 2015, 323; Ex. 1005 ¶ 33. Further, a person searching for WWiSE on the Mentor website, based upon this guidance, would have located the WWiSE document as part of the 70 results for that search. Ex. 1007, Appx. K. For purposes of informing the parties for further briefing, the record supports Petitioner's assertion that the relevance of WWiSE proposals through Hansen and industry publications would have guided a person seeking to improve features of 802.11n, including range extension, to look to those WWiSE proposals.

G. Prior Art and Asserted Grounds

Petitioner asserts that claims 1–3, 5, 7–11, and 13 would have been unpatentable on the following grounds:

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1–3, 5, 7–11, 13	103(a) ²	Hansen, WWiSE
1–3, 5, 7–11, 13	103(a)	Hansen, WWiSE, Choi

II. ANALYSIS

A. Legal Standards

A claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter 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.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007).

The question of obviousness is resolved on the basis of 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 (4) objective evidence of non-obviousness.³ *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

² Petitioner asserts that pre-AIA 35 U.S.C. 103 applies to the ’449 patent. Although the application patented as the ’449 patent was filed after the effective date of the AIA prior art scheme, it claims the benefit, through a series of continuations, to a date prior to that effective date. Ex. 1001, code (61). Absent any indication in the record that any claim in the application patented as the ’449 patent ever lacked the earlier benefit date, we agree that the pre-AIA patentability prior art scheme applies here.

³ Neither party presents evidence or arguments regarding objective evidence of non-obviousness at this stage.

B. Level of Ordinary Skill in the Art

Petitioner asserts that a person of ordinary skill in the art (“POSITA”) at the critical time “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). Patent Owner does not contest this assessment. Prelim. Resp. 2. For purposes of this Decision, we adopt Petitioner’s proposed level of ordinary skill, as it appears to be consistent with the specification of the ’449 patent and the prior art of record.

C. Claim Construction

In an *inter partes* review, we construe a patent claim “using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. [§] 282(b).” 37 C.F.R. § 42.100(b). Under this standard, the words of a claim generally are given their “ordinary and customary meaning,” which is the meaning the term would have to a person of ordinary skill at the time of the invention, in the context of the entire patent including the specification. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc).

Here, neither party sets forth any claim construction. Pet. 9–10; Prelim. Resp. 3. Therefore, we construe the claims pursuant to § 42.100(b).

D. Obviousness over Hansen and WWiSE

Petitioner asserts that claims 1–3, 5, 7–11, and 13 are unpatentable under 35 U.S.C. § 103 as obvious over Hansen and WWiSE. Pet. 4. Patent Owner argues against the combination. Prelim. Resp.

Upon consideration of Petitioner’s explanations and the totality of evidence in this current record, we are persuaded that Petitioner has

demonstrated a reasonable likelihood of prevailing in showing that claims 1–3, 5, 7–11, and 13 are unpatentable under 35 U.S.C. § 103 as obvious over Hansen and WWiSE.

1. Hansen

Hansen is titled “Method and System for Compromise Greenfield Preambles for 802.11N.” Ex. 1005, code (54). Hansen relates to a standard to enable WLAN devices to achieve throughput rates beyond 100 Mbits/s. *Id.* ¶ 9. Hansen describes efforts by the IEEE (Institute for Electrical and Electronics Engineers) organization to evaluate proposals from industry groups, such as TGn Sync and WWiSE, as candidates for incorporation in next generation wireless networks for IEEE 802.11n. *Id.* ¶¶ 9, 33, 66 (disclosing “an exemplary L-SIG field for mixed mode access in accordance with a TGN Sync proposal”). Hansen promotes compromise greenfield preambles for 802.11n, “which utilizes a channel sounding mechanism to communicate information between a transmitter and a receiver.” *Id.* ¶ 27. Hansen describes a transmitter 200 that includes a coding block 202, puncture block 204, interleaver block 206, mapper blocks 208, inverse fast Fourier transform (“IFFT”) blocks 210, beamforming block 212, and digital to analog conversion blocks 214. *Id.* ¶ 41. The interleaver block rearranges bits received in a coding rate-adapted data block from the puncture block to reduce the probability of data corruption impacting contiguous bits. *Id.* ¶ 45. Each IFFT block subdivides the bandwidth of the RF channel into a plurality of n sub-band frequencies to implement orthogonal frequency division multiplexing (“OFDM”). *Id.* ¶ 48.

2. WWiSE

WWiSE proposes a high throughput physical layer for operation in the 2.4 and 5 GHz bands, as an extension to the IEEE 802.11 standard. Ex.

1006, 1. WWiSE adds extended range (“ER”) protection to prior proposals from its authors. *Id.* WWiSE explains that ER capable devices are devices that support the optional ER Modulation and Coding Scheme (“MCS”), in addition to the normal range (“NR”) MCS, and the long SIG-N field format. *Id.* at 50. WWiSE discusses implementation of green field access, in which a Multiple Input Multiple Output Orthogonal Frequency Division Multiplexing physical layer (“MIMO-OFDM”) uses a MAC mechanism to reserve access to the medium. *Id.* at 58, 50 (discussing reservation of access for NR and ER devices). The MIMO-OFDM header contains a SIG-N field that consists of 54 bits that specify all configuration and length-related parameters associated with PPDU transmission. *Id.* at 59. The transmitted data may constitute multiple MIMO-OFDM symbols, transmitted according to the SIG-N parameters. *Id.* The SIG-N field has an optional “extended communication range” configuration in which SIG-N is comprised of two consecutive MIMO-OFDM symbols. *Id.* at 69. The first symbol is SIG-N, and the second symbol, denoted ER-SIG-N, is derived from SIG-N by applying a permutation on the subcarrier indices of the OFDM data symbols comprising SIG-N. *Id.* The ER feature is used only with binary phase-shift keying (“BPSK”) modulation. *Id.* The SIG-N field includes a REXT bit (37th in order of the 54 SIG-N bits) that indicates extended range communication. *Id.* WWiSE illustrates a duplicate SIG-N for extended range communication in Figure 7:

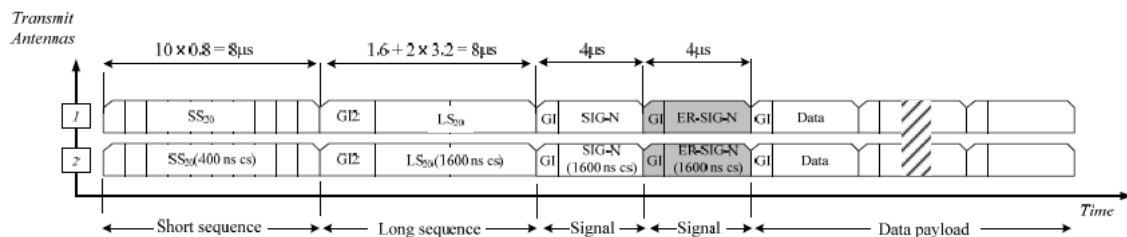


Figure 7 depicts a PLCP preamble field, followed by SIG-N, then by ER-SIG-N, and then by the data payload.

3. *Analysis of Claim 1*

We begin our analysis of Petitioner’s obviousness contentions with Petitioner’s assertions as to claim 1. Patent Owner does not specifically argue against Petitioner’s assertions for limitations [1P]–[1I] and [1L]–[1O]; however, we draw no inference therefrom and Petitioner bears the burden of persuasion. Patent Owner’s arguments that a person having ordinary skill in the art would not have made the proposed combination are addressed *infra* at section II.D.3.i.

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

Petitioner asserts that Hansen discloses a transceiver having transmitter portion 200 that implements OFDM via IFFT blocks 201a . . . 201n. Pet. 27–28 (citing Ex. 1005 ¶¶ 14, 48–50, Fig. 2b). We agree that this description in Hansen sufficiently teaches limitation [1P] for purposes of institution.⁴

b) [1A] a wireless OFDM communications transmitter operable to generate a first packet type for transmission in a first channel bandwidth,

Petitioner asserts that Hansen discloses a first packet having a first header, in the form of a physical layer protocol data unit (“PPDU”), having preamble 302, header 304, and data 306. Pet. 28 (citing Ex. 1005 ¶ 59); Ex. 1003 ¶ 105 (“A packet is usually formed by a preamble, header, and

⁴ Petitioner “does not acquiesce that the preamble is limiting” (Pet. 27); however, we need not make a determination on that matter because Petitioner has shown sufficiently for institution that Hansen teaches all of its elements.

payload”). Petitioner refers to Hansen’s first packet as “an NR [Near Range] greenfield PPDU.” Pet. 29. Petitioner asserts that Hansen indicates transmission via an RF channel that may be in either the 20 MHz or 40 MHz bandwidth. *Id.* at 57–58 (citing Ex. 105 ¶¶ 15, 31, 49; Ex. 1003 ¶ 176). We agree that this description in Hansen sufficiently teaches limitation [1A] for purposes of institution.

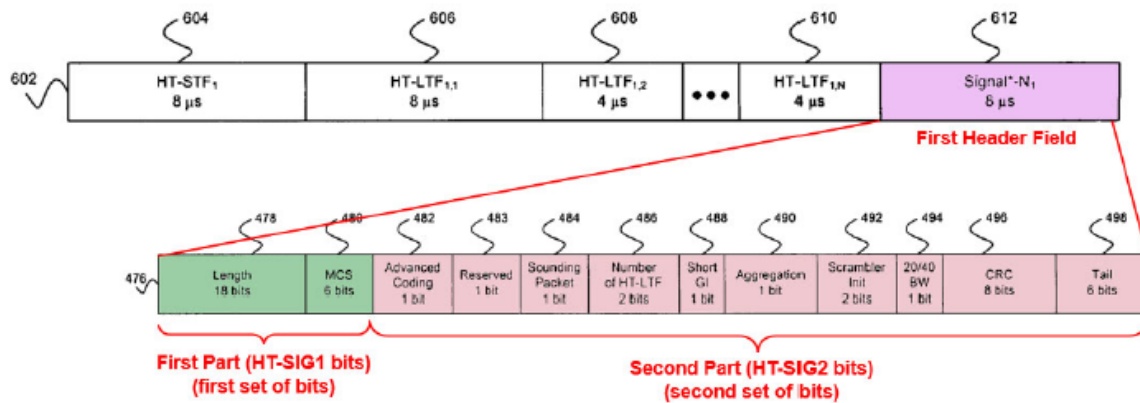
c) [1B] the first packet type comprising a first header field, wherein the first header field comprises two parts, a first part comprising a first set of header bits of the first header field and a second part comprising a second set of header bits of the first header field, [1C] wherein the first set of header bits of the first header field is different than the second set of header bits of the first header field; and

Petitioner asserts that Hansen’s first header has a first header field, “Signal*-N.” Pet. 30 (citing Ex. 1005 ¶¶ 20, 67, 90, Fig. 6a).⁵ Petitioner asserts that the Signal*-N field comprises 48 total bits corresponding to 2 transmitted OFDM symbols. *Id.* at 31 (citing Ex. 1005 ¶¶ 97, 62, 67–68). Petitioner asserts that the first header field includes a first part comprising an 18-bit length field 478 and a 6-bit MCS field 480, collectively referring to those as “HT-SIG1 bits.” *Id.* at 32 (citing Ex. 1005 ¶¶ 67–68; Ex. 1003 ¶ 113). Petitioner asserts that the first header field also includes a second part comprising 24 bits, collectively referring to those as “HT-SIG2 bits.” *Id.* (pointing to Hansen’s 1-bit advanced coding field 482, 1-bit reserved field 483, 1-bit sounding packet field 484, 2-bit number of HT-LTF field 486, 1-bit short GI field 488, 1-bit aggregation field 490, 2-bit scrambler

⁵ Petitioner also refers to Ex. 1012 for description of the Signal*-N field; however, because Ex. 1012 is not part of the asserted references for claim 1, we do not consider its teachings except as support for Dr. LaPorta’s testimony in his declaration.

initialization field 492, 1-bit 20 MHz or 40 MHz bandwidth field 494, 8-bit cyclical redundancy check field 496, and 6-bit tail field 498, citing Ex. 1005 ¶¶ 67–68; Ex. 1003 ¶ 114).

Petitioner provides an annotated illustration of the first header field shown in Hansen’s Figure 6a and 4c:



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

Id. at 30. Annotated Figure 4c illustrates the above-described fields, with green highlighting of the first two fields (478 and 480) and pink highlighting of the remaining fields (482–484, 486, 488, 490, 492, 494, 496, and 498). Figure 4c is illustrated as an expanded view of the Signal*-N field of Figure 6a, which also includes HT-STF field 604 and HT-LTF fields 606–610. We agree that this description in Hansen sufficiently teaches limitations [1B] and [1C] for purposes of institution.

d) [1D] an encoder and a modulator operable to generate a first OFDM symbol followed by a second OFDM symbol, [1E] wherein the first OFDM symbol is used to transmit the first part of the first header field and the second OFDM symbol is used to transmit the second part of the first header field;

Petitioner asserts that the claimed encoder is taught by Hansen’s coding block 220 that applies a forward error correction technique as part of its transmitter, or under an alternate assertion, coding block 202 in

combination with puncture block 204, interleaving block 206, and mapping block 208. Pet. 38–41 (citing Ex. 1005 ¶ 44, Fig. 2b, Ex. 1003 ¶¶ 130–133, 140). Petitioner asserts that Hansen further teaches that the output of its mapping block is provided to IFFT 210, which implements OFDM, in which each signal is modulated by a carrier frequency, and generates a composite OFDM signal that corresponds to an OFDM signal. *Id.* at 42 (citing Ex. 1005 ¶ 48; Ex. 1003 ¶¶ 141–145). In this manner, Petitioner asserts that Hansen’s IFFT 210 teaches the claimed modulator and the generation of first and second OFDM symbols. *Id.* at 43 (citing Ex. 1003 ¶ 146). We agree that this description in Hansen sufficiently teaches limitations [1D] and [1E] for purposes of institution.

- e) *[1F] the wireless OFDM communications transmitter further operable to transmit the first packet type over a wireless communication channel,*

Petitioner asserts that Hansen teaches transmitter having an antenna that is operable to transmit the PPDU wirelessly via an analog RF signal. Pet. 56 (citing Ex. 1005 ¶ 49; Ex. 1003 ¶ 175). We agree that this description in Hansen sufficiently teaches limitation [1F] for purposes of institution.

- f) *[1G] the wireless OFDM communications transmitter further operable to generate a second packet type for transmission in a second channel bandwidth*

Petitioner asserts that WWiSE teaches a second packet type, an ER greenfield PPDU, comprising a second header field, Long Signal*-N, that includes an indication of whether the transmission was in a 20 MHz or a 40 MHz bandwidth channel. Pet. 58 (citing Ex. 1003 ¶ 179; Ex. 1005 ¶¶ 34–35, 65; Ex. 1006, 70:6–7). Petitioner asserts that WWiSE teaches that an ER capable device is one in which extended range is supported in addition to

normal range MCS. *Id.* at 59 (citing Ex. 1006, 50:9–10). Moreover, Petitioner asserts that WWiSE’s Signal*-N field “indicates whether an ER capable device is operating in [the] ER or NR mode.” *Id.* at 59 (citing Ex. 1006, 69:29–31, 70:6–7, 50:9–1 [sic]). Petitioner asserts that the combined teachings of WWiSE and Hansen teach a transceiver operable to generate and transmit both a first packet type (i.e., Hansen’s NR) and a second packet type (i.e., WWiSE’s ER). *Id.* at 60 (citing Ex. 1003 ¶ 180).

We agree that this description in WWiSE, combined in Petitioner’s manner with the above-identified teachings of Hansen, sufficiently teaches each element of limitation [1G] for purposes of institution. We address whether Petitioner has shown that WWiSE and Hansen are combinable in the manner in section II.D.3.i, *infra*.

[1H] the second packet type comprising a second header field, 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, [1I] 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,

Petitioner asserts that the second header field is taught by the Long Signal*-N of WWiSE, which repeats each part of Hansen’s Signal*-N; (i.e., HT-SIG1 and HT-SIG2). Pet. 33 (citing Ex. 1006, 69:16–18 (“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”)). Petitioner asserts that such repetition of Hansen’s Signal*-N “results in a four-part header having two HT-SIG1 parts (HT-SIG1/ER-HT-

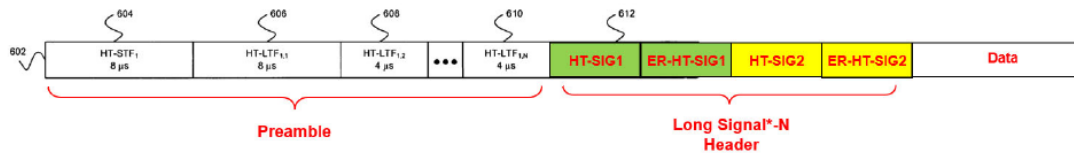
SIG1) and two HT-SIG2 parts (HTSIG2/ER-HT-SIG2).” *Id.* at 34. With respect to limitation [1I], Petitioner asserts that the resulting header comprises HT-SIG1 and ER-HT-SIG1 as the first and second header and HT-SIG2 and ER-HT-SIG-1 as the third and fourth headers. *Id.* at 34–35.

We agree that this description in WWiSE, combined in Petitioner’s manner with the above-identified teachings of Hansen, sufficiently teaches each element of limitations [1H] and [1I] for purposes of institution. We note that limitation [1H] does not require specifically named signals or bits, just that the header exists in four parts, which is sufficiently taught by the combination. Similarly, limitation [1I] requires that the bits of the first and second header parts be identical, but does not impose any ordering of such bits within the header. Limitations [1J] and [1K], addressed below, do impose an ordering on the generation and transmission of the four header fields. Because Petitioner sufficiently shows Hansen to have a two-part header, and WWiSE to duplicate that two part header, the resulting header has two sets of identical bits; e.g., one set of first and second headers having identical bits, and a set of third and fourth headers having identical bits. Thus, the combination sufficiently teaches limitation [1I]. We address whether Petitioner has shown that WWiSE and Hansen are combinable in the manner in section II.D.3.i, *infra*.

g) [1J] the encoder and the modulator further operable to generate a first OFDM symbol followed by a second OFDM symbol followed by a third OFDM symbol followed by a fourth OFDM symbol, [1K] wherein the first OFDM symbol is used to transmit the first part of the second header field, the second OFDM symbol is used to transmit the second part of the second header field, the third OFDM symbol is used to transmit the third part of the second header

field, the fourth OFDM symbol is used to transmit the fourth part of the second header field,

Petitioner asserts that the claimed ordering of OFDM symbol generation, although not explicitly taught by either Hansen nor WWiSE, would have been obvious to one having ordinary skill in the art. Pet. 49. Petitioner illustrates the claimed transmission ordering being taught by the Hansen and WWiSE as follows:



ER Greenfield PPDU

Id. Petitioner's illustration shows its assertion of an ER Greenfield PPDU, having a preamble, header, and data, in which the header is a Long Signal*-N header comprising, from left to right, HT-SIG₁, ER-HT-SIG₁, HT-SIG₂, and ER-HT-SIG₂. *Id.* Petitioner asserts that each corresponds to an OFDM signal. *Id.* at 44, 49.

Petitioner asserts that such ordering would have been obvious to try because, assuming that HT-SIG₁ is transmitted first, only two alternatives for such ordering exist. *Id.* at 49–50. Petitioner identifies such alternatives as (1) HT-SIG₁, ER-HT-SIG₁, HT-SIG₂, ER-HT-SIG₂ and (2) HT-SIG₁, HT-SIG₂, ER-HT-SIG₁, and ER-HT-SIG₂. *Id.* at 50 (citing Ex. 1003 ¶ 162). Petitioner asserts that each alternative must start with HT-SIG₁, pointing to such initial ordering in WWiSE, and citing this as a requirement of a TGn Sync proposal discussed in Hansen. *Id.* at 51–52 (citing Ex. 1006, Fig. 7, 69:16–18), 49–50 (citing Ex. 1012, 133:9–10), 12 (citing Ex. 1005 ¶¶ 61–76; Ex. 1003 ¶ 69). Petitioner further asserts that WWiSE teaches

placing a repeated symbol immediately after the original symbol. *Id.* at 51–52 (citing Ex. 1006, 69:16–18 (“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.”)). Petitioner asserts that in view of the guidance from WWiSE, TGn Sync, and the limited number of possible orders of the symbols, a person having ordinary skill in the art would have found it obvious to use the HT-SIG1, ER-HT-SIG1, HT-SIG2, ER-HT-SIG2, thereby arriving at the claimed ordering. *Id.* at 50–52.

Patent Owner argues that WWiSE only teaches adding a second identical header following the first, which would keep HT-SIG1 in its original order. Prelim. Resp. 40–41 (citing Ex. 2001 ¶ 131). Patent Owner argues that Petitioner’s asserted ordering requires breaking the HT-SIG field apart and duplicating the separate symbols rather than WWiSE’s description of duplicating the SIG-N field in its entirety as the ER-SIG-N field. Patent Owner further argues that even if TGn Sync were applicable, applying its teachings would “still result in HT[-]SIG1 being transmitted first.” *Id.* at 41 (citing Ex. 2001 ¶ 131).

We find Petitioner’s showing sufficient for institution. Petitioner asserts a combination of Hansen, which splits its Signal*-N field into two symbols, with WWiSE, which appends a second copy of a Signal-N field as an ER-Signal-N field. Ex. 1015 ¶ 97; Ex. 1006, Fig. 11, 69:13–18. WWiSE describes that the Signal-N-containing symbol is followed by the ER-Signal-N containing symbol, which supports Petitioner’s assertion that the combination would start with the first bits of the Signal-N header, which

Petitioner labels HT-Sig-1. Ex. 1006, 69:16–18; Pet. 50.⁶ Because Hansen’s Signal-N header bits are split between two symbols, we do not agree with Patent Owner that there is no reason to split the Signal-N symbol into two symbols in the Hansen-WWiSE combination.

We agree that Petitioner has sufficiently shown, for purposes of institution, that a person having ordinary skill in the art would have found it obvious to try generating and sending two identical symbols followed by the other two identical symbols when combining Hansen and WWiSE. The application of common sense to try a limited number of known options within the technical grasp of a person of ordinary skill may indicate the obviousness of a combination. *KSR*, 550 U.S. at 421. When applying WWiSE’s teaching that ER-containing symbols follow non-ER symbols to Hansen’s two-symbol, non-ER Signal-N, we are persuaded by Dr. LaPorta’s testimony that a person of ordinary skill in the art would have anticipated success with either alternative 1 (NR symbol followed by same-bit ER symbol) or alternative 2 (both NR symbols followed by both ER symbols). Ex. 1003 ¶¶ 163–165. Because alternative 1 provides the order required by limitations [1J] and [1K], we determine that Petitioner has sufficiently shown its asserted combination to teach those limitations.

Conversely, we do not find the presence of the REXT bit in the third symbol to show that the combination would be inoperative. Patent Owner argues that the receiver in Petitioner’s combination would not know if it was

⁶ Petitioner’s assertions here are based not on Dr. LaPorta’s testimony for which Ex. 1012 is used to support its statements, but on Ex. 1012 itself. We do not rely upon Ex. 1012 here for its teachings at this stage because Petitioner has not (1) shown that it is publicly available prior art, (2) listed it as a reference in the combination, or (3) shown that it is the document being relied upon in Hansen.

receiving NR or ER, and would therefore not be able to properly receive the PPDU. Prelim. Resp. 42. However, Patent Owner does not assert that the REXT bit does not work for its intended purpose in WWiSE. Petitioner's placement of the REXT bit in Hansen (26th of 48 bits) is not dissimilar to its placement (the 37th out of 54 bits) in WWiSE. Ex. 1006, 69, 29–31, Table 11, Fig. 17; Pet. 19–20 (citing Ex. 1005 ¶ 67 (reserved field 483)). Because the evidence of record indicates that received symbols may be buffered prior to decoding, and that a REXT bit within a symbol may be used to indicate that a duplicate ER header has been generated, the current record sufficiently supports Petitioner's assertion that WWiSE's REXT bit information header field may operably be combined with Hansen's reserved header field.

h) [1L] wherein the second set of header bits of the second header field transmitted using the second OFDM symbol are transmitted in a different order than the first set of header bits of the second header field transmitted using the first OFDM symbol, [1M] wherein the fourth set of header bits of the second header field transmitted using the fourth OFDM symbol are transmitted in a different order than the third set of header bits of the second header field transmitted using the third OFDM symbol, and

Petitioner asserts that ER-SIG-N in WWiSE is derived from SIG-N by applying a permutation in which subcarrier indices are in reverse order. Pet. 60–62 (citing Ex. 1006, 69). Dr. LaPorta testifies that a person having ordinary skill in the art “would have understood that July 2005 WWiSE's frequency permutation would be accomplished by changing the order of the bits fed into the IFFT for the repeated ER-SIG-N, so that the modulation order is changed.” Ex. 1003 ¶ 183. Dr. LaPorta states that this is accomplished in WWiSE by bit interleaving, which is the same method asserted by Patent Owner in its infringement contentions that used to reorder bits. *Id.* ¶ 185 (citing Ex. 1032, 43).

- i) [1N] the wireless OFDM communications transmitter further operable to transmit the second packet type over the wireless communication channel.*

Petitioner asserts that this limitation is taught for the same reasons asserted for similar limitation [1G].

- j) [1O] wherein the first channel bandwidth is at least two times wider than the second channel bandwidth.*

Petitioner asserts that Hansen’s first channel bandwidth of 40 MHz is two times wider than its second channel bandwidth of 20 MHz. Pet. 62–63 (citing Ex. 1005 ¶¶ 34–35, 67–69, 78, 97; Ex. 1003 ¶ 187). Petitioner asserts that a person having ordinary skill encountering WWiSE’s transmission channel would select the NR greenfield PPDU on the 40 MHz channel to obtain the highest throughput, and would select the ER green field PPDU on the 20 MHz channel to maximize range. *Id.* at 63 (citing Ex. 1003 ¶ 188).

- k) Combination of Hansen and WWiSE*

Petitioner asserts that a person having ordinary skill in the art would have five reasons to make such a combination. Pet. 21–24 (citing Ex. 1003 ¶ 91). First, Petitioner asserts that Hansen “repeatedly suggests the combination.” *Id.* Because Hansen suggests combining aspects of proposals by the WWiSE and TGn Sync industry teams, Dr. LaPorta states that a person having ordinary skill in the art would have been motivated to combine aspects of WWiSE (which issued after Hansen’s filing date) into Hansen’s greenfield PPDU. *Id.* at 21 (citing Ex. 1003 ¶ 91; Ex. 1006, 1, 31, 46–48, 50, 67–70). Petitioner points to documents purportedly expressing a “critical need to merge these two competing proposals to reach a final version of the 802.11n standard.” *Id.* (citing Ex. 1027, 1; Ex. 1028, 1; Ex. 1021, 1).

Patent Owner argues, and we agree at this stage, that a general desire to combine two competing proposals as expressed in Hansen does not specifically motivate incorporating ER header bits into the standard, as asserted by Petitioner. Prelim. Resp. 45–47. Although insufficient by itself to support the asserted combination, such an expressed desire to combine proposals provides some impetus to consider features from each proposal as a compromise to create the new IEEE standard, and we consider that in our consideration of Petitioner’s other reasons.

Second, Petitioner asserts that incorporating the ER capability of WWiSE into Hansen would provide an extended range to the device of Hansen. Pet. 21–22 (citing Ex. 1003 ¶ 93). Petitioner notes that WWiSE informs the reader of this benefit, stating, “[a] characteristic of ER MCS is that they have a longer range than NR MCS.” *Id.* at 22 (citing Ex. 1006, 50:15). Dr. LaPorta testifies that the ER capability of WWiSE, which uses a repeated header field and frequency permutation (i.e., frequency diversity) on the duplicated version of the header field, makes the Signal*-N header field more decodable for a given signal power, improving receiver gain and allowing weaker signals to be received and decoded more effectively. Ex. 1003 ¶ 93.

Patent Owner argues that repeating bits was “one of the least efficient approaches available to a POSA in 2009,” and that it was rejected by the TGn Working Group and never adopted into 802.11n. Prelim. Resp. 12 (citing Ex. 2001 ¶¶ 60–61, 90). Patent Owner also argues that because repeating bits was known, Hansen’s choice not to use it underscored that a POSA would not find it desirable to add repeated headers to Hansen. *Id.*

However, obviousness of the Hansen-WWiSE combination is not solely guided by the choices made in Hansen or by the TGn Working Group,

but by the knowledge and choices available to a person having ordinary skill in the art. Here, Patent Owner admits that repeating bits was known, but represented a tradeoff with efficiency. Prelim. Resp. 12. Moreover, Patent Owner and its declarant, Dr. Haas, appear to 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); *see also* Ex. 1003 ¶ 93 (Dr. LaPorta testifying that temporal diversity (i.e., repeated header field) makes the header field more decodable).

In addition, Patent Owner argues that any range advantages gained by implementing WWiSE’s ER feature would be negligible because Hansen already incorporated other range-improving techniques, including beamforming and MIMO. Prelim. Resp. 31–32 (citing Ex. 2001 ¶ 76, 121–122). According to Patent Owner, beamforming improves signal-to-error ratios so as to effectively improve the range, and MIMO spatially repeats headers on multiple antennas, which also boosts range. Prelim. Resp. 32 (citing Ex. 2001 ¶¶ 61–63, 121–22; Ex. 2015 ¶¶ 312, 334).

However, the record does not indicate that beamforming or MIMO are incompatible with WWiSE’s ER feature such that a person having ordinary skill in the art would not add an ER feature to Hansen. At best, Dr. Haas states, “July 2005 WWiSE, however, did not include a specific way to do beamforming. While some articles regarding WWiSE proposals reference beamforming, they state only that provisions are included.” Ex. 2001 ¶ 120. Such does not indicate any incompatibility, or tend to show that beamforming would not be used with ER. With respect to MIMO, Dr. Haas

points to its use in WWiSE. *Id.* ¶121 (citing Ex. 1006, 70:18–20 (“The SIG-N MIMO-OFDM symbol is transmitted simultaneously from all TX antennas in all modes”)). The use of MIMO and ER in WWiSE supports Petitioner’s contention that some added advantage would accrue from their use in combination. The current record therefore supports Petitioner’s assertion that a person having ordinary skill in the art would look to addition of WWiSE’s ER to Hansen for additional range extension.

Patent Owner argues that Hansen uses BPSK modulation, which “already had a longer range provision than” WWiSE, which used quadrature phase-shift keying (“QPSK”) modulation. Prelim. Resp. 26–30 (citing Ex. 2001 ¶¶ 44, 54, 115–118). Thus, Patent Owner argues, “the repetition in . . . WWiSE, at best, puts it back on par with Hansen’s BPSK—it does not improve it.” *Id.* at 30–31 (citing Ex. 2001 ¶ 119).

However, Patent Owner indicates that WWiSE does use BPSK modulation for its ER feature, stating that the ER in WWiSE is used “only with rate-1/2 encoding using BPSK modulation.” *Id.* at 35 (citing Ex. 1006, 69) (emphasis omitted). WWiSE appears to use QPSK with 20 MHz modes, and BPSK modulation with 40 MHz modes. Ex. 1006, 70:8–11. Thus, the current record does not support a finding that combining WWiSE necessarily incorporates a less effective QPSK modulation that would negate any beneficial effect of WWiSE’s ER feature.

Third, Petitioner asserts that the range advantages would be recognized as beneficial even at the cost of some throughput reduction. Pet. 22–23 (citing Ex. 1003 ¶ 94). Dr. LaPorta states that such a tradeoff was familiar to a person having ordinary skill in the art. Ex. 1003 ¶ 94 (citing Ex. 1014 ¶ 80 (“repetition of the OFDM symbol and a diversity effect due to the subcarrier allocation may be achieved, the transmission speed may be

reduced by half, **but a service radius may be increased to 50% to 100%**”) (emphasis added)). Petitioner asserts that such a combination would permit transmission at the highest speed achievable based on the current conditions of a channel. Pet. 22–23. (citing Ex. 1003 ¶ 94).

Patent Owner argues that the ER in WWiSE is about range extension for the data portions (the ER MCS) of the packets, not the header. Prelim. Resp. 35 (citing Ex. 2001 ¶¶ 84–85, 124, 127, 140). Patent Owner argues that Petitioner provides no reason for extension of reception of the Signal*-N field by itself. *Id.* at 39 (citing Ex. 2001 ¶¶ 123–24, 140–42).

However, it is unclear why extension of the headers would be separate from extension of the signal. Because the headers are used to decode the data, and the headers and data are transmitted in the same message, reception of the headers appears to be associated with reception of the data.

Patent Owner further argues that WWiSE sets forth other features, such as that are required to grant range extension. *Id.* at 35–38 (citing Ex. 2001 ¶¶ 84–89, 124–128; Ex. 1030, 22, 24–29; Ex. 1006, 46–48, 50, 52). Patent Owner argues that these other features have not been considered by Petitioner in its asserted combination, and that those features add a complexity to the combination that “would greatly complicate any purported combination.” *Id.* at 37 (citing Ex. 2001 ¶ 129).

However, the test for obviousness is not determined by “whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference Rather, the test is what the combined teachings of [those] references would have suggested to those of ordinary skill in the art.” *In re Keller*, 642 F.2d 413, 425 (CCPA 1981). We acknowledge the considerations raised by Patent Owner. However, on the current record, Petitioner has sufficiently shown the combined teachings of

Hansen and WWiSE to have suggested modifying Hansen with the ER extended range features of WWiSE.

Because Petitioner has sufficiently provided rationale for the combination, we need not address Petitioner's remaining assertions that the combination is the application of a known technique (ER capability as per WWiSE) to a known device (Hansen's compromise greenfield PPDU) in the same way (providing ER capability), or merely combines prior art elements according to known methods, for purposes of institution. Pet. 23–24.

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 PPDU 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 had a reasonable expectation that the combination would operate successfully. (INTEL-1003, ¶ 97.)

Pet. 24–25. This argument is reasonable and supported.

l) Determination

In view of the foregoing, we determine that Petitioner has sufficiently shown, for purposes of institution, that each element of claim 1 has been taught or suggested by the combined teachings of Hansen and WWiSE. Further, that Petitioner has sufficiently shown, for purposes of institution, that a person having ordinary skill in the art would have reason to combine the teachings of Hansen and WWiSE as suggested by Petitioner, and would have a reasonable expectation of success in doing so. On the record before us, and for purposes of institution, Petitioner has sufficiently shown that claim 1 would have been obvious over Hansen and WWiSE.

4. Claims 2–3, 5, 7–11, and 13

Petitioner provides a detailed analysis of the limitations of claims 2–3, 5, 7–11, and 13, and points to teachings in Hansen and WWiSE as meeting each limitation. Pet. 64–69. For example, Petitioner asserts that claim 9 is a method claim having substantially the same limitations as system claim 1, and provides a sufficient explanation of how the differences are taught by the combination. *Id.* at 64–66. With respect to the recitation of provision of diversity to increase a likelihood of correctly communicating header information in claims 2, 3, 10, and 11, Petitioner asserts that repetition coding as taught by the combination provides such diversity. Pet. 66–69 (citing Ex 1003 ¶ 193; Ex. 1024, 59; Ex. 1025, 130–131). With respect to the recitation of the transceiver supporting wireless standards as recited in claims 5 and 13, Petitioner points to Hansen’s and WWiSE’s intended support for 802.11n. *Id.* at 69 (citing Ex. 1005 ¶ 11; Ex. 1006, 1). With respect to the recitation of the first and second header fields indicating the type of packet, respectively recited in claims 7 and 8, Petitioner points to both its assertions regarding its location of its REXT bit in both the first and

second header fields and through the “sounding packet field” in the Signal*-N header field. *Id.* at 69–71 (citing Ex. 1003 ¶¶ 200–203).

Patent Owner does not provide any additional reasons why Petitioner’s assertions are unpersuasive. We have reviewed Petitioner’s assertions for claims 2–3, 5, 7–11, and 13 and determine, for purposes of institution, that Petitioner has sufficiently shown Hansen and WWiSE to teach each limitation of claims 2–3, 5, 7–11, and 13.

In view of the foregoing, we determine that Petitioner has sufficiently shown, for purposes of institution, that each element of claims 2–3, 5, 7–11, and 13 has been taught or suggested by the combined teachings of Hansen and WWiSE. Further, that Petitioner has sufficiently shown, for purposes of institution, that a person having ordinary skill in the art would have reason to combine the teachings of Hansen and WWiSE as suggested by Petitioner, and would have a reasonable expectation of success in doing so.

E. Alleged Obviousness over Hansen, WWiSE, and Choi

Petitioner asserts that claims 1–3, 5, 7–11, and 13 are unpatentable under 35 U.S.C. § 103 as obvious over Hansen, WWiSE, and Choi. Pet. 4. Patent Owner argues against the combination. Prelim. Resp. 56.

1. Choi

Choi is titled “Repetition Coding for a Wireless System.” Ex. 1008, code (54). Choi relates to providing extended range for wireless communication according to IEEE 802.11 by repeating each encoded value that is transmitted. *Id.* ¶¶ 2, 13. Choi describes that values may be repeated in either the frequency or time domain. *Id.* ¶¶ 13, 16. Choi describes the repetition techniques as “simpler and more efficient in many cases.” *Id.* ¶ 15.

2. *Analysis*

Petitioner asserts that Choi teaches the order of symbol generation for the second packet type set forth in limitation [1J]/[9J], if not taught by the combination of Hansen and WWiSE. Pet. 71. Petitioner asserts that Choi teaches the use of a repetition encoder placed before the input of an interleaver designed to handle repetition coded bits. *Id.* (citing Ex. 1008 ¶ 26). Petitioner asserts that repetition in Choi is performed on a symbol-by-symbol basis, “meaning that for post-coding/pre-modulation repetition, a coded block corresponding to a symbol is repeated,” and subsequently, interleaved and modulated. *Id.* at 72 (citing Ex. 1008 ¶ 18, Fig. 3A; Ex. 1003 ¶ 208). Relying on Dr. LaPorta’s testimony, Petitioner asserts that a person having ordinary skill in the art would have recognized the application of Choi’s repetition to headers as well as data. *Id.* (citing Ex. 1003 ¶ 210).

Petitioner asserts that the lack of details in WWiSE as to how to implement repetition of a header field in its PPDUs in the transmission portion would motivate a person having ordinary skill in the art to seek teachings of those details, as provided by Choi. *Id.* at 73–74 (citing Ex. 1003 ¶ 211). Petitioner also points to “efficiency reasons.” *Id.* at 74 (citing Ex. 1003 ¶ 211). Petitioner further points to teachings in Choi; i.e., that Choi is “applicable to 802.11 standards,” that Choi suggests use of repetition coding in ER systems and for communication “in noisy environments.” *Id.* (citing Ex. 1003 ¶ 215). Petitioner further points to evidence of use of repetition encoders for a header field. *Id.* (citing Ex. 1003 ¶ 216; Ex. 1018, 51:1331–1358).

Patent Owner argues that Choi suffers from the same defects as Hansen and WWiSE; i.e., that no further need for range exists where Hansen

includes range-boosting MIMO and beam forming, and that placement of the REXT bit in the HT-SIG2 symbol would be unworkable because a receiver would not know the correct mode. Prelim. Resp. 56–57. However, we have already considered and rejected these arguments in our analysis of the Hansen-WWiSE combination.

Patent Owner further argues that Petitioner’s asserted reason for combining Choi – to add details for implementing repetition – is lacking because Dr LaPorta describes implementing repetition as a “simple concept.” Prelim. Resp. 57 (citing Ex. 1003 ¶ 165).

However, Petitioner points to Choi’s particular method as providing advantages such as efficiency and operability in noisy environments, which is a common concern for WLAN systems. Pet. 74–75 (citing Ex. 1008 ¶ 2; Ex. 1003 ¶ 215). Even assuming that repetition coding, as a general concept, is simple, a person having ordinary skill in the art could find such advantages flowing from Choi’s particular method as a reason to look to Choi and apply its particular coding method.

Consequently, we determine that Petitioner has sufficiently shown, for purposes of institution, that each element of claims 1–3, 5, 7–11, and 13 have been taught or suggested by the combined teachings of Hansen, WWiSE, and Choi. Further, that Petitioner has sufficiently shown, for purposes of institution, that a person having ordinary skill in the art would have reason to combine the teachings of Hansen, WWiSE, and Choi as suggested by Petitioner, and would have a reasonable expectation of success in doing so. On the record before us, and for purposes of institution, Petitioner has sufficiently shown that claims 1–3, 5, 7–11, and 13 would have been obvious over Hansen, WWiSE, and Choi.

III. DISCRETIONARY DENIAL

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)⁷ (“*Fintiv* Memo”). The *Fintiv* Memo sets forth, *inter alia*, that the 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 Preliminary 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 ’449 Patent against Dell, Lenovo, as well as against HP Inc. (“HP”) and Acer Inc.

⁷ Available at https://www.uspto.gov/sites/default/files/documents/interim_proc_discretionary_denials_aia_parallel_district_court_litigation_memo_20220621_.pdf

(“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 by Dell and Lenovo, 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 is 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, Patent Owner for the first time in the Sur-reply 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 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”)⁸ 74 (citing 37 C.F.R. § 42.23). It “does not mean

⁸ Available at <https://www.uspto.gov/sites/default/files/documents/tpgnov.pdf?MURL=TrialPracticeGuideConsolidated>

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, 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 reasons discussed above, we conclude Petitioner has shown a reasonable likelihood of prevailing with respect to at least one of claims 1–3, 5, 7–11, and 13. We determine that the record supports institution. Accordingly, we institute an *inter partes* review of all challenged claims under all grounds set forth 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.”); *see SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1355 (2018) (noting that the language of 35 U.S.C. § 314(b) “indicates a binary choice—either institute review or don’t”); *PGS Geophysical AS v. Iancu*, 891 F.3d 1354, 1360 (Fed. Cir. 2018) (interpreting the statute as requiring “a simple yes-or-no institution choice respecting a petition, embracing all challenges included in the petition”).

Our determination at this stage of the proceeding is based on the evidentiary record currently before us. This decision to institute trial is not a

final decision as to patentability of any claim for which an *inter partes* review has been instituted. Our final decision will be based on the full record developed during trial.

V. ORDER

For the foregoing reasons, it is:

ORDERED that pursuant to 35 U.S.C. § 314(a), an *inter partes* review is hereby instituted for all asserted grounds on all asserted claims, i.e.:

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1–3, 5, 7–11, 13	103(a)	Hansen, WWiSE
1–3, 5, 7–11, 13	103(a)	Hansen, WWiSE, Choi

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial; the trial will commence on the entry date of this Decision.

IPR2023-01137
Patent 10,291,449 B2

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