

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD.,
Petitioner,

v.

WILUS INSTITUTE OF STANDARDS AND TECHNOLOGY INC.,
Patent Owner.

IPR2025-00934
Patent 11,159,210 B2

Before TERRENCE W. McMILLIN, JON M. JURGOVAN, and
DANIEL J. GALLIGAN, *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*

Samsung Electronics Co., Ltd. (“Petitioner”)¹ filed a Petition for *inter partes* review of claims 1–9 of U.S. Patent No. 11,159,210 B2 (Ex. 1001, “the ’210 patent”). Paper 2 (“Pet.”), 1. Wilus Institute of Standards and Technology Inc. (“Patent Owner”)² filed a Preliminary Response. Paper 9 (“Preliminary Response” or “Prelim. Resp.”).

This Petition has been referred to the Board to determine whether to institute review. Paper 11. 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 and the Preliminary Response, as well as the evidence of record, we institute an *inter partes* review as to claims 1–9 of the ’210 patent.

B. *Related Proceedings*

The parties identify the following district court matters related to the ’210 patent: *Wilus Institute of Standards and Technology Inc. v. HP Inc.*, Case No. 2:22-cv-00752-JRG (E.D. Tex.); and *Wilus Institute of Standards and Technology Inc. v. Samsung Electronics Co., Ltd., et al.*, Case No. 2:22-cv-00746-JRG (E.D. Tex.). Pet. 81; Paper 4, 1–2.

¹ Petitioner identifies itself and Samsung Electronics America, Inc. as the real parties-in-interest to this proceeding. Pet. 81.

² Patent Owner identifies itself as the real party-in-interest to this proceeding. Paper 4, 1.

C. The '210 Patent (Ex. 1001)

The '210 patent is titled “Wireless Communication Method and Wireless Communication Terminal for Signaling Multi-User Packet.” Ex. 1001, code (54). The '210 patent discloses receiving, through a communication unit, a high efficiency multi-user PHY protocol data unit (HE MU PPDU), wherein a preamble of the HE MU PPDU includes high efficiency signal A field (HE-SIG-A) and high efficiency signal B field (HE-SIG-B), and decoding the received HE MU PPDU based on information obtained from the HE-SIG-A, wherein a configuration of the HE-SIG-B is identified based on information obtained from at least one subfield of the HE-SIG-A. *Id.* at code (57).

Figures 13(d)-1 and 13(d)-2 of the '210 patent are reproduced below:

Field	Bit	Descriptions
AID	11	STA ID
NSTS	3	# of Spatial Streams
TxBF	1	TxBF on/off
MCS	4	
DCM	1	
Coding	1	BCC/LDPC
Total	21	

(d)-1

Field	Bit	Descriptions
AID	11	STA ID
SCF	4	Spatial Conf. Fields
MCS	4	
DCM	1	
Coding	1	BCC/LDPC
Total	21	

(d)-2

FIG. 13

According to the '210 patent, figures 13(d)-1 and 13(d)-2 “illustrate embodiments of the subfield configuration of the user field of the HE-SIG-B, respectively.” *Id.* at 20:33–35. More specifically, the '210 patent states that figure 13(d)-1 “illustrates a user field for an OFDMA transmission,” and figure 13(d)-2 “illustrates a user field for a MU-MIMO transmission.” *Id.* at 20:35–37. The '210 patent explains that “[w]hen one user is allocated to one resource unit (i.e., non-MU-MIMO allocation), the user field includes a number of space time streams (NSTS) field, a TxBF field, an MCS field, a DCM field and a coding field as illustrated in FIG. 13(d)-1,” and that “when a plurality of users are allocated to one resource unit (i.e., MU-MIMO allocation), the user field includes a spatial configuration field (SCF), an MCS field, a DCM field, and a coding field as illustrated in FIG. 13(d)-2.” *Id.* at 20:41–49.

D. Challenged Claims

Petitioner challenges claims 1–9 (all) of the '210 patent. Pet. 1. Of the challenged claims, claims 1 and 6 are independent claims. Ex. 1001, 32:55–33:14; 34:1–22. Claim 1 recites:³

- [1pre] A wireless communication terminal, the terminal comprising:
 - [1.1] a communication unit; and
 - [1.2] a processor configured to process signals transmitted and received through the communication unit, wherein the processor is configured to:
 - [1.3] receive, through the communication unit, a high efficiency multiuser PHY protocol data unit (HE MU PPDU), wherein a preamble of the HE MU PPDU includes high efficiency

³ The bracketed labels correspond to those used by Petitioner to reference the claim limitations. *See* Pet. vii–ix. We use the same labels and parsing of the claims here for ease of reference, understanding, and consistency.

signal A field (HE-SIG-A) and high efficiency signal B field (HE-SIG-B), and

- [1.4] decode the received HE MU PPDU based on information obtained from the preamble,
- [1.5] wherein when a SIG-B compression field of the HE-SIG-A indicates full bandwidth multi User-Multiple Input Multiple Output (MU-MIMO) transmission, a format of user field(s) included in a user specific field of the HE-SIG-B is identified based on a number of MU-MIMO users indicated by a subfield of the HE-SIG-A,
- [1.6] wherein when the number of MU-MIMO users indicates two or more users, the user specific field of the HE-SIG-B includes user fields for MU-MIMO allocation, and
- [1.7] wherein when the number of MU-MIMO users indicates a single user, the user specific field of the HE-SIG-B includes one user field for non-MU-MIMO allocation.

Ex. 1001, 32:55–33:14.

Claim 6 recites:

- [6pre] A wireless communication method of a wireless communication terminal, the method comprising:
 - [6.1] receiving a high efficiency multi-user PHY protocol data unit (HE MU PPDU), wherein a preamble of the HE MU PPDU includes high efficiency signal A field (HE-SIG-A) and high efficiency signal B field (HE-SIG-B); and
 - [6.2] decode the received HE MU PPDU based on information obtained from the preamble,
 - [6.3] wherein when a SIG-B compression field of the HE-SIG-A indicates full bandwidth multi User-Multiple Input Multiple Output (MU-MIMO) transmission, a format of user field(s) included in a user specific field of the HE-SIG-B is identified based on a number of MU-MIMO users indicated by a subfield of the HE-SIG-A,
 - [6.4] wherein when the number of MU-MIMO users indicates two or more users, the user specific field of the HE-SIG-B includes user fields for MU-MIMO allocation, and

[6.5] wherein when the number of MU-MIMO users indicates a single user, the user specific field of the HE-SIG-B includes one user field for non-MU-MIMO allocation.

Ex. 1001, 34:1–22.

E. The Asserted Grounds

Petitioner challenges claims 1–9 of the '210 patent based on the grounds set forth in the table below.

Claims Challenged	35 U.S.C. §	Reference(s)/Basis
6–9	103 ⁴	802.11ax D1.0 ⁵
1–5	103	802.11ax_D1.0, Bharadwaj ⁶
1–9	103	Bharadwaj, Sun ⁷

Pet. 1.

II. OBVIOUSNESS ANALYSIS

A. Principles of Law

Under 35 U.S.C. § 103, a patent claim is unpatentable “if the differences between the claimed invention and the prior art are such that the

⁴ The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (“AIA”), amended 35 U.S.C. § 103 effective on March 16, 2013. The application for the '210 patent is U.S. Application No. 16/731,031, filed on December 31, 2019, which claims priority to two Korean applications filed January 9, 2017 and January 18, 2017. Ex. 1001, codes (21), (22), (30). Because the application for the '210 patent claims a priority date after the effective date of the applicable AIA amendment, the AIA version of § 103 applies for purposes of institution.

⁵ IEEE P802.11ax/D1.0 Draft Standard for Information technology–Telecommunications and information exchange between systems Local and metropolitan area networks–Specific requirements. Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications. Amendment 6: Enhancements for High Efficiency WLAN (Ex. 1004).

⁶ US 2017/0181130 A1 (Ex. 1013).

⁷ US 2016/0204912 A1 (Ex. 1015).

claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains.” *See KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007) (similar language). 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). Further, “there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *See KSR*, 550 U.S. at 418.

B. Level of Ordinary Skill in the Art

Petitioner contends that

For purposes of this IPR, a person of ordinary skill in the art (“POSITA”) would have had a Bachelor’s degree in electrical engineering, computer engineering, computer science, or a related field, and at least 3 years of experience in the research, design or development of wireless communication devices, systems, and/or networks, or the equivalent, as of the Critical Date.

Pet. 3 (citing Ex. 1003 ¶¶ 29–31). Petitioner further states that “[i]ncreased educational experience can make up for less work experience, and vice versa.” *Id.* Patent Owner contends that “[t]o the extent that Petitioner requires that the required experience and/or education level to be acquired by January 9, 2017, Petitioner objects to this requirement because it is not relevant or needed for someone to be a POSITA.” Prelim. Resp. 6. Patent

Owner does not otherwise challenge Petitioner’s definition for purposes of its Preliminary Response. *Id.*

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 Institution Decision, with the exception of the open-ended language “at least,” we adopt the assessment offered by Petitioner, as it is consistent with the ’210 patent and the asserted prior art.⁸

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) (2024). 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 at the time of the invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (quoting *Vitronics Corp. v. Conceptor, 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

⁸ 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.

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 1312–1317).

Petitioner asserts that “no formal claim constructions are necessary.” Pet. 2. Patent Owner notes that “both parties have submitted terms for construction in the district court for this Patent” (Prelim. Resp. 6), but that “for purposes of [the] Preliminary Response, Patent Owner applies the plain and ordinary meaning of the challenged claims” (*id.* at 8).

Accordingly, at this stage, no need exists to expressly construe any claim terms to resolve the parties’ disputes.⁹ See *Nidec Motor Corp. v. Zhongshan Broad 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. Prior Art Status of 802.11ax_D1.0 (Ex. 1004)

Petitioner challenges claims 1–9 of the ’210 patent as obvious in view of 802.11ax_D1.0 (Ex. 1004) (claims 6–9 (Ground 1A)) and the combination of 802.11ax_D1.0 and Bharadwaj (Ex. 1013) (claims 1–5 (Ground 1B)). Pet. 1, 32–61. For either of these challenges to succeed, Petitioner must establish that 802.11ax_D1.0 is prior art to the challenged claims of the ’210 patent.

⁹ If either party contends that explicit claim construction is necessary in order to make a final determination whether or not any challenged claim is unpatentable based on the arguments and evidence presented, it should clearly explain why during trial and provide a clear and unambiguous construction with supporting evidence including specifically identifying the challenges, claims, and limitations to which the construction is necessary.

According to the Federal Circuit, “[b]ecause there are many ways in which a reference may be disseminated to the interested public, ‘public accessibility’ has been called the touchstone in determining whether a reference constitutes a ‘printed publication’” under Section 102. *Kyocera Wireless Corp. v. Int’l Trade Comm’n*, 545 F.3d 1340, 1350 (Fed. Cir. 2008) (quoting *In re Hall*, 781 F.2d 897, 898–99 (Fed. Cir. 1986)). A reference is publicly accessible “upon a satisfactory showing that such 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.” *SRI Int’l, Inc. v. Internet Sec. Sys., Inc.*, 511 F.3d 1186, 1194 (Fed. Cir. 2008).

802.11ax_D1.0 is a draft standard of the LAN/MAN Standards Committee of the IEEE Computer Society. Ex. 1004, 1. 802.11ax_D1.0 relates to “modifications to both the IEEE 802.11 physical layer (PHY) and the medium access control (MAC) sublayer for high efficiency operation in frequency bands between 1 GHz and 6 GHz.” *Id.* at 2.

In support of its contention that 802.11ax_D1.0 was publicly accessible before the critical date of January 9, 2017, Petitioner cites Exhibit 1026 (“Public Accessibility Declaration of Christopher Hansen, Ph.D.”). Petitioner contends that “802.11ax_D1.0 was publicly available at least as early as December 1, 2016, and is prior art at least under 35 U.S.C. § 102(a)(1).” Pet. 2 (citing Ex. 1026 ¶¶ 59–63); *see also id.* at 17–19 (addressing the “Public Availability of 802.11ax_D1.0” and citing Ex. 1026 ¶¶ 1–78). Specifically, Petitioner contends that:

Interested members of the public would have gained access to 802.11ax_D1.0 either by following IEEE’s straightforward procedures for joining the ranks of voting members of the IEEE

802.11 Working Group by the Critical Date of the '210 Patent, or simply by obtaining a copy of 802.11ax_D1.0 from a voting member (or an intermediary who obtained a copy from a voting member).

Id. at 17. Patent Owner challenges the contention that 802.11ax_D1.0 is prior art. Prelim. Resp. 2, 18–22. Patent Owner argues that “the Petition fails to establish that 802.11ax_D1.0 was ‘publicly accessible’ for purposes of serving as printed-publication prior art.” *Id.* at 18.

802.11ax_D1.0 was circulated to IEEE 802.11 Working Group on December 1, 2016, to be voted on for approval before publication. The Petition states:

TGax created and submitted 802.11ax_D1.0 to letter balloting for consideration and approval by the broader IEEE 802.11 Working Group, and 802.11ax_D1.0 was officially released on December 1, 2016, when it was made available online to members of the IEEE 802.11 Working Group, who were notified by email of the same. [Ex. 1026 ¶¶24, 56-63.

Pet. 17. However, 802.11ax_D1.0 was distributed in a restricted manner that required membership in the group working to the create the draft and a password to gain access to the draft. The Patent Owner argues:

The Petition acknowledges that the document was not “publicly accessible” in the conventional sense. Dr. Hansen explains—and the Petition does not mention—that, first, the existence of 802.11ax_D1.0 was made known to “IEEE 802.11 Working Group” via email on December 1, 2016, and that the email contained a “link to the draft D1.0 PDF, which was password protected.” Ex. 1026, ¶ 60. According to Dr. Hansen, a “voting member of the IEEE 802.11 Working Group could enter their credentials” to download a copy of 802.11ax_D1.0. The draft was otherwise not “publicly accessible” in the myriad scenarios addressed by the Federal Circuit case law on this issue: for example, it was not

downloadable or retrievable via the Internet by a member of the general public, it could not be located in a library via an index of collected works, and so on.

Prelim. Resp. 18.

The first of the two ways that Petitioner argues that 802.11ax_D1.0 was publicly available was that “[i]nterested members of the public would have gained access to 802.11ax_D1.0 either by following IEEE’s straightforward procedures for joining the ranks of voting members of the IEEE 802.11 Working Group by the Critical Date of the ’210 Patent.”

Pet. 17. However, Patent Owner disputes this contention with:

[T]he Petition contends that it would have been simple for a POSITA (having graduated from college 3 years earlier) to follow “straightforward procedures for joining the ranks of voting members of the IEE 802.11 Working Group.” Pet. at 17. Those procedures, as of the critical date, required an interested person to attend three IEEE working group meetings *in person*, two of which must be week-long “plenary” meetings. *See* Ex. 1035, ¶¶ 66-70.

Dr. Hansen’s declaration itself shows why the Petition’s arguments are suspect. *See* Ex. 1035, ¶ 69. If an interested member of the public desired to become a voting member of IEEE 802.11 Working Group as late as possible before the January 2017 critical date, they would have needed to do the following:

- Attend at least two “plenary” IEEE meetings in the following locations and dates: (1) Macau, March 2016; (2) San Diego, California, July 2016, and (3) San Antonio, Texas, November 2016.
- If only two “plenary” meetings attended, attend at least one of the following non-plenary IEEE meetings: (1) Waikoloa, Hawaii, May 2016, (2) Warsaw, Poland, September 2016.

The Petition’s theory that a POSITA would have just “joined” Working Group and become a member fails for numerous reasons.

Prelim. Resp. 20–21. Thus, the evidence establishes that becoming a member of the IEEE 802.11 Working Group was a lengthy process. And, as Patent Owner points out, it would have been impossible to have become a member of the IEEE 802.11 Working Group after learning of the existence of 802.11ax_D1.0 on, or after, December 1, 2016, before the critical date of January 9, 2017. *See id.* at 21–22.

The second of the two ways that Petitioner argues that 802.11ax_D1.0 was publicly available was “by obtaining a copy of 802.11ax_D1.0 from a voting member (or an intermediary who obtained a copy from a voting member).” Pet. 17. Petitioner cites paragraphs 71–77 of Exhibit 1026 (Dr. Hansen’s “Public Accessibility Declaration”) in support of this argument. *See* Pet. 18–19. But, Dr. Hansen’s testimony does not show any first-hand knowledge of any member of the 802.11 Working Group sharing a copy of 802.11ax_D1.0 prior to the critical date of January 8, 2017. *See generally* Ex. 1026.¹⁰ In cited paragraphs 73–76, Dr. Hansen refers to submissions related to drafts of 802.11ax_D1.0 being submitted by persons who were not members of the 802.11 Working Group but all were in March, 2017, after the critical date and after 802.11ax_D1.0 had been voted on and approved by the voting members of the 802.11 Working Group. *See id.* at ¶ 61.

¹⁰ Dr. Hansen’s testimony as to the public availability of 802.11ax_D1.0 appears to be based upon his review of documents currently available on IEEE’s public email archive and webpages. *See* Ex. 1026 ¶¶ 59–63. Dr. Hansen does not testify to personally accessing 802.11ax_D1.0, or otherwise knowing of, 802.11ax_D1.0 during December, 2016, or early January, 2017. *See* Ex. 1026. Dr. Hansen does not testify as to how or when he first became aware of, or was first able to access, 802.11ax_D1.0. *See id.*

We are aware, however, that we must not confuse access with accessibility. *See Samsung Elecs. Co. v. Infobridge Pte. Ltd.*, 929 F.3d 1363, 1374 (Fed. Cir. 2019) (“[A] petitioner need not establish that specific persons actually accessed or received a work to show that the work was publicly accessible.”). Dr. Hansen notes that the cover of 802.11ax_D1.0 grants permission to reproduce the document to others for consideration. Ex. 1026 ¶ 72; *see* Ex. 1004, 1 (“Permission is hereby granted for IEEE Standards Committee participants to reproduce this document for purposes of international standardization consideration.”). Dr. Hansen also testifies that meetings to discuss 802.11ax_D1.0 were open to the public. Ex. 1026 ¶ 58 (citing Appendix J to declaration). Thus, it appears, on the current record, that the purpose of 802.11ax_D1.0 was to promote dialogue with interested artisans, which indicates public accessibility. *See Valve Corp. v. Ironburg Inventions Ltd.*, 8 F.4th 1364, 1374 (Fed. Cir. 2021) (“We have previously held that where a publication’s purpose is ‘dialogue with the intended audience,’ that purpose indicates public accessibility.” (citation omitted)).

After having reviewed all the arguments and evidence presented by the parties, we would like to see further development of this issue during trial. The current record is not well-developed on this issue either factually or legally. With regard to the factual record, Patent Owner has not yet had the opportunity to depose Dr. Hansen or been given a full opportunity to marshal its own evidence on this issue. With regard to the law, we would like to see the parties apply the relevant case law to the developed facts as to the public accessibility and prior art status of 802.11ax_D1.0. We will determine, if necessary and appropriate, whether 802.11ax_D1.0 is prior art

to the challenged claims of the '210 patent based on the full record as developed during trial.

E. Asserted Obviousness of Claims 1–9 Based on Bharadwaj and Sun

Petitioner challenges claims 1–9 as being obvious in view of a combination of the teachings of Bharadwaj and Sun. *See* Pet. 1, 61–81 (Ground 2). We start our analysis with a description of Bharadwaj and Sun and then consider the arguments and evidence presented by parties.

1. Bharadwaj (Ex. 1013)

Bharadwaj is titled “Preamble Design Aspects for High Efficiency Wireless Local Area Networks.” Ex. 1013, code (54). Bharadwaj relates to a “first signaling field and/or a second signaling field of a preamble used for transmitting frames in high efficiency (HE) wireless local area networks (WLANs) . . . modified to improve performance and efficiency of HE WLANs.” *Id.* ¶ 6.

Figure 1 of Bharadwaj is reproduced below:

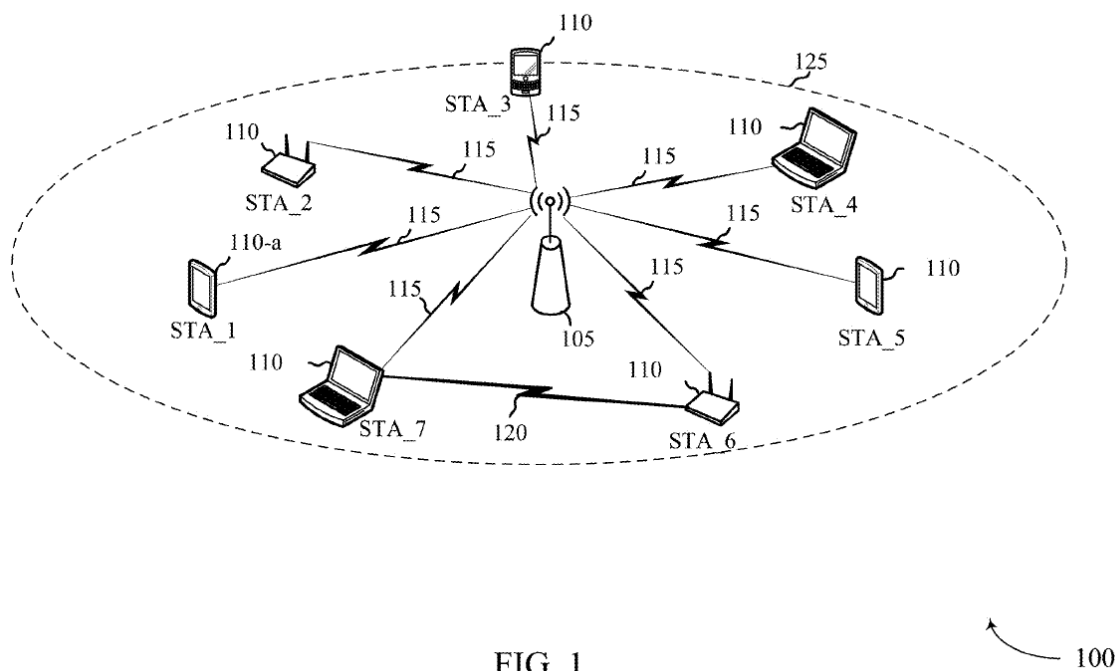


FIG. 1

According to Bharadwaj, Figure 1 “illustrates an example of a wireless communications system 100 that supports preamble design aspects for HE WLANs.” *Id.* ¶ 60. Bharadwaj states that “[t]he WLAN 100 includes an AP 105 and wireless stations (STAs) 110 labeled as STA_1 through STA_7.” *Id.* ¶ 61. Bharadwaj further states that “[t]he STAs 110 can be mobile handsets, tablet computers, personal digital assistants (PDAs), other handheld devices, netbooks, notebook computers, tablet computers, laptops, desktop computers, display devices (e.g., TVs, computer monitors, etc.), printers, etc.” *Id.* “The STAs 110 associate and communicate with the AP 105 via a communication link 115.” *Id.*

Bharadwaj explains that “[h]igh efficiency (HE) WLAN preambles can be used to schedule multiple devices, such as STAs 110, for single-user simultaneous transmission (e.g., single-user orthogonal frequency division multiple access (SU-OFDMA)) and/or MU-MIMO transmissions (e.g., multiple-input/multiple-output MU-MIMO).” *Id.* ¶ 65. Bharadwaj states that “[i]n one example a HE WLAN signaling field is used to signal a resource allocation pattern to multiple receiving STAs 110.” *Id.*

Bharadwaj states that a high efficiency WLAN preamble may include “any of: a repeated legacy WLAN field (e.g., an RL-SIG field), a first WLAN signaling field (e.g., a first HE WLAN signaling field such as HE-SIG-A), [and] a second WLAN signaling field (e.g., a second HE WLAN signaling field such as HE-SIG-B).” *Id.* ¶ 69. According to Bharadwaj, “[t]he HE WLAN preamble . . . uses a common signaling field and one or more dedicated (e.g., station-specific) signaling fields to schedule resources and to indicate the scheduling to other WLAN devices.” *Id.*

Petitioner contends that “Bharadwaj is prior art at least as of its filing date under 35 U.S.C. § 102(a)(2).” Pet. 2. Patent Owner does not challenge Petitioner’s contention that Bharadwaj is prior art. *See* Prelim. Resp. Bharadwaj is a U.S. Patent Application Publication that was filed on December 21, 2016.¹¹ Ex. 1013, code (22). 35 U.S.C. § 102(d)(2) provides that a published patent application is prior art as of its filing date. The earliest priority claimed for the ’210 patent is January 9, 2017. Ex. 1001, code (30). On this record, Bharadwaj is prior art to the ’210 patent.

2. *Sun (Ex. 1015)*

Sun is titled “Downlink Signaling in a High Efficiency Wireless Local Area Network (WLAN).” Ex. 1015, code (54). Sun relates to a method for generating a physical layer (PHY) data unit, including “generating a first signal field to include multiple copies of first signal field content, wherein the first signal field content spans one sub-band of a plurality of sub-bands of the PHY data unit, and wherein the multiple copies collectively span the plurality of sub-bands of the PHY data unit,” and “generating a second signal field to include multiple copies of second signal field content, wherein the second signal field content spans multiple ones of the plurality of sub-bands of the PHY data unit, and wherein the multiple copies of the

¹¹ Bharadwaj claims priority to five provisional patent applications with earlier filing dates. Ex. 1013, code (60). Therefore, Bharadwaj may have an effective filing date under 35 U.S.C. § 102(a)(2) that is earlier than December 21, 2016. But, we need not, and do not, consider whether Bharadwaj is entitled to an effective filing date earlier than December 21, 2016, as this date is sufficient for Bharadwaj to be prior art to the ’210 patent.

second signal field collectively span the plurality of sub-bands of the PHY data unit.” *Id.* at code (57).

Sun teaches a data unit that includes a preamble including a first HE signal field (HE-SIG-A) and a second HE signal field (HE-SIG-B). *Id.* ¶ 43. Sun further teaches an HE-SIG-B signal field that includes a common portion and a per-allocation portion. *Id.* ¶¶ 72–73. According to Sun, the per-allocation portion “includes one or more user blocks . . . respectively corresponding to one or more users.” *Id.* ¶ 73. Sun discusses user blocks that correspond to each of an MU-MIMO resource unit and a single user resource unit. *Id.* ¶¶ 31, 82.

Petitioner contends that “Sun is prior art under 35 U.S.C. § 102(a)(1)-(2).” Pet. 2. Patent Owner does not challenge Petitioner’s contention that Sun is prior art. *See* Prelim. Resp. Sun is a U.S. Patent Application Publication that was filed on January 8, 2016.¹² Ex. 1015, code (22). 35 U.S.C. § 102(d)(2) provides that a published patent application is prior art as of its filing date. The earliest priority claimed for the ’210 patent is January 9, 2017. Ex. 1001, code (30). On this record, Sun is prior art to the ’210 patent.

3. *Independent Claim 1*

Our limitation-by-limitation analysis of the showing in the Petition for claim 1 is provided below.

¹² Sun claims priority to six provisional patent applications with earlier filing dates. Ex. 1015, code (60). Therefore, Sun may have an effective filing date under 35 U.S.C. § 102(a)(1)–(2) that is earlier than January 18, 2016. But, we need not, and do not, consider whether Sun is entitled to an effective filing date earlier than January 8, 2016, as this date is sufficient for Sun to be prior art to the ’210 patent.

*[Ipre] A wireless communication terminal, the terminal comprising:*¹³

Petitioner relies on Bharadwaj for teaching “a wireless communication terminal.” Pet. 66 (citing Ex. 1003 ¶159; Ex. 1013 ¶¶ 61, 64, 65). Bharadwaj describes a wireless communication system (WLAN 100 (*see* Fig. 1)) that “includes an AP 105 and wireless stations (STAs) 110.” Ex. 1013 ¶ 61.

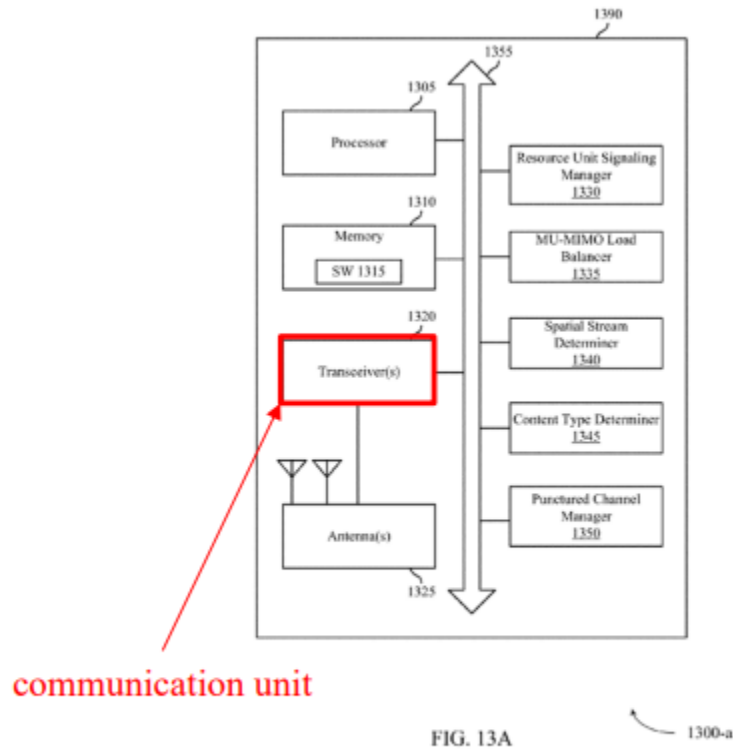
Patent Owner does not challenge Petitioner’s contention that Bharadwaj teaches “a wireless communication terminal.” *See* Prelim. Resp.

We determine that the preamble of claim 1 is disclosed in Bharadwaj.

[1.] a communication unit; and

Petitioner relies on Bharadwaj for teaching “a communication unit.” Pet. 66–67 (citing Ex. 1003 ¶¶ 160–162; Ex. 1013 ¶¶ 150, 151, Fig. 13A). Figure 13A of Bharadwaj, as annotated by Petitioner, is reproduced below.

¹³ Petitioner does not address whether the preamble of claim 1 is limiting. *See* Pet. 66. We determine that the preamble of claim 1 is not limiting because it does not recite essential structure and is not necessary to give life, meaning, and vitality to the claim. *See Shoes by Firebug LLC v. Stride Rite Children’s Group, LLC*, 962 F.3d 1362, 1367 (Fed. Cir. 2020).



SAMSUNG-1013, FIG. 13A (annotated)

Id. at 67. Figure 13A depicts a “block diagram of an example device.” Ex. 1013 ¶ 43. The Petition provides:

“The transceiver(s) 1320 communicate bi-directionally with other wireless devices, such as APs 105, STAs 110, or other devices.” SAMSUNG-1013, ¶[0151]. “The processor 1305 processes information received through the transceiver(s) 1320 and information to be sent to the transceiver(s) 1320 for transmission through the antenna (s) 1325.” *Id.*, ¶[0150]; SAMSUNG-1003, ¶¶160-162.

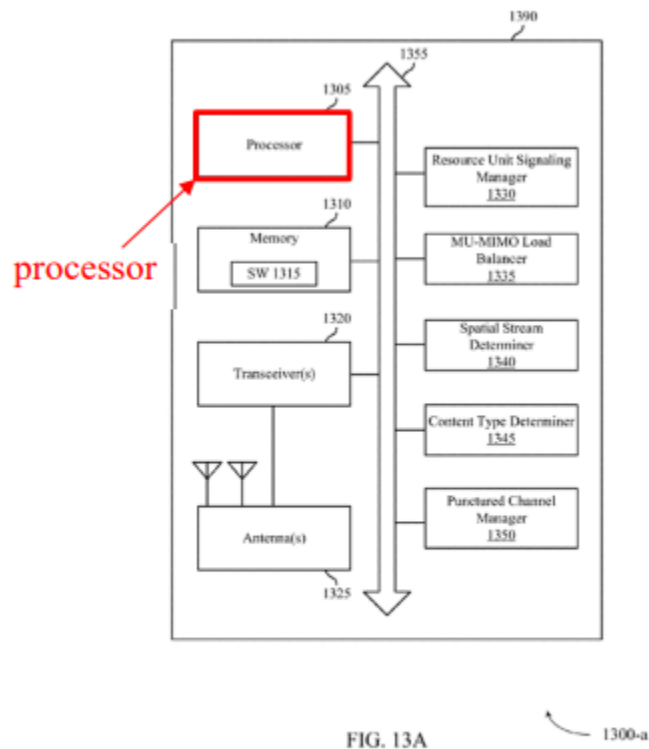
Pet. 67.

Patent Owner does not dispute the showing for this limitation. *See* Prelim Resp.

We determine that Bharadwaj teaches this limitation.

[1.2] a processor configured to process signals transmitted and received through the communication unit, wherein the processor is configured to:

Petitioner relies on Bharadwaj for teaching “a processor.” Pet. 66–67 (citing Ex. 1003 ¶¶ 163–164; Ex. 1013 ¶ 150, Fig. 13A). Figure 13A of Bharadwaj, as annotated by Petitioner, is reproduced below.



SAMSUNG-1013, FIG. 13A (annotated)

Id. at 68. Figure 13A depicts a “block diagram of an example device.” Ex. 1013 ¶ 43. The Petition provides that “[i]n Bharadwaj, the station includes a processor configured to process signals transmitted and received through the communication unit.” Pet. 67–68. Bharadwaj discloses that “[t]he processor 1305 processes information received through the transceiver(s) 1320 and information to be sent to the transceiver(s) 1320 for transmission through the antenna (s) 1325.” Ex. 1013 ¶ 150.

Patent Owner does not dispute the showing for this limitation. *See* Prelim Resp.

We determine that Bharadwaj teaches this limitation.

[1.3] receive, through the communication unit, a high efficiency multiuser PHY protocol data unit (HE MU PPDU), wherein a preamble of the HE MU PPDU includes high efficiency signal A field (HE-SIGA) and high efficiency signal B field (HE-SIG-B), and

Petitioner relies on Bharadwaj for teaching all the elements of this limitation. Pet. 68–70 (citing Ex. 1003 ¶ 165; Ex. 1013 ¶¶ 70–72, 95–97, 139, 173, Figs. 3, 21A–21C, 25). Figure 3 of Bharadwaj, as annotated by Petitioner, is reproduced below.

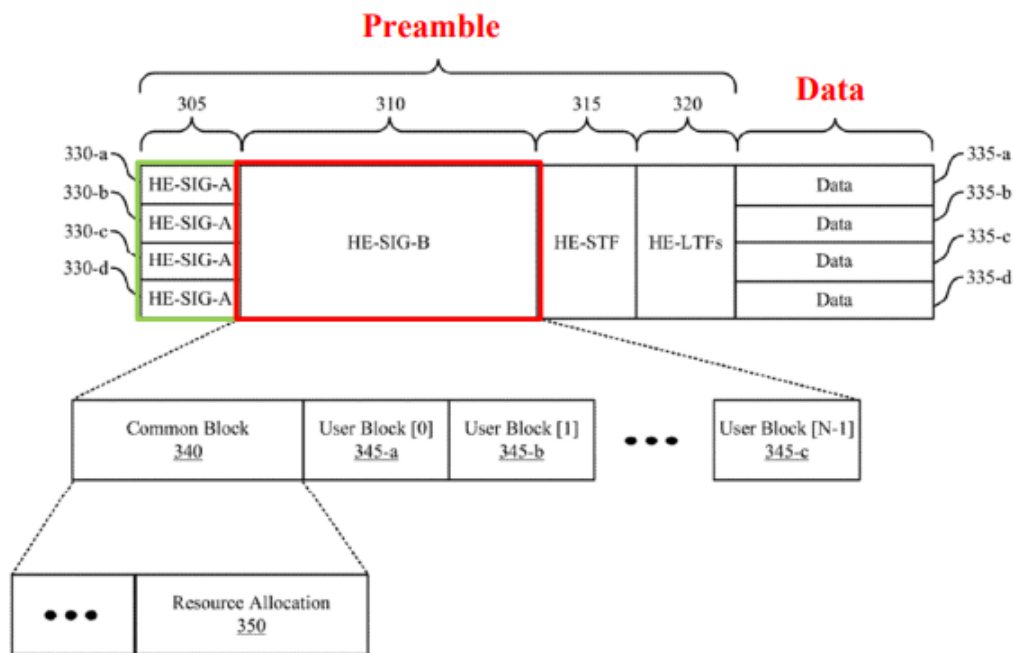


FIG. 3

300

SAMSUNG-1013, FIG. 3 (annotated)

Pet. 69. Figure 3 depicts “an example of aspects of a WLAN protocol data unit for preamble design aspects for HE WLANs.” Ex. 1013 ¶ 32. The Petition provides:

Bharadwaj describes a processor (processor connected to transceiver) configured to receive an HE MU PPDU. *E.g.*, SAMSUNG-1013, ¶¶[0139], [0172], FIG. 25. As shown in FIG. 3, Bharadwaj also describes that the HE MU PPDU includes a preamble with HE-SIG-A and HE-SIG-B fields. *Id.*, ¶¶[0070]-[0072], [0095]-[0097], FIGS. 3, 21A-C; SAMSUNG-1003, ¶165.

....

Bharadwaj discloses that the User Blocks 345 are part of an HE MU PPDU. SAMSUNG-1013, ¶[0094]; SAMSUNG-1003, ¶165. A POSITA would have recognized that Bharadwaj disclosed the HE MU PPDU based on Bharadwaj's disclosure of the HE-SIG-B field, which only appears in the HE MU PPDU.

Pet. 69. The cited passages and figures in Bharadwaj support Petitioner's contention that the cited art teaches all the elements of this limitation.

Patent Owner does not dispute the showing for this limitation. *See* Prelim Resp.

We determine that Bharadwaj teaches this limitation.

[1.4] decode the received HE MU PPDU based on information obtained from the preamble,

Petitioner relies on Bharadwaj for teaching all the elements of this limitation. Pet. 70 (citing Ex. 1003 ¶ 166; Ex. 1013 ¶¶ 65, 69–72). The Petition provides:

Bharadwaj describes information provided in a preamble is used by a device to decode the subsequent data. SAMSUNG-1013, ¶[0065]. Per Bharadwaj, HE-WLAN preambles can be used to schedule multiple devices" for single-user simultaneous transmission and/or MU-MIMO transmissions. *Id.*; *see also id.*, ¶[0069]; SAMSUNG-1003, ¶166. Bharadwaj also teaches that the first WLAN signaling field (i.e., the HE-SIG-A) includes information to decode the second WLAN signaling field (i.e., the HE-SIG-B). SAMSUNG-1013, ¶¶[0069]-[0071]. The

second WLAN signaling field (i.e., the HE-SIG-B) includes information usable by the station to “decode data in the data field” of the HE MU PPDU. *Id.*, ¶¶[0072], [0094]. Thus, a POSITA would have recognized, or found it obvious, that Bharadwaj teaches decoding the received HE MU PPDU based on information obtained from the preamble. SAMSUNG-1003, ¶166.

Pet. 70. The cited passages in Bharadwaj support Petitioner’s contention that the cited art teaches all the elements of this limitation.

Patent Owner does not dispute the showing for this limitation. *See* Prelim Resp.

We determine that Bharadwaj teaches this limitation.

[1.5] wherein when a SIG-B compression field of the HE-SIG-A indicates full bandwidth multi User-Multiple Input Multiple Output (MU-MIMO) transmission, a format of user field(s) included in a user specific field of the HE-SIG-B is identified based on a number of MU-MIMO users indicated by a subfield of the HE-SIG-A,

Petitioner relies on Bharadwaj and Sun for this limitation. Pet. 70–72 (citing Ex. 1003 ¶ 167–168; Ex. 1013 ¶¶ 93, 96, 97, Figs. 21A, 21B; Ex. 1015 ¶ 84, Fig. 16B). Figures 21A and 21B of Bharadwaj, as annotated by Petitioner, are reproduced below.

	B18: B21	SIGB Number of Symbols/ Number of MU- MIMO Users	4	When SIGB compression field=0, indicates the number of HE-SIG-B symbols. Set to n for n+1 HE-SIG-B symbol, where n = 0, 1, 2, ..., 15. When SIGB compression field=1, indicates the number of MU-MIMO users minus 1.
Two parts of HE- SIG-A	Bits	Field	# of bits	Description
HE-SIG- A1	B22	SIGB Compressi on	1	Set to 1 for full BW MU-MIMO. Set to 0 otherwise.

SAMSUNG-1013, FIGS. 21A-B (annotated)

Id. at 71. Figures 21A and 21B depict, “a HE-SIG-A field contents for a HE MU PPDU for supporting preamble design aspects for HE WLANs.” Ex.

1013 ¶ 51. The Petition provides:

Bharadwaj teaches that full bandwidth is indicated by the **SIGB Compression bit being set to 1** in the **HE-SIG-A**. SAMSUNG-1013, FIGS. 21A-B, shown [above].

....

When **SIGB compression is set to 1**, the “**SIGB Number of Symbols/Number of MU-MIMO Users**” field indicates the number of MU-MIMO users. *Id.* Bharadwaj also teaches that in the full bandwidth mode, no RU signal information is transmitted in a HE-SIG-B field. *Id.*, ¶[0097]. A POSITA would have recognized, or found it obvious, therefore, that the number of MU-MIMO users was determined from the HE-SIG-A field when in full bandwidth. SAMSUNG-1003, ¶¶167-168.

Bharadwaj also describes that “the station may differentiate between SU and MU-MIMO allocations.” Bharadwaj, ¶[0096]; SAMSUNG-1003, ¶¶167-168. In the combination, as described [below], Bharadwaj differentiates the MU-MIMO user block from the SU (non-MU-MIMO) user block based on the number of MU-MIMO users identified in the HE-SIG-A field, where the MU-MIMO user block includes a spatial configuration subfield, and the SU (non-MU-MIMO) user block includes an Nsts subfield and a TxBF subfield. SAMSUNG-1013, ¶[0093]; SAMSUNG-1015, ¶[0084], FIG. 16B; *supra*, §IV.C.1-2. A POSITA would have understood and found it obvious that after Bharadwaj identifies the number of MU-MIMO users, it would have identified the corresponding format for the HE-SIG-B user field, as taught by both Bharadwaj (MU-MIMO) and Sun (non-MU-MIMO). SAMSUNG-1003, ¶¶167-168.

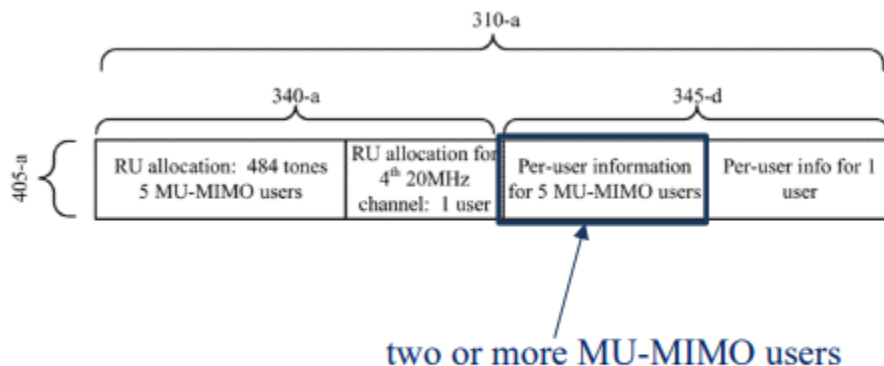
Pet. 70–72. The cited passages and figures in Bharadwaj and Sun support Petitioner’s contention that the cited art teaches all the elements of this limitation.

Although Patent Owner purports to dispute Petitioner’s contentions with respect to limitation 1.5 (*see* Prelim. Resp. 16), Patent Owner’s argument appears directed to the “single user” subject matter in limitation 1.7, which we address further below.

We determine that the combination of Bharadwaj and Sun teaches this limitation.

[1.6] wherein when the number of MU-MIMO users indicates two or more users, the user specific field of the HE-SIG-B includes user fields for MU-MIMO allocation, and

Petitioner relies on Bharadwaj for teaching all the elements of this limitation. Pet. 72–73 (citing Ex. 1003 ¶ 169–170; Ex. 1013 ¶¶ 85–87, 93, 118, 119, Figs. 3, 5, 9, 9A, 9B). Figure 5 of Bharadwaj, as annotated by Petitioner, is reproduced below.



SAMSUNG-1013, FIG. 5 (annotated)

Id. at 72. Figure 5 depicts “an example of aspects of a WLAN protocol data unit for supporting preamble design aspects for HE WLANs.” Ex. 1013 ¶ 34. The Petition provides:

In Bharadwaj, when the number of MU-MIMO users is two or more, the HE-SIG-B field includes user fields for MU-MIMO allocation. For example, Bharadwaj describes the HE-SIG-B field includes user blocks, as shown in FIG. 5.

....

User blocks 345-d each include per user information for MU-MIMO users. SAMSUNG-1013, ¶¶[0085]-[0087], FIGS. 3, 5, 8 (full bandwidth mode); see also *id.*, ¶¶[0118]-[0119], FIGS. 9A-B.

Bharadwaj also teaches that the “user field for an MU-MIMO allocation, e.g. in a HE-SIG-B field, may include a spatial configuration subfield of 4 bits indicating the number of spatial streams for each multiplexed STA, the index of the spatial stream, and the total number of spatial streams.” SAMSUNG-1013, ¶[0093].

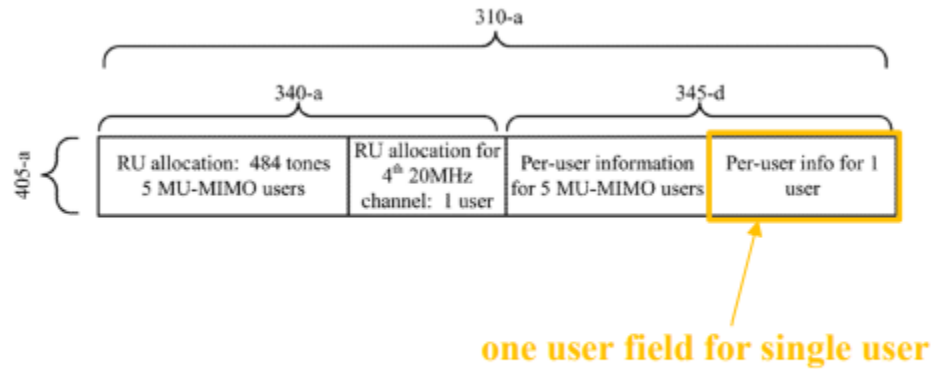
Pet. 72–73. The cited passages and figures in Bharadwaj support Petitioner’s contention that the cited art teaches all the elements of this limitation.

Patent Owner does not dispute the showing for this limitation. *See* Prelim Resp.

We determine that Bharadwaj teaches this limitation.

[1.7] wherein when the number of MU-MIMO users indicates a single user, the user specific field of the HE-SIG-B includes one user field for non-MU-MIMO allocation.

Petitioner relies on Bharadwaj and Sun for this limitation. Pet. 73–74 (citing Ex. 1003 ¶ 171–172; Ex. 1013 ¶¶ 85, 87, Figs. 3, 5, 8; Ex. 1015 ¶¶ 72, 73, Figs. 13A, 13B). Figure 5 of Bharadwaj, as annotated by Petitioner, is reproduced below.



SAMSUNG-1013, FIG. 5 (annotated)

Id. at 73. Figure 5 depicts “an example of aspects of a WLAN protocol data unit for supporting preamble design aspects for HE WLANs.” Ex. 1013 ¶

34. The Petition provides:

Bharadwaj describes that when the number of MU-MIMO users indicates a single user, the HE-SIG-B field includes a user-specific field for non-MU-MIMO (SU) allocation for one user. For example, Bharadwaj describes the HE-SIG-B field includes user block for a single user, as shown in FIG. 5.

....

SAMSUNG-1013, ¶¶[0086] (“User blocks 345-d and 345-e each include ... per-user information for SU users in user blocks.”), [0085], [0087], FIGS. 3, 5, 8 (full bandwidth mode).

Pet. 73–74. The cited passages and figures in Bharadwaj support Petitioner’s contentions.

Figures 13A and 13B of Sun, as annotated by Petitioner, are reproduced below.

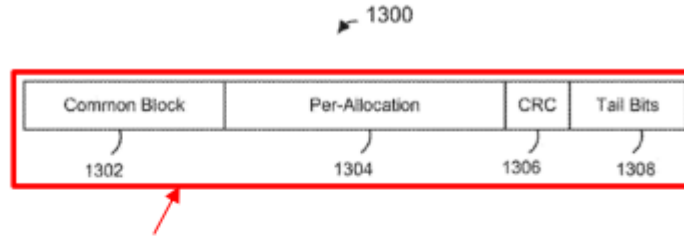


Fig. 13A HE-SIG-B

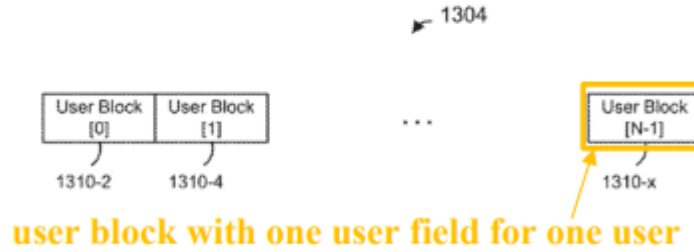


Fig. 13B

SAMSUNG-1015, FIGS. 13A-B (annotated)

Pet. 74. Figure 13A depicts “a signal field” and Figure 13B depicts, “a per-allocation portion of the signal field of FIG. 13A.” Ex. 1015 ¶¶ 17, 18. The Petition provides:

In the combination, Sun also describes the HE-SIG-B as including “*one* or more user blocks 1310 respectively corresponding to *one* or more users (e.g., *one* or more client stations 25) that are scheduled to receive data.” SAMSUNG-1015, ¶[0073] (emphasis added). When a single user is indicated, a single user block 1310 would thus provide a user field for a single user. *Id.*; SAMSUNG-1003, ¶¶171-172. The HE-SIG-B and user blocks are illustrated in FIGS. 13A-B, reproduced below. SAMSUNG-1015, ¶¶[0072]-[0073], FIGS. 13A-B.

Pet. 74. The cited passages and figures in Sun support Petitioner’s contentions.

Patent Owner challenges the showing for this limitation. Prelim. Resp. 16–18. Patent Owner contends that “the Petition does not explain why

these disclosures . . . teach or suggest full bandwidth *MU*-MIMO transmission *for a single user.*” *Id.* at 17 (emphasis added). Specifically, Patent Owner contends that “where Figure 5 of Bharadwaj accounts for a *single user* (e.g., as expressed in the right-hand portion of object 345-D of Figure 5 that the Petition maps), it is for a ‘*single user*’ (*SU*) transmission which does not use *MU*-MIMO techniques and never described, in either the Figure or in the text of Bharadwaj, as for *MU*-MIMO transmission.” *Id.* (emphasis added). On this record, we do not see how Patent Owner’s contentions distinguish the claims from the prior art. The limitation recites that when there is a *single user*, the user specific field of the HE-SIG-B includes one user field for *non-MU*-MIMO allocation. As shown in the above quoted passages and figures from the Petition, the cited art teaches this limitation. We reject Patent Owner’s argument.

We determine that the combination of Bharadwaj and Sun teaches this limitation.

Motivation to Combine the Teachings of Bharadwaj and Sun

With regard to combining the teachings of Bharadwaj and Sun, the Petition provides:

Bharadwaj describes 1) in full bandwidth, determining the number of *MU*-MIMO users from a HE-SIG-A field, and 2) that the user field in HE-SIG-B for a *MU*-MIMO allocation indicates a spatial configuration for a number of users indicated by the common field of the HE-SIG-A. Bharadwaj, however, does not expressly disclose the format of the user field in HE-SIG-B for single-user allocation. In the same field of endeavor, Sun teaches that the user specific field of the HE-SIG-B has two possible structures: one for the single-user mode and one for the multi-user mode. **In the Bharadwaj-Sun combination (“Bharadwaj/Sun”), it would have been obvious to apply to Bharadwaj the format for the user field for the non-MU-**

MIMO (SU) allocation, as suggested by Sun, based on the number of users determined from the HE-SIG-A field indicating a single user. SAMSUNG-1003, ¶152.

Pet. 61 (emphasis added). With regard to the motivation to combine these teachings, the Petition provides:

As an initial matter, Bharadwaj and Sun are both analogous art to the '210 Patent in that that they are both concerned with the design of the PHY data unit for supporting MU-MIMO transmissions in the downlink. SAMSUNG-1003, ¶¶153-158. . . . In addition, both Bharadwaj and Sun describe MU-MIMO downlink PHY data unit structures in the context of 802.11ax. SAMSUNG-1013, ¶[0064]; SAMSUNG-1015, ¶[0031]; SAMSUNG-1003, ¶¶153-158.

....

[A] POSITA implementing Bharadwaj's preamble designs would have been motivated to look to another reference, like Sun, for an understanding of the format of the user field that would support non-MU-MIMO allocations and the single-user transmission scenario. A POSITA would have combined the teachings of Bharadwaj with Sun to realize implementation details for the HE-SIG-A and HE-SIG-B fields of the HE MU PPDU to better support both MU-MIMO and non-MU-MIMO allocations. SAMSUNG-1003, ¶¶153-158.

....

A POSITA would have found it obvious to look to Sun for modifying Bharadwaj to include the user field format for SU (non-MU-MIMO) allocation to complement Bharadwaj's disclosure of the MU-MIMO user field format and to provide a more complete system that would allow HE MU PPDUs to support both MU-MIMO allocations for multiple users and non-MU-MIMO allocations for a single user. SAMSUNG-1003, ¶¶153-158.

The combination also would have been obvious and predictable for at least the following reasons:

1) both Bharadwaj and Sun describe designs for a PHY data unit (or PPDU) to support communications between an AP and a station within a high-efficiency Wi-Fi network, consistent with 802.11ax;

2) both Bharadwaj and Sun describe the PPDU design for supporting MU-MIMO downlink transmission as including HE-SIG-A and HE-SIG-B fields; and

3) Bharadwaj already describes the format for the user field for the MU-MIMO allocation, while also recognizing the single-user scenario, and the combination merely involves the addition to Bharadwaj of the user field format for the single-user allocation, as taught by Sun. SAMSUNG-1003, ¶¶153-158.

The combination is obvious also because elements of the combined system would each perform similar functions they had been known to perform in similar contexts outside the combination. SAMSUNG-1003, ¶¶153-158.

....

A POSITA would have reasonably expected success implementing the combination, especially considering the substantially similar 802.11ax techniques described in each reference. SAMSUNG-1003, ¶¶153-158. Additionally, combining the teachings of Bharadwaj with Sun would have merely involved combining prior art elements according to known methods to yield predictable results. SAMSUNG-1003, ¶¶153-158.

Id. at 62–65.

Patent Owner does not challenge the showing on motivation to combine the relevant teachings of Bharadwaj and Sun. *See* Prelim. Resp.

We determine that Petitioner has articulated and supported a motivation to combine the relevant teachings of Bharadwaj and Sun.

Summary as to Independent Claim 1

Petitioner has shown that the combination of Bharadwaj and Sun teaches or suggests all the limitations of claim 1 notwithstanding Patent Owner's arguments. Petitioner provides articulated reasoning with rational underpinnings to support combining the relevant teachings of Bharadwaj and Sun. We determine that there is a reasonable likelihood that Petitioner will prevail with respect to the unpatentability of claim 1.¹⁴

4. Independent Claim 6

Independent claim 6 is a method claim with limitations that are commensurate with the limitations of independent device claim 1. For claim 6, the Petitioner relies on its showing for claim 1. *See* Pet. 79–80. For claim 6, Patent Owner presents the same arguments as for claim 1. *See* Prelim. Resp. 16–18. We determine that Petitioner's showing for claim 6 is persuasive and well-supported and reject Patent Owner's arguments for the reasons discussed above with regard to claim 1. Therefore, we determine that there is a reasonable likelihood that Petitioner will prevail with respect to the unpatentability of claim 6.

5. Dependent Claims 2–5 and 7–9

Petitioner also asserts that dependent claims 2–5 and 7–9 would have been obvious in view of a combination of the teachings of Bharadwaj and

¹⁴ Thus, we determine 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.”).

Sun. Pet. 1, 74–79, 80–81. The Petition provides a detailed and supported showing that the additional limitations recited in these dependent claims 2–5 are taught by Bharadwaj and Sun. *Id.*

Patent Owner does not dispute the showing as to the dependent claims. *See* Prelim. Resp.

We determine that there is a reasonable likelihood that Petitioner will prevail with respect to the unpatentability of claims 2–5 and 7–9.

III. CONCLUSION

For the foregoing reasons, we determine that there is a reasonable likelihood that Petitioner will prevail in its challenge with respect to claims 1–9 of the '210 patent as obvious in view of the combination of Bharadwaj and Sun (Ground 2). Pursuant to *SAS Institute Inc. v. Iancu*, 584 U.S. 357, 364–65 (2018) and 37 C.F.R. § 42.108(a) providing that the Board must institute on all grounds or none, we determine that trial should be instituted on claims 1–9 of the '210 patent on all the grounds asserted in the Petition.

IV. 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 1–9 of U.S. Patent No. 11,159,210 B2 is instituted with respect the grounds set forth in the Petition (*see* Pet. 1); 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. 11,159,210 B2 shall commence on the entry date of this Order, and notice is hereby given of the institution of a trial.

IPR2025-00934
Patent 11,159,210 B2

FOR PETITIONER:

W. Karl Renner
Jeremy Monaldo
Nicholas Stephens
Rishi Gupta
FISH & RICHARDSON P.C.
axf-ptab@fr.com
jjm@fr.com
nstephens@fr.com
rgupta@fr.com

FOR PATENT OWNER:

Reza Mirzaie
Neil Rubin
Philip Wang
RUSS AUGUST & KABAT
rmirzaie@raklaw.com
nrubin@raklaw.com
pwang@raklaw.com