

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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SAMSUNG ELECTRONICS CO., LTD.,  
Petitioner,

v.

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

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Case No. IPR2025-01165  
U.S. Patent No. 11,664,926

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**PATENT OWNER'S PRELIMINARY RESPONSE**

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**PATENT OWNER'S EXHIBIT LIST**

| <b>Exhibit</b> | <b>Description</b>                                                                                                                                                                                                                                                                                                   |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2001           | Order, <i>Wilus Institute of Standards and Technology Inc., v. HP Inc.</i> , Case No. 2:25-cv-00069-JRG-RSP, Dkt. No. 51 (E.D. Tex., June 13, 2025) (“Docket Control Order”)                                                                                                                                         |
| 2002           | Press Release, “Lenovo and Wilus Agree Wi-Fi License Deal,” April 10, 2025                                                                                                                                                                                                                                           |
| 2003           | Excerpts of Defendants’ P.R. 3-3 and 3-4 Invalidity Contentions and Subject Matter Eligibility Contentions in the consolidated case, <i>Wilus Institute of Standards and Technology Inc., v. HP Inc.</i> , Case No. 2:25-cv-00069-JRG-RSP (E.D. Tex.), dated July 9, 2025.                                           |
| 2004           | Docket Navigator Stay Statistics                                                                                                                                                                                                                                                                                     |
| 2005           | Excerpt from U.S. District Court – National Judicial Caseload Profile for the Eastern District of Texas, March 31, 2025, <a href="https://www.uscourts.gov/sites/default/files/document/fcms_na_distprofile0331.2025.pdf">https://www.uscourts.gov/sites/default/files/document/fcms_na_distprofile0331.2025.pdf</a> |
| 2006           | Judge Rodney Gilstrap’s median time to trial from August 25, 2024 until August 25, 2025, retrieved from <a href="http://www.docketnavigator.com">www.docketnavigator.com</a>                                                                                                                                         |
| 2007           | Samsung “Letter of Assurance for Essential Patent Claims,” January 14, 2022                                                                                                                                                                                                                                          |
| 2008           | Declaration of Jin Sam Kwak                                                                                                                                                                                                                                                                                          |
| 2009           | List of Licensees to Wifi 6 from Sisvel, <a href="https://www.sisvel.com/licensing-programmes/Wi-Fi/wifi-6/#tab-list-of-licensees">https://www.sisvel.com/licensing-programmes/Wi-Fi/wifi-6/#tab-list-of-licensees</a>                                                                                               |
| 2010           | Letter re “Notice of Wi-Fi 6 License offer” from Sisvel to Samsung Electronics Co., Ltd. with Attachments 1-2, April 8, 2022                                                                                                                                                                                         |

Patent Owner's Preliminary Response  
IPR2025-01165 (U.S. Patent No. 11,664,926)

|      |                                                                                                                                                                                                             |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2011 | Letter re “Notice of Wi-Fi 6 License offer – Follow-up to our letter dated April 08, 2022 and follow-up communications” from Sisvel to Samsung Electronics Co., Ltd. with Attachments 1-2, October 25, 2023 |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## **I. Introduction**

The Petition contends that all challenged claims of the '926 Patent are obvious in view of Chu in combination with IEEE-D1 and IEEE-D2 prior art, and in view of IEEE-3 prior art. However, none of these references disclose what is clearly required by the challenged claims: a MDPU type that is determined by EOF and length information, and a response frame type that is determined by a combination of the MDPU type and acknowledge policy information. Further, the IEEE-D1 reference that serves as a reference for the Petition's Ground 1 obviousness combination is not even prior art. Thus, the Petition fails to establish a reasonable likelihood that Petitioner would succeed in showing that the prior art discloses or renders obvious any of the challenged claims. For at least this reason, the Board should deny institution.

## **II. Overview of the '926 Patent**

### **A. Background of the '926 Patent**

The '926 Patent was filed on January 25, 2021, and issued on May 30, 2023. It is a continuation of U.S. Patent No. 10,931,396, filed on June 21, 2019, which is a continuation of PCT Application No. PCT/KR2017/015265, filed on December 21, 2017. SAMSUNG-1001 ('926 patent) at pgs. 1-2. The PCT Application further claims priority to multiple Korean applications filed

in 2016 and 2017. '926 Patent at 1:10-21. Wilus Institute of Standards and Technology Inc. ("Wilus") is the sole assignee of record.

The '926 Patent describes that there is a continued need "for providing a high-efficiency and high-performance wireless LAN communication technology in a high-density environment" and recognizes that "in a next-generation wireless LAN environment, communication having high frequency efficiency needs to be provided indoors/outdoors under the presence of high-density stations and access points (APs)." '926 Patent at 2:41-50. The techniques provided in the '926 Patent can advantageously improve the efficiency and resource utilization rate of the wireless LAN system. '926 Patent, 5:7-15. The '926 Patent is utilized by products that implement the Wi-Fi 6 (802.11ax) standard for wireless communications. Wilus was an active participant in and contributor to the development of the 802.11ax standard, and the '926 patent is widely licensed by the industry.

Representative Claim 1 of the '926 Patent recites the following:

1[pre] A wireless communication terminal, the terminal comprising:

1[a] a processor; and

1[b] a communication unit,

1[c] wherein the processor is configured to: receive a PPDU (physical layer protocol data unit) including an A-MPDU (Aggregate-MAC Protocol

Data Unit) in which one or more MPDUs (MAC Protocol Data Units) are aggregated,

1[d] wherein the A-MPDU includes Ack policy information related to a block Ack for the one or more MPDUs, and one or more subframes,

1[e] wherein each of the one or more subframes includes MPDU identifier information and an MPDU of the one or more MPDUs, and

1[f] wherein the MPDU identifier information includes an end of frame (EOF) field and a length field, and

1[g] transmit a response frame in response to the PPDU,

1[h] wherein a type of the response frame is determined as one of an Ack frame, a compressed BlockAck frame, and a multi-STA BlockAck frame according to a combination of a type of the MPDU determined by the EOF field and the length field, and the Ack policy information, and

1[i] wherein the compressed BlockAck frame is used to transmit a response to the one or more MPDUs corresponding to one TID, when the one or more MPDUs correspond to the one TID among an one or more TIDs (traffic IDs).

Independent method Claim 8 also recites similar elements as Claim 1.

### **III. Level of Ordinary Skill in the Art**

The Petition proposes that a 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 equivalent, as of the Critical Date. ... Increased education experience can make up for less work experience and vice versa.” Petition at 2. Patent Owner does not challenge Petitioner’s definition for purposes of this Preliminary Response.

### **IV. Claim Construction**

“Petitioner submits that no formal claim constructions are necessary...” for purposes of the Petition. Pet. at 2-3. Patent Owner does not contend that any formal claim construction is necessary for purposes of this Preliminary Response.

### **V. The Petition Fails to Establish Obviousness of Any of the Challenged Claims**

#### **A. Ground 1A/1B: The Petition Fails to Establish that the Prior Art Renders Obvious All Challenged Claims**

The Petition argues, for Ground 1A and 1B, U.S. Patent Application Publication 2017/0111951 (“Chu”) in combination with either IEEE P802.11ax/D1.0 (“IEEE-D1”) or IEEE 802.11-16/1185r2 (“IEEE-D2”) renders obvious all challenged claims of the ’926 Patent. *See, e.g.*, Pet. at 29-

70 (mapping Chu combined with IEEE-D1 or IEEE-D2 against independent claim 1 and dependent claims 2-7), 70-71 (incorporating analysis for independent claim 1 in Grounds 1A/1B against independent claim 8 and dependent claims 9-14).<sup>1</sup>

Under any of the theories articulated by the Petition for Grounds 1A/1B, the asserted prior art does not disclose or render obvious at least limitation 1[h]/8[f], which recites: “*wherein a type of the response frame is determined as one of an Ack frame, a compressed BlockAck frame, and a multi-STA BlockAck frame according to a combination of a type of the MPDU determined by the EOF field and the length field, and the Ack policy information.*”

None of the asserted prior art disclose, specifically, the (1) determining of a MPDU type based on the “EOF Field and the length field” or (2) determining a type of the response frame based on (a) MPDU type *and* (b) Ack policy information. Both elements are required by all asserted claims,

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<sup>1</sup> For both Grounds 1A/1B and 2, the Petition offers no independent analysis for independent claim 8 and its dependent claims. Instead, for independent claim 8 and its dependent claims, the Petition simply cites back and incorporates by reference its analysis for independent claim 1 and dependent claims 2-7. As a result, Patent Owner's responses and statements regarding the Petition's analysis of claim 1 should be understood as applying equally to the Petition's treatment of claim 8.

and, because the prior art does not disclose them either explicitly or implicitly, the Petition cannot establish obviousness of any of the challenged claims.

**1. Limitation 1[h]: No Determination of MPDU Type Based on EOF and Length Field**

The Petition asserts, for limitation 1[h], that the prior art discloses each of the three claimed response frame types and explains how the art teaches the frame type to be based on a type of MPDU and Ack policy information. *See* Pet. at 47-51 (mapping for “Ack frame” as the claimed response frame type), 51-56 (mapping for “compressed BlockAck frame” as the claimed response frame type), & 56-62 (mappings for “multi-STA BlockAck frame” as the claimed response frame type). Each of these theories fails, as explained below.

First, the Petition argues that Chu, and Chu in view of the “IEEE 802.11ax standard,” render obvious limitation 1[h]’s requirement of determining the “type of the response frame” as an “Ack Frame,” where that determination is based on a “combination of a type of the MPDU determined by the EOF field and the length field” and “the Ack Policy information.” *See* Pet. at 47-51.

For “Ack Frame,” the Petition maps Chu’s discussion of “a management frame or a data frame that corresponds to a normal acknowledgement.” Pet. at 49 (quoting and mapping “Ack Frame” to Chu, at [0073]). Likewise, The Petition further asserts that, under the “Ack Frame”

theory, the claimed “type of the MPDU” in the ’926 Patent is disclosed in Chu as a “single standalone MPDU or single normal ACK MPDU.” Pet. at 50. It further asserts that, under this theory, that the “type of MPDU” is determined based on “*EOF field ... [being] set to 1*” and “*nonzero MPDU length*” (corresponding to the requirement, “a combination of a type of the MPDU determined by the EOF field and the length field”) and also “*policy bits (e.g., ‘00’)*” (corresponding to the requirement, “Ack policy information”). *Id.*

For Chu’s disclosures alleged to teach the response frame type determination based on “the type of the MPDU determined by the EOF field and the length field” and “Ack policy information,” the Petition relies primarily on paragraphs [0073]-[0074] of Chu. *See* Pet. at 48-50. For example, in mapping the limitation 1[h]’s required “*Ack policy information*” to Chu’s discussion of policy bits, the Petition specifically asserts that the acknowledgement policy field of the MPDU is “set to a value such as ’00.” Pet. at 49 (quoting Chu, at [0074]). Paragraphs [0073] and [0074] of Chu are excerpted below. Similarly, for limitation 1[h]’s required “*EOF field*” and “*length field*,” the Petition relies on Chu’s discussion in paragraphs [0073] and [0074] of a scenario where the end of frame field is specifically set to “1” and the MPDU’s length field “nonzero” to generate “an A-MPDU that

includes a 'normal ACK' MPDU that has an acknowledgment policy corresponding to a Normal Ack Request. *See* Pet. at 49-50.

Paragraphs [0073]-[0074] of Chu are excerpted below.

In some embodiments and/or scenarios, the AP 14 or client station 25 aggregates a management frame or a data frame that corresponds to a normal acknowledgment (e.g., which asks for Ack) within an OFDMA A-MPDU, for example, within the A-MPDU 500. However, the acknowledgment policy bits of the QoS control field 314 by themselves do not provide for an indication to differentiate Ack and BA within an A-MPDU. In some embodiments and/or scenarios, ***the AP 14 or client station 25 sets i) the acknowledgment policy bits of the corresponding QoS control field 314 to immediate Ack/BA, and ii) sets the EOF field 532 of the corresponding MPDU delimiter 530 to 1 and the MPDU Length field 534 to a non-zero value in order to indicate an acknowledgment policy for the corresponding MPDU within an OFDMA A-MPDU.*** In an embodiment and/or scenario, the AP 14 sets the acknowledgment policy bits and the EOF field 532 so that an MPDU having an acknowledgment policy corresponding to a normal acknowledgment request (e.g., Normal Ack Request) can be sent within an OFDMA A-MPDU. In other words, the AP 14 utilizes the EOF field 532 and the MPDU Length field 534 to differentiate between a normal acknowledgment request and a block acknowledgment request.

In an embodiment and/or scenario, for example, ***the AP 14 generates an A-MPDU that includes a "normal ACK" MPDU*** that has an acknowledgment policy corresponding to a Normal Ack Request. In other words, a recipient of the normal ACK MPDU within the A-MPDU is requested to acknowledge the receipt of the normal ACK MPDU by transmitting an acknowledgment frame after a short interframe space (SIFS) period after the A-MPDU. In this embodiment and/or scenario, ***the AP 14 sets the EOF field 532 to 1, sets the MPDU length field 536 to a non-zero value, and sets the acknowledgment policy bits of the corresponding QoS control field 314 to a normal acknowledgment policy (e.g., a value of "00").*** In some

embodiments and/or scenarios, the normal ACK MPDU includes a management frame. In an embodiment, the AP 14 generates the A-MPDU to include multiple normal ACK MPDUs within an OFDMA A-MPDU. In an embodiment, for example, the AP 14 generates the A-MPDU to include at most one frame from each TID corresponding to a normal acknowledgment (e.g., which asks for Ack).

Chu, at [0073]-[0074].

The Petition's arguments about Chu are incorrect. Chu's disclosure and discussion of embodiments where EOF field is set to "1," MPDU length field is set to a "non-zero value" does not teach what the limitation 1[h] requires: that is, the use of that information to determine *the type of MPDU*—limitation 1[h], after all, specifically requires "a type of the MPDU determined *by* the EOF field and the length field."

Chu's discussion of the setting of the EOF field and MPDU length field values, however, is never described—either expressly or implicitly—as used to determine "a type of the MPDU." Rather, as Chu states, those values are used to indicate an *acknowledgement policy*, not a MPDU type:

In some embodiments and/or scenarios, the AP 14 or client station 25 sets i) the acknowledgment policy bits of the corresponding QoS control field 314 to immediate Ack/BA, and ii) sets the EOF field 532 of the corresponding MPDU delimiter 530 to 1 and the MPDU Length field 534 to a non-zero value *in order to indicate an acknowledgement policy for the corresponding MPDU within an OFDMA A-MPDU*.

Chu, at [0073]. Put another way, the Petition mapped “MPDU type” specifically to a “single standalone MPDU or single normal ACK MPDU.” Pet. at 50. As a result, it must also specifically show that Chu teaches the use of EOF field value being set to 1, length field being set to a non-zero value, as together being used to determine that particular MPDU type. Chu does not contain any such teaching, either in its paragraphs [0073]-[0074] or elsewhere, and the disclosure of Chu upon which the Petition relies clearly states only that the EOF field value and length field are used to “indicate an acknowledgement policy,” not determine an MPDU type as required by limitation 1[h].

Recognizing that Chu alone may not be enough to render obvious limitation 1[h], the Petition then asserts that the limitation is obvious “when Chu’s teachings are considered in combination with the 802.11ax disclosure” (that is, IEEE-D1 and IEEE-D2). *See* Pet. at 51. Here, however, the Petition argues merely that these IEEE disclosures teach “a type of the response frame is determined as an Ack frame in response to a VHT single MPDU.” *Id.* The Petition does not assert or explain whether IEEE-D1 and/or IEEE-D2 teaches or renders obvious the determination of an MPDU type based on EOF field and length field values.

Next, the Petition argues that Chu render obvious limitation 1[h]'s requirement of determining the "type of the response frame" as a "compressed BlockAck Frame," where that determination is based on a "combination of a type of the MPDU determined by the EOF field and the length field" and "the Ack Policy information." *See* Pet. at 51-55.

For "compressed BlockAck Frame," the Petition asserts that Chu's discussion of "block ack MPDU(s)" satisfies limitation 1[h]'s "type of the MPDU." Pet. at 5. It further asserts that, under this mapping, the MPDU type is "determined by EOF = 0 ('EOF field') and the nonzero value of the MPDU length field ('length field')." *Id.* at 55-56. For this assertion, the Petition relies on paragraphs [0073]-[0075] of Chu. *See* Pet. at 52-53. This theory fails, as well. Like for the theory for limitation 1[h]'s "Ack Frame" requirement, the Petition relies on Chu's discussion of setting EOF and length field values as allegedly ones which are used to determine MPDU type, but Chu only teaches how those values are used to indicate *an acknowledgment policy*. *See* Chu, at [0073]-[0074].

Perhaps recognizing this issue, the Petition appears to argue that an "acknowledgement policy" can be used to infer MPDU type where the latter is a "BlockAck frame." *See* Pet. at 52-53 (arguing that "Chu explains that such MPDU 'that has an acknowledgement policy corresponding to a block

acknowledgement'... can be referred to as a 'block ack' MPDU.'"). This fails as well, because limitation 1[h] requires that the *type* of MPDU (which the Petition argues is "compressed BlockAck frame") be determined based on EOF field and length information—that is, it is not satisfied simply where EOF field and length information can be used to indicate an acknowledgement policy which might correspond to an alleged MPDU type.

Next, the Petition argues that Chu render obvious limitation 1[h]'s requirement of determining the "type of the response frame" as a "multi-STA BlockAck frame," where that determination is based on a "combination of a type of the MPDU determined by the EOF field and the length field" and "the Ack Policy information." *See* Pet. at 56-61. Under these theories, the Petition asserts that the claimed "type of the MPDU" is "(e.g., a standalone MPDU that is part of multi-TID A-MPDU, 'multiple normal ACK MPDUs')." Pet. at 59. It asserts that the MPDU type here is "determined by EOF=1 ('EOF field') and the 'non-zero value' of 'MPDU length field' ('length field')." *Id.*

For this theory, the Petition relies on Chu's discussion of setting EOF to 1 and length to a nonzero value. *See* Pet. at 57 (asserting "'normal ACK MPDU' has (1) EOF = 1 and length ≠ 0") (quoting and citing Chu, at [0074], [0161], [0159]. For the same reasons as explained above, the cited disclosures of Chu do not disclose or teach the determination of an MPDU type based on

setting EOF to 1 and length to a non-zero value. That information, at most, is taught as indicating an acknowledgment policy. Paragraph [0074] simply states, in relevant part: “In other words, a recipient of the normal ACK MPDU within the A-MPDU is requested to acknowledge the receipt of the normal ACK MPDU by transmitting an acknowledgment frame after a short interframe space (SIFS) period after the A-MPDU. *In this embodiment and/or scenario, the AP 14 sets the EOF field 532 to 1, sets the MPDU length field 536 to a non-zero value*, and sets the acknowledgment policy bits of the corresponding QoS control field 314 to a normal acknowledgment policy (e.g., a value of ‘00’).” Chu, at [0074]. Notably, Chu does not describe the use of EOF field = 1 or length field being set to a non-zero value as something which is used to determine MPDU type.

The Petition advances a second theory for limitation 1[h] where response frame type is “multi-STA BlockAck frame.” The Petition contends that “Chu in view of IEEE-D1 or IEEE-D2” renders this limitation obvious. *See* Pet. at 60-61. In simple terms, the Petition argues that in IEEE-D1 and IEEE-D2, when an A-MPDU contains “multiple contiguous nonzero length MPDU limiters with EOF subfield equal to 1,” then the frame provided in response is a “Multi-STA BlockAck frame.” Pet. at 60-61 (quoting IEEE-D1,

at 219-220 and IEEE-D2, at 5-6). The relevant portion of 802.11ax is shown below.

A multi-TID A-MPDU may contain multiple noncontiguous nonzero length MPDU delimiters with EOF subfield equal to 1, one for each TID that solicits Ack and/or multiple noncontiguous nonzero length MPDU delimiters with EOF subfield equal to 0, one for each TID that solicits BlockAck.

An HE STA that receives a multi-TID A-MPDU shall respond with a Multi-STA BlockAck frame that contains (see 27.4 (Block acknowledgement)):

- One Per STA Info field indicating an Ack for each successfully received MPDU that solicits a response that is preceded by a nonzero length MPDU delimiter whose EOF is 1 (TID value equals that of the QoS Data/QoS Null frame or 15 for the Action frame),

IEEE-D1, at 219 (highlighting added). This disclosure of 802.11ax, however, does not disclose indicating the type of MPDU using the EOF field and length field. What 802.11ax is teaching here is indicating BlockAck (Multi-STA BlockAck) using the EOF field and length field, not the MPDU type.

## **2. Limitation 1[h]: No Determination of Response Frame Type Based on MPDU Type and Policy Information**

The Petition's theories for limitation 1[h] also fail to establish how Chu or Chu in combination with IEEE-D1 or IEEE-D2 teaches determining a response frame type based on a combination of MPDU type and acknowledgement policy. The Petition's theories for limitation 1[h] for "Ack frame" focus on Chu's paragraph [0074] ("normal acknowledgment policy" embodiment), and its theories for limitation 1[h]'s "BlockAck frame" and "multi-STA BlockAck frame" focus on Chu's paragraphs [0075] ("block ack MPDU" embodiment) and [0081] (multiple MPDU acknowledgment

embodiment). *See generally* Pet. at 47-61. The relevant portions of these paragraphs are excerpted below.

In this embodiment and/or scenario, the AP 14 sets the EOF field 532 to 1, sets the MPDU length field 536 to a non-zero value, and sets the acknowledgment policy bits of the corresponding QoS control field 314 to a normal acknowledgment policy (e.g., a value of “00”). In some embodiments and/or scenarios, the normal ACK MPDU includes a management frame. In an embodiment, the AP 14 generates the A-MPDU to include multiple normal ACK MPDUs within an OFDMA A-MPDU.

Chu, at [0074].

In an embodiment and/or scenario for an immediate BlockAck, the AP 14 sets the EOF field 532 to 0, sets the MPDU length field 536 to a non-zero value, and sets the acknowledgment policy bits of the corresponding QoS control field 314 to an implicit block acknowledgment request (e.g., a value of “00”). In an embodiment and/or scenario, in response to the receipt of an MPDU corresponding to an EOF field 532 being set to 0 and the implicit block acknowledgment request, the recipient acknowledges the MPDU with a BlockAck after a SIFS period.

Chu, at [0075].

The AP 14 or client station 25 generates the MPDU 350 with the BA control field 600 and the BA information field 620 as a unicast frame which includes block acknowledgments and/or single acknowledgments, in various embodiments and/or scenarios. In an embodiment, each block acknowledgment indicates respective acknowledgments for multiple MPDUs belonging to a single TID and each single acknowledgment indicates an acknowledgment for a single MPDU belonging to a single TID. In some embodiments and/or scenarios, the AP 14 or client station 25 utilizes the single acknowledgment to indicate an acknowledgment for a management frame by setting the corresponding TID value subfield 648 to a predetermined value (e.g., a value greater than 7, a value of 15, or other suitable value).

Chu, at [0081].

What these paragraphs teach is that the response frame type may be indicated using EOF field, length field, and acknowledgment policy bits—e.g., a normal Ack frame would have EOF=1, MPDU length≠0, and acknowledgment policy bits being set to “00”; a BlockAck frame would have EOF=0, MPDU length≠0, and acknowledgment policy bits being set to “00.” None of these disclosures, however, teach what the limitation requires: the determination of response frame type based on MPDU type or policy information. In other words, Chu teaches determination of response frame type based on information like EOF field, length field, and acknowledgement policy bits, regardless of the MPDU type—and thus cannot render obvious limitation 1[h].

### **3. Prior Art Status: IEEE-D1 Is Not Prior Art**

Finally, the Petition fails to establish that IEEE-D1 is prior art. It was not “publicly accessible” for purposes of serving as printed-publication prior art. The Petition and Petitioner’s “public accessibility” expert, Dr. Christopher Hansen, argue at length that IEEE-D1 was “publicly accessible” because it was circulated internally within the IEEE 802.11ax working group on or around December 1, 2016.

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. 1029, ¶ 53. 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. Instead, the Petition advances a novel theory of public accessibility: that (1) “[a]ny interested person” could have “gained access to IEEE-D1” by becoming a voting member,” or (2) “by obtaining a copy from a voting member from a voting member.” Pet. at 18-20.

As an initial matter, the Petition’s argument for the alleged public accessibility of IEEE-D1 is unsupported by any Federal Circuit or other precedent. It is settled law that a publication which is “uploaded to a website or deposited in a library” and which is “indexed or catalogued in some way” may be “publicly accessible” for prior art purposes. *See Samsung Elecs. Co.*

*v. Infobridge Pte. Ltd.*, 929 F.3d 1363, 1369 (Fed. Cir. 2019). For a publication to be “publicly accessible” to a POSITA, whether the POSITA “would have been independently aware” of the publication before the critical date also affects the determination. *Voter Verified, Inc. v. Premier Election Sols., Inc.*, 698 F.3d 1374, 1381 (Fed. Cir. 2012). For publications deposited in an Internet location, the inquiry should include whether “a person of ordinary skill could have reasonably found the website and then found the reference on that website.” *Infobridge*, 929 F.3d at 1369. The IEEE-D1 draft fits none of these or other scenarios in which the Federal Circuit has confirmed the “public accessibility” of a prior art reference.

Here, the IEEE-D1 draft was never made “publicly available” to a general member of the interested public, unless one were to assume that the definition of a POSITA include membership in the “voting” sub-group of the IEEE 802.11 Working Group. The Petition does not allege that a POSITA for the '926 Patent would have been a voting member of the IEEE Working Group (*see* Pet. at 2-3), and an assertion otherwise would be dubious at best, given that the Petition also asserts a POSITA would have had only “3 years of experience” with a Bachelor’s degree in electrical engineering or computer science, a definition met by innumerable 24-year-old, junior software engineers in the United States.

Perhaps having foreseen this problem, the Petition contends that it would have been simple for a POSITA (having graduated from college 3 years earlier) to follow a “straightforward process” for joining the ranks of voting members of the IEE 802.11 Working Group. 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. 1029, ¶¶ 57-63.

Dr. Hansen's declaration itself shows why the Petition's arguments are suspect. *See* Ex. 1029, ¶¶ 57-63. 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 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 attend, 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. First, a POSITA could not

have been meaningfully motivated to do so beginning in December 2016 if they had (hypothetically) been informed of the existence of IEEE-D1, because they would not had time to do so before the December 21, 2016 critical date. Even if one counterfactually assumes the role of a 23-year old software engineer in January 2016, it defies logic to conclude that 23-year old software engineer, even acting as a reasonably diligent member of the public but with just 3 years of experience and a Bachelor's degree, would have strategically attend multiple IEEE meetings throughout 2016, some in far-flung locations, just to become a voting member of the Working Group for the chance to learn about and access IEEE-D1 between December 1, 2016 and December 21, 2016.

The Petition plainly understands the incredibility of the above scenario, and so also argues that a reasonably diligent POSITA would have asked a member of the Working Group (or some intermediary who knows a Working Group member) to obtain a copy of IEEE-D1. But this presupposes, without evidence, that a POSITA would have known of the existence of IEEE-D1 before the December 20, 2016 critical date, which is a factually dubious scenario given the Petition's own definition of a POSITA. More importantly, the Petition's argument here is simply: "a POSITA, acting as an otherwise unrelated member of the public, could have emailed a Working Group member,

or someone else who knew a Working Group member, to request the password-protected IEEE-D1 draft and expected to obtain it.” No case law or other precedent supports such an expansive definition of “public accessibility,” and the Petition cites none. IEEE-D1 was simply not “publicly accessible” for prior art purposes.

**B. Ground 2: The Petition Fails To Establish that the Prior Art Discloses All Challenged Claims**

The Petition argues, for Ground 2, the IEEE 802.11 (2016) technical standard (“IEEE-D3”) alone renders obvious all challenged claims of the ’926 Patent. *See, e.g.*, Pet. at 71-84 (mapping IEEE-D3 against independent claim 1 and dependent claims 2-7), 85 (incorporating analysis for independent claim 1 in Grounds 2 against independent claim 8 and dependent claims 9-14).

The Petition fails to establish obviousness under Ground 2, because IEEE-D3 does not disclose determining response frame type based on both MPDU type and acknowledge policy information or a MPDU type determined based on EOF and length field information, both of which are required by limitation 1[h]/8[i]: *“wherein a type of the response frame is determined as one of an Ack frame, a compressed BlockAck frame, and a multi-STA BlockAck frame according to a combination of a type of the MPDU determined by the EOF field and the length field, and the Ack policy information.”*

**1. Limitation 1[h]: No Determination of MPDU Type Based on EOF and Length Field**

For limitation 1[h], the Petition relies on Table 9-422 of IEEE-D3 as allegedly teaching the use of EOF field and length field to indicate MPDU type. *See* Pet. 82-83 (first and second full paragraphs discussing characteristics of S-MPDU and VHT S-MPDU and A-MPDU). Table 9-422 is shown below.

**Table 9-422— MPDU delimiter fields (non-DMG)**

| Field                                                                                                                      | Size (bits) | Description                                                                                                                                                                                                                                                                                    |
|----------------------------------------------------------------------------------------------------------------------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EOF                                                                                                                        | 1           | End of frame indication. Set to 1 in an A-MPDU subframe that has 0 in the MPDU Length field and that is used to pad the A-MPDU in a VHT PPDU as described in 10.13.6. Set to 1 in the MPDU delimiter of a VHT single MPDU as described in 10.13.7. Set to 0 otherwise.                         |
| Reserved                                                                                                                   | 1           |                                                                                                                                                                                                                                                                                                |
| MPDU Length                                                                                                                | 14          | Length of the MPDU in octets. Set to 0 if no MPDU is present. An A-MPDU subframe with 0 in the MPDU Length field is used as defined in 10.13.3 to meet the minimum MPDU start spacing requirement and also to pad the A-MPDU to fill the available octets in a VHT PPDU as defined in 10.13.6. |
| CRC                                                                                                                        | 8           | 8-bit CRC of the preceding 16 bits.                                                                                                                                                                                                                                                            |
| Delimiter Signature                                                                                                        | 8           | Pattern that can be used to detect an MPDU delimiter when scanning for an MPDU delimiter.<br>The unique pattern is 0x4E (see NOTE below).                                                                                                                                                      |
| NOTE—The ASCII value of the character 'N' was chosen as the unique pattern for the value in the Delimiter Signature field. |             |                                                                                                                                                                                                                                                                                                |

IEEE-D3, at 1289 (highlighting added). According to the Petition, IEEE-D3 satisfies this limitation when MPDU type is “VHT S-MPDU,” in which case it has “EOF = 1” and length  $\neq 0$ .” Pet. at 83.

As Table 9-422 provides, the setting of MPDU limiter in a VHT S-MPDU to 1 is described in section 10.13.7. Section 10.13.7 provides as follows:

#### **10.13.7 Setting the EOF field of the MPDU delimiter**

The EOF field may be set to 1 in an A-MPDU subframe carried in a VHT PPDU if the subframe's MPDU Length field is nonzero and the subframe is the only subframe that has a nonzero MPDU Length field. The EOF field of each A-MPDU subframe with an MPDU Length field with a nonzero value that is not the only A-MPDU subframe with MPDU Length field with a nonzero value in the A-MPDU carried in a VHT PPDU shall be set to 0. The EOF field shall be set to 0 in all A-MPDU subframes that are carried in an HT PPDU.

An MPDU that is the only MPDU in an A-MPDU and that is carried in an A-MPDU subframe with 1 in the EOF field is called a *VHT single MPDU*.

IEEE-D3, at 1370. IEEE-D3 here does not disclose a MPDU type (e.g., VHT S-MPDU type) based on EOF field and length field, and does not disclose that the type of the MPDU is determined according to the EOF field and length field. For example, as stated in Table 9-422 and section 10.13.7, if EOF field is set to 1, then the VHT MPDU is a single MPDU; meaning that the value of the EOF field determines whether the A-MPDU subframe contains a single MPDU or multiple MPDUs. Therefore, in IEEE-D3, the EOF field and length field are only used to identify whether the A-MPDU subframe contains a single MPDU or multiple MPDUs, not to identify different MPDU types.

#### **2. Limitation 1[h]: No Determination of Response Frame Type Based on MPDU Type and Acknowledgment Policy Information**

For limitation 1[h], the Petition relies on section 10.13.8 and Table 9-9 of IEEE-D3 as allegedly teaching the determination of a response frame type as an Ack frame using a MPDU type and acknowledgment policy information. The Petition contends follows:

Further, the IEEE-D3 explains that, in the context of VHT single MPDU (having EOF = 1 and length  $\neq$  0), corresponding policy value is set to "00" ("the Ack policy information"), ***and the resulting response frame is an "Ack frame."*** See ***SAMSUNG-1009, 1371 (1370) (noting that for VHT single MPDU, "[d]ata frame could indicate an Ack Policy of 'Normal Ack', which solicits an Ack frame immediate response")***, 651 (650), ***Table 9-9 (disclosing that policy bits of "00" indicate either "Normal Ack or Implicit Block Ack Request" and in the context of VHT single MPDU, "Ack [response] frame" is triggered)***, 1319 (1318) (explaining that an "Ack frame might be sent in immediate response to a VHT single MPDU"), 1290 (1289), Table 9-422 (describing that length is non-zero when there is MPDU present and that EOF is "[s]et to 1 in the MPDU delimiter of a VHT single MPDU"); see SAMSUNG-1012, 9-10 (corroborating the definition of VHT single MPDU). SAMSUNG-1003, ¶182

Pet. at 82-83. Section 10.13.8 and Table 9-9. As with its arguments for Ground 1, the IEEE-D3 art relied upon by the Petition does not actually disclose a response frame type (here, the "Ack frame" under the Petition's theory) that is determined based on MPDU type or acknowledgement policy information. On the contrary, IEEE-D3 defines specifically what indicates the frame to be a normal Ack frame or a Block Ack frame. This is shown in the very sections of IEEE-D3 relied upon by the Petition. Section 10.13.8, section 9.2.4.5.4, and Table 9-9 are shown below in relevant part.

#### 10.13.8 Transport of VHT single MPDUs

The rules for VHT single MPDU operation are the same as the rules for non-A-MPDU frame operation with other types of non-A-MPDU.

NOTE—This affects the following behavior:

- The frame could carry a fragment of an MSDU or MMPDU (see 10.2.7).
- Rate selection of control responses (see 10.7).
- A Data frame cannot indicate an Ack Policy of “Implicit Block Ack”, and does not generate a BlockAck frame response (see 9.2.4.5.4).
- A Data frame could indicate an Ack Policy of “Normal Ack”, which solicits an Ack frame immediate response. No block ack agreement is needed in this case (see 9.2.4.5.4).
- The frame could be a Management frame that solicits an Ack frame response (see 9.7.3).

#### 9.2.4.5.4 Ack Policy subfield

The Ack Policy subfield is 2 bits in length and identifies the acknowledgment policy that is followed upon the delivery of the MPDU. The interpretation of these 2 bits is given in Table 9-9.

| Table 9-9—Ack Policy subfield in QoS Control field of QoS Data frames |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Bits in QoS Control field                                             |       | Meaning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Bit 5                                                                 | Bit 6 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 0                                                                     | 0     | Normal Ack or Implicit Block Ack Request.<br><br>In a frame that is a non-A-MPDU frame or VHT single MPDU:<br>The addressed recipient returns an Ack or QoS +CF-Ack frame after a short interframe space (SIFS) period, according to the procedures defined in 10.3.2.9 and 10.22.3.5. A non-DMG STA sets the Ack Policy subfield for individually addressed QoS Null (no data) frames to this value.<br><br>Otherwise:<br>The addressed recipient returns a BlockAck frame, either individually or as part of an A-MPDU starting a SIFS after the PPDU carrying the frame, according to the procedures defined in 10.3.2.9, 10.24.7.5, 10.24.8.3, 10.28.3, 10.28.4, and 10.32.3. |

IEEE-D3, at 1369-1370 (section 10.13.8), 650 (section 9.2.4.5.4), and (Table 9-9). As shown above, in IEEE-D3, if a frame is a normal Ack (which is mapped as the limitation's “Ack frame” in the Petition), such fact is indicated by bits 5 and 6 of the frame's QoS Control field. Nothing in IEEE-D3 states that the response frame type (i.e., whether a frame is a normal Act frame) is affected by MPDU type, and thus it does not disclose limitation 1[h].

## VI. Conclusion

For the foregoing reasons, the Petition should be denied.

Patent Owner's Preliminary Response  
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**CERTIFICATE OF COMPLIANCE WITH 37 C.F.R. § 42.24**

I certify that there are 5,383 words in this paper, excluding the portions exempted under 37 C.F.R. § 42.24(a)(1), according to the word count tool in Microsoft Word.

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