

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.

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

PATENT OWNER'S RESPONSE

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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, https://www.uscourts.gov/sites/default/files/document/fcms_na_distprofile0331.2025.pdf
2006	Judge Rodney Gilstrap’s median time to trial from August 25, 2024 until August 25, 2025, retrieved from www.docketnavigator.com
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, https://www.sisvel.com/licensing-programmes/Wi-Fi/wifi-6/#tab-list-of-licensees
2010	Letter re “Notice of Wi-Fi 6 License offer” from Sisvel to Samsung Electronics Co., Ltd. with Attachments 1-2, August 24, 2022

Exhibit	Description
2011	IEEE P802.11, Document IEEE 802.11-18/0367r, dated March 1, 2018
2012	IEEE P802.11ax TM / D2.3, dated April 2018
2013	Excerpts of IEEE 802.11-17/1682r13, Comments on TGAX/D2.0
2014	Defendants’ P.R. 4-1 Exchange of Proposed Terms and Claim Elements for Construction, October 23, 2025
2015	November 5, 2025 email re: Samsung v. Wilus IPRs — requests for supplemental briefing
2016	November 13, 2025 email withdrawing contentions as to indefiniteness
2017	Declaration of James S. Tsuei in Support of Pro Hac Vice Recognition
2018	Corrected Declaration of James S. Tsuei in Support of Pro Hac Vice Recognition
2019	Declaration of Todor V. Cooklev, Ph.D. in Support of Patent Owner’s Response (“Cooklev Decl.”)
2020	Declaration of Paul Nikolich in Support of Patent Owner’s Response (“Nikolich Decl.”)
2021	Transcript of the Deposition of Christopher Hansen, Ph.D. (April 9, 2026) (“Hansen Depo.”)
2022	Transcript of Deposition of Mark Mahon, Ph.D. (April 20, 2026) (“Mahon Depo.”)
2023	IEEE P802.11ax comment resolution table for Draft D1.0 (IEEE 11-17/0010r14) (October 3, 2017 version)
2024	IEEE P802.11ax comment resolution table for Draft D2.0 (IEEE 11-17/1682r13) (June 1, 2018 version)

Exhibit	Description
2025	Ack-related CID resolution document that amended Section 27.4 of the standard (11-18/0027r4) (March 1, 2018

I. INTRODUCTION

The Petition fails on multiple independent grounds, with separate fatal defects for each of its three grounds.

Ground 1A (Chu + IEEE-D1) / Ground 1B (Chu + IEEE-D2). Ground 1A relies on U.S. Patent Application Publication 2017/0111951 (“Chu”) and IEEE P802.11ax/D1.0 (“D1.0” or “IEEE-D1”) as a combination reference. Ground 1B likewise relies on Chu and IEEE 802.11-16/1185r2 (“IEEE-D2”).

First, D1.0 is not prior art. D1.0 was circulated only within the password-protected, members-only area of the IEEE 802.11 website at earliest on December 1, 2016—twenty days before the December 21, 2016 Critical Date. It was not uploaded to any public website, not in any library, and not indexed or cataloged anywhere accessible to the general public. Petitioner’s public accessibility expert, Dr. Christopher Hansen, conceded at deposition that he does not know whether D1.0 was on the publicly searchable IEEE Mentor website, does not know whether D1.0 was ever on IEEE Xplore, and cannot identify a single specific non-member who received D1.0 before the Critical Date.¹ The Petition’s proffered pathways for access — voting membership, “ask a Working Group member,” the “Aspirant” and listserv

¹Hansen Depo. 48:5–11 (“I really don’t know” whether D1.0 was on the Mentor website); Hansen Depo. 48:16–21 (“I don’t know if 1.0 was ever available on IEEE Xplore or not”).

theories, and RFC 7241 IETF cooperation — are each unsupported by any evidence of actual dissemination to a member of the relevant public exercising reasonable diligence. Ex. 2021 (“Hansen Depo.”) at 45:18–25; 57:1–9; 59:13–24. D1.0 does not qualify as a “printed publication” under 35 U.S.C. § 102, and Ground 1A fails based on this threshold issue.

Second, even if D1.0 were prior art (and it is not), both Grounds 1A and 1B fail on the merits. The key disputed limitation of the challenged claims, [1h]/[8f], requires that the type of the response frame be determined by a *combination* of (i) a type of the MPDU *determined* by the EOF field and the length field, and (ii) the Ack policy information. Chu does not teach that structure. At most, Chu uses the EOF and length fields of a MPDU to *indicate an acknowledgment policy*—not to determine an MPDU type. Worse, Chu’s own paragraphs teach that an MPDU with EOF=1, length≠0, and normal acknowledgment policy corresponds to a *normal ACK response*—the same delimiter values the Petition maps to the multi-STA BlockAck context. More simply, the Petition maps the same discussion in Chu about EOF and length in Chu satisfying the MPDU type determination in both the normal Ack and multi-STA BlockAck contexts—but without showing how Chu teaches the use of the EOF and length delimiters to determine the MPDU type or otherwise resolve the ambiguity.

Ground 2 (IEEE-D3). Ground 2 presents a single-reference obviousness theory based on IEEE Std 802.11-2016 (“IEEE-D3”). The theory based on IEEE-D3—a 2016 revision of the older IEEE 802.11ac standard preceding IEEE 802.11ax—fails for several reasons. First, the Petition does not disclose using the EOF and length fields to determine that an MPDU’s type is a “single standalone MPDU”—and this is the only theory advanced for meeting the MPDU-type determination requirement. Second, IEEE-D3 does not disclose the multi-STA BlockAck response type claimed in [1h]—and Petitioner’s own expert confirmed at deposition that he performed no analysis mapping any provision of IEEE-D3 to that requirement.² Ground 2 fails entirely.

Secondary Considerations. The absence of a clear theory for how the prior art discloses in limitation [1h]/8[f]’s MPDU type determination based on EOF and length is made stark by a robust record of evidence—namely, the actual, historical deliberations of the IEEE Wi-Fi standards working group—establishing the non-obviousness.

The Petition has not shown by a preponderance of the evidence that any challenged claim is unpatentable. The Board should find all challenged claims not shown to be unpatentable.

²Mahon Depo. 121:6–17.

II. OVERVIEW OF THE ‘926 PATENT

U.S. Patent No. 11,664,926 (the “’926 Patent”) (Ex. 1001) issued on May 30, 2023 and claims priority to Korean Application No. 10-2016-0175999 filed December 21, 2016. The ’926 Patent addresses response-frame selection in High Efficiency (802.11ax) wireless LAN systems where a received Aggregate MPDU (“A-MPDU”) may contain a single constituent MPDU / MAC data frame, multiple MPDUs sharing one Traffic ID (TID), or multiple MPDUs spanning different TIDs³—and the correct acknowledgment response differs for each type. *See, e.g.*, ‘926 Patent, 2:56-61 (explaining that “present invention” works to “set various formats of the aggregate MPDU and the response frame thereto and to use them to perform efficient data communication”), 5:7-10 (stating that one of the “advantageous effects” of the “present invention” is that it becomes “possible to set an aggregate MPDU and a response frame thereto in various formats”), 15:53-16:27 (establishing situations where each of the three possible response frame types—“Ack frame,” “Compressed BlockAck,” and “Multi-STA BlockAck”—may be selected and used).

³ “TIDs” in the 802.11 context refer to identifiers used to classify and differentiate between traffic types and to assign quality-of-service (QoS) priorities, which in turn are used by devices to prioritize certain data types and transmissions. *See, e.g.*, Ex. 1009, at 142 (defining of “traffic identifier (TID)” in the IEEE 802.11ac wireless standard).

The '926 Patent discusses the three types of MPDU which may be included within a received A-MPDU, each with a corresponding response: (i) the S-MPDU (EOF=1, length≠0)—responded to with an Ack frame; (ii) the single-TID A-MPDU (EOF=0, length≠0, one TID)—responded to with a compressed BlockAck (C-BA); and (iii) the multi-TID A-MPDU—responded to with a multi-STA BlockAck (M-BA). *See* '926 Patent, FIGS. 6(a)–(b), 7(a), 10(a)–(c). *See also id.* at 15:53-16.

The key disputed limitation is [1h]/[8f], shown below and which will be referred to hereafter as limitation [1h] for convenience.

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.

This limitation encodes a two-step algorithm: first, the recipient determines the *type of the MPDU* by inspecting the EOF field and length field; second, it determines the *type of the response frame* by combining that MPDU-type result with the Ack policy information. Both steps are required, and neither Chu, IEEE-D1/D2, nor IEEE-D3 teaches this two-step, causally chained structure. Further, limitation [1h]/[8g] requires the response type be selected from three possible response frame types, including “multi-STA BlockAck” type first introduced in the IEEE 802.11ax wireless standard. As

discussed below, this aspect of the limitation presents additional difficulties for the Petition's Ground 2, which relies solely on the older 802.11ac wireless standard.

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 3. Patent Owner does not challenge Petitioner’s definition for purposes of this Response.

IV. LEGAL STANDARDS

A patent claim is unpatentable as obvious under 35 U.S.C. § 103 if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious to a person of ordinary skill in the art at the time the invention was made. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). Obviousness is a question of law based on underlying factual determinations, including: (1) the scope and content of the prior art; (2) the differences between the prior art and the claimed invention;

(3) the level of ordinary skill in the art; and (4) objective indicia of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966).

The petitioner bears the burden of proving unpatentability by a preponderance of the evidence. 35 U.S.C. § 316(e). That burden never shifts to the patent owner. *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

An obviousness analysis “need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *KSR*, 550 U.S. at 418. But the analysis must account for the “reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does,” and must guard against the impermissible use of hindsight. *Id.*

A reference may be said to teach away when “a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant.” *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994).

A printed publication qualifies as prior art only if it was “sufficiently accessible to the public interested in the art.” *In re Lister*, 583 F.3d 1307, 1311 (Fed. Cir. 2009). The ultimate question is whether the reference was “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).

The petitioner has the burden to clearly set forth the basis for its challenges in the petition. *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) as “requiring IPR petitions to identify ‘with particularity . . . the evidence that supports the grounds for the challenge to each claim’”). A petitioner may not rely on the Board to substitute its own reasoning to remedy the deficiencies in a petition. *SAS Inst., Inc. v. Iancu*, 584 U.S. 357, 364 (2018) (“Congress chose to structure a process in which it’s the petitioner, not the Director, who gets to define the contours of the proceeding.”); *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1381 (Fed. Cir. 2016) (rejecting the Board’s reliance on obviousness arguments that “could have been included” in the petition but were not, and holding that the Board may not “raise, address, and decide unpatentability theories never presented by the petitioner and not supported by record evidence”); *Ariosa Diagnostics v. Verinata Health, Inc.*, 805 F.3d 1359, 1367 (Fed. Cir. 2015) (holding that “a challenge can fail even if different evidence and arguments might have led to success”); *Wasica Finance GMBH v. Continental Auto. Systems*, 853 F.3d 1272, 1286 (Fed. Cir. 2017) (holding that new arguments

in a reply brief are “foreclosed by statute, our precedent, and Board guidelines”).

The Board “may reject even uncontroverted expert testimony when it is intrinsically unpersuasive.” *Granite Constr. Co. v. United States*, 962 F.2d 998, 1006 (Fed. Cir. 1992). The petitioner cannot satisfy its burden of proving obviousness by employing “mere conclusory statements.” *Magnum*, 829 F.3d at 1380.

An obviousness determination requires finding that a POSITA would have been motivated to modify or combine teachings in the prior art. *In re Stepan Co.*, 868 F.3d 1342, 1345–46 (Fed. Cir. 2017). Obviousness concerns “whether a skilled artisan not only *could have made* but *would have been motivated to make* the combinations or modifications of prior art to arrive at the claimed invention.” *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1073 (Fed. Cir. 2015). The “mere fact that these possible arrangements existed in the prior art” does not provide a motivation to substitute the arrangement in one prior art embodiment with the arrangement in another.” *Virtek Vision International ULC v. Assembly Guidance Systems, Inc.*, 97 F.4th 882, 887 (Fed. Cir. Mar. 27, 2024). Because a motivation to modify or combine is part of the *prima facie* case for obviousness that must be set forth in the petition, a petitioner should not be permitted to present “an entirely new rationale to

explain why one of skill in the art would have been motivated to combine” in its reply. *Intelligent Bio-Systems, Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1370 (Fed. Cir. 2016).

V. CLAIM CONSTRUCTION

A. The Two-Step Structure of Limitation [1h]

Limitation [1h] encodes a two-step algorithm: it requires (1) determining the *type of the MPDU* by the EOF and length fields, and then (2) determining the *type of the response frame* according to a *combination* of that MPDU-type result with the Ack policy information. Both steps are required. No formal claim construction is required to recognize this requirement because it is simply the plain and ordinary meaning of the words in the limitation. This two-step structure bear emphasis, however, because the Petition’s analysis depends on collapsing them—*i.e.*, the Petition assumes that no explicit MPDU-type determination step needs to be shown.

Under the plain and ordinary meaning, with the claim language “a type of the MPDU determined by the EOF field and the length field,” the phrase “determined by” describes a causal relationship in which the EOF and length fields are inputs that yield an MPDU-type output. Cooklev Decl. ¶¶ 43-45. That MPDU-type output is then *combined* with the Ack policy information to *determine* the response frame type. Both *determinations* are required.

This multi-determination causality repeatedly appears in the specification: the MPDU type must first be identified, and then that identification is used to select a response frame type. *See, e.g.*, ‘926 Patent, 17:9-12 (“if the MPDU successfully received in the A-MPDU is the only MPDU soliciting an immediate response of the Ack context (i.e., the received A-MPDU is identified as the S-MPDU), the STA responds with the Ack frame”), 18:12-14 (“the STA may also respond with an M-BA frame if the received A-MPDU is identified as a single-TID A-MPDU”), 18:18-20 (“when the received A-MPDU is identified as a multi-TID A-MPDU, the STA responds with a multi-STA BlockAck (M-BA) frame”). *See* Cooklev Decl. ¶¶ 45-46. Accordingly, a system that uses EOF and length values only to signal or indicate an acknowledgment policy or decide a response frame type—without separately determining and then using an MPDU type as required by the claim—does not satisfy this limitation.

B. Capability to Select Each of the Three Possible Response Frame Types in Limitation [1h]

Limitation [1h] requires the “type of response frame” to be determined as “one of an Ack frame, a compressed BlockAck frame, *and* a multi-STA BlockAck frame.” This language can be interpreted in two ways. First, it could be interpreted where it could be satisfied by prior art teaching only the determination of a response frame type, where the type is response frame type

is one of the three possibilities recited by limitation [1h]—i.e., a prior art reference which discloses the determination of a response frame type to be an “Ack frame” (while being silent as to “compressed BlockAck frame” and “multi-STA BlockAck frame”), for example, might satisfy this language in its entirety under this interpretation.

Alternatively, the [1h] language could be interpreted where it could be satisfied only when each of the three frame types recited in [1h] is a possible frame type which can be selected—i.e., a reference or combination of references must suggest having each of the three recited response frame types as a possible option to select. Patent Owner contends that the latter interpretation is correct. It is supported by the specification, the file history, and the language of the claims.

To begin, limitation [1h] recites a list of three possible response types, with the last member of the list separated from the others by a coordinating conjunction. When drafting claim language having a list of elements, one has a choice to select between different possible conjunctions to separate the last member of the list from the others. The choice of that conjunction—whether it is “and” or “or”—is meaningful and material to the disputes here.

As explained below, the use of the conjunctive “and” in limitation [1h], in view of the intrinsic evidence, suggests that the claim requires a system

capable of determining all three response types—i.e., the limitation cannot be fully satisfied simply with a prior art reference which discloses capability to select one or two of the three claimed response frame types. Cooklev Decl. ¶¶ 47-49. Whether this is correct may affect whether the Petition has shown unpatentability under Ground 2, in which it presents no argument or theory for how the asserted art renders obvious limitation [1h]’s “multi-STA BlockAck frame” response type. Patent Owner’s interpretation—that limitation [1h] requires an apparatus capable of selecting each of the three required response frame types—is correct and should be adopted by the Board. *Id.*

First, the specification supports this interpretation. The ‘926 Patent explains that its invention is directed to a device that receives an A-MPDU, interprets them and identifies the type(s) of MPDUs included in the A-MPDU, and then selects one of three possible response frame types specifically tailored to the type of MPDU for which a response will be constructed. ‘926 Patent, at ‘926 Patent, 2:56-61 (“The present invention has an object to set various formats of the aggregate MPDU and the response frame thereto and to use them to perform efficient data communication.”), 5:7-10 (“According to an embodiment of the present invention, it is possible to set an aggregate MPDU and a response frame thereto in various formats and to perform

efficient data communication.”), The ‘926 Patent teaches, at columns 15 and 16, the following:

Response Frame for the A-MPDU

FIG. 10 illustrates an embodiment of a response method according to the format of an A-MPDU. As described above, in the non-legacy wireless LAN system, an A-MPDU having the following format can be used. i) A-MPDU in which a plurality of MPDUs belonging to different TIDs are aggregated (embodiment of FIG. 10(a)). ii) A-MPDU in which a plurality of MPDUs belonging to a single TID are aggregated (embodiment of FIG. 10(b)). iii) A-MPDU containing a single MPDU (embodiment of FIG. 10(c)).

Therefore, *the structure of the response frame may be different according to the format of the A-MPDU received by the recipient. According to the embodiment of the present invention, the following response frame may be transmitted for each format of the A-MPDU.*

1) **Ack frame**: If MPDU with the value of the EOF field set to 1 is present only one in the received A-MPDU. Alternatively, if MPDU soliciting an immediate response is present only one in the received A-MPDU.

2) **Compressed BlockAck (C-BA) frame**: Among the received A-MPDU, if MPDUs soliciting an immediate response belong to the same TID. Alternatively, if the received A-MPDU consists of MPDUs of only one TID soliciting an immediate response and frames of other TID not soliciting an immediate response. In this case, the frame not soliciting an immediate response may include an Action No Ack frame, a QoS data frame for which the acknowledgment policy is BlockAck or No Ack, a QoS Null frame for which the acknowledgment policy is BlockAck or No Ack, and the like.

3) **Multi-STA BlockAck (M-BA) frame**: If the received A-MPDU consists of MPDUs of two or more TIDs soliciting an immediate response. Alternatively, if the received A-MPDU is

configured to include MPDUs of one or more TIDs soliciting an immediate response and an Action frame. When a response is transmitted via the M-BA frame, a response may be performed through the per AID TID information field which is independent for each TID. If an MPDU with the value of the EOF field set to 1 is present in the received A-MPDU, the value of the Ack type subfield of the per AID TID information field corresponding to the MPDU may be set to 1 so that the BA bitmap is omitted.

‘926 Patent, 15:53-16:27 (emphasis added).

In simple terms, the invention is about having a device that is able to identify each of three possible MPDU types that it might find with a received A-MPDU (as illustrated in Figures 10(a), 10(b), and 10(c)), and being able to choose the correct response frame type. These passages show that the invention is not a device which is only able to identify just one MPDU type and provide the correct response frame to that MPDU type—it is one which is able to identify each of the three possible MPDU types and provide one of three response frame types corresponding to a specific type of MPDU.

Second, the prosecution history further supports an interpretation that the Challenged Claims require a system which is capable of selecting each one of the three possible claimed response frame types. When the initially drafted claims of U.S. Patent App. No. 17/157,978 (“‘978 Application”) (which led to the issuance of the ‘926 Patent) were first filed, they contained no requirement that specific response types of response frames be selected. *See, e.g.*, Ex. 1002, at 954-56 (Jan. 25, 2021 Preliminary Amendment) (claim

17⁴: “wherein a type of the response frame is determined according to a combination of a type of the MPDU determined by the EOF field and the length field, and the Ack policy information”).

On August 25, 2025, The Examiner issued an Office Action rejecting the claims on nonstatutory obviousness-type double patenting (“ODP”) grounds. See Ex. 1002, at 379-382. Citing co-pending U.S. Patent App. No. 17/157/996 (“‘966 Application”), the Examiner concluded that the claims broadened the scope of copending claims in the ‘966 Application and should be rejected as being not patentably distinct. *See id.* Notably, the ‘966 Application’s pending claims required each of the three response frame types at issue here—Ack, compressed BlockAck, and Multi-STA BlockAck:

⁴ Claim 17 of the pending claims was later reissued as claim 1 of the ‘926 Patent. *See* Ex. 1002, at 195.

wherein the specific format of the response frame is determined as a format for an Ack frame when the one or more MPDUs include only one MPDU soliciting an immediate response, and the only one MPDU soliciting the immediate response follows the MPDU delimiter information with a value of the EOF field equal to 1 and a value of the length field is non-zero;

wherein the specific format of the response frame is determined as a format for a compressed BlockAck frame when the at least one TID is the same, and the at least one TID soliciting the immediate response follows the MPDU delimiter information with a value of the EOF field equal to 0;

wherein the specific format of the response frame is determined as a format for a multi-STA BlockAck frame when the one or more MPDUs include at least one MPDU of the at least one TID;

Ex. 1002, at 380 (reciting claims from ‘966 Application) (red underlines added). Then, on November 26, 2022, the Applicant attempted to traverse the obviousness-type double patenting rejection by amending the claims. *See* Ex. 1002, at 206-217. The Applicant made several narrowing amendments (shown at page 207 of Ex. 1002), including one which narrowed “type of the response frame” to be one of three possible response types at issue here:

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

Ex. 1002, at 207-09 (November 26, 2022 listing of amended claims). In its remarks, the Applicant argued that these changes traversed the previous

ODP rejection. *See* Ex. 1002, at 211-12.⁵ By narrowing its previously broad recitation of “type of the response frame” to now require that “the response frame [be] determined as one of an Ack frame, a compressed BlockAck frame, and a multi-STA BlockAck frame”—that is, all possible response frame types discussed in the specification—the Applicant indicated its intent to claim the invention discussed in the specification: a device capable of receiving an A-MPDU and constructing a response frame of either the Ack, compressed BlockAck, or Multi-STA BlockAck type, based on inspection of information in the A-MPDU.

Third, the plain English of the words supports Patent Owner’s interpretation. The words “and” and “or” mean different things. Where a conjunctive “and,” as opposed to the disjunctive “or,” is used, this may suggest intent by the drafter to signal that all elements of a given list are required—that is, the members of the list are not alternatives to one another where any one might satisfy the claim. *Cf. SuperGuide Corp. v. DirecTV Enters., Inc.*, 358 F.3d 870, 886 (Fed. Cir. 2004) (“patentee used the term ‘and’ to separate the categories of criteria, which connotes a conjunctive list”); *Altera Corp. v. PACT XPP Techs., AG*, No. 14-CV-02868-JD, 2015 WL

⁵ In the same amendment set and remarks, the Applicant also added what later became ‘926 Patent, limitation [1i]/[8g] to traverse an obviousness rejection based on the Qualcomm prior art reference. *See* Ex. 1002, at 214-216.

4999952, at *3 (N.D. Cal. Aug. 21, 2015) (construing “one or more of ... [As, Bs], and/or [Cs]...” as equivalent to “at least one *element chosen from the set consisting* of As, Bs, and Cs” in view of the specification).

Indeed, the structure of the '926 Patent's claims provides yet more support. Consider limitation [1i], which reads as follows:

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).

Limitation [1i] (and the similar limitation [8g]) recite “the compressed BlockAck frame” and claim further conditions on when and how a compressed BlockAck response frame is to be transmitted in the context of the invention. This suggests that limitation [1h], which supplies the antecedent “a compressed BlockAck frame” language, intended for the contemplated system to have at least the capability to pick and send a “compressed BlockAck frame”—otherwise, limitation [1i] would be superfluous—this is, after all, an important part of the invention discussed the specification and suggested by the syntax of limitation [1h] itself—that the invention can choose the right response frame type from among at least three possible types based on other information it can perceive.

Samsung's technical expert, Dr. Mark P. Mahon, also provides an overview of the background and the claims of the '926 Patent, which further

confirms that the ‘926 Patent’s invention addresses a problem arising specifically in the context of the 802.11ax wireless standard not present in the previous 802.11ac standard: that is, in 802.11ax, a standards-compliant device needs to be able to correctly decide between these three response types, including specifically the multi-STA BlockAck response type newly-introduced in 802.11ax. *See* Ex. 1003 ¶¶ 61-67, 73-76. For instance, Dr. Mahon explains:

66. ... [T]he use of M-BA frames continued to evolve in the IEEE 802.11ax development process. Previously, a multi-TID A-MPDU containing MPDUs with different delimiter information having varying End of Frame (EOF) field values and different acknowledgment policies (e.g., normal Ack and BlockAck) did not coexist. However, IEEE-D1 (SAMSUNG-1005) and IEEE-D2 (SAMSUNG-1006) introduced a new rule that allowed such mixed-policy MPDUs (e.g., MPDUs with EOF=1 for Ack and MPDUs with EOF=0 for BlockAck) to be aggregated within the same A-MPDU. SAMSUNG-1006, 4-5; SAMSUNG-1005, 219-220 (193-194). This newly introduced rule for multi-TID A-MPDU enables more flexible and efficient multi-TID frame aggregation. Moreover, under this newly introduced rule, when the receiving terminal receives such multi-TID A-MPDU or detects mixed configuration—including MPDUs of different TIDs and policies (e.g., policies that solicit Ack and BlockAck) within a multi-TID A-MPDU—the receiving terminal may be instructed to respond with a Multi-STA BlockAck frame. ...

67. ... The transition toward using Multi-STA BlockAck in both SU and MU contexts was a natural evolution of the protocol, motivated by the desire to reduce transmission complexity—for example, by minimizing the number of data units (e.g., A-MPDUs and PPDUs) that need to be constructed and transmitted—and to consolidate acknowledgments within a single, efficient response frame.

On this record, the evidence shows that invention of the ‘926 Patent is directed not just to a claims which can be satisfied by simply selecting Ack or BlockAck as a response type. It is instead directed to a system that is capable of intelligently picking either Ack, BlockAck, or Multi-STA BlockAck as a response frame type where appropriate. The ‘926 Patent’s description of the Technical Solution at 2:65-5:3, uniformly presents the technical solution of the invention as one where the receiving device can intelligently pick Ack, BlockAck, *and* multi-STA BlockAck as possible response types. The specification, intrinsic evidence, and the claims themselves suggest this is the case. Thus, with respect to limitation [1h]’s language, “a type of the response frame is determined as one of an Ack frame, a compressed BlockAck frame, and a multi-STA BlockAck frame,” that language should be interpreted to require the capability to determine each of the possible three response frame types.

VI. GROUND 1A: IEEE P802.11AX D1.0 (IEEE-D1) IS NOT A PRIOR ART PRINTED PUBLICATION

Ground 1A relies on IEEE P802.11ax/D1.0 (Ex. 1005) as a combination reference to render all challenged claims obvious. Pet. at 21-70. The Petition relies on IEEE-D1 specifically to supply teachings to satisfy the “multi-STA BlockAck” requirement of limitation [1h], as well as teachings to satisfy dependent claims 6, 7, 13, and 14. See Pet. at 22 (contending that “a POSITA

would have been motivated to combine the protocol for transmitting and receiving a multi-TID A-MPDU (as described in each of IEEE-D1 and IEEE-D2) containing MPDUs with nonzero delimiters having differing EOF values and corresponding response mechanisms (e.g., Multi-STA BlockAck) into Chu's system)"). The Petition's Ground 1A arguments based on IEEE-D1/D1.0 fail at the threshold because D1.0 is not a prior art printed publication.

Petitioner bears the burden of establishing that each asserted reference qualifies as a printed publication. *In re Lister*, 583 F.3d 1307, 1311 (Fed. Cir. 2009); *SRI Int'l, Inc. v. Internet Sec. Sys., Inc.*, 511 F.3d 1186, 1194 (Fed. Cir. 2008). The Petition does not carry that burden. On December 1, 2016, D1.0 was released only to a password-protected, members-only area of the IEEE 802.11 website and circulated only to members of the IEEE 802.11 Working Group and, by reciprocal agreement, members of other IEEE 802 working groups. Ex. 1031 (Hansen Decl.) ¶¶ 52–53; (Nikolich Decl. ¶ 17); (Nikolich Decl. ¶ 33); (Nikolich Decl. ¶ 30). Patent Owner's expert on IEEE standards-setting — Paul Nikolich, Chairman of the IEEE 802 LAN/MAN Standards Committee (the body that oversaw the 802.11 Working Group) from 2001 to 2024, recipient of the 2025 IEEE Charles Proteus Steinmetz Award for his leadership in the development and advancement of IEEE 802 network

standards, and an IEEE Fellow — confirms as much on multiple independent grounds. (Nikolich Decl. ¶ 11). That is not public accessibility under any Federal Circuit precedent.

A. The Petition Does Not Establish Conventional Public Accessibility

A publication “uploaded to a website or deposited in a library” that is “indexed or cataloged in some way” may be publicly accessible. *Samsung Elecs. Co. v. Infobridge Pte. Ltd.*, 929 F.3d 1363, 1369 (Fed. Cir. 2019). For publications deposited in an internet location, the inquiry includes whether “a person of ordinary skill could have reasonably found the website and then found the reference on that website.” *Id.* Whether persons interested in the art “would have been independently aware” of the publication before the critical date is also relevant. *Voter Verified, Inc. v. Premier Election Sols., Inc.*, 698 F.3d 1374, 1381 (Fed. Cir. 2012).

D1.0 fits none of these scenarios. It was not uploaded to a public website. It was not in a library. It was not indexed or cataloged anywhere a member of the public could search. Petitioner’s own expert confirms the point. Dr. Hansen testified he “really [doesn’t] know” whether D1.0 was on the IEEE mentor website, Ex. 2021 (Hansen Depo.) at 48:5–11, and that he “d[oes]n’t know if 1.0 was ever available on IEEE Xplore,” *id.* at 48:16–21. On

December 1, 2016, only “a person with a password to the members’ area would be able to download” D1.0. *Id.* at 45:18–25.

Because Petitioner cannot anchor D1.0 to any of the recognized public-accessibility scenarios, it has tried to invent new ones.

B. The Petition’s “Join the Working Group” Pathway Fails

Petitioner first contends that a POSITA could have become a voting member of the IEEE 802.11 Working Group and downloaded D1.0 through the members-only area. Pet. at 73–74; Ex. 1029 (Hansen Decl.) ¶¶ 62–63. The theory collapses on its own facts.

Voting privileges required more than one-time attendance; they required sustained participation in the Working Group’s balloting process. Ballot 223 opened August 15, 2016; ballot 224 opened September 10, 2016; ballot 225 — which concerned D1.0 itself — opened December 1, 2016. (Nikolich Decl. ¶ 19). Voting status eligible to access D1.0 on December 1, 2016 therefore required sustained participation through the preceding ballots, not a late-fall decision to join. The earliest practical deadline for a POSITA to have become eligible to access D1.0 on that date was well before December 1 itself — long before any POSITA could have been on notice of D1.0’s existence.

Voting membership required an interested person to attend three IEEE 802 working group meetings *in person*, two of which had to be week-long “plenary” meetings. Ex. 1029 (Hansen Decl.) ¶¶ 58, 62; (Nikolich Decl. ¶ 24). The candidate plenaries before the April 14, 2017 Critical Date were Macau (March 2016), San Diego (July 2016), and San Antonio (November 2016); the candidate non-plenary interims were Waikoloa, Hawaii (May 2016) and Warsaw, Poland (September 2016). (Nikolich Decl. ¶ 24). The Petition thus posits that a POSITA — whom Petitioner defines as someone with a bachelor’s degree and three years of experience, Pet. at 3 — would have strategically self-funded travel and week-long hotel stays to three such sessions, potentially including Macau, Poland, or Hawaii, for the chance to access a then-unreleased draft. (Nikolich Decl. ¶ 25). The Federal Circuit requires a realistic pathway a reasonably diligent POSITA would have used; a theoretical pathway that “defies logic” is not enough. *Infobridge*, 929 F.3d at 1369; (Nikolich Decl. ¶ 25); (Nikolich Decl. ¶ 26); (Nikolich Decl. ¶ 27).

The pathway is doubly implausible for a POSITA who first learned of D1.0 in or after December 2016, because the membership requirements could not be satisfied before the Critical Date. (Nikolich Decl. ¶ 26); (Nikolich Decl. ¶ 27). And even Dr. Hansen — Petitioner’s proffered example of someone accessing the Working Group — was already a “senior staff scientist” at

Broadcom when he first joined as a voting member in 2000, Ex. 2021 (Hansen Depo.) at 23:14–23, not a 3-year-experience POSITA. The Working Group’s 243 voting members as of early 2018 are, as a group, senior engineers from major technology companies; the alphabetically first voting member (Osama Aboulmagd of Huawei, an 802.11 participant since 2003 and chair of 802.11ax and 802.11ac) is typical of the cohort. (Nikolich Decl. ¶ 21); (Nikolich Decl. ¶ 22). IEEE 802 LAN/MAN participants, moreover, are expected to contribute “as individual technical experts,” not as junior engineers placed by their employer to observe. (Nikolich Decl. ¶ 22). The Federal Circuit’s “interested public” means POSITAs, not senior industry veterans; Dr. Hansen’s theory that the 600 senior-engineer Working Group members are themselves the “interested public” fails as a matter of logic. (Nikolich Decl. ¶ 23); (Nikolich Decl. ¶ 20).

C. The “Ask a Working Group Member” Pathway Fails

Petitioner alternatively contends that a POSITA would have obtained D1.0 by asking a Working Group member (or an intermediary). Pet. at 74; Ex. 1029 (Hansen Decl.) ¶ 64; (Nikolich Decl. ¶ 28). This pathway presupposes, without evidence, that a POSITA would have known D1.0 existed and what it contained — a factually dubious premise given Petitioner’s own POSITA definition. (Nikolich Decl. ¶ 29).

Dr. Hansen’s deposition confirms the pathway is evidence-free. Asked whether he had evidence of even one specific person who received D1.0 (outside the voting bloc), he had none: “With regard to Draft 1.0, I don’t think I make any statement regard to someone I know personally who’s been — has received a copy of the draft.” Ex. 2021 (Hansen Depo.) at 59:7–16. His estimate in his second declaration that D1.0 “would have been disseminated to thousands” of interested members of the public, Ex. 1029 (Hansen Decl.) ¶ 66, is an extrapolation from general practice, not actual-distribution evidence. Ex. 2021 (Hansen Depo.) at 59:13–24; (Nikolich Decl. ¶ 38). The Federal Circuit requires actual evidence of dissemination, not generalized evidence about the distribution of similar documents. *Cf. Infobridge*, 929 F.3d at 1369; *Norian Corp. v. Stryker Corp.*, 363 F.3d 1321, 1330 (Fed. Cir. 2004); (Nikolich Decl. ¶ 29); (Nikolich Decl. ¶ 47).

Dr. Hansen’s attempts to identify specific recipients collapse on examination. The Tsodik/Epstein March 2017 submission references “pre-D1.0,” not D1.0 itself — undermining rather than supporting Dr. Hansen’s theory that D1.0 was publicly available on December 1, 2016. (Nikolich Decl. ¶ 39). Evidence about a different draft, even a similar one, is not evidence of D1.0’s public availability. *See Norian*, 363 F.3d at 1330. Each of the specific individuals Dr. Hansen names (Tsodik, Epstein, Hsu, Sutskover, Simon) was

a Working Group participant already permitted to download D1.0 under IEEE rules — not a member of the general public receiving a leak — and none matches Petitioner’s 2-3-year-experience POSITA definition. (Nikolich Decl. ¶ 40); (Nikolich Decl. ¶ 43); (Nikolich Decl. ¶ 44); (Nikolich Decl. ¶ 41); (Nikolich Decl. ¶ 42).

Petitioner’s librarian declaration (Ex. 1027 (Munford Decl.)) does not fill the gap. The screen captures provided do not reflect any public availability around the December 2017 Critical Date. The Wayback Machine screenshots contain no information that D1.0 was actually publicly available then.

D. The “Aspirant” and STDS-802-11 Listserv Pathways Fail

Petitioner’s Supplemental Public Accessibility Declaration (Ex. 1031 (Hansen Supp. Decl.)) introduces two additional theories. First, members of the general public could have become “Aspirant” IEEE 802.11 participants by attending one 802.11 session and received members-area credentials. Ex. 1031 (Hansen Supp. Decl.) ¶¶ 14–16. Second, any “Active 802.11 participant” could subscribe to the STDS-802-11 listserv and receive the December 1, 2016 email announcing D1.0. *Id.* ¶¶ 17–19. Both theories require WG participation, and both fail for the reasons the voting-member pathway fails.

Neither theory has evidentiary support. Dr. Hansen conceded he is “not aware of a specific aspirant” who received D1.0. Ex. 2021 (Hansen Depo.) at 57:1–9. The Supplemental Declaration cites no evidence that any member of the public subscribed to the read-only reflector before December 1, 2016 and then used that subscription to obtain D1.0. The Members Area’s written restriction — “Documents whose circulation is restricted to members of IEEE 802.11, and by reciprocal agreement, members of other IEEE 802 working groups” — has been in place throughout the relevant period. (Nikolich Decl. ¶ 33); (Nikolich Decl. ¶ 31). Observing an announcement that a password-protected document exists is not the same as having access to it. (Nikolich Decl. ¶ 29); (Nikolich Decl. ¶ 45). IEEE drafts are, moreover, IEEE copyrighted work product subject to defined distribution restrictions that bind Working Group participants. (Nikolich Decl. ¶ 36).

E. The November 2016 Plenary Session Does Not Establish Public Accessibility

The Supplemental Declaration describes a November 7–14, 2016 San Antonio plenary at which the Working Group voted to prepare D1.0 and initiate a 30-day letter ballot. Ex. 1031 (Hansen Supp. Decl.) ¶¶ 21–23. But the plenary predates D1.0 by more than two weeks — no attendee received a copy there because D1.0 did not yet exist. Dr. Hansen himself confirms attendees were only “made aware of the imminent release of D1.0.” Ex. 1031

(Hansen Supp. Decl.) ¶ 23 (emphasis added). Being made aware of a forthcoming draft is not the same as having access once it is released.

F. The RFC 7241 / IETF Cooperation Theory Is Speculative and Unsupported

The Supplemental Declaration relies on RFC 7241, an IETF document describing IEEE 802/IETF cooperation, for the proposition that IETF Working Group chairs could share IEEE 802 WG credentials with “anyone who requests it.” Ex. 1031 (Hansen Supp. Decl.) ¶¶ 24–26. The theory requires a hypothetical chain: a POSITA would have to (i) know D1.0 existed, (ii) know about RFC 7241, (iii) identify and contact the relevant IETF WG chair, (iv) have that chair agree to share IEEE 802.11 credentials, and (v) use those credentials to download D1.0 from the private area — all before the Critical Date. (Nikolich Decl. ¶ 46). Dr. Hansen has no evidence any IETF participant actually requested and obtained D1.0, no analysis that such a person matched the POSITA definition, and no evidence the IETF chair would have agreed to share IEEE credentials with that participant — a step RFC 7241 leaves to the chair’s discretion. Ex. 2021 (Hansen Depo.) at 57:10–58:1. A hypothetical cascading chain no one actually followed is not a realistic pathway a POSITA “exercising reasonable diligence” would have used. *Infobridge*, 929 F.3d at 1369.

G. Dr. Hansen’s “First-Hand Experience” Example Is Inapposite

The Supplemental Declaration closes with an anecdote that Dr. Hansen personally shared an 802.11 draft with his UCLA students via email. Ex. 1031 (Hansen Supp. Decl.) ¶ 28; App. CH. The document was not D1.0 — it was 802.11ax D6.0, a substantially complete, near-final draft from 2020, shared more than three years after the Critical Date. Ex. 2021 (Hansen Depo.) at 56:24–57:9; 59:7–12. Evidence about D6.0’s 2020 dissemination is not evidence of D1.0’s December 2016 public availability. *See Norian*, 363 F.3d at 1330. Dr. Hansen’s own deposition confirms he cannot identify any analogous pre-Critical-Date sharing of D1.0. *Id.*; (Nikolich Decl. ¶ 48). Academic sharing by a faculty member with his own students in an instructional setting is not public dissemination; it appears to violate the IEEE 802 rules. (Nikolich Decl. ¶ 48).

Dr. Hansen’s further assertion that it was “common practice” for voting members to share drafts generally, Ex. 1031 (Hansen Supp. Decl.) ¶ 28, is unsupported by any specific instance of D1.0 being shared with any member of the general public before the Critical Date. The Federal Circuit has squarely held that evidence of a “general practice” of distribution does not supply the “substantial evidence of actual availability” a public-accessibility finding requires. *Norian*, 363 F.3d at 1330.

H. Dr. Hansen’s Own Deposition Undermines His Declarations

In sum, Dr. Hansen has no evidence of actual dissemination of D1.0 to the public — only an extrapolation that D1.0 “would have been” shared with “thousands.” Ex. 2021 (Hansen Depo.) at 45:18–25, 57:1–9, 59:13–24. That does not clear the *Lister/SRI International/Infobridge* bar.

Petitioner bears the burden on prior-art status for D1.0. Petitioner has not carried it. All of Petitioner’s arguments for Ground 1A based on combining Chu with D1.0 should be denied for this reason alone.

VII.GROUNDS 1A/1B: CHU COMBINED WITH IEEE-D1 OR IEEE-D2 DOES NOT RENDER CLAIMS 1–14 OBVIOUS

Even if D1.0 qualified as prior art—which it does not—the Petition’s merits analysis fails for both Grounds 1A and 1B. The Petition relies on Chu for limitation [1h]’s requirement that a MPDU type be determined based on EOF and length values for both Ground 1A and Ground 1B (*see* Pet. at 50 (“Ack Response Frame”), 52-55 (“Compressed BlockAck frame”), 56-61 (“1st instance” for “Multi-STA BlockAck”), & 61-62 (“2nd instance” for Multi-STA BlockAck))), and so the same merits analysis below applies to both grounds.

The combination of Chu with either IEEE-D1 or IEEE-D2 fails to teach limitation [1h] because: (1) Chu uses EOF and length fields to indicate acknowledgment policy, not to determine MPDU type; (2) Chu’s own text

teaches away from using those delimiter values to derive a multi-STA BlockAck; and (3) neither IEEE-D1 nor IEEE-D2 cures the MPDU-type determination gap.

A. Chu’s EOF and Length Fields Indicate Acknowledgment Policy—They Do Not Determine MPDU Type

The Petition maps limitation [1h] to Chu’s paragraphs [0073]–[0075] and [0081], arguing that Chu’s delimiter information and policy bits together teach the claimed combination. Pet. at 47–62. Chu’s own text forecloses this mapping. *See* Cooklev Decl. ¶¶ 52-53. Paragraph [0073] of Chu is unambiguous on the function of the EOF and length fields:

[T]he 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.

Chu, at [0073] (emphasis added). Chu’s EOF and length fields “indicate an acknowledgment policy”—they are not used to determine a type of MPDU, and neither does Chu suggest they can be used to make such a determination. An “acknowledgment policy” and MPDU type are not the same thing. The distinction is fundamental. Indication of an acknowledgement policy is one thing; determination of an MPDU type is another, different thing—i.e., different MPDU types can have the same acknowledgement policy, for

example. *See* Cooklev Decl. ¶ 54. Limitation [1h] requires the type of the MPDU to be *determined by* the EOF and length fields, and that MPDU-type output to be *combined* with acknowledgement policy information to yield the response frame type, which must be Ack, compressed BlockAck, or multi-STA BlockAck. Chu's system skips the intermediate MPDU-type determination entirely and proceeds directly from delimiter/policy values to a picking a response frame type.

The same flaw pervades the Petition's mapping for all three response contexts. For the Ack response, the Petition relies on Chu's paragraph [0074], which states that the AP sets EOF=1, length≠0, and the QoS field to "normal acknowledgment policy (e.g., a value of '00')." Pet. at 49–50. For the compressed BlockAck, the Petition relies on Chu's paragraph [0075], which states that for an immediate BlockAck, the AP sets EOF=0, length≠0, and the QoS field to "implicit block acknowledgment request (e.g., a value of '00')." Pet. at 51–55. In each case, Chu is describing how the *transmitter* sets field values to signal a policy—not how a *receiver* determines the MPDU type by inspecting those fields.

Petitioner's own expert confirmed at deposition that he could not identify any specific paragraph in Chu that explicitly teaches a recipient device determining an MPDU type from the EOF and length field values,

independent of acknowledgment policy determination.⁶ *See* Cooklev Decl. ¶¶ 56-58. He further acknowledged that he performed no stand-alone analysis of whether Chu alone satisfies the claim elements.⁷

Importantly, Petitioner’s expert was asked multiple times where in his declaration he showed how Chu taught the use of EOF and length fields to make the claimed MPDU-type determination. *See, e.g.*, Mahon Dep. 79:3-80:3; 81:4-83:7; 83:9-85:5. Petitioner’s expert simply could not identify a specific paragraph in his declaration or a portion of Chu describing how it teaches the use of EOF and length fields to determine an MPDU type—because that opinion was not in his declaration, and nor would such an opinion be grounded in any disclosure of Chu. *See id.*

What Petitioner’s expert did say in his deposition on this issue is telling. He acknowledged that his declaration explained how Chu disclosed ***frame delimiters***, such as “EOF field, the length field, and ack policy information,” and further asserted in deposition that these delimiter “fields” are “***associated with*** a type of MPDU, such as a VHT single-MPDU.” Mahon Depo. 79:14-80:2. He testified that being able to recognize and determine what those

⁶Mahon Depo. 83:16–86:9 (unable to identify any specific paragraph in Chu teaching MPDU-type determination; falling back on declaration being “fulsome”).

⁷Mahon Depo. 60:22–24 (“I don’t have an independent analysis of whether Chu alone satisfies all the claim elements.”).

delimiter “fields” are (e.g., EOF, length fields, and others), “would constitute in my analysis the determination of the type of MPDU.” Mahon Depo. 80:4-23. These admissions are illustrative of the Petition’s weakness in Ground 1A/1B: The furthest that Petitioner’s expert was willing to testify was that Chu disclosed of the determination of EOF and length field values, and that these values were “*associated with*” certain MPDU types (*see id.*). What Petitioner’s expert conspicuously did not—and could not—testify is that Chu taught an express MPDU-type determination, much less a MPDU-type determination based on the EOF and length values of a given frame as required by the claims. These admissions, from Petitioner’s own expert, are decisive.

The contemporaneous IEEE 802.11ax standards development record independently confirms that MPDU delimiter values are not coextensive with MPDU type, and that the relationship between the two requires a distinct determination step in the manner of the claims. As discussed in Section IX below, numerous Working Group participants—including engineers from Samsung itself—repeatedly acknowledged in D1.0 and D2.0 comments that an MPDU with nonzero length and EOF=1 is not necessarily an S-MPDU, that the receiver cannot reliably determine MPDU type from the EOF field alone, and that the 802.11 standards body required multiple draft cycles to

define a workable receiver-side MPDU classification procedure. This contemporaneous record directly refutes any suggestion that Chu's EOF/Length-and-policy mechanism trivially teaches the claimed MPDU-type determination.

Finally, in a moment of candor, Petitioner's expert asserted that the type of MPDU received would have been "*obvious*" to a POSITA based on the delimiters—that is, he contended that some combination of decoded limiters would effectively inform a POSITA the type of MPDU received. *See* Mahon Depo at 69:5-21:

[Dr. Mahon:]: from the perspective of a person of ordinary skill in the art, analyzing Chu and obviously the '926 and that it would be understood by a person that different MPDU types would be or -- the MPDU type would be determined or could be determined based upon the contents of the delimiter field, so that type of MPDU would -- or I am sorry -- the type of MPDU would be obvious to be determined based upon the contents of that delimiter which is associated with the specific MPDU being received.

This argument, presented in deposition and not found in the declaration of Petitioner's technical expert or in the Petition, is incorrect because a POSITA could not simply assume, based just on EOF and length delimiter values, that that it had received, for example, a VHT single-user frame to which an Ack frame response would be appropriate. This is because, as

explained in the next section, different MPDU types can have the same EOF and length delimiter values to begin with.

B. Chu Teaches Away from the Claimed Multi-STA BlockAck Combination

Beyond merely failing to disclose the required structure, Chu affirmatively *teaches away* from using the specific EOF=1/length≠0 delimiter combination to derive a multi-STA BlockAck response. This is fatal not only to the multi-STA BlockAck aspect of limitation [1h] but also to the motivation-to-combine analysis.

Chu's paragraphs [0060], [0061], [0069], and [0074]—paragraphs the Petition itself cites—describe a system in which an MPDU with EOF=1, a non-zero length field, and a normal acknowledgment policy corresponds to a *normal ACK* response. *See* Cooklev Decl. ¶¶ 60-62. Chu expressly states: “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 . . . to a normal acknowledgment policy (e.g., a value of ‘00’).” Chu, at [0074]. A normal ACK is what follows from EOF=1 and length≠0 in Chu's system, according to Petitioner.

But Petitioner's Ground 1A/1B mapping for the multi-STA BlockAck response of limitation [1h] also involves MPDUs with EOF=1 and length≠0—specifically, in the context of a multi-TID A-MPDU where each standalone

MPDU of a different TID has EOF=1 and a non-zero length. Pet. at 59–62; Ex. 1003, Table 4 (fourth column). Chu’s own disclosure ties *exactly that delimiter combination*—EOF=1 and non-zero length—to a *normal ACK* response, not to a multi-STA BlockAck. Cooklev Decl. ¶¶ 60-63. The Petition is thus using Chu’s system against itself: the same delimiter values that Chu expressly associates with a normal ACK response are the ones Petitioner claims render the multi-STA BlockAck determination obvious.

Under *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994), a reference teaches away when “a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference.” A POSITA reading Chu’s paragraphs [0074] and [0073] would be directed toward a normal ACK response for EOF=1/length≠0 MPDUs and would be discouraged from re-reading those same field values to arrive at a multi-STA BlockAck determination.

C. IEEE-D1 and IEEE-D2 Do Not Cure the MPDU-Type Determination Gap

The Petition relies on IEEE-D1 and IEEE-D2 to supply the multi-TID A-MPDU mixed-EOF structure (EOF=0 and EOF=1 within a single A-MPDU) that Petitioner uses to map the second instance of the M-BA response context. Pet. at 60–62; Ex. 1003, Table 4 (fourth column). Dr. Mahon

confirmed at deposition that this “mixed combination” scenario is “supplied by IEEE-D1 or IEEE-D2”—not by Chu.⁸

But supplying the mixed-EOF structure does not supply the MPDU-type determination. IEEE-D1 and IEEE-D2 describe the EOF conditions that *trigger* a Multi-STA BlockAck response—they describe structural characteristics of a multi-TID A-MPDU and specify that an HE STA receiving such an A-MPDU shall respond with a Multi-STA BlockAck. Ex. 1005 at 219–220; Ex. 1006 at 4–5. This is a trigger description, not a two-step determination procedure. Neither reference teaches a receiver that (1) inspects the EOF and length fields to classify the received MPDU into a specific type, and then (2) combines that classification with the Ack policy information to select among Ack, C-BA, and M-BA responses. *See* Cooklev Decl. ¶¶ 64-65.

D. The Dependent Claims Fall with Claims 1 and 8

The Petition incorporates its claim 1 analysis by reference to address claims 2–7 and 8–14 under Grounds 1A and 1B. Pet. at 70–71. Because the Petition fails to establish that the prior art renders claim 1 obvious, its challenges to all other challenged claims fail as well. Cooklev Decl. ¶¶ 66.

⁸Mahon Depo. 62:17–19 (confirming that the mixed EOF coexistence teaching in Table 4 is “supplied by IEEE-D1 or IEEE-D2”).

VIII. GROUND 2: IEEE-D3 DOES NOT RENDER CLAIMS 1 AND 8 OBVIOUS

Ground 2 asserts that IEEE Std 802.11-2016 (“IEEE-D3”, Ex. 1009) alone renders claims 1 and 8 obvious. Pet. at 71–85. It fails on three independent bases: (1) IEEE-D3 does not teach using EOF and length fields to determine an MPDU type; (2) IEEE-D3 does not disclose the multi-STA BlockAck frame required by limitation [1h]; and (3) IEEE-D3 does not provide any procedure that distinguishes among the three response types based on MPDU type and Ack policy information combined.

A. IEEE-D3 Does Not Use EOF and Length Fields to Determine MPDU Type

The Petition relies on Table 9-422 and Section 10.13.7 of IEEE-D3 as allegedly teaching MPDU-type determination by the EOF and length fields. Pet. at 82–83.

Table 9-422 describes the fields of the MPDU delimiter, including the EOF field, with the notation that EOF is “[s]et to 1 in the MPDU delimiter of a VHT single MPDU as described in 10.13.7.” Ex. 1009 at 1289. Section 10.13.7 elaborates that “[t]he 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.” *Id.* at 1370.

Critically, this describes what the *transmitter* does when *constructing* a VHT single MPDU—it sets EOF=1. It does not describe a *receiver* using the EOF and length values to *determine* that a VHT single MPDU has been received, as a step that then feeds into response-frame selection. *See Cooklev Decl.* ¶¶ 66-71. The EOF field in IEEE-D3 tells the receiver that this subframe is “the only subframe that has a nonzero MPDU Length field”—a structural count, not an MPDU type classification. Table 9-422 only discloses the number of VHT MPDUs according to the EOF field, and does not disclose that the type of MPDU is determined according to the EOF field and length field. *Id.*

In short, the EOF field in IEEE-D3 is used to identify whether the A-MPDU subframe contains a single MPDU or multiple MPDUs—a structural flag—not to classify the MPDU into a specific type that is then combined with Ack policy information. The challenged claims’ MPDU-type determination requirement is wholly absent.

B. IEEE-D3 Does Not Disclose the Multi-STA BlockAck Frame

Limitation [1h] requires the system to be capable of determining the response frame as one of *three* alternatives, including a multi-STA BlockAck frame. IEEE-D3 is the 2016 revision of the baseline 802.11 standard—the standard that preceded 802.11ax. *Cooklev Decl.* ¶ 71. As Petitioner’s own

expert conceded, the multi-STA BlockAck frame is a concept that first shows up “in the 802.11ax specification,” not in the (earlier) IEEE-D3. He likewise conceded to not having analyzed whether IEEE-D3 disclosed the “multi-STA BlockAck” response frame type of the claims. *See* Mahon Depo. at 120:6-121:17 (“I can certainly do that, but I have not done that.”).

This concession is important. The Mahon Declaration’s entire discussion of IEEE-D3 under Ground 2 (paragraphs 161–191) addresses only the Ack frame and compressed BlockAck frame mappings. *See* Cooklev Decl. ¶¶ 72-74. Petitioner performed no analysis mapping any provision of IEEE-D3 to limitation [1h]’s multi-STA BlockAck requirement. That gap cannot be filled by the Board on Petitioner’s behalf. *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1381 (Fed. Cir. 2016).

C. In IEEE-D3, the Ack Frame Is Determined by Ack Policy Bits, Independent of MPDU Type

For the Ack frame mapping, the Petition relies on IEEE-D3’s Section 10.13.8 and Table 9-9. Pet. at 82–84. These provisions show that in IEEE-D3, the Ack frame is triggered solely by the Ack Policy subfield of the QoS Control field—specifically, when bits 5 and 6 are set to “00” (Normal Ack or Implicit Block Ack Request) and the frame is a VHT single MPDU or non-A-MPDU frame.

But the critical point is that in IEEE-D3, the determination of whether to respond with an Ack frame is made by inspecting the *Ack policy subfield bits*—entirely independently of any determination of MPDU type. Section 10.13.8 provides: “A Data frame could indicate an Ack Policy of ‘Normal Ack,’ which solicits an Ack frame immediate response.” Ex. 1009 at 1371. And Table 9-9 shows that policy bits “00” indicate “Normal Ack or Implicit Block Ack Request,” which in the context of a VHT single MPDU triggers an Ack response. *Id.* at 650-52. *See* Cooklev Decl. ¶¶ 75-77.

There is no two-step procedure in IEEE-D3. The MPDU type is not determined first; instead, the Ack policy subfield directly indicates the appropriate response. In other words, the response frame type is simply indicated by bits 5 and 6 of the Ack policy subfield, and the method for determining an Ack frame is completely unrelated to the MPDU type indicated by the EOF and length fields.

D. In IEEE-D3, the BlockAck Frame Is Triggered by a BAR Frame—Unrelated to MPDU Type

For the compressed BlockAck mapping under Ground 2, the Petition relies on IEEE-D3’s Section 10.3.2.10, which describes the BlockAck procedure. Pet. at 83–84.

Section 10.3.2.10 of IEEE-D3 describes a multi-user acknowledgment procedure in which an AP sends BlockAckRequest (BAR) frames to multiple

STAs and each STA responds with a BlockAck (BA) or Ack after a SIFS period. Ex. 1009 at 1318–1319, FIG. 10-12. This procedure is triggered by receipt of a BAR frame—not by the type of the MPDU the STA received or even the EOF/length values of MPDU delimiters.

Furthermore, and critically, IEEE-D3 does not provide any procedure by which a receiving STA distinguishes *between* a multi-STA BlockAck frame and a compressed BlockAck frame based on MPDU type and Ack policy. The concept of distinguishing between these two BlockAck subtypes did not exist in the 802.11 standard that IEEE-D3 codifies; it was introduced only in 802.11ax (because, among other things, 802.11ax, which post-dates IEEE-D3, was the technical standard for which multi-STA BlockAck frames were first conceived).

E. IEEE-D3 Does Not Suggest the Three-Way Response Determination

Stepping back, the fundamental problem with Ground 2 is not just the absence of one or two specific disclosures—it is that IEEE-D3 presents an entirely different system architecture. In IEEE-D3: the Ack frame is determined by the Ack policy subfield alone; the BlockAck frame is triggered by a BAR frame; and there is no procedure by which a STA determines among three alternative response types based on an MPDU classification and acknowledgement policy. The Petition extracts isolated provisions from

IEEE-D3, labels them with the names of claim limitations, and declares the claim obvious—but it never shows that IEEE-D3 *as a system* uses EOF and length values to determine MPDU types and then combines those types with policy information to select among three different responses. IEEE-D3 does not disclose and does not suggest this framework. At most, Petitioner’s expert has shown that EOF and length values are—in his words—”associated with” MPDU types like “VHT single-MPDU.” But “associated with” is not limitation [1h]’s “determined by.”

F. Ground 2 Should Be Denied in Its Entirety

Ground 2 is pleaded as a single-reference ground based on IEEE-D3 alone. Because IEEE-D3 fails to disclose the MPDU-type determination required by limitation [1h], fails to disclose the multi-STA BlockAck frame, and fails to disclose any procedure distinguishing the three response types based on a MPDU-type-plus-policy combination, Ground 2 should be denied. The dependent claims under Ground 2 fall with claims 1 and 8 for the same reasons. Pet. at 85.

IX. OBJECTIVE INDICIA OF NONOBVIOUSNESS

Even if the prior art presented a *prima facie* case of obviousness—which it does not—substantial objective evidence confirms that the challenged claims are patentable. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). The four Graham secondary-considerations factors—commercial success, long-felt need, failure of others, and unexpected results—are all supported here. The most powerful of the available evidence comes from an authoritative and entirely independent source: the contemporaneous IEEE 802.11ax Working Group comment record, which shows that senior engineers from the world’s leading Wi-Fi technology companies—including Samsung’s own engineers—recognized the MPDU-type determination problem the ’926 Patent solves, struggled with it across multiple draft cycles, and proposed competing solutions before the Working Group eventually arrived at a simplified rule that embodies the same structure the claims require.

A. The IEEE 802.11ax Standards Record Confirms the MPDU-Type Determination Step Was Non-Obvious

Exhibits 2023, 2024, and 205 contain the IEEE P802.11ax comment resolution tables for Draft D1.0 (11-17/0010r14) and Draft D2.0 (11-17/1682r13), and the adopted Ack-related CID resolution document that amended Section 27.4 of the standard (11-18/0027r4). Taken together, these

documents establish a record suggesting the nonobviousness of the challenged claims and, specifically limitation [1h].

**1. EOF=1/Length≠0 Is Not Coextensive with S-MPDU—
An Admission From Samsung’s Own Engineer**

The Petition rests on an implicit premise: that inspecting the EOF and length field values in an MPDU delimiter effectively determines the type of the MPDU. That premise is wrong, and Samsung’s own engineers said so in the IEEE standards process.

CID 12832 in the D2.0 comment database was submitted by Mark Rison of Samsung to the IEEE 802.11ax Working Group in the 2018. Addressing the draft specification’s use of the term “S-MPDU,” Rison wrote:

“The usage of the term ‘S-MPDU’ is incorrect. An S-MPDU, from the baseline, is ‘An MPDU that is the *only* MPDU in an aggregate MPDU (A-MPDU) carried in a VHT [PPDU] and that is carried in an A-MPDU subframe with the EOF subfield of the MPDU delimiter field equal to 1.’ So an MPDU with EOF=1 in an A-MPDU that also contains a QoS Null MPDU with EOF=0 and No Ack ack policy, or an Action No Ack frame, say, *is not an S-MPDU*.” Ex. 2024, CID 12832.

The Working Group accepted this comment and revised the draft accordingly.⁹ The significance is instructive. Samsung’s own engineer acknowledged—in the IEEE record, prior to this IPR—that EOF=1 with a

⁹Ex. 2024, CID 12832 (Mark Rison, Samsung), Resolution: “REVISED – Agree in principle. ... TGax editor shall incorporate changes in 11-18-0027-04-00ax.”

non-zero length field does *not* necessarily identify the received MPDU as an S-MPDU (or any other particular MPDU type). The same delimiter values appear in other MPDU contexts. The EOF field value, length field value, and the MPDU type are categorically distinct concepts. And if the Samsung engineer who wrote CID 12832 understood that the two are not the same, a POSITA reading the prior art would not have assumed they were coextensive either.

CID 7537 (D1.0, Li-Hsiang Sun), submitted to the IEEE 802.11ax Working Group in response to D1.0 in 2017, independently established the same point from the opposite direction:

“The EOF field description does not take into account of ack-enabled Multi-TID A-MPDU, in which EOF could be set to 1 *but not for padding and not for S-MPDU* as described in the table.”
Ex. 2023, CID 7537.

The Working Group agreed: in a multi-TID A-MPDU, EOF=1 appears on individual TID-specific MPDUs that are not S-MPDUs. Chu’s system uses EOF=1/length≠0 to signal normal ACK policy. In contrast, the claimed invention uses those same field values as one input into an MPDU-type determination. Those are different operations because—as the IEEE record confirms—the field values alone do not determine the MPDU type.

CID 9348 (D1.0, Tomoko Adachi of NTT), submitted to the IEEE 802.11ax Working Group in response to D1.0 in 2017, made this explicit in the context of the specification's own terminology:

“The ‘EOF’ subfield is no longer an end of frame indication. . . . An S-MPDU should be distinguished by EOF set to 1 *and no subframes other than with MPDU Length field equal to 0 following.*” Ex. 2009, CID 9348.

The Working Group accepted this comment as well, revising the specification to clarify how the S-MPDU type is properly identified.¹⁰ The qualifier Adachi identified—“and no subframes other than with MPDU Length field equal to 0 following”—is exactly what makes MPDU-type determination a distinct step. It is not enough to read the delimiter values of a single MPDU to conclude what type of MPDU it is; the receiver must inspect the context of the surrounding A-MPDU structure to determine its type. Chu's system does not do this, and neither does any other reference the Petition asserts.

CID 11740 (D2.0, George Cherian of Qualcomm) made the same point at the level of specification terminology:

“There is an ambiguity in terminology between S-MPDU (where there is only one MPDU in a PPDU) vs. ‘a single MPDU (i.e.,

¹⁰Ex. 2023, CID 9348 (D1.0 Comment Resol. Table, Tomoko Adachi, NTT). Resolution: “REVISED – Generally agree with the commenter. . . . TGax editor to make the changes shown in 11-17/0884r1.”

MPDU in an A-MPDU subframe with EOF = 1)’. Fix it—define it in an unambiguous way.” Ex. 2024, CID 11740.

The ambiguity Cherian identified—between the S-MPDU *type* and an MPDU *structurally characterized* by EOF=1—is precisely the gap that Petitioner’s merits analysis papers over. The claim requires a MPDU type determination; the prior art at most performs a structural field inspection, leading the ambiguity recognized by members of the standards development group. The prior art and ’926 Patent suggests different approaches, and this is confirmed by the engineers who built the standard.

2. The Receiver Cannot Determine MPDU Type from the EOF Field Alone—The Working Group’s Own Admission

Another powerful piece of evidence is CID 8393 (D1.0, Po-Kai Huang), which addressed the technical problem the ’926 Patent solves:

“Currently, it is required that Multi-STA Block Ack is used for response to multi-TID A-MPDU. However, if the receiver only receives one MPDU with EOF in the delimiter set to 1 due to error of receiving other MPDUs, and the A-MPDU is carried in VHT PPDU, then the receiver may treat the MPDU as VHT single MPDU and responds with Ack frame rather than Multi-STA Block Ack. Similarly, if the receiver only receives one MPDU carrying QoS Data with EOF in the delimiter set to 0 due to error of receiving other MPDUs, then the receiver may treat the MPDU as single TID and respond with Block Ack rather than Multi-STA Block Ack.” Ex. 2023, CID 8393.

The commenter proposed three alternative technical solutions: adding a reserved bit in the MPDU delimiter to differentiate multi-TID A-MPDU

from S-MPDU; requiring M-BA response in all ambiguous cases; or relaxing the multi-TID rule. *Id.* The Working Group’s own resolution discussion states:

“When only a MPDU with EoF being 1 and Length being non zero in an A-MPDU is received correctly, the receiver will always respond with M-BA. *The reason is that the receiver can’t figure out whether the transmitter transmits a S-MPDU or multi-TID A-MPDU.*” Ex. 2023, CID 8393 Resolution (emphasis added).

This is a direct institutional acknowledgment—adopted as part of the Working Group’s formal resolution—that *a receiver cannot make decisions about response frame type based on EOF and length fields alone without also making a MPDU-type determination, because EOF and length fields can be shared between different MPDU types.*

In contrast, Petitioner’s expert’s treats the EOF field and length values as together a sufficient MPDU-type quasi-indicator. The IEEE Working Group—after dedicated deliberation by engineers from Qualcomm, Samsung, Intel, NTT, Broadcom, and others—concluded the opposite: that the receiver *cannot figure out* the MPDU type from the EOF field and length values alone. That is not an obvious combination. It is a problem that took the 802.11 standards community multiple draft cycles to resolve.

CID 8135 (D1.0, Matthew Fischer) confirmed this independently:

“How does the recipient know whether the received PPDU was a multi-TID AMPDU or a single TID AMPDU? If some of the

delimiters are bad, the recipient could mistake a multi-TID AMPDU for a single AMPDU.” Ex. 2023, CID 8135.

The Working Group rejected Fischer’s proposed simplification (always respond with M-BA) with the explanation that “if the responder always uses MBA, the initiator’s assumption of responding PPDU length may not be right.” Ex. 2023, CID 8135 Resolution. This rejection confirms that getting the MPDU-type determination *right*—not simply defaulting to a single response type—matters for protocol operation. The precise MPDU-type-plus-policy combination structure the claims require is load-bearing in the 802.11ax design. It is not an obvious design choice based on Chu or early 802.11ax drafts.

3. Failed Attempts and Long-Felt Need Across Multiple Draft Cycles

The evidence of long-felt need and failure of others is unusually concrete in this case because it comes directly from the standards record of the specification that purportedly renders the claims obvious.

D1.0 was published on December 1, 2016—twenty days before the ’926 Patent’s December 21, 2016 priority date. The D1.0 and D2.0 comment records show that the MPDU-type determination problem was active and unresolved long after D1.0 was published. CID 8393 was filed in response to D1.0 (meaning the commenter identified the problem in D1.0). CID 13734

was filed against D2.0 (the problem persisted into D2.0 and 2018). CIDs 13664 and 13666 (both from Tomoko Adachi of NTT) independently raised the same identification problem against D2.0:

“How can a recipient know the received HE SU PPDU is either of 1) to 3) cases? Some MPDUs within an A-MPDU can fail. If there are errors, the recipient cannot be 100% sure between case 2) and case 3).” Ex. 2024, CIDs 13664 and 13666.¹¹

Both CIDs were accepted and the text was rewritten. A senior NTT engineer asked the same question about two different PPDU scenarios and received the same response: the prior text (supplied, in significant by, by the authors of the Chu reference) was inadequate, and the rules needed to be restated to reflect what a receiver can and should determine from observable inputs.

Finally, Patent Owner and named inventor of the '926 Patent, Dr. Woojin Ahn, identified this exact problem. *See* Ex. 2023, CID 9393 (D1.0, Woojin Ahn):

“An MPDU with EOF 1 and non-zero length may be aggregated with other MPDUs not soliciting immediate responses (QoS Data No Ack, Action No Ack, QoS Null) in an A-MPDU. Is the A-MPDU an S-MPDU or a single TID A-MPDU or a Multi TID A-MPDU?” Ex. 2023, CID 9393.

¹¹Ex. 2024, CIDs 13664 and 13666 (D2.0 Comment Resol. Table, Tomoko Adachi, NTT).

The answer was not obvious from D1.0. Many engineers of the Working Group recognized that Draft D1.0 could result in situations where there was ambiguity on the receiver's side about MPDU type. Dr. Ahn, named inventor of the '926 Patent, identified this ambiguity in January 2017 (the date of the first version of the Comment Resolution table collected by the Working Group for 802.11ax D1.0). And the ambiguity persisted in the standards development process well into the revision history of draft D2.0. If the MPDU-type classification rule was still being worked out in D2.0 comments, it was not obvious from D1.0.

Indeed, Dr. Ahn identified a further case that D1.0 and Chu both fail to address. Ex. 2023, CID 9395 (D1.0, Woojin Ahn):

“If an MPDU with EOF 1 and non-zero length is aggregated with Action No Ack in an A-MPDU, then the A-MPDU is neither an S-MPDU nor a multi-TID A-MPDU, in which case, the A-MPDU must be responded by compressed BA that doesn't have Ack type field.” Ex. 2023, CID 9395.

This comment identifies a scenario in which the prior-art's EOF-based approach generates the *wrong answer*—a compressed BA rather than an Ack—because the EOF field value alone is insufficient to determine the appropriate response. The correct answer (Ack frame) requires knowing both the EOF field value *and* the TID count and Ack policy context. This is what limitation [1h]'s “combination” structure provides—there must be a

determination of MPDU type to prevent errors in selecting the right response frame. And the fact that a Working Group participant had to raise this issue as a formal deficiency comment confirms that the prior art—including D1.0—did not teach the combination.

X. CONCLUSION

Ground 1A/1B fails at the threshold because D1.0 was not publicly accessible before the Critical Date, and on the merits because Chu teaches away from using the claimed delimiter combination to determine a multi-STA BlockAck response, and because neither Chu nor IEEE-D1/IEEE-D2 discloses the two-step MPDU-type-then-response determination required by limitation [1h]. Ground 2 fails because IEEE-D3 does not disclose MPDU-type determination via EOF and length fields, does not disclose the multi-STA BlockAck frame, and does not provide any procedure distinguishing the three required response types—a gap Petitioner’s own expert explicitly conceded.

Even if a *prima facie* case of obviousness were made out—which it is not—the objective indicia compel finding the challenged claims not unpatentable. The contemporaneous IEEE 802.11ax standards record, drawn from the very community of engineers who built the standard the Petition relies upon, establishes that the MPDU-type determination problem was actively unresolved when D1.0 was published, that multiple proposed

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solutions failed or required further iteration long after the '926 Patent's priority date.

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CERTIFICATE OF WORD COUNT

I certify that there are 12,368 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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CERTIFICATE OF SERVICE

I hereby certify that “Patent Owner’s Response” was served on May 19,
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