

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 IPR2025-01111
Patent 10,911,186

PATENT OWNER'S RESPONSE

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Cases

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<i>Virtek Vision Int'l ULC v. Assembly Guidance Sys., Inc.</i> , 97 F.4th 887 (Fed. Cir. 2024)	38

PATENT OWNER'S EXHIBIT LIST

Exhibit	Description
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	Intentionally Omitted
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_distpro_file0331.2025.pdf
2006	Judge Rodney Gilstrap’s median time to trial from August 25, 2024 until August 25, 2025, retrieved from www.docketnavigator.com
2007	D. Crouch, <i>Estoppel Gutted: A Pelican’s Guide to Patent Litigation</i> , Patently-O, https://patentlyo.com/patent/2025/05/estoppel-pelicans-litigation.html (May 7, 2025)
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, April 8, 2022
2011	Defendants’ P.R. 4-1 Exchange of Proposed Terms and Claim Elements for Construction, October 23, 2025
2012	November 13, 2025 email withdrawing contentions as to indefiniteness

2013	November 5, 2025 email re: Samsung v. Wilus IPRs – requests for supplemental briefing
2014	Declaration of Erik de la Iglesia in Support of Patent Owner’s Response
2015	<i>Curriculum Vitae</i> of Erik de la Iglesia
2016	March 13, 2026 deposition transcript of Zhi Ding, Ph.D.
2017	Andrzej Stelter et al., Dynamic 20/40/60/80MHz Channel Access for 80MHz 802.11ac, WIRELESS PERSONAL COMMUNICATION (May 30, 2014), <i>available at</i> https://www.researchgate.net/publication/271919142_Dynamic_20406080_MHz_Channel_Access_for_80_MHz_80211ac
2018	RFWirelessWorld, <i>PHY vs MAC in IoT Networking: Key Differences Explained</i> , https://www.rfwireless-world.com/terminology/phy-vs-mac-in-iot-networking (last visited Apr. 3, 2026)

I. Introduction

The Petition raises two grounds of invalidity, both of which fail.

First, the Petition's Ground 1 relies on the Kim prior art reference alone. However, Kim is not prior art, as evidenced by the limitation-by-limitation priority date analysis provided in Section IV below, by virtue of disclosures in the PCT Application (Ex. 1012). Although the Petition purports to engage in a priority analysis, that priority analysis does not even address the teachings of the PCT Application discussed below.

Second, the Petition's Ground 2 relies on a combination of the "Chu" reference (Ex. 1015) with the "Choi" reference (Ex. 1016). The Petition alleges that a POSITA would have sought to combine Chu with Choi because supposedly, "Chu is silent as to any indication, flag, or marker that distinguishes the padding portion of the frame from other fields," and "provides no detail on how the receiving client station would know which bits correspond to padding versus meaningful scheduling content." Pet. 45. In other words, the Petition asserts that a POSITA would need to turn to Choi "to address a known problem (Chu's lack of detail regarding padding implementation)." Pet. 48.

This core premise underlying the Petition's combination, however, is simply incorrect; Chu *does* teach how to implement its padding solution and delineate padding from non-padding. Chu is abundantly clear that the padding region can be

identified by evaluating two pre-existing “length” fields—one length field indicates the beginning of the padding region, and another length field indicates the end of the padding region. *See* Ex. 1015, [0093] (Chu disclosing that “the one or more padding bits follow the valid payload,” the length of which is provided in a “MAC header,” and the duration of the “entire length of the scheduling frame[], which includes the one or more padding bits at the end of the scheduling frame” is indicated by a “PHY preamble”).

At his deposition, Petitioner’s expert acknowledged that this disclosure in Chu *does* teach a POSITA how to identify the padding bits. Ex. 2016 at 35:13–36:8 (acknowledging that “Chu does suggest in paragraph 93” “to a person of skill in the art that whether or not padding can be identified could be dealt with”); *id.* at 36:14–37:22 (“I acknowledge that Chu suggests an example” of “allowing a receiving station to delineate the padding [region] from other parts of the frame”). Accordingly, no POSITA would be motivated by the Petition’s allegation Chu “provides no detail on how the receiving client station would know which bits correspond to padding versus meaningful scheduling content” (Pet. 41), because it is undisputed that Chu *does* describe these details.

The Petition’s combination of Chu with Choi also involves significant modifications to Chu’s frame structure (such as moving Chu’s padding bits from outside the MAC frame to inside the MAC frame despite inefficiencies involved

with such a modification), contrary to the Petition’s assertion that its proposed combination “does not require fundamental changes to the underlying frame structure.” Pet. 47; *see* Ex. 2014 ¶¶104–110 (Patent Owner’s expert discussing the significant changes and corresponding disadvantages that the Petition’s combination would entail, including modifying the location of the padding bits). Put simply, the Petition’s Ground 2 combination is based on fundamental misunderstandings or mischaracterizations of the prior art, and the Petition sets forth no coherent reason to combine these references based on their *actual* disclosures.

Because both the Petition’s Grounds 1 and 2 fail in their entirety, all challenged claims should be found not unpatentable.

II. 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.” Pet. 2 (internal citation omitted).

Setting aside Patent Owner’s disagreement with Petitioner regarding what the appropriate “Critical Date” is (explained in Section IV below), Patent Owner does

not challenge the Petition’s articulation of the level of ordinary skill in the art for purposes of this response.

III. Overview of the ’186 Patent

The ’186 patent was filed on April 8, 2019, and issued on February 2, 2021. It is a continuation of U.S. Patent No. 10,305,638, the national stage of PCT Application No. PCT/KR2016/02199 (the “PCT Application”), filed on March 4, 2016. Ex. 1001 (’186 patent) at pgs. 1-2. The ’186 patent further claims priority to (and incorporates by reference) multiple Korean applications filed in 2015, including Korean Application 10-2015-0036754 (“KR ’754”). *See* Ex. 1001, 1:9-17.

The ’186 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).” Ex. 1001 at 2:37-46. The techniques provided in the ’186 patent can improve the efficiency and reliability of the wireless LAN system while reducing unnecessary channel occupancy and increasing spectral efficiency, by using a frame structure consistent with in-development 802.11 standards development which “prevent[s] malfunction of the wireless LAN network by aligning length” of frames, including

trigger frames for uplink transmission. Ex. 1001, 3:61-4:11, 3:1–23; Ex. 2014, ¶¶30–32.

Independent claim 1 of the '186 patent recites the following:

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

[1.1] a transceiver; and

[1.2] a processor, wherein the processor is configured to:

[1.3] receive, through the transceiver, a trigger frame indicating uplink transmission of one or more terminals,

[1.4] wherein the trigger frame includes an association identifier (AID) field, and

[1.5] perform, through the transceiver, an uplink transmission in response to the trigger frame,

[1.6] wherein the AID field is used to identify whether the trigger frame includes a padding field to which padding is applied, and

[1.7] wherein the trigger frame further includes the padding field when the AID field is set to a specific value.

Ex. 1001, Cl. 1. The only other independent claim, claim 11, is a method claim that is generally parallel to claim 1. *See* Ex. 1001, Cl. 11; Ex. 2014, ¶32.

IV. Priority Date of the '186 Patent

The test for written description support is whether the disclosure of the application relied upon reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date.” *Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc). The '186

patent incorporates by reference the applications to which it claims priority, including PCT Application No. PCT/KR2016/002199 (the “PCT Application,” Exs. 1011–1012) filed March 4, 2016 and KR application No. 10-2015-0036754 (“KR ’754,” Exs. 1009–1010) filed March 17, 2015. Ex. 1001, 1:9–17. As such, the disclosures of both the PCT Application and KR ’754 may be considered for written description support as of the dates of their filings.

As discussed below, all claims of the ’186 patent are entitled to a priority date of no later than March 4, 2016, the filing date of the PCT Application No. PCT/KR2016/002199. A POSITA would have understood that all limitations of the claims are disclosed by the PCT Application. Ex. 2014, ¶¶33–82.

A. Claim 1

1. Elements [1Pre], [1.1], and [1.2]

The preamble and the first two limitations of claim 1 recite: “*A wireless communication terminal, the terminal comprising: a transceiver; and a processor, wherein the processor is configured to....*”

The PCT Application discloses these requirements. Ex. 2014, ¶¶35–37. Notably, although the claims of the PCT Application are directed to an access point (AP) terminal whereas the claims of the ’186 patent are directed to non-access point terminals, the specification of the PCT discloses both concepts. For instance, the PCT explains:

*A station (STA)... broadly includes both non-access point (non-AP) stations as well as access points (APs).... A station for wireless communication includes a **processor** and a **transmitter/receive unit**, and may further include a user interface and a display unit, depending on the embodiment. The processor may generate frames for transmission over the wireless network, process frames received over the wireless network, and perform various other processing to control the station. The transmitter and receiver are functionally coupled to the processor and transmit and receive frames over the wireless network for the station.*

Ex. 1012 at [53];¹ *see also* Ex. 1012 at [11] (“First, according to an embodiment of the present invention, the base wireless communication terminal includes... a processor... transmitting a trigger frame that **triggers multi-user uplink data transmission of multiple terminals....**”).

As shown above, the PCT Application is explicit in disclosing a non-access point station which includes both a “processor” and a “transmitter/receive unit” (i.e., a transceiver). Ex. 1012 at [53]; Ex. 2014, ¶37.

2. Limitation [1.3]

Limitation [1.3] recites “[*wherein the processor is configured to:*] *receive, through the transceiver, a trigger frame indicating uplink transmission of one or more terminals.*” The PCT Application discloses this limitation. Ex. 2014, ¶¶38–41.

¹ All emphases in quotations are added unless otherwise specified.

As discussed above, the PCT Application discloses a non-AP terminal that receives frames over the wireless network from an access point terminal. *See* Ex. 1012 at [53]. The processor is configured (in coordination with the transceiver) to receive frames received over the network. *See id.* (“The transmitter and receiver are functionally coupled to the processor and transmit and receive frames over the wireless network for the station.”).

The PCT Application also explicitly discloses that these frames received over the wireless network include *trigger frames* for allocation of uplink (UL) multi-user (MU) transmissions. Ex. 2014, ¶¶40–41. For instance, the PCT Application teaches that a “multi-user uplink transmission may be initiated by a trigger frame” which is transmitted “by an AP.” Ex. 1012 at [118] (“In non-legacy WLAN system, the multi-user uplink transmission may be initiated by a trigger frame, i.e., the initialization step 210 of FIG. 9 may be performed by the transmission of a trigger frame by an AP.”).

This trigger frame “*indicat[es] uplink transmission of one or more terminals*” as limitation [1.3] requires. *See* Ex. 1012 at [118] (“The trigger frame indicates the start time of the multi-user uplink transmission and may indicate the channel or subchannel information assigned to each uplink transmission STA. STAs that have been assigned a channel or subchannel by the AP transmit upstream data simultaneously at the time specified by the AP.”); *see also id.* at [135] (“According

to embodiments of the present invention, padding may also be performed on the trigger frame that triggers a multi-user simultaneous transmission. In a multi-user upstream data transmission and a multi-user downstream data transmission, a different number of STAs may be allocated for each channel.”).

3. Limitation [1.4]

Limitation [1.4] recites: “*wherein the trigger frame includes an association identifier (AID) field.*”

The PCT Application is explicit that the trigger frames (including trigger frames which that trigger both multi-user upstream, and trigger frames which trigger multi-user downstream data transmissions) include AID field containing AID information. *See* Ex. 1012 at [135] (“In a multi-user upstream data transmission and a multi-user downstream data transmission, a different number of STAs may be allocated for each channel. The trigger frame may include AID information of the STAs assigned to each channel, wherein the amount of information in the trigger frame transmitted may vary for each channel.”); *id.* at [123] (noting that “AID information” includes the “AID for each STA”); Ex. 2014, ¶¶42–43.

4. Limitation [1.5]

Limitation [1.5] recites: “[*wherein the processor is configured to:*] *perform, through the transceiver, an uplink transmission in response to the trigger frame.*”

The PCT Application discloses this limitation. Ex. 2014, ¶¶44–46.

The PCT Application teaches that the purpose of the trigger frame sent by an access point is to coordinate an uplink transmission from a plurality of terminals, such that the recited non-access point “terminal” of claim 1 will use the trigger frame to prepare and transmit a frame (the “response frame”) in response to the received trigger frame. For instance, the PCT Application teaches:

The trigger frame indicates the start time of the multi-user uplink transmission and may indicate the channel or subchannel information assigned to each uplink STA. STAs that have been assigned a channel or subchannel by the AP transmit upstream data simultaneously at the time specified by the AP.

Ex. 1012, [118]. In other words, the trigger frame sent by the access point indicates *when* and *on which channel or subchannel* the terminal should “transmit upstream data,” and the terminal uses that information to prepare and transmit a response at the correct time and on the correct channel or subchannel. And the PCT Application is explicit that the purpose of the padding discussed above is to allow the STAs sufficient “processing time to participate in multi-user simultaneous transmission *in response to* the trigger frame.” *Id.* at [136].

Accordingly, the PCT Application discloses that the claimed processor is configured to “*perform, through the transceiver, an uplink transmission in response to the trigger frame.*”

5. Limitation [1.6]

Limitation [1.6] recites: “*wherein the AID field is used to identify whether the trigger frame includes a padding field to which padding is applied.*”

The PCT Application further discloses this limitation. Ex. 2014, ¶¶47–52. For instance, the PCT Application is explicit that the trigger frames can include padding (which may include either preset padding values or redundant AID values) prior to an FCS field of the trigger frame:

According to embodiments of the present invention, padding may also be performed on the trigger frame that triggers a multi-user simultaneous transmission. In a multi-user upstream data transmission and a multi-user downstream data transmission, a different number of STAs may be allocated for each channel. The trigger frame may include AID information of the STAs assigned to each channel, wherein the amount of information in the trigger frame transmitted may vary for each channel.

According to one embodiment of the present invention, a preset padding may be performed before the Frame Check Sequence (FCS) field of the trigger frame. Thus, the transmission of the trigger frame may terminate at the same time on each channel over which the trigger frame is transmitted. Furthermore, by padding the trigger frame, the STAs may acquire additional processing time to participate in multi-user simultaneous transmission in response to the trigger frame. ***According to another embodiment of the present invention,***

redundant AID information may be inserted prior to the FCS field of the trigger frame.

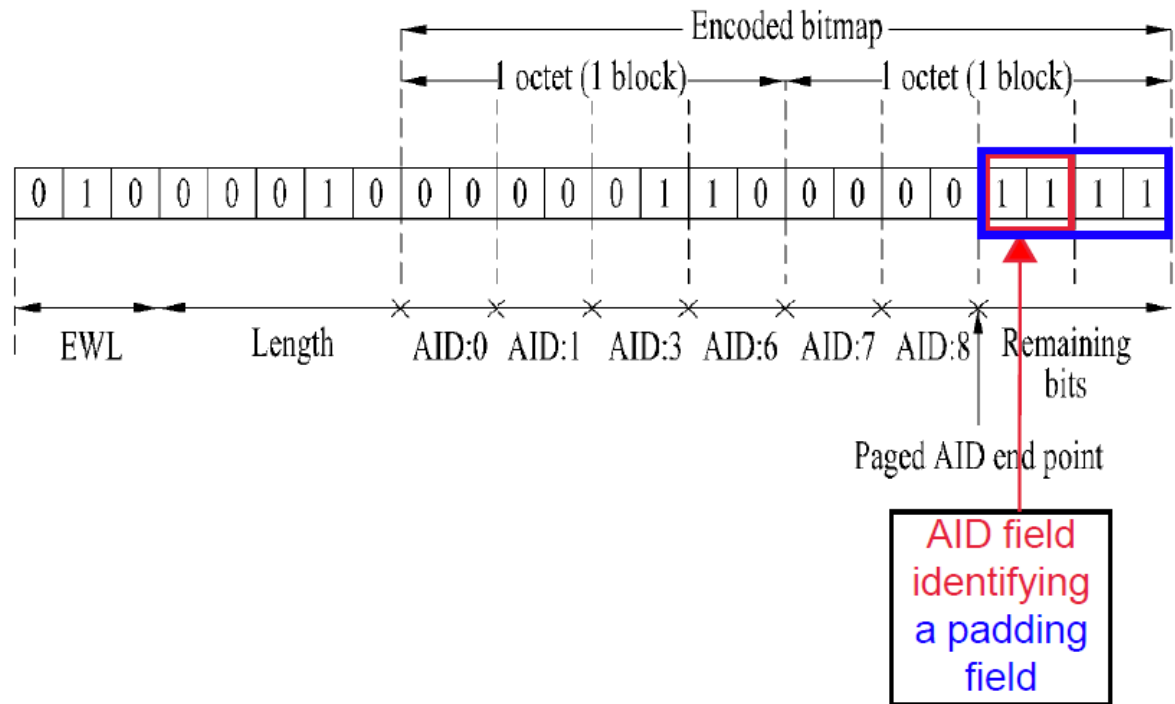
Ex. 1012, [135]–[136].

In either the “preset padding” or “redundant AID information” embodiments, the “*AID field is used to identify whether the trigger frame includes a padding field to which padding is applied.*” First, in the “redundant AID information” embodiment, a POSITA would understand that the padding field would repeat a value specified in the AID field of the trigger frame, such that the information in the padding field would have “redundant AID information.” A POSITA would thus understand that when the AID field and the padding field have information “redundant” with one another, padding is present, the padding field is present, and when no redundancy exists, no padding is present. Ex. 2014, ¶49.

Likewise, the use of a preset padding value additionally satisfies this claim requirement, as confirmed by the Petition’s invalidity theory based on Choi, where the Petition provides a theory where the padding field and AID field overlap. Ex. 2014, ¶¶50–52.

For instance, the Petition alleges that Choi discloses an “AID field” (annotated in red) which identifies “a padding field” (annotated in blue) in FIG. 22 of Choi:

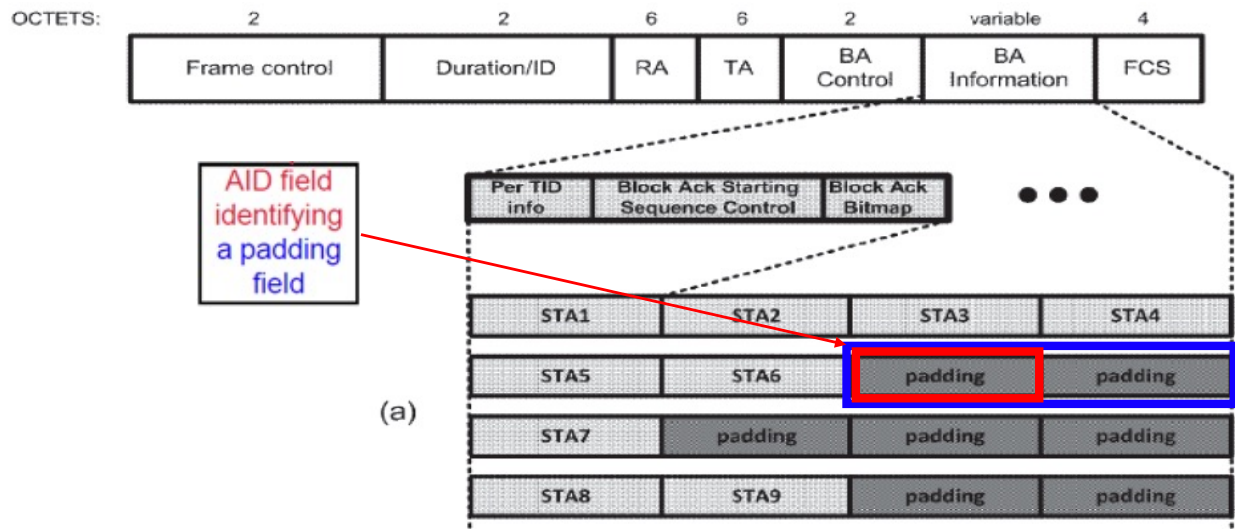
FIG. 22



See Pet. 63 (Petition’s annotation of Choi’s FIG. 22).

As can be clearly seen by the Petition’s annotation above, the Petition maps the padding field to include the AID field. Applying this same understanding of claim scope to the disclosures in the PCT, the use of a predetermined padding value following the AID field and before the FCS field has a similar structure, where a reserved “preset padding” value is used following AID fields that have substantive information. A POSITA would readily understand that in this embodiment, the “padding” field is identified by a reserved value (wherein whatever the “preset padding” value is, such as all 0s or all 1s) would identify the presence of a padding field, because that is the purpose of the padding being “preset.” Specifically, by

using a “preset” value that does not overlap with any valid AID value, the system will know that the field is a padding field inserted to extend the length of the frame rather than substantive AID information that must be processed.



Ex. 1012, FIG. 19 (excerpted and annotated to show application under the Petition’s Choi-based theory of invalidity). For instance, if each STA were identified by an 8-bit AID, each AID value other than the reserved AID value (e.g., “1111111”) would be a substantive AID value, where the reserved AID value of “1111111” would identify a padding field. Accordingly, consistent with the Petition’s invalidity allegations involving Choi, the PCT Application discloses “*the AID field is used to identify whether the trigger frame includes a padding field to which padding is applied*” via both the “redundant AID information” **and** the “preset padding” embodiments. Cf. Pet. 59-60 (“Choi teaches that the STA, upon decoding the partial virtual bitmap, can identify a termination state—specifically through a particular

Δ AID value—and thereby recognize that padding follows the valid Δ AID values.

This aligns with the claimed feature of [1.6]”).

6. Limitation [1.7]

Limitation [1.7] recites: “*wherein the trigger frame further includes the padding field when the AID field is set to a specific value.*” The PCT Application further discloses these requirements. Ex. 2014, ¶¶53–55.

This limitation is disclosed for both the “preset padding” and “redundant AID information” embodiments. First, in the redundant AID information embodiment, the “specific value” that the AID field is set to is the specific value of a previously-provided AID value. The use of this specific value—redundant AID information—signals to the receiving station that the padding field is present. Ex. 2014, ¶54.

Likewise, in the “preset padding” embodiment, the “specific value” that the AID field is set to is a specific preset value (such as “00000000” or “11111111”). *See* Ex. 1012, [89] (teaching “zero padding”); Ex. 1008, [0074] (“The zero padding used in the present invention is one embodiment, and padding with 1s can achieve the same effect.”). Whenever this preset padding value is present in the AID field, that signals to the receiving station that the padding field is present. Ex. 2014, ¶55.

B. Claim 2

Claim 2 recites: “*The wireless communication terminal of claim 1, wherein a duration of the padding field is set based on a time needed for the one or more terminals to process the trigger frame.*”

A POSITA would have understood the inventors to have had possession of claim 2. Ex. 2014, ¶¶56–58. Specifically, the PCT Application teaches:

According to embodiments of the present invention, padding may also be performed on the trigger frame that triggers a multi-user simultaneous transmission. In a multi-user upstream data transmission and a multi-user downstream data transmission, a different number of STAs may be allocated for each channel. The trigger frame may include AID information of the STAs assigned to each channel, ***wherein the amount of information in the trigger frame transmitted may vary for each channel.***

According to one embodiment of the present invention, a preset padding may be performed before the Frame Check Sequence (FCS) field of the trigger frame. ***Thus, the transmission of the trigger frame may terminate at the same time on each channel over which the trigger frame is transmitted. Furthermore, by padding the trigger frame, the STAs may acquire additional processing time to participate in multi-user simultaneous transmission in response to the trigger frame.*** According to another embodiment of the present invention, redundant AID information may be inserted prior to the FCS field of the trigger frame.

Ex. 1012, [135]–[136].

As discussed above regarding claim 1, the PCT Application discloses the use of either padding (either by inserting a preset padding value or redundant AID information) so that each trigger frame may “terminate at the same time on each channel” and so that “the STAs may acquire additional processing time.” *Id.* Accordingly, a POSITA would understand that the inventors were in possession of the first padding frame being “*set based on a time needed for the one or more terminals to process the trigger frame.*” Ex. 2014, ¶58.

C. Claim 3

Claim 3 recites: “*The wireless communication terminal of claim 1, wherein the padding field is contained before a frame check sequence (FCS) field included in the trigger frame.*”

A POSITA would have understood the inventors to have possession of claim 3. Ex. 2014, ¶¶59–61. The PCT Application is explicit that the trigger frames can include padding (which may either be preset padding values or redundant AID values) prior to an FCS field of the trigger frame:

According to embodiments of the present invention, padding may also be performed on the trigger frame that triggers a multi-user simultaneous transmission. In a multi-user upstream data transmission and a multi-user downstream data transmission, a different number of STAs may be allocated for each channel. The trigger frame may include AID information of the STAs assigned to each channel, wherein the

amount of information in the trigger frame transmitted may vary for each channel.

According to one embodiment of the present invention, a preset padding may be performed before the Frame Check Sequence (FCS) field of the trigger frame. Thus, the transmission of the trigger frame may terminate at the same time on each channel over which the trigger frame is transmitted. Furthermore, by padding the trigger frame, the STAs may acquire additional processing time to participate in multi-user simultaneous transmission in response to the trigger frame. *According to another embodiment of the present invention, redundant AID information may be inserted prior to the FCS field of the trigger frame.*

Ex. 1012, [135]–[136].

As such, the PCT Application is explicit (under either the preset padding value or redundant AID information padding embodiments) that “*the padding field is contained before a frame check sequence (FCS) field included in the trigger frame.*”

Ex. 2014, ¶61.

D. Claim 4

Claim 4 recites: “*The wireless communication terminal of claim 1, wherein the AID field indicates a start of the padding, when the AID field is set to the specific value.*”

A POSITA would have understood the inventors to have possession of claim 4. Ex. 2014, ¶¶62–63. As discussed above, under the “preset padding” value

embodiment, the AID field indicates a start of the padding when the preset padding value is placed in the AID field, indicating that that field is the start of the padding. Likewise, under the “redundant AID information” embodiment, the first instance of redundant AID information in the AID field indicates that that field is the start of the padding.

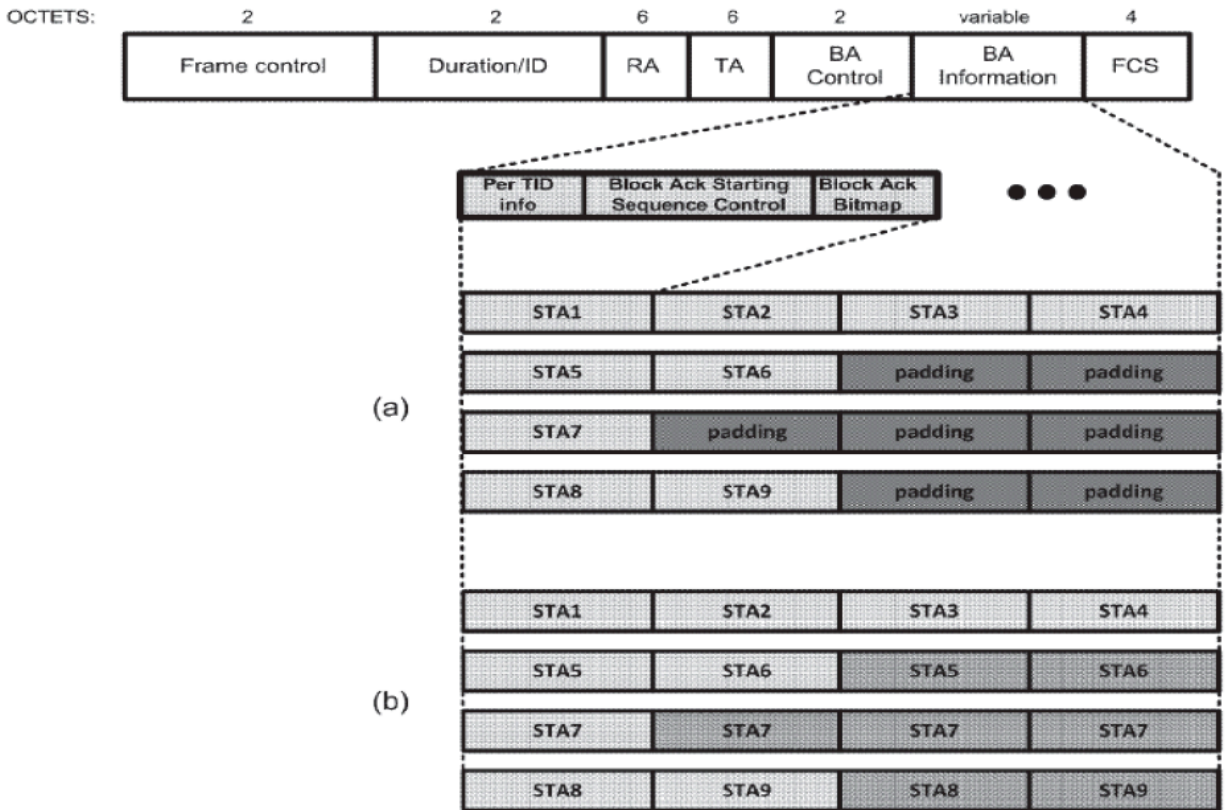
E. Claim 5

Claim 5 recites: “*The wireless communication terminal of claim 4, wherein the predetermined AID field information is duplicated bit information in an AID field.*”

A POSITA would have understood the inventors had possession of this additional limitation. Ex. 2014, ¶¶64–66. For instance, when a preset padding value is used (e.g., all zeros or all ones), that padding value will be duplicated across the AID field, thus constituting “duplicated bit information.” Not only are the bits duplicated (by virtue of repeating ones or zeros), but the reserved preset padding value itself is duplicated across the trigger frame. Ex. 2014, ¶65.

Likewise, in the redundant AID information embodiment, redundant AID information is duplicated (because it is redundant) across the AID field. Ex. 2014, ¶66. For instance, in FIG. 19 of the PCT Application (reproduced below), in the second row of example (b), STA5 and STA6 are duplicated in the AID field to indicate the presence of padding.

[FIG. 19]



Ex. 1012, FIG. 19. Likewise, in the third row, STA7 is duplicated in the AID field to indicate the presence of padding. Because these AID values are represented by bits, their duplication constitutes “duplicated bit information” as recited in claim 5.

Ex. 2014, ¶66.

F. Claim 6

Claim 6 recites: “*The wireless communication terminal of claim 1, wherein the padding is applied in the trigger frame by using duplicated information.*”

A POSITA would have understood the inventors had possession of this claim under either embodiment of the PCT Application (redundant AID information or

preset padding values). Under either embodiment, a duplicated preset padding value (e.g., all ones or zeros) or duplicated AID information (e.g., AID information duplicated from prior AID values) is used to apply the padding in the trigger frame. Ex. 2014, ¶¶67–68.

G. Claim 7

Claim 7 recites: “*The wireless communication terminal of claim 6, wherein the padding is applied in the trigger frame by duplicating the predetermined AID field information.*”

A POSITA would have understood the inventors had possession of this claim. For example, as discussed above, under either embodiment, predetermined AID field information (e.g., either redundant AID field information or a preset padding value) is duplicated in the trigger frame. Ex. 2014, ¶¶69–70.

H. Claim 8

Claim 8 recites: “*The wireless communication terminal of claim 1, wherein the processor is further configured to: generate an uplink packet to perform the uplink transmission, and perform the uplink transmission in response to the trigger frame by using the generated uplink packet, wherein a padding is applied to the uplink packet to terminate the uplink transmission at a designated time.*” The PCT Application discloses possession of this claim. Ex. 2014, ¶¶71–73.

The PCT Application teaches that the purpose of the trigger frame sent by an access point is to coordinate an uplink transmission from a plurality of terminals, such that the recited non-access point “terminal” of claim 1 will use the trigger frame to generate and transmit an uplink packet in response to the received trigger frame. For instance, the PCT Application teaches:

The trigger frame indicates the start time of the multi-user uplink transmission and may indicate the channel or subchannel information assigned to each uplink STA. STAs that have been assigned a channel or subchannel by the AP transmit upstream data simultaneously at the time specified by the AP.

Ex. 1012, [118]. In other words, the trigger frame sent by the access point indicates *when* and *on which channel or subchannel* the terminal should “transmit upstream data,” and the terminal uses that information to prepare and transmit a response at the correct time and on the correct channel or subchannel. Ex. 2014, ¶72. And the PCT Application is explicit that the purpose of the padding discussed above is to allow the STAs sufficient “processing time to participate in multi-user simultaneous transmission *in response to* the trigger frame.” *Id.* at [136].

A POSITA would have also understood that “a *padding is applied to the uplink packet to terminate the uplink transmission at a designated time.*” As discussed above for claim 1, a POSITA would have understood that the inventors had possession of claim 1’s trigger frame for uplink transmission utilizing the recited

padding. A POSITA would have understood that these same concepts would be applicable for “a method of frame length alignment via padding in a multi-user simultaneous transmission process.” *See* Ex. 1012 at [134]–[135] (“FIG. 20 illustrates a method of frame length alignment via padding in a multi-user simultaneous transmission process.... According to embodiments of the present invention, padding may also be performed on the trigger frame that triggers multi-user simultaneous transmission.”). Accordingly, a POSITA would have understood that when the response frame of the claimed terminal is required for “frame length alignment,” the response frame would have included padding for to terminate the uplink transmission at a designated time (such that the durations of uplink transmissions are aligned). *See* Ex. 1012 at [134]; Ex. 2014, ¶73.

I. Claim 9

Claim 9 recites: “*The wireless communication terminal of claim 1, wherein the AID field is set to the specific value according to the number of user information for the one or more terminal.*”

Because the PCT Application teaches that “a preset padding may be performed” (Ex. 1012, [136]), a POSITA would have understood that the inventor

had possession of using all 1s as the “preset padding” value, because all zeros and all 1s are the easiest values to verify via logical operators.² Ex. 2014, ¶75.

The inventors’ possession of this concept is further confirmed by the disclosures contained in KR ’754 (which is incorporated by reference by the PCT Application—*see* Ex. 1012, [50]). Specifically, KR ’754 discloses that padding can be accomplished by “padding with 1s.” Ex. 1008, [0074] (“The zero padding used in the present invention is one embodiment, and padding with 1s can achieve the same effect.”). As discussed above, the PCT Application is explicit that padding can be performed with a preset padding field for a trigger frame for uplink transmission. In light of that disclosure, as well as KR ’754’s teaching that padding with 1s can be used as a preset padding value, a POSITA would understand that the inventor had possession of use of a preset padding field for uplink transmission, wherein all of the bits in the padding field are set to 1s. Ex. 2014, ¶76.

Furthermore, when the “preset padding” value is all 1s, “*the specific value*” indicating padding would be determined “*according to the number of user information for the one or more terminal[s]*.” Ex. 2014, ¶77. For instance, if eight

² For instance, the presence of an all-zero reserved value can be identified by performing a logical “or” operation on each bit in a field; if the result is “0,” then the entire field is comprised of 0 bits. Ex. 2014, ¶45. Likewise, the presence of an all-one reserved value can be identified by performing a logical “and” operation on each bit in the field; if the result is “1,” then the entire field is comprised of 1 bits. *Id.*

bits were used for an AID field, the number 255 (or “11111111”) in binary would be the maximum possible AID value that could be represented—i.e., that would be the maximum number of users that could be indicated. If “11111111” were a reserved value to indicate padding, the maximum valid AID value would then be 254, so that “the specific value” would be set to be one more than the “number of user[s]” that could be indicated under that signaling scheme, and would thus be set “according to the number of user information for the one or more terminal[s].”

J. Claim 10

Claim 10 recites: “*The wireless communication terminal of claim 1, wherein all bits of the padding field are set by repeating a specific value when the padding field is included in the trigger frame.*”

This limitation is disclosed for both the “preset padding” and “redundant AID information” embodiments. Ex. 2014, ¶¶78–81. First, in the redundant AID information embodiment, the “specific value” that the AID field is set to is the specific value of a previously provided AID value. The use of this specific value—redundant AID information—signals to the receiving station that the padding field is present. Ex. 2014, ¶79.

Likewise, in the “preset padding” embodiment, the “specific value” that the AID field is set to is a specific preset value (such as “00000000” or “11111111”).

Whenever this preset padding value is present in the AID field, that signals to the receiving station that the padding field is present. Ex. 2014, ¶80.

In either embodiment, all bits of the padding field are set by repeating the specific value when the padding field is present. Ex. 2014, ¶81.

K. Claims 11–18

As the Petition acknowledges, claims 11–18 have “corresponding claims” of claims 1–8, respectively. *See* Pet. 41–42. A POSITA would understand that the inventor had possession of these claims for the same reasons as discussed above for claims 1–8, discussed above. Ex. 2014, ¶82.

L. Response to the Initial Determination’s Preliminary Findings Regarding Claim 1

On a preliminary record, the Institution Decision (“ID”) found on the preliminary record that “the ’186 Patent is not entitled to an earlier effective filing date earlier than April 8, 2019 and find that Kim is prior art,” and invited the parties to address this issue in subsequent briefing. *See* Paper No. 14 at 19–20. The ID found that “the disclosure of a preset padding being performed before the FCS field of the trigger frame and the disclosure of inserting redundant AID information prior to the FCS field of the trigger frame” are “directed to two embodiments,” and the PCT Application “does not provide any suggestion that the two embodiments are used

together, or that the redundant AID information of one embodiment can serve as a preset padding of the other embodiment.” Paper No. 17 at 17.

Patent Owner acknowledges (as discussed above) that the PCT Application discloses the use of a “preset padding” value and the use of “redundant AID information” as being alternative embodiments of padding the trigger frame. *See* Ex. 1012 at [136] (discussing both of these alternative embodiments as ways to ensure that “by padding the trigger frame, the STAs may acquire additional processing time”).

The fact that (1) the use of a preset padding value for padding and (2) the use of redundant AID information for padding are two distinct embodiments, however, is not relevant to the priority of claim 1 of the ’186 patent, because both embodiments *independently* satisfy all limitations of claim 1 as discussed above. A POSITA would understand that inserting redundant AID information is a form of padding, even if it does not use “*preset* padding” information (e.g., the padding value is not “preset” because the bits of the padding field are based on a value specified in the AID field of the trigger frame).

The Petition itself acknowledges that “repeating AIDs” is a form of padding that can be used “to align the length” of trigger frames, as disclosed in the PCT Application. Specifically, the Petition discussed a similar disclosure in KR ’754 regarding “inserting zero padding or repeating AIDs” to “align the length of the

trigger [frame]” (Ex. 1008, [0072]), and argued that “[t]his discussion is limited to padding applied to a downlink trigger frame.” Pet. 11. The Petition thus acknowledges that “repeating AIDs” (which is using redundant AID information) is a form of “padding,” but only disputed that KR ’754 disclosed this padding being applied to *uplink* trigger frames. As discussed above, however, the PCT Application is explicit that this type of padding is applied to trigger frames for scheduling uplink transmissions.

Additionally, as discussed above, the “preset padding value” embodiment also independently discloses the requirements of claim 1.

V. The Petition’s Ground 1 (Kim) fails because Kim is not prior art.

As discussed above, all claims of the ’186 patent are entitled to a priority date of no later than March 4, 2016, the filing date of the PCT Application.

In contrast, Kim has a filing date of January 8, 2018. Kim also cites three provisional applications filed in January of 2017. *See* Ex. 1014 at (60). The Petition does not allege that Kim is entitled to the priority of its provisional applications, but even if it were, Kim would still have a later priority date than the March 4, 2016 priority date of the ’186 patent (i.e., the PCT Application’s filing date).

VI. The Petition’s Ground 2 (Chu in combination with Choi) fails.

A. Overview of Chu

Chu teaches a comprehensive padding structure, wherein a frame that is used to schedule uplink transmissions (i.e., Chu’s “scheduling frame”) “includes one or more padding bits at the end of the scheduling frame 902 to provide sufficient time for the client stations 25 to prepare for uplink transmission based on the uplink scheduling information provided by the scheduling frame 902. Ex. 1015, [0093]. Chu teaches that the padding bits are located “at the end of the scheduling frame 902 to provide sufficient time for the client stations 25 to prepare for uplink transmission based on the uplink scheduling information provided by the scheduling frame.” *Id.* Ex. 2014, ¶86.

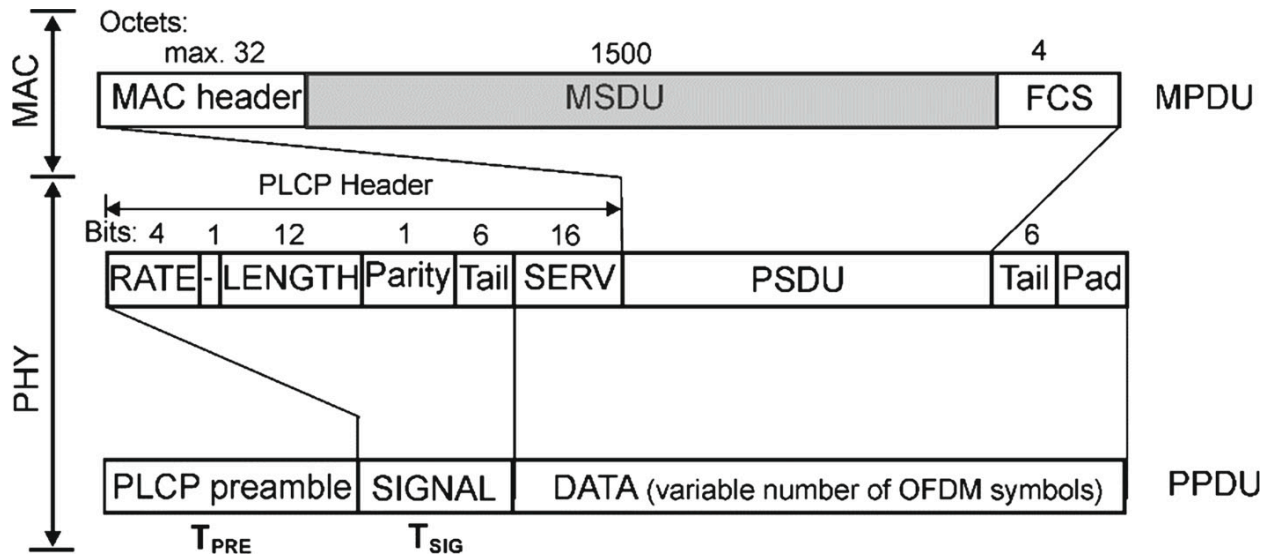
Chu is explicit regarding how this padding is identified. Ex. 2014, ¶87. First, “a MAC header included in the scheduling frame 902 indicates a length of a valid payload, wherein the one or more padding bits follow the valid payload.” Ex. 1015, [0093]. Additionally, “a signal field of a PHY preamble of the scheduling frame 902 includes an indication of the entire length of the scheduling frame 902, which includes the one or more padding bits at the end of the scheduling frame 902.” *Id.*; *see also id.* at [0144] (similar teachings).

In other words, Chu teaches that a MAC header of Chu’s scheduling frame 902 “indicates the length of a valid payload” (which *does not* include the padding bits), and a PHY preamble of Chu’s scheduling frame 902 indicates the *entire* length of the frame (which entire length *does* include the padding bits). Accordingly, the

start of the padding bits is determined by simply identifying the end of Chu's "valid payload" (which information is provided in Chu's MAC header). Ex. 2014, ¶88. And the end of the padding bits is determined by identifying the end of the entire scheduling frame (which information is provided in Chu's PHY preamble). *Id.*

Chu thus explicitly teaches a mechanism for receiving stations to identify the beginning and end of Chu's padding bits through usage of existing fields in the MAC header and PHY preamble. Accordingly, a POSITA would understand Chu to disclose that a length field of a MAC header identifies the length of the MAC frame, whereas a length field of a PHY preamble identifies the length of the PHY frame. Ex. 2014, ¶¶89–90. Given that Chu's padding bits occur "*at the end of*" Chu's scheduling frame (Ex. 1015, [0093]), they necessarily occur in the PHY frame (after the end of the MAC frame, including after the FCS field that is at the end of the MAC frame). Ex. 2014, ¶90.

This concept of inserting padding after a MAC frame, at the end of a PHY frame, is not unique to Chu's disclosure, but was instead generally known in the art. Ex. 2014, ¶91. For example, an exemplary frame format in 802.11a (a standard that was first ratified in 1999) is shown below:



Ex. 2017 at 12. As shown above, the PHY frame includes a PSDU MAC frame, which MAC frame terminates with a frame check sequence (FCS) field. Then, following the MAC frame (but still within the PHY frame), a 6-bit tail value is provided, followed by padding for the remainder of the length of the PHY frame. While Chu is not inconsistent with the use of tail bits (because the beginning of the padding region would, in the case of a 6-bit tail field, be calculated as beginning 6 bits after the end of the MAC frame), a POSITA would also understand that not all PHY frames require tail bits. Accordingly, in the event no tail bits are utilized, Chu's padding region would begin immediately after the MAC frame terminates (i.e., immediately after the length of the valid payload that is identified in the MAC header of Chu's scheduling frame 902). Ex. 2014, ¶91.

Dr. Ding, at his deposition, acknowledged that Chu discloses these concepts, including that "by providing the length of a valid payload of the MAC frame and the

entire length of the scheduling frame 902 using the PHY preamble, that would allow a receiving station to delineate the padding region of the scheduling frame from other parts of the scheduling frame.” *See id.* at 39:4–40:14.³

Chu also teaches that within the MAC frame of the scheduling frame 902, a “station identifier subfield 756 (AID)” is included. *See* Pet. 38 (citing Ex. 1015, [0079], [0090]). Ex. 2014, ¶94.

B. Overview of Choi

Choi discloses the use of a Δ AID field to signal AID values. Rather than directly disclosing the AID value of a given station (other than the first station), Choi’s Δ AID field can be used to calculate AID values for stations. This is notably different from the Chu, which teaches that the AID values are identified directly using a “station identifier subfield” with no encoding based on Δ AID values. Ex. 1015 at FIG. 7B, [0079], [0090]; Ex. 2014, ¶95.

Choi discloses that padding bits are used in place of substantive Δ AID values if the total length of substantive Δ AID values “is less than a multiple of an octet.”

³ Dr. Ding stated that this may “not always [be] the best solution” because “one would really have to incorporate a valid payload length into the MAC header,” Ex. 2016 at 40:11–15, but he elsewhere acknowledged that “a length value” must be provided “in the MAC header” regardless of whether Chu’s padding technique is used. *See* Ex. 2016 at 37:17–38:4. Dr. Ding appeared to be under the apprehension that a valid payload length would be a separate field, but as Mr. de la Iglesia explains, no separate length value would be required because Chu discloses that its padding occurs at the end of the PHY frame, *after* the MAC frame. Ex. 2014, ¶¶92–93.

Ex. 1016 at [0184]. The purpose of this padding is thus to align bits within the octet requirements of a MAC frame (a problem the Petition does not allege exists in Chu's frame structure), which is different than the purpose of the padding bits in Chu (in which the padding bits are provided *after* the MAC frame "to provide sufficient time for the client stations 25 to prepare for uplink transmission." Ex. 1015, [0093]; Ex. 2014, ¶96.

C. The Petition's proposed combination of Chu with Choi would not have been obvious.

1. The Petition's motivations are based on a misunderstanding of the Chu reference.

The Petition's motivation to combine Chu with Choi is as follows:

Chu discloses the use of a frame to initiate uplink Orthogonal Frequency Division Multiple Access (OFDMA) transmissions from multiple client devices, whereby each device transmits data over a sub-channel allocated by the AP. SAMSUNG-1015, [0042]. Chu describes that the frame "includes one or more padding bits at the end of the scheduling frame 902 to provide sufficient time for the client stations 25 to prepare for uplink transmission based on the uplink scheduling information provided by the scheduling frame 902." SAMSUNG-1015, [0093]; SAMSUNG-1003, ¶¶148-149.

While Chu mentions the presence of padding bits to allow for processing time, it does not describe how these padding bits are implemented or identified within the scheduling frame. In particular,

Chu is silent as to any indication, flag, or marker that distinguishes the padding portion of the frame from other fields. It provides no detail on how the receiving client station would know which bits correspond to padding versus meaningful scheduling content.

This lack of specificity creates an implementation gap. In practical multiuser systems, where frame parsing is to be fast and accurate, the ability to distinguish padding from data or control information is essential for reliable operation. *A POSITA, encountering this absence of guidance in Chu, would have recognized the need for additional implementation details to operationalize Chu's contemplated padding feature in a robust manner.* SAMSUNG-1003, ¶¶149-153.

Accordingly, the POSITA would have been motivated to consult other references that provide practical mechanisms for padding identification. Choi would have been an obvious choice for such purposes, as it addresses this issue. SAMSUNG-1003, ¶¶145-149.

Pet. 45–46; *see also* Pet. 48 (alleging that “Chu describes padding conceptually but fails to explain how to implement or signal it”).

In short, the Petition contends that Chu discloses padding, but does not disclose “how the receiving client station would know which bits correspond to padding versus meaningful scheduling content.” Pet. 45. It is this alleged “lack of specificity” which supposedly “creates an implementation gap” that the Petition contends would have motivated a POSITA “to consult other references that provide practical mechanisms for padding identification.” *Id.* at 45–46.

The Petition's theory in this regard, however, is directly inconsistent with a POSITA's understanding of Chu. *See* Ex. 2014, ¶¶97–102. Specifically, as discussed above, Chu explicitly teaches how to know where the padding begins—by evaluating the length specified in the length of the MAC header (to determine the length of the MAC frame), such that the padding would begin after the end of the MAC frame (i.e., at the end of the scheduling frame). The padding bits would simply begin after the MAC frame ends, and continue until the PHY frame ends, wherein the lengths of both frames are specified by the MAC header and PHY preamble, respectively. Ex. 2014, ¶99.

Dr. Ding acknowledged that the Petition's characterization of Chu was incorrect, because he acknowledged that Chu *does* teach a “suggested solution” for how “to delineate the padding [region] from other parts of the frame”:

14 Q Okay. So -- so you agree that Chu discloses a
15 way of allowing a receiving station to delineate the
16 padding ranging from other parts of the frame; correct?

17 A I acknowledge that Chu suggests an example,
18 but it does not really limit -- Chu -- his invention to
19 this one particular suggested solution. And to the
20 extent that Chu's invention is quite broad, includes
21 many other aspects, and this particular padding is only
22 one of many inventive aspect of Chu.

Ex. 2016 at 36:14–22; *see also id.* at 35:13–36:13 (acknowledging that Chu discloses “to a person of skill in the art that whether or not padding can be identified could be dealt with by adding another length indicator”).

Accordingly, the Petition’s sole alleged motivation to look to Choi in the first place—i.e., to solve an alleged “implementation gap” in Chu—is inapplicable (*see* Pet. 45); contrary to the Petition’s theory, Chu *does* teach how to delineate padding regions of the frame from other regions of the frame. Ex. 2014, ¶101. Given that Chu has no problem in this regard, the Petition provides no competent evidence that a POSITA would have looked to Choi in an effort to “solve” this non-existent problem in Chu’s teachings. *See In re Schweickert*, 676 F. App’x 988, 994 (Fed. Cir. 2017) (finding no motivation to combine where the “record describes no problem in [the prior art] that would be resolved by the [proposed combination]”).

The Petition’s other allegations regarding the alleged obviousness of the combination of Chu with Choi likewise fail. *See* Ex. 2014, ¶102. For instance, the Petition alleges that the combination would have resulted in “a predictable improvement in MU uplink scheduling” (Pet. 48), but this assumes that there is a “missing detail” in Chu that is needed to allow for padding to occur (*id.*); as discussed above, Chu clearly enables a POSITA to implement padding without the need for the additional complexities of Choi’s teachings. Likewise, the Petition’s allegation that its proposed combination would have had benefits including “(i)

improved parsing efficiency, (ii) enhanced synchronization, and (iii) reduced likelihood of misinterpreting padding as data.” Pet. 47–48. But these allegations are unsupported because they do not engage with whether there would be any improvement, enhancement, or reduced likelihood of misinterpretation ***over Chu’s system in isolation***. Ex. 2014, ¶102. Indeed, a POSITA would have understood that Chu, by virtue of unambiguously signaling the location of the padding content through length fields, would not have any issues with parsing, synchronization, or misinterpreting padding as data that would be solved by any teachings in Choi.⁴

In conclusion, the Petition’s obviousness theory is based on a misunderstanding of Chu’s teachings as failing to provide “any indication... that distinguishes the padding portion of the frame from other fields.” Pet. 45. A

⁴ The Petition’s proposed combination also does apply a known solution to a “known problem (Chu’s lack of detail regarding padding implementation)” as the Petition alleges (*see* Pet. 48), because Chu has no problem regarding lack of detail. Furthermore, KSR is clear that under the “application of a known technique” legal principle, a POSITA must have been able to recognize that the application of the known technique “would ***improve***” the device being modified. *See KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007).

POSITA, however, would not have misunderstood Chu’s teachings in this manner, and would instead know that Chu teaches a “solution” to this supposed problem. *See* Ex. 2016 at 36:14–22 (“Q. [S]o you agree that Chu discloses a way of allowing a receiving station to delineate the padding [region] from other parts of the frame; correct? A. I acknowledge that Chu suggests an example, but [Chu] does not really limit... his invention to this one particular suggested solution.”). Ex. 2016 at 36:14–22.

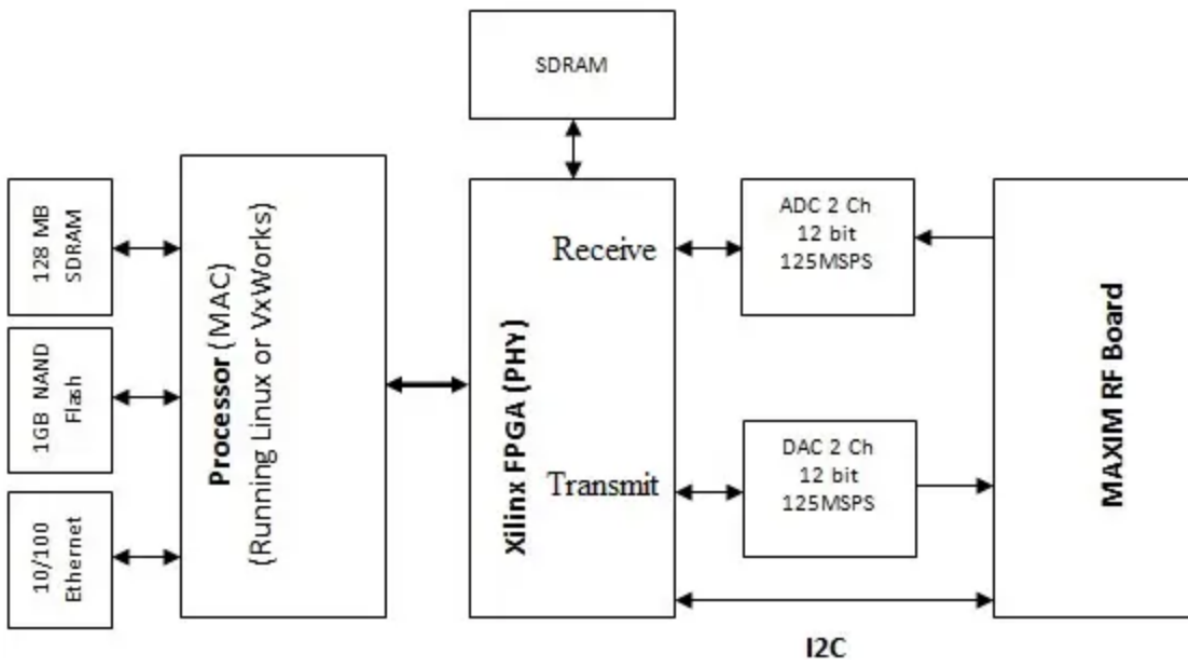
And the Petition’s vague and unsupported allegations of enhancement, improvement, or reduced errors (*see* Pet. 47–48) relative to a system that the Petition assumed contained *no* mechanism for identifying padding bits existed cannot support modifying Chu, which *does* provide a mechanism for identifying padding bits. The Petition simply fails to provide any coherent “reason for combining,” when the *actual* teachings of Chu are considered. *See Virtek Vision Int’l ULC v. Assembly Guidance Sys., Inc.*, 97 F.4th 882, 887 (Fed. Cir. 2024) (“It does not suffice to simply be known. A reason for combining must exist.”).

**2. A POSITA would have avoided the Petition’s
combination of Chu with Choi for additional reasons.**

The Petition’s combination of Chu with Choi also creates what a POSITA would have viewed as significant disadvantages (relative to Chu’s disclosure) that

the Petition fails to account for. In actuality, a POSITA would have avoided the proposed combination. Ex. 2014, ¶¶104–110.

First, a POSITA would readily understand that processing of data in MAC frames requires significantly more overhead and system resources than processing data that is exclusive to a PHY frame. This is because MAC processing is typically implemented in software, whereas PHY processing is typically handled primarily through dedicated hardware solutions. An example of such an implementation is shown below, where a dedicated FPGA handles PHY processing, whereas a general purpose processor running Linux or Windows handles MAC processing.



Ex. 2014, ¶105 (citing Ex. 2018) (showing the PHY layer being processed in an FPGA but the MAC layer being processed in higher-level software, such as an application in Linux or Windows).

Thus, processing of data within the PHY layer is more efficient and consumes less overall system resources (including processing cycles and memory) than processing data within the MAC layer. Furthermore, bits processed within the MAC layer are processed within in *both* the PHY and MAC layers, thus requiring an additional level of processing for bits in the MAC layer. Accordingly, a POSITA would not be motivated to move processing from the PHY layer to the MAC layer, assuming that the processing could be placed in either location, because doing so would lead to increased need for system resources. Ex. 2014, ¶¶105–106.

As discussed above, Chu is clear that its padding bits are located in the PHY layer, because it is the “length” field of the PHY preamble that specifies the length of the frame including the padding bits, and the “length” field of the MAC header that specifies the length of the MAC payload data (excluding the padding bits). Ex. 1015, [0093]; *see also id.* (noting that “the one or more padding bits follow the payload” such that they are “at the end of the scheduling frame 902”). Chu additionally makes this clear because it teaches that the padding bits are located “at the end of the scheduling frame” (Ex. 1015 at [0093]), even though the FCS field is necessarily located the end of any MAC frame. Ex. 2014, ¶107.

Because of the increased efficiency of handling the padding bits at the PHY layer as opposed to at the MAC layer (and because these padding bits do not include substantive information that would require processing at the MAC layer), a POSITA

would have avoided an implementation that would have required moving Chu's padding bits from the end of the PHY frame such that they would instead be contained within the MAC frame. Accordingly, a POSITA would not have viewed moving Chu's padding bits from the end of Chu's PHY frame into the middle of Chu's MAC frame to be an obvious modification. Ex. 2014, ¶108.

This modification would also “require fundamental changes to the underlying frame structure” of Chu—i.e., changing the location of padding from *outside* the MAC frame to *inside* the MAC frame—inconsistent with the Petition's allegation that its combination would “not require fundamental changes” to Chu's frame structure. *See* Pet. 47; Ex. 2014, ¶109.

Furthermore, Choi's Δ AID system requires a separate “Length” field (beyond the already-required length fields of the PHY preamble and MAC header). *See* Ex. 1016, [0182] (“The Length field specifies the length of the encoded bitmap in octets.”). A POSITA would recognize that requiring an additional length field would be undesirable, because it would create additional overhead in the MAC frame. Ex. 2014, ¶110. Again, the Petition neither acknowledges this disadvantage nor explains why a POSITA would have been motivated to modify Chu in this manner when Chu already teaches a comprehensive padding technique.

Both of these disadvantages weigh strongly against obviousness, particularly in light of the fact that Chu already teaches a way to achieve the benefits the Petition

alleges its proposed combination would entail. *See Henny Penny Corp. v. Frymaster LLC*, 938 F.3d 1324, 1332 (Fed. Cir. 2019) (affirming finding of nonobviousness because “a reasonable fact finder could have found these tradeoffs to yield an unappetizing combination, especially because [the primary reference] already teaches a sensor that [performs similar functionality as its proposed replacement]”).

In sum, as noted in Section VI.C.1 above, because Chu clearly teaches a POSITA how to identify the padding region and distinguish it from non-padding content, a POSITA would not have looked to Choi in the first place. But even if a POSITA did look to Choi, the disadvantages of using Δ AID signaling placing significant limitations on the AID values that can be signaled, in addition to the relative inefficiency of moving Chu’s padding bits from the PHY layer to the MAC layer, would have caused a POSITA to actively avoid the Petition’s proposed combination.

VII. Conclusion

Both of the Petition’s grounds fail.

First, Kim is not prior art, because the ’186 patent is entitled to the priority date of the PCT Application’s filing date.

Second, the Petition’s alleged motivations to combine Chu with Choi are based on a fundamental misunderstanding of how Chu operates. Not only does the Petition mischaracterize Chu’s teachings in implying that a POSITA would need to

“sol[ve]” a “problem” that Chu already solved (i.e., how to identify padding within Chu’s frame structure—*see* Pet. 48), but the Petition also ignores the fundamental changes that its combination would require in moving Chu’s padding bits from outside the MAC frame to inside the MAC frame, thus increasing inefficiency. In short, the Petition presents no coherent theory regarding how Chu’s teachings, *when understood in the way a POSITA would have understood them*, would be obvious to combine with Chu in the proposed manner.

For each of the foregoing reasons, Patent Owner respectfully requests that all challenged claims be found not unpatentable.

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CERTIFICATE OF COMPLIANCE WITH 37 C.F.R. § 42.24

I certify that there are 9,163 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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