

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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SAMSUNG ELECTRONICS CO., LTD.,  
Petitioner,

v.

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

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Case No. IPR2025-00935  
U.S. Patent No. 11,129,163

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**PATENT OWNER'S RESPONSE**

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**Patent Owner’s Exhibit List for IPR2025-00873**

Pursuant to 37 C.F.R. § 42.63(e), Wilus Institute of Standards and Technology Inc. hereby submits its exhibit list associated with the above-captioned *inter partes* review of U.S. Patent No. 11,129,163.

Exhibit	Description
2001	Order, <i>Wilus Institute of Standards and Technology Inc., v. HP Inc.</i> , Case No. 2:24-cv-00752-JRG-RSP, Dkt. No. 130 (June 11, 2025) (“Docket Control Order”)
2002	Excerpt from Exhibit G-22 to Invalidity Contentions Served on February 13, 2025 in the consolidated case <i>Wilus Institute of Standards and Technology Inc., v. HP Inc.</i> , Case No. 2:24-cv-00752-JRG-RSP
2003	Interim Processes For PTAB Workload Management, March 26, 2025, <a href="https://www.uspto.gov/sites/default/files/documents/InterimProcesses-PTABWorkloadMgmt-20250326.pdf">https://www.uspto.gov/sites/default/files/documents/InterimProcesses-PTABWorkloadMgmt-20250326.pdf</a>
2004	FAQs for Interim Processes for PTAB Workload Management), retrieved from <a href="https://www.uspto.gov/patents/ptab/faqs/interim-processes-workload-management">https://www.uspto.gov/patents/ptab/faqs/interim-processes-workload-management</a>
2005	Guidance on USPTO’s rescission of “Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation”, March 24, 2025, <a href="https://www.uspto.gov/sites/default/files/documents/guidance_memo_on_interim_procedure_rescission_20250324.pdf">https://www.uspto.gov/sites/default/files/documents/guidance_memo_on_interim_procedure_rescission_20250324.pdf</a>
2006	Excerpts from U.S. District Court – National Judicial Caseload Profile for the Eastern District of Texas, March 31, 2025, <a href="https://www.uscourts.gov/sites/default/files/document/fcms_na_distpr_ofile0331.2025.pdf">https://www.uscourts.gov/sites/default/files/document/fcms_na_distpr_ofile0331.2025.pdf</a>
2007	Screenshot regarding Judge Rodney Gilstrap’s average time to trial from July 22, 2024 until July 22, 2025, retrieved from <a href="http://www.docketnavigator.com">www.docketnavigator.com</a>

2008	Excerpts from Invalidation Contentions Served on February 13, 2025 in the consolidated case <i>Wilus Institute of Standards and Technology Inc., v. HP Inc.</i> , Case No. 2:24-cv-00752-JRG-RSP
2009	Dennis Crouch, Estoppel Guttled: A Pelican’s Guide to Patent Litigation, <a href="https://patentlyo.com/patent/2025/05/estoppel-pelicans-litigation.html">https://patentlyo.com/patent/2025/05/estoppel-pelicans-litigation.html</a>
2010	Letter re “Notice of Wi-Fi 6 License offer” from Sisvel to Samsung Electronics Co., Ltd. with Attachments 1-2, April 8, 2022
2011	Intentionally Omitted
2012	Declaration of Jin Sam Kwak
2013	List of Licensees to Wi-Fi 6 from Sisvel, <a href="https://www.sisvel.com/licensing-programmes/Wi-Fi/wifi-6/#tab-list-of-licensees">https://www.sisvel.com/licensing-programmes/Wi-Fi/wifi-6/#tab-list-of-licensees</a>
2014	U.S. Pat. No. 12,058,230
2015	Excerpts of File History of U.S. Pat. No. 12,058,230
2016	Declaration of Todor V. Cooklev, Ph.D., in support of Patent Owner’s Response
2017	February 3, 2026 Deposition Transcript of Mark P. Mahon, Ph.D.

## I. Introduction

The Petition asserts two sets of invalidity grounds, one based on the “Lee” reference (Ex. 1005) as the primary reference, and one based on the “Choudhury” reference (Ex. 1009) as the primary reference. Grounds 1A and Grounds 2A (each relying on Lee or Choudhury in isolation) are the only two grounds that challenge any independent claims of the ’163 patent. Both sets of grounds fail as to all challenged claims.

Regarding Lee, the sole independent device claim 1 (which the Petition treats as representative of the only other independent claim 9) of the ’163 patent requires that the processor be configured “not to use a Basic Service Set (BSS) color when signaling information indicates that an operation based on the BSS color is not allowed.” The Petition alleges that when Lee’s “coloring disable bit” indicates a trigger frame, then Lee’s wireless terminal (which Lee refers to as an STA) “operates *‘without regard to information indicated by the coloring bit.’*” Pet. 13 (emphasis in original);<sup>1</sup> *see also* Paper No. 16 at 4 (Samsung alleging that the Board’s Institution Decision was correct because “when Lee’s coloring disable bit is set, Lee disables BSS color and the BSS color is not used at all”).

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<sup>1</sup> All emphases herein are added unless otherwise specified).

However, Lee undisputably does *not* teach that its STA does not use BSS color at all, contrary to Samsung’s theory of invalidity. Lee teaches only that when the coloring disable bit is set (which “indicates that the frame is a... trigger frame”), then “the STA does not perform a change of the CCA level without regard to information indicated by the coloring bit.” Ex. 1005, Abstract (selectively quoted by Pet. 13). A POSITA would understand, as Samsung’s own expert conceded, that nothing in Lee “rule[s] out using” BSS color for any operations *other* than CCA level change (a type of spatial reuse). *See* Ex. 2017 at 35:4–7. And Samsung’s expert *also* acknowledged that he did not identify how Lee’s disclosure teaches that it would impact any color-based operations other than a CCA level change / spatial reuse operation. Ex. 2017 at 15:5–22 (“Q. Other than a CCA level change or a spatial reuse operation, do you identify any other color-based operations in Lee that are affected by [the] color disable bit? A. Well, addressing Lee in this section of my report, I don’t specifically point to anything else....”). Thus, the Petition fails to show that Lee discloses (as Samsung incorrectly asserts) that Lee would avoid using BSS color when a trigger frame is indicated; instead, Lee only discloses that one type of color-based operation would be impacted. And Samsung presents no obviousness theory that would even potentially cure this deficiency in Lee’s disclosure.

The Petition in Ground 1B further proposes combining Lee with the “Stacey” reference (Ex. 1006) to arrive at certain dependent claims. But the Petition’s proposed combination of Lee with Stacey would nonsensically require that a single bit of information indicate two different and independent scenarios: a trigger frame (as Lee discloses its coloring disable bit indicates) and a color collision (as Samsung alleges would be obvious in view of Stacey). This proposal would cause serious errors, such that the combined system would misinterpret received frames and also unnecessarily refrain from using valuable “BSS color” functionality even when there would be no reason to do so.

The Petition’s reliance on the “Choudhury” reference fares no better. While the Petition sets forth several alternative theories for this reference, they are all inconsistent with Samsung and its expert’s understanding of what that reference actually teaches. For instance, Samsung contends that Choudhury’s “Low Power Indicator” prevents channel access determination based on the received BSS color, but Samsung’s own summary of Choudhury makes clear that Choudhury will *always* perform channel access determination based on the received BSS color (regardless of the status of Choudhury’s Low Power Indicator).

As another example, Samsung alternatively contends that a COLOR value of ‘0000’ in “Choudhury” can be the claimed “signaling information” that would cause Choudhury’s device to not use the received color of ‘0000.’ *See* Pet. 54–55 (alleging

that a BSS color of ‘0000’ “serves as signaling information that BSS color-based operations should not be performed”). But Samsung explicitly alleges that in Choudhury, this BSS color of “‘0000’ *does not represent a valid BSS identifier.*” Pet. 54–55.

As such, the Petition’s theory is *directly inconsistent* with the claims’ requirement that the BSS color that the processor be “configured... not to use” (as recited in limitation [1.4]) must *also* be “an identifier of a BSS” (as recited in limitation [1.5]. *See* Ex. 1001, claim 1 (“the processor is configured... not to use a Basic Service Set (BSS) color..., *wherein the BSS color is an identifier of the BSS*”). This problem (among others) also infects the Petition’s Grounds 2B and 2C, which rely on this non-identifier color value as being the claimed BSS color (which the claim requires must be “an identifier of the BSS”).

Because none of the Petition’s theories can succeed, all challenged claims should be found not unpatentable.

## **II. Background of the ’163 Patent**

The ’163 patent discloses a WLAN device that classifies data frames as Intra-Basic Service Set (BSS) or Inter-BSS, depending on the BSS color from which the frame is transmitted. The device is configured to access a channel depending on whether the frame is Intra- or Inter-BSS. *See* Ex. 1001 at Abstract; Ex. 2016, ¶32.

At a high level, the challenged claims are directed to a device and method of using a device. In the independent device claim 1, a processor of the device is configured “not to use a Basic Service Set (BSS) color when signaling information indicates that an operation based on the BSS color is not allowed, wherein the BSS color is an identifier of a BSS.” In the independent method claim 9, the method entails “not using a Basic Service Set (BSS) color when signaling information indicates that an operation based on the BSS color is not allowed, wherein the BSS color is an identifier of a BSS.”

Claim 1 is the sole independent device claim, and recites:

[1.1] A wireless communication terminal communicating wirelessly, the wireless communication terminal comprising:

[1.2] a transceiver; and

[1.3] a processor,

[1.4] wherein the processor is configured to receive a physical layer convergence procedure (PLCP) Processing Data Unit (PPDU) by using the transceiver, and not to use a Basic Service Set (BSS) color when signaling information indicates that an operation based on the BSS color is not allowed,

[1.5] wherein the BSS color is an identifier of a BSS,

[1.6] wherein the signaling information is transmitted from a base wireless communication terminal to which the wireless communication terminal is associated.

Claim 9 is the sole independent method claim, which is otherwise similar to claim 1, and recites:

[9.1] An operation method of a wireless communication terminal communicating wirelessly, the method comprising:  
[9.2] receiving a physical layer convergence procedure (PLCP) Processing Data Unit (PPDU); and  
[9.3] not using a Basic Service Set (BSS) color when signaling information indicates that an operation based on the BSS color is not allowed,  
[9.4] wherein the BSS color is an identifier of a BSS,  
[9.5] wherein the signaling information is transmitted from a base wireless communication terminal to which the wireless communication terminal is associated.

Claims 1–8 are generally similar, respectively, to claims 9–16, and the Petition largely treats them the same for purposes of analysis. *See, e.g.*, Pet. 63 (merely incorporating by reference the Petition’s analysis for claims 1, 7, and 8 into allegations regarding claims 9 and 15, and 16); Pet. 71–73 (merely incorporating by reference the Petition’s analysis for claims 2, 3, and 6 into allegations regarding claims 10, 11, and 14); Pet. 77 (merely incorporating by reference the Petition’s analysis for claims 4 and 5 into allegations regarding claims 12 and 13); Ex. 2016,

¶¶33–34. Accordingly, the analysis herein showing that the Petition’s theories fail with regard to the device claims is equally applicable to the method claims.

### **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 [March 4, 2016]. Increased education experience can make up for less work experience and vice versa.” Pet. 4. To the extent that Petitioner requires that the required experience and/or education level to be acquired by March 4, 2016, Patent Owner objects to this requirement because it is not relevant or needed for someone to be a POSITA. Patent Owner does not otherwise challenge Petitioner’s definition for purposes of this Response.

### **IV. Claim Construction**

The Federal Circuit has held that “only those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.” *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999). This principle applies equally to IPR proceedings. *See, e.g., Apple Inc. v. Uniloc Luxembourg S.A.*, IPR2018-00420, Paper 7 at 8 (PTAB, Aug. 6, 2018). For purposes of this response, Patent Owner does not propose constructions for any claim terms.

**V. The Petition fails to show unpatentability of claims 1, 9, or any dependent claims based on Lee alone.**

Claim limitation 1.4 recites: “wherein the processor is configured to ... not to use a Basic Service Set (BSS) color when signaling information indicates that an operation based on the BSS color is not allowed.” Limitation 9.3 recites a similar requirement of “not using a Basic Service Set (BSS) color when signaling information indicates that an operation based on the BSS color is not allowed.” As explained below (using the exemplary claim language of claim 1), the Petition fails to show that these limitations are disclosed or rendered obvious by Lee. *See* Ex. 2016, ¶¶36–48.

The Petition’s theory in this regard involves maps Lee’s “coloring disable bit” to the claimed “signaling information.” *See* Pet. 13 (mapping the “signaling information” to the “coloring disable bit”). According to the Petition, when the coloring disable bit is set to whatever value “indicates that the frame corresponds to a trigger frame” (*see* Ex. 1005, [0068]), then Lee’s device “may not perform the change of the CCA level irrespective of information indicated by the coloring bit.” Pet. 13 (quoting Ex. 1005, [0068]). The Petition thus contends that the coloring disable bit “indicates that an operation based on the BSS color is not allowed”—specifically, that CCA level change is not allowed. *See* Pet. 13 (alleging that “the

‘coloring disable bit’ (i.e., signaling information) indicates that a CCA level change (i.e., an operation based on the BSS color) is not allowed”).

The Petition further alleges that when the coloring disable bit indicates that a CCA level change is not allowed, “Lee renders obvious that the ‘coloring bit’ is not used.” Pet. 13. As explained below, this is not accurate—at most, Lee discloses that the processor is configured not to change the CCA level based on the BSS color when the coloring disable bit indicates a trigger frame.

As explained in further detail below, Lee does *not* disclose or render obvious that Lee’s processor would be configured “not to use a [BSS] color” for any other operations when a trigger frame is indicated, as the claims would require. Ex. 2016, ¶¶39–48.

**A. Lee does not disclose limitations [1.4] and [9.3].**

As noted above, limitation 1.4 recites: “wherein the processor is configured to ... not to use a Basic Service Set (BSS) color when signaling information indicates that an operation based on the BSS color is not allowed,” and limitation 9.3 contains a similar requirement that the Petition treats as equivalent for purposes of its analysis. Lee, however, does not teach this limitation, because Lee does not teach that any BSS color operations other than CCA level change would be prevented. Ex. 2016, ¶¶40–41.

The Petition’s theory alleges that when Lee’s coloring disable bit indicates a trigger frame, “the STA operates ‘*without regard to information indicated by the coloring bit.*’” Pet. 13 (emphasis in original, partially quoting Ex. 1005 at Abstract). In other words, the Petition alleges that Lee discloses that the coloring bit is not used to perform *any* operations when the coloring disable bit indicates a trigger frame, consistent with the claim requirement that the processor be “configured not to use BSS color.” *See also* Paper No. 16 at 2 (Samsung alleging that Lee “disables BSS color such that BSS color is not used”); *id.* at 3–4 alleging that in contrast to “Noh,” which “uses BSS color to determine whether or not the color-dependent operation is performed,” “Lee does not use BSS color when BSS color is disabled”); *id.* at 4 (alleging that the Board’s Institution Decision was correct because “when Lee’s coloring disable bit is set, Lee disables BSS color and the BSS color is not used at all”).

Lee, however, does not teach that its STA would be configured “not to use [BSS]” color when Lee’s coloring disable bit indicates a trigger frame. Ex. 2016, ¶¶40–41. Lee (including the portion of Lee that is only partially quoted by the Petition) is clear that “when the coloring disable bit indicates that the frame is a... trigger frame, *the STA does not perform a change of the CCA level without regard to information indicated by the coloring bit.*” Ex. 1005, Abstract; *id.*, [0007] (“[I]f the coloring disable bit indicates that the frame corresponds to a trigger frame..., *the*

*STA does not perform the change of the CCA level* irrespective of information indicated by the coloring bit”); *id.*, [0008] (“If the coloring disable bit indicates [a trigger frame], *the STA does not perform the change of the CCA level* irrespective of information indicated by the coloring bit.”). In other words, Lee’s disclosure is limited to *restricting a specific operation (CCA level change)* that would normally depend on BSS color. Lee does not disclose the processor would be configured such that **no** color-based operations would occur, as required by the claim requirement that the processor be configured “not to use a [BSS] color.”

Importantly, even if ***CCA level changes*** make use of the received BSS color value and those CCA level changes are prohibited, that does not mean that the received BSS color value is not used, as the Petition’s theory alleges. Ex. 2016, ¶42. There is nothing in Lee that prevents the coloring bit from being used for other types of operations. *Id.* For example, in a different ground, Samsung relies on “other operations based on BSS color” including “NAV setting [and] power save mode” that would be “based on BSS color.” Pet. 20. And Dr. Mahon acknowledges that there is no “language in Lee that would lead a POSITA to understand that” “Lee rule[s] out using the received BSS color for operations other than CCA level change and spatial reuse” (such as NAV setting and power save mode). *See* Ex. 2017, 35:4–7. A POSITA would have the same understanding that Lee does not disclose that its

processor would be configured “not to use a [BSS] Color” for other operations. Ex. 2016, ¶42.

Notably, neither Petitioner nor its expert provided evidence that Lee discloses not using BSS color for “any other color-based operations” beyond CCA level change or spatial reuse. *See* Mahon Dep. Tr. at 15:5–22 (“Q. Other than a CCA level change or a spatial reuse operation, do you identify any other color-based operations in Lee that are affected by [the] color disable bit? A. Well, addressing Lee in this section of my report, I don’t specifically point to anything else....”). For instance, when asked “where does Lee specify that operations other than CCA level change [ ]or spatial reuse operations are not performed when the color disable bit is set to 1,” Dr. Mahon provided a discussion of obviousness (which did not refer to any specific disclosures in Lee), and then stated that “I don’t see any other specific explicit references within Lee itself other than those two” operations. Mahon Dep. Tr. at 16:15–17:8.

Dr. Mahon’s inability to identify any teaching that operations other than CCA level change (which the Petition states is a type of spatial reuse operation—*see e.g.* Pet. 18) is consistent with what a POSITA would have understood: that there is no teaching in Lee (either express or inherent) that Lee would be configured “not to use [BSS] color” when Lee’s coloring disable bit indicates a trigger frame. Ex. 2016,

¶43. Instead, Lee at most discloses that when a trigger frame is indicated, CCA level changes will not occur regardless of BSS color. *Id.*

**B. Lee does not render obvious limitations [1.4] and [9.3].**

As explained in the previous section, Lee does not disclose that its processor would be configured “not to use [BSS] color” when the coloring disable bit indicates a trigger frame (and also fails to show “not using a [BSS] color” as required by limitation [9.3]).

The Petition has a cursory allegation that “Lee renders obvious that the ‘coloring bit’ is not used when the ‘coloring disable bit’” indicates a trigger frame. Pet. 13. However, the Petition sets forth no obviousness rationale for the obviousness of the claim requirement. Instead, the Petition only alleges that limitation [1.4] would be rendered obvious “[t]hrough [Lee’s] disclosure.” Pet. 13 (“Through this disclosure, Lee renders obvious that the ‘coloring bit’ is not used when the ‘coloring disable bit’ (i.e., signaling information) indicates that a CCA level change (i.e., an operation based on the BSS color) is not allowed.”). The Petition does not explain why this would have been obvious if Lee does not actually disclose it. For example, the Petition provides no motivation to modify Lee’s teachings, nor does the Petition set forth any other obviousness rationale. See generally Pet. 13.

Accordingly, the Petition fails to establish the obviousness of its theory with regard to Lee. *See* Ex. 2016, ¶¶44–48.

**VI. The Petition additionally fails to establish unpatentability under its Ground 1B.**

Stacey is a proposed 802.11ax draft specification (*see* Ex. 1006 at 1), which the Petition proposes combining with Lee for its Ground 1B. Specifically, the Petition’s combination of Lee with Stacey is based on the premise that a POSITA would have modified Stacey to recognize color collisions, and then combined that modified version of the Stacey reference with the Lee reference to indicate color collisions using Lee’s coloring disable bit. *See* Pet. 20–21 (“A POSITA would therefore have found obvious that an AP may incidentally select the same BSS color as another AP, ***leading to a BSS color collision***. It would have also been obvious to a POSITA that, in such a situation, operations that are normally based on BSS color—including NAV setting, power save operations, and spatial reuse operations—should not be performed (at least not using BSS color). ***Thus, a POSITA would have been motivated to combine the BSS color-based operations in Stacey with Lee’s ‘coloring disable bit’ such that, upon an AP’s recognition of a BSS color collision, the AP can signal to STAs in the BSS that operations based on BSS color are disabled and/or disallowed.***”) (internal citations omitted).

As explained in more detail below, the Petition fails to establish the obviousness of his proposed combination, because Lee’s coloring disable bit cannot operate consistently with the teachings of Lee while also indicating that color

operations should be suspended as a result of a color collision. Furthermore, even if it were obvious to combine Lee and Stacey, the combination does not disclose recognizing a color collision and thus does not render obvious disabling all color operations on that basis. Ex. 2016, ¶¶49–66.

**A. The Petition fails to show that its proposed combination could be implemented in any reasonable manner.**

Lee is explicit that Lee’s coloring disable bit indicates a trigger frame in the embodiment that the Petition relies upon. *See* Ex. 1005, [0067] (explaining that in Lee’s Embodiment 1, “[i]f the received frame format corresponds to an OFDM-based frame format,” the “frame can include a coloring disable bit” which can “indicate[] that the frame corresponds to a trigger frame related to multiuser transmission”); Ex. 2017 at 24:1–24:23 (Dr. Mahon testifying that a POSITA would understand that the “coloring disable bit set to 1” “corresponds to a trigger frame”).<sup>2</sup> In other words, the coloring disable bit serves the important purpose of identifying whether or not the frame at issue is a trigger frame or not. Ex. 2016, ¶51.

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<sup>2</sup> For a separate embodiment not at issue in the Petition’s theory, the coloring disable bit being set to a value of “1” indicates an RTS/CTS frame. *See* Ex. 1005, [0082] (“In this case, a transmitter of the RTS/CTS sets a BSS coloring disable bit... to 1 to indicate that the frame corresponds to the RTS/CTS frame.”); Ex. 2016, ¶51.

The Petition proposes that Lee’s coloring disable bit would serve a *different* purpose: indicating that a color collision has occurred. *See* Pet. 21 (alleging a POSITA would “combine the BSS color-based operations in Stacey with Lee’s ‘coloring disable’ bit such that, upon an AP’s recognition of a BSS color collision the AP can signal to STAs in the BSS that operations based on BSS color are disabled and/or disallowed”); *id.* at 22 (alleging that “Lee’s coloring disable bit” would be used to yield the “predictable result[]” of “indicat[ing] that [Stacey’s BSS color-based] operations should not be performed”); Pet. 23 (alleging that in the combined system “the coloring disable bit indicates that operations based on BSS color are not allowed” such that the system “does not perform inter-intra-BSS NAV setting, power save operations..., or spatial reuse operations using BSS color” (i.e., the operations that the Petition contends should be disabled in the event of a color collision)).

A POSITA, however, would understand that it would not make sense for Lee’s coloring disable bit to indicate *both* a color collision (or otherwise indicate that all operations using BSS color should be disallowed) *and* indicate a trigger frame. This modification to Lee would cause two different types of serious errors within the system, as explained below. Ex. 2016, ¶¶52-53.

Regarding the first type of error, a POSITA would understand that using the coloring disable bit for indicating a color collision would cause errors when a frame

other than a trigger frame is received and a color collision has occurred. Specifically, under the Petition's combination, when a color collision occurs but the intended frame is *not* a trigger frame,<sup>3</sup> setting the color disable bit to 1 to indicate that a color collision has occurred and/or that all color-based operations should be disabled would cause an error in the system because the receiving station would incorrectly interpret the received frame as a trigger frame. This would be problematic because it would prevent Lee's device from accurately interpreting whether or not the received frame is a trigger frame related to multiuser transmission. And knowledge of whether or not a received frame is a trigger frame is necessary for an STA to know whether a given STA "can transmit an uplink data." *See* Ex. 1005, [0065] ("An STA indicated by the trigger frame can transmit an uplink data."); Ex. 2016, ¶54.

Regarding the **second** type of error, a POSITA would also have understood that using the coloring disable bit to indicate that all operations based on BSS color should be disabled in response to a color collision, would unnecessarily cause the system to BSS color operations based on an assumed color collision, when the frame type is a trigger frame and when no color collision actually occurred and where BSS color operations need *not* be suspended. For example, a POSITA would have

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<sup>3</sup> A POSITA would have understood that frames other than trigger frames (and RTS/CTS frames) can be received by Lee's station. *See, e.g.,* Ex. 1004, [0009] (discussing an "uplink frame" that is not a trigger frame, but is instead "related to the trigger frame").

understood that it is entirely possible (and in fact “ideal[.]”) for trigger frames to be received even when no color collision has occurred. Samsung’s expert Dr. Mahon also agrees with this understanding. *See* Mahon Dep. Tr. at 40:21–41:5 (“Q. Okay. So is it possible for a trigger frame to be received even though there is no color collision within the system? A. In the normal use of an 802.11ax system or a system that’s using a trigger frame, sure, yeah. That’s ideally the case.”); Ex. 2016, ¶55.

Thus, when a station receives a trigger frame (indicated by Lee’s coloring bit being set to 1), the Petition’s proposed modification would disable all color-based operations even in the more common scenario where no color collision has occurred. This would result in unnecessary and disruptive disallowance of BSS color operations due to assumed color collisions, which would introduce significant inefficiency into the combined system (because color operations would frequently be disabled even when no color collision occurred). Ex. 2016, ¶56.

Accordingly, the Petition’s proposed combination would render Lee’s coloring disable bit inoperable for its original purpose of indicating a trigger frame, such that it would not have been obvious to implement it. *See Plas-Pak Indus., Inc. v. Sulzer Mixpac AG*, 600 F. App’x 755, 759 (Fed. Cir. 2015) (“[A] change in a reference’s principle of operation is unlikely to motivate a person of ordinary skill in the art to pursue a combination with that reference.”) (internal quotation omitted); Ex. 2016, ¶57. The coloring disable bit would not be able to simultaneously and

accurately both (1) indicate a trigger frame *and* (2) indicate that all operations making use of BSS color should be disabled as a result of a color collision. Ex. 2016, ¶57 (explaining that because the Petition’s combination would be highly undesirable does not include a solution to this problem, the combination would not be a mere combination of known methods to yield predictable results). Neither the Petition nor the corresponding expert declaration even acknowledge this problem, much less explain how a POSITA could have solved it consistent with the proposed combination of using Lee’s coloring disable bit for both purposes.

**B. The Petition fails to show that a POSITA would have found it obvious to disable all BSS operations in response to color collisions in view of Lee and Stacey.**

Additionally, even if Lee and Stacey *were* obvious to combine, the combination of the references does not disclose either the concept of a color collision, or the concept of disallowing color operations in response to a color collision. And the Petition fails to establish that this concept would have been obvious in view of Lee and Stacey. Ex. 2016, ¶58–66.

Dr. Mahon additionally alleges that a POSITA would have found it to be “obvious that an AP may incidentally select the same BSS color as another AP.” Ex. 1003, ¶106. But Dr. Mahon does not allege that a POSITA would understand this to be a sufficiently common occurrence that a POSITA would be motivated to design

a system that disables color operations. For example, Stacey does not indicate how many bits would be dedicated to the BSS color field (*see* Ex. 1005 at 26 (noting that bits 0 to TBD would be assigned this field)), and that number could be set such that the odds of a collision are small. Furthermore, Dr. Mahon does not explain why a POSITA would have sought to disable all operations based on color in response to color collisions as opposed to implementing techniques to avoid collisions in the first place (or resolve those collisions quickly through prompt color reassignment). As explained by Patent Owner’s expert Dr. Cooklev, a POSITA would not have viewed it as obvious to disable color operations in the manner the Petition proposes. Ex. 2016, ¶¶59–66.

Notably, the Petition does not explain *how* a POSITA would have ceased all color-based operations while maintaining network functionality. For example, the Petition proposes that in the combination, it would be obvious that “NAV setting... should not be performed (at least not using BSS color).” Pet. 21. This is not some trivial oversight; Stacey recognized that setting the NAV is an *essential* operation for 802.11 networks. *See* Ex. 1006, 28 (“A virtual CS mechanism *shall be provided* by the MAC. This mechanism is referred to as the NAV.”). Thus, setting the NAV is a requirement as set forth by Stacey. Ex. 2016, ¶61. And the Petition does not explain *how* the NAV could be set without using BSS color, much less explain or allege that such an implementation would be within the level of skill in the art or

that a POSITA would have been motivated to implement such a system. Accordingly, the Petition fails to show that its proposed combination in this regard would have been obvious. *See* Ex. 2016, ¶61.

The Petition’s proposal that “spatial reuse operations[] should not be performed (at least not using BSS color)” is likewise unsupported. Ex. 2016, ¶¶62–64. Spatial reuse is the method according to which devices ignore weaker signals from neighboring networks and transmit on the same channel. *See* Ex. 1006, 48 (“The objective of the HE spatial reuse operation is to improve the system level performance and the utilization of the spectrum resources in dense deployment scenarios by early identification of signals from overlapping basic service sets (OBSSs) and interference management.”).

Stacey teaches that spatial reuse requires different CCA levels and BSS coloring. *See id.* at 48–49. Dr. Mahon does not explain *why* a POSITA would be motivated to perform spatial reuse without using BSS color, much less explain *how* this would actually occur in practice or how this would be within the level of skill in the art. And if the Petition’s theory is not to use spatial reuse at all (when there is a color collision), then this would have the clear disadvantage of reduce the throughput of the system. *See* Ex. 2016, ¶¶63–64.

Even assuming that a POSITA would have recognized the problem of color collision when considering Lee in combination with Stacey, the Petition fails to

show that a POSITA would have found it obvious not to perform the identified operations (either at all or based on BSS color). Ex. 2016, ¶¶65–66 (explaining that the combination of Lee and Stacey as proposed by the Petition is not the mere combination of known methods or known techniques to yield predictable results). Instead, a POSITA would have realized that BSS color is a useful concept and would have sought other solutions, such as reducing the likelihood of color collision and implementing techniques to promptly resolve collisions. Ex. 2016, ¶¶66.

**VII. The Petition’s Ground 2A (Choudhury) also fails.**

The Petition sets forth two alternative theories regarding what the claimed “signaling information” that “indicates that an operation based on the BSS color is not allowed” can be mapped to for its Ground 2A. *See* Pet. 51 (alleging that “Choudhury teaches multiple forms of signaling information, including: (1) a ‘Low Power/High Interference Indicator’ bit, and (2) a reserved COLOR field value”).

Both theories fail because neither Choudhury’s “Low Power/High Interference Indicator” bit (is herein sometimes referred to as merely a “Low Power Indicator” for brevity) nor Choudhury’s reserved COLOR field value signal satisfy the claim requirements, as explained in further detail below. Ex. 2016, ¶¶67–88.

**A. The Petition’s Reliance on Choudhury’s “Low Power/High Interference Indicator” bit fails.**

The Petition’s first theory is that Choudhury’s Low Power Indicator indicates that “operations based on the BSS color are not allowed,” and that “the processor would be configured to receive the transceiver and not use the BSS color” if the Low Power Indicator were set to 1. *See* Pet. 55 (alleging that “a POSITA would have found it obvious that the processor would be configured to receive the PPDU using the transceiver, and not use the BSS color when the signaling information, such as the ‘Low Power/High Interference Indicator’... indicates that operations based on BSS color are not allowed”). This theory fails for at least two reasons, as explained below. Ex. 2016, ¶¶69–81.

- 1. The Petition fails to present a coherent theory regarding how the Low Power Indicator would “indicate[] that an operation based on the BSS color is not allowed.”**

The Low Power Indicator does not indicate that any “operation based on the BSS color is not allowed” as the claim requires. Samsung’s expert testified that he understood “the BSS color” to be referring to “the color that would be contained in the received [PLCP PPDU]” for the Petition’s invalidity theory. Mahon Dep. Tr. at 57:19–58:9. But the Petition does not show that any operations that would allegedly be disallowed are operations “based on the [received] BSS color” as the Petition’s theory would require.

For instance, the Petition alleges that “channel access determination based on BSS identification” is the “operation based on BSS color” that would not be allowed. Pet. 54. It alternatively states that “allowing access and re-using the channel” is an “operation based on BSS color” that “is not allowed.” Pet. 53–54. The Petition thus presents two alternative arguments: that (1) *determining whether* to access the channel; and (2) actually accessing the channel, are alternative operations based on BSS color that are indicated as being disallowed. Neither theory succeeds.

Regarding the Petition’s theory that “channel access determination based on BSS identification” is the “operation based on BSS color” that is indicated as not being allowed, the Petition fails to show that this determination is indicated as not being allowed when the Low Power Indicator is set to 1. Indeed, the Petition’s own description of Choudhury makes clear that Choudhury *does* determine whether to allow channel access by looking at the received BSS color *even when the Low Power Indicator is set to 1*, such that this determination based on BSS color is not indicated as being disallowed. Ex. 2016, ¶¶72–74.

Specifically, a summary table of Choudhury’s operation is provided below:

COLOR Field	Low Power/High Interference Indicator	Receiving STA
Not used	1	Limit Access
Not used	0	Allow Access
STA in same BSS (that is, same COLOR field as receiving STA)	0 or 1	Limit Access
STA in different BSS (different COLOR field from receiving STA)	0	Allow Access
STA in different BSS (different COLOR field from receiving STA)	1	Limit Access

Ex. 1009, [0029]; Pet. 52 (relying on this table).

As the Petition makes clear *even when the Low Power Indicator is set to 1*, Choudhury’s device will evaluate the COLOR field to “determine[] [whether]”<sup>4</sup> the PPDU is part of an ‘intra-BSS transmission.’” Ex. 1003, ¶168; Ex. 2016, ¶74. This determination—whether the PPDU is part of an intra-BSS transmission—affects Choudhury’s channel access determination. Specifically, if “the receiving STA determines that the PPDU is part of an ‘intra-BSS transmission,’” it concludes that it “will not re-use the channel” “because it decoded ‘a valid SIG field from the same BSS.’” Pet. 52. In this scenario, the STA does not need to evaluate the Low Power Indicator: as the Petition notes, “[i]n this case, the value of the ‘Low Power/High Interference Indicator’ does not matter.” Pet. 52–53. However, if the STA determines that the PPDU is *not* part of an intra-BSS transmission, the STA will

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<sup>4</sup> As Dr. Cooklev explains, Choudhury’s device cannot determine “*that*” the PPDU is part of an “part of an intra-BSS transmission” (i.e., whether “a transmission is from another station in the same BSS”) unless Choudhury’s STA determines *whether* the PPDU is part of an intra-BSS transmission. Ex. 2016 at ¶74 n.4.

then evaluate the Low Power Indicator to see if it “equals 1,” and if so, the STA will “limit[] channel access.” Pet. 53. In either scenario, the STA must evaluate the BSS color field to know whether (in the case of an intra-BSS transmission as shown in row 3 of Choudhury’s table) channel access is limited *regardless* of the Low Power Indicator, or whether instead (in the case of the scenario when the BSS COLOR is determined to be “in a different BSS than the receiving STA”—*see* Pet. 53—as shown in rows 4–5 of Choudhury’s table) the STA must look to the Low Power Indicator to determine whether or not channel access is allowed. If this channel access determination is the “operation based on BSS color” that the Petition contends is disallowed when the Low Power Indicator is set to 1, the Petition’s theory fails because that determination based on BSS color will *always* occur with respect to the received BSS COLOR field. Ex. 2016, ¶74.

Furthermore, in the alternative theory that actually accessing and reusing the channel itself is the claimed “operation based on BSS Color,” the Petition provides no evidence or support for its assertion that in the context of Choudhury, accessing and re-using the channel depends on “the BSS color” of the claims. Specifically, Dr. Mahon maps “the BSS color” of the claim to *the BSS color that is received in the PPDU* in Choudhury’s system. Mahon Dep. Tr. at 57:25–58:9 (“Q. And my question is, in your analysis of Choudhury, what are you mapping to, quote, the BSS color, unquote? A. The BSS color is the color that would be contained in the received

physical layer [convergence] procedure, PLCP, processing data unit, or the PPDU, is what I am referring—what I interpret that as.”). But neither Dr. Mahon nor the Petition provide no evidence that actually accessing or using the channel is an operation based on the *received* BSS color in the context of Choudhury as the Petition’s theory would require, such that those operations would be indicated as being disallowed. Ex. 2016, ¶75.

**2. The Petition also fails to show that Choudhury discloses or renders obvious that Choudhury’s processor would be configured “not to use [BSS] color” when the Low Power Indicator is set to 1.**

Regardless of which theory the Petition relies on regarding what the operation based on BSS color that is allegedly indicated as not being allowed (either determining whether channel access / re-use is allowed, or channel access and re-use itself), the Petition’s theory fails. In *either* scenario, the Petition contends that whatever operation based on BSS color is indicated as not being allowed is not performed. *See generally* Pet. 51–55. On this basis, the Petition concludes that “based on Choudhury’s teachings, a POSITA would have found it obvious that the processor would be configured to... not use the BSS color when the signaling information” of a Low Power Indicator or COLOR ‘0000’ value is present. Pet. 55.

However, even if the Petition's allegations in that regard are accepted as true, a POSITA would understand that there are *other* operations that use BSS color in an 802.11 system such as Choudhury's. Ex. 2016, ¶¶76–81. For example, a POSITA would understand that in a system such as Choudhury's, there are operations that would not involve either (1) determining whether to access or re-use the channel, or (2) accessing or re-using the channel. For instance, changing the CCA level does not require either accessing or re-using the channel or determining whether to access or re-use the channel; instead, it requires only writing an updated value reflecting a CCA threshold into a memory location. *See* Ex. 2017 at 76:1–77:5 (noting that CCA level changes can “certainly be done in between accesses”); Ex. 2016 at ¶79 (explaining that Choudhury does not disclose disallowing CCA level changes).

Furthermore, as noted above, other uses of BSS color are possible such as setting the NAV or power save operations. None of these are precluded from occurring in Choudhury's system, such that Choudhury does not disclose that its processor would be configured “not to use” BSS color through those BSS-color operations as well. And the Petition provides no evidence from its supporting expert declaration regarding whether a POSITA would have understood that its system would make use of BSS Color in ways other than explicitly taught by Choudhury. *See* Ex. 2017, 56:4–17 (“Q. Are there ways to use BSS color that do not involve accessing and reusing the channel? A. Well, that's a general[] question, and *certainly*

*you can contemplate many uses of the BSS.* Choudhury, is specifically discussing channel access. So beyond that, I am not really sure how to answer that. *I would be speculating as giving examples, but that would be outside the context of my declaration.*”). Furthermore, Dr. Mahon did not provide any examples of Choudhury “disabling operations based on BSS color *other* than allowing access and reusing the channel.” Mahon Dep. Tr. at 55:17–56:3 (“So I am not recalling anything other than what I am pointing out in my declaration [regarding accessing the channel and limiting channel access].”).

Accordingly, Choudhury does not disclose that its processor would be configured “not to use [BSS] Color” when the Low Power Indicator is high. And the Petition also sets forth no reasoning as to *why* Choudhury would render that limitation obvious if it does not disclose the limitation. Instead, the Petition only alleges that “[b]ased on Choudhury’s teachings, a POSITA would have found it obvious” with no supporting reasoning. Pet. 55. Thus, the Petition fails to establish that Choudhury either discloses or renders obvious this limitation under the Petition’s Low Power Indicator theory. Ex. 2016, ¶¶76–81.

**B. The Petition’s reliance on Choudhury’s “COLOR ‘0000’ value” fails.**

As noted above, Choudhury’s “COLOR ‘0000’ value” is an alternative theory the Petition presents as to what constitutes the claimed “signaling information.” *See* Pet. 55. This theory also fails for the reasons discussed below. Ex. 2016, ¶¶82–88.

**1. Under the Petition’s own theory, use of BSS color would continue even when the COLOR value is set to ‘0000.’**

The Petition alleges, if a COLOR value of ‘0000’ was contained in the COLOR field of Choudhary’s PPDU, that it would be obvious “not to use the BSS color” Pet. 55. However, the Petition makes clear that it understands Choudhury to disclose that channel access determination (which the Petition alleges to be a color based operation) would *still* use BSS color, because “devices decoding ‘0000’ are ‘required to defer channel access.’” Pet. 59–60; *see also* Pet. 54 (noting that “channel access determination based on BSS identification” is “an operation based on BSS color”). Thus, in order for Choudhary’s STA to perform a channel access determination such that it can tell that it is “required to defer channel access” in the case of COLOR value ‘0000,’ Choudhary would need to use BSS color under the Petition’s theory that using color for channel access determination is a use of BSS color. Ex. 2016, ¶¶82–83.

As explained in the following subsection, there is an even more glaring problem with the Petition’s theory regarding a ‘0000’ COLOR value, because the

Petition concedes that this scenario is inconsistent with the requirements of limitations [1.5] and [9.4].

**2. The Petition concedes that its “COLOR ‘0000’ value” theory is inconsistent with the claim requirement that “the BSS color is an identifier of a BSS” in the context of Choudhury.**

The Petition is explicit that when the COLOR value ‘0000’ is used, the BSS color is *not* “an identifier of a BSS” as claim limitation [1.5] (and similar limitation [9.4]) requires. Notably, “the BSS color” in limitation [1.5] derives antecedent basis from, and thus refers to, the *same* “Basic Service Set (BSS) color” that the processor is configured “not to use” in limitation [1.4]. Thus, under the Petition’s theory that the BSS COLOR of ‘0000’ would not be used, the Petition must show that this BSS color value “is an identifier of a BSS.”

It is clear, however, that the Petition *cannot* make such a showing, because it explicitly asserts that this requirement is not present when the BSS color is ‘0000.’ Specifically, the Petition acknowledges that in the context of Choudhary, “a POSITA would have understood or found obvious that a COLOR field value of ‘0000’ *does not represent a valid BSS identifier*,” such that “[w]hen a device receives a PPDU with this reserved value, it cannot use the BSS color for its intended purpose of BSS identification because *no valid BSS color has been provided*.” Pet.

54–55. Because the Petition is explicit that in the context of Choudhury, the BSS color of “0000” that the processor would be configured “not to use” is *not* an identifier of a BSS, the Petition’s BSS COLOR value of ‘0000’ theory cannot satisfy the claim requirements.

The Petition does allege that limitation [1.5] is satisfied because Choudhury states that the “COLOR bit [in the COLOR field] *can* be used to set the basic service set identification (BSS ID).” Ex. 1003, ¶175 (quoting Ex. 1009, [0029]). Although Choudhury teaches that in certain instances, the COLOR bit “can” set an identification, the Petition concedes that it does *not* set an identification when the “COLOR field value of ‘0000’” is received because “‘0000 does not represent a valid BSS identifier” in the context of Choudhury. Pet. 54–55. Thus, while the COLOR bit *may* serve as an identifier in certain scenarios, the Petition concedes that it is *not* an identifier in the scenario where a COLOR value of ‘0000’ is received, such that the BSS color of ‘0000’ that the Petition alleges the processor would be configured “not to use” is not an “an identifier of a BSS” as the claims require. Ex. 2016, ¶¶85–88.

**VIII. The Petition’s Ground 2B (Choudhury in combination with Stacey) also fails.**

The Petition further alleges that dependent claims 2–3, 6, 10–11, and 14 are obvious in view of Choudhury in combination with Stacey. However, for the

combination to render obvious the dependent claims, it must also render obvious the independent claims. Thus, for example, for the Petition to show that Choudhury in view of Stacey renders obvious claims 2–3 and 6, it must first establish that the proposed combination renders obvious claim 1 (from which those claims depend).

The Petition does not provide any explicit analysis of how its combination allegedly satisfies claim 1. However, the Petition is clear that in its proposed combination of Choudhury with Stacey, that theory depends on the COLOR ‘0000’ value as being “the signaling information” that “indicates that an operation based on the BSS color is not allowed.” *See, e.g.*, Pet. 68–69 (the Petition’s analysis of limitation [2.1] which requires “not to set an Intra-BSS [NAV] by using the BSS color... when the signaling information indicates that the operation based on the BSS color is not allowed,” alleging that a POSITA would have combined “Choudhury’s ‘0000’ signaling with Stacey’s NAV framework, configuring the processor to bypass Intra-BSS NAV updates when ‘0000’ is detected”); Pet. 71 (the Petition’s analysis of claim 6, also relying on “Choudhury’s ‘0000’ COLOR value”); *see also* Pet. 64–73 (the Petition’s analysis for the entirety of Ground 2B, relying extensively on “Color ‘0000’” and not once relying on or mentioning Choudhury’s Low Power Indicator as being the “signaling information” of claim 1). Thus, the Petition’s Ground 2B is restricted to the COLOR ‘0000’ value embodiment of Choudhury as satisfying the requirements of claim 1 in his Ground 2B combination.

But as discussed above in Sections VII.B.1 and VII.B.2, the Petition’s theory where the “signaling information” is a COLOR value of ‘0000’ does not satisfy the requirements of claim 1 (or the corresponding requirements of claim 9). Accordingly, Dr. Mahon’s combination of Choudhury and Stacey, which relies on the COLOR value of ‘0000’ embodiment of Choudhury, does not render obvious any of the challenged dependent claims. Ex. 2016, ¶¶89–91.

**IX. The Petition’s Ground 2C (Choudhury in combination with Stacey) also fails.**

Like with the Petition’s Ground 2B, Ground 2C relies solely on Choudhury’s COLOR value ‘0000’ embodiment as allegedly disabling use of the BSS color. *See* Pet. 73–77 (relying extensively on COLOR value of ‘0000’ and not relying on Choudhury’s Low Power Indicator). That embodiment fails to satisfy the requirements of independent claims 1 and 9 for the reasons discussed above, and thus the Petition’s combination of Choudhury with Zhou also does not satisfy the requirements of the dependent claims (which include all of the requirements of either claim 1 or claim 9). Ex. 2016, ¶92.

**X. Conclusion**

For the reasons set forth above, Patent Owner respectfully requests that the Board find all challenged claims not unpatentable.

Date: February 21, 2026

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**CERTIFICATION REGARDING WORD COUNT**

Pursuant to 37 C.F.R. §42.24(d), Patent Owner hereby certifies, in accordance with and reliance on the word count provided by the word-processing system used to prepare this **PATENT OWNER'S RESPONSE**, that the amount of words in this paper is 8,029. Pursuant to 37 C.F.R. § 42.24, this word count is in compliance with the word limit set forth in 37 C.F.R. § 42.24(b)(2) excluding the portions exempted under 37 C.F.R. § 42.24(a)(1).

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**CERTIFICATE OF SERVICE (37 C.F.R. § 42.6(e)(1))**

The undersigned hereby certifies that the above document was served on February 20, 2026, by filing this document through the Patent Trial and Appeal Case Tracking System as well as delivering a copy via electronic mail upon the following attorneys of record for the Petitioners:

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