

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

UBIQUITI INC.,
Petitioner,

v.

INTELLECTUAL VENTURES I LLC,
Patent Owner.

IPR2024-01290
Patent 8,594,122 B2

Before HYUN J. JUNG, JOHN A. HUDALLA, and RUSSELL E. CASS,
Administrative Patent Judges.

CASS, *Administrative Patent Judge.*

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

A. Background

Ubiquiti Inc. (“Petitioner”) filed a Petition requesting an *inter partes* review of claims 1–8 and 11–42 (the “challenged claims”) of U.S. Patent No. 8,594,122 B2 (Ex. 1001, “the ’122 patent”). Paper 2 (“Pet.”). Intellectual Ventures I, LLC (“Patent Owner”) filed a Preliminary Response. Paper 6 (“Prelim. Resp.”). With our permission, Petitioner filed a Preliminary Reply (Paper 7, “Prelim. Reply”), and Patent Owner filed a Preliminary Sur-reply (Paper 8, “Prelim. Sur-reply”).

We have authority to determine whether to institute an *inter partes* review, under 35 U.S.C. § 314 (2024) and 37 C.F.R. § 42.4 (2024). An *inter partes* review may not be instituted unless it is determined that “the information presented in the petition filed under section 311 and any response filed under section 313 shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314; *see also* 37 C.F.R. § 42.4(a) (“The Board institutes the trial on behalf of the Director.”). The reasonable likelihood standard is “a higher standard than mere notice pleading,” but “lower than the ‘preponderance’ standard to prevail in a final written decision.” *Hulu, LLC v. Sound View Innovations, LLC*, IPR2018-01039, Paper 29 at 13 (PTAB Dec. 20, 2019) (precedential).

For the reasons provided below and based on the record before us, we determine that Petitioner has not demonstrated a reasonable likelihood that it would prevail in showing the unpatentability of at least one of the challenged claims. Accordingly, we do not institute an *inter partes* review on any grounds set forth in the Petition.

B. Real Parties in Interest

The parties identify themselves as the real parties-in-interest. Pet. 89; Paper 3, 2.

C. Related Proceedings

The parties identify the following proceedings involving the '122 patent: *Intellectual Ventures I LLC v. Ubiquiti Inc.*, 1-23-cv-00865 (D. Del.) filed August 8, 2023, *Intellectual Ventures I LLC v. Extreme Networks, Inc.*, 1-23-cv-00489 (D. Del.) filed May 4, 2023 (dismissed), and *Hewlett Packard Enterprise Company v. Intellectual Ventures I LLC*, 1-22-cv-00730 (D. Del.) filed June 2, 2022 (dismissed). Pet. 89 (citing Ex. 1004); Paper 3, 2.

D. The '122 Patent (Ex. 1001)

The '122 patent is directed to a system for transmission announcement indication in a wireless communications system. Ex. 1001, 1:13–15, 2:7–8. The patent explains that the system “can be implemented as a transmitter configured to transmit a first communication frame from a first station to a second station” and “provide a transmit announcement indication” indicating “whether a second communication frame to the second station will follow the first communication frame.” *Id.* at 2:8–15. A transmission announcement, also denoted as a “TxA,” is an indication in a transmission frame transmitted from a first station to a second station indicating that another transmission (the indicated transmission) to the second station will follow. *Id.* at 4:49–53. The indicated transmission need not include a Medium Access Control (MAC) destination address because the transmission announcement indication was sent on the preceding transmission to that station. *Id.* at 4:53–56.

The '122 patent Specification explains that the transmission indicated by the TxA may either be either right after the frame that includes the TxA indication, or may start after the receiver sends a possible response frame to the frame with the TxA indication. Ex. 1001, 4:61–67. The indicated transmission, the Specification explains, “may start after a short inter frame space (SIFS), but there is no strict requirement on timing.” *Id.* at 4:67–5:2. A SIFS “is used to separate transmissions belonging to a single dialog (e.g., fragment-acknowledge), and is the minimum inter frame space.” *Id.* at 5:2–4.

Figure 3 of the '122 patent, reproduced below, shows an embodiment where an indicated transmission is sent after a response to the initial transmission including a TxA.

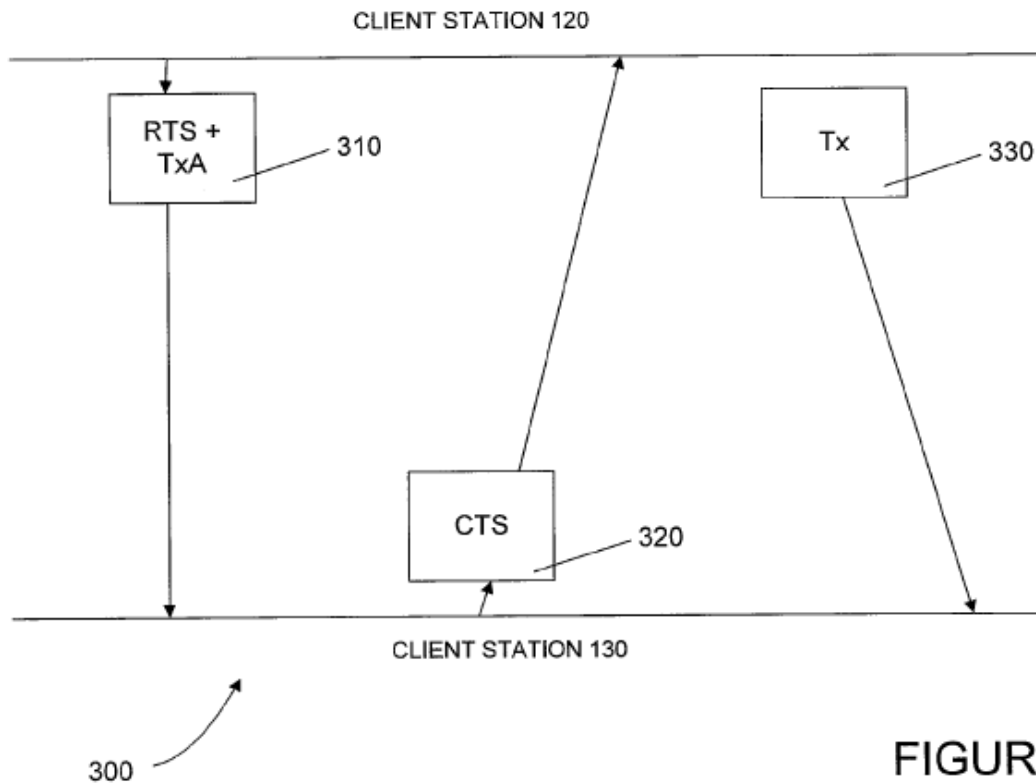


FIGURE 3

Figure 3 of the '122 patent shows a system of transmission announcement in accordance with an embodiment of the invention. Ex. 1001, 2:48–50, Fig. 3.

As shown in Figure 3, a ready to send (RTS) frame with a TxA indication 310 is transmitted from client station 120 to client station 130, followed by a clear to send (CTS) frame response 320 from client station 130 to client station 120. Ex. 1001, 5:18–23. After receiving the CTS frame, client station 120 sends the announced transmission Tx 330 to client station 130. *Id.* at 5:23–25.

Figure 4 of the '122 patent, reproduced below, shows another embodiment where an indicated transmission is sent after a response to the initial transmission including a TxA.

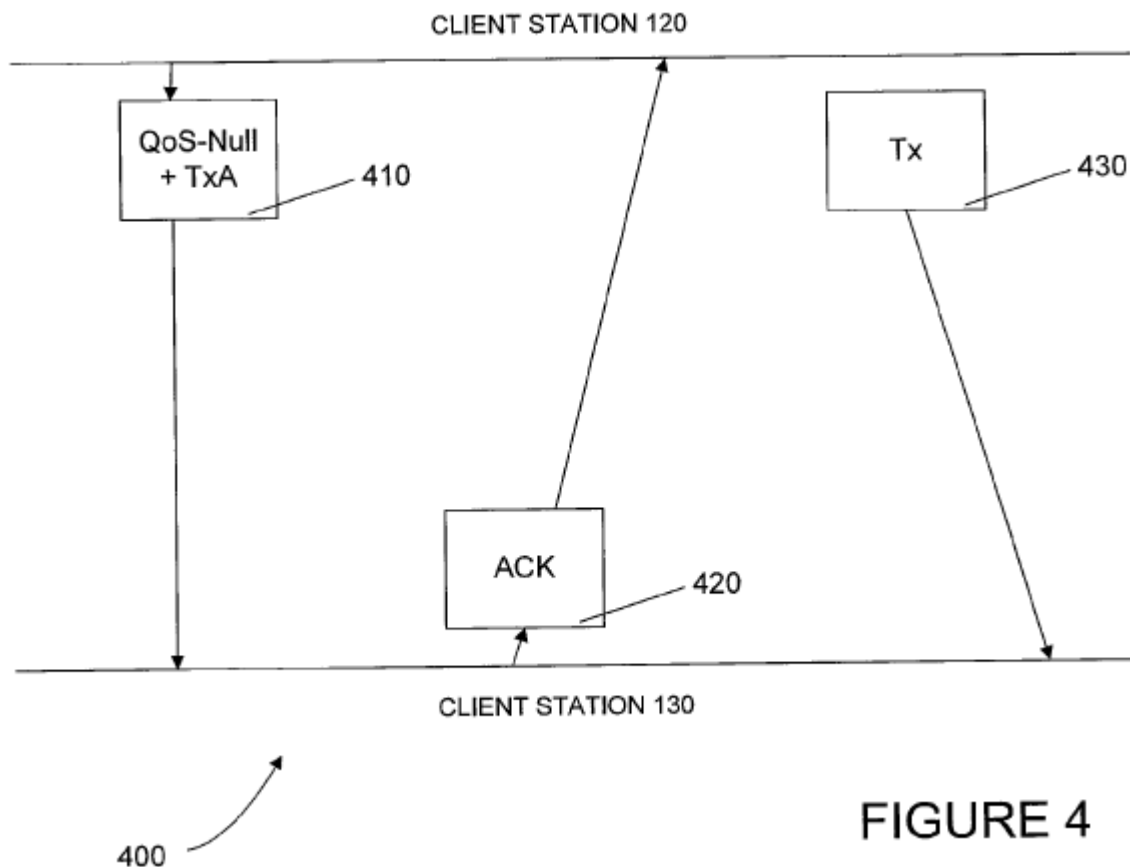


FIGURE 4

Figure 4 of the '122 patent shows a system of transmission announcement in accordance with another embodiment of the invention. Ex. 1001, 2:51–54, Fig. 4.

As shown in Figure 4, a quality of service (QoS) null frame with a TxA indication 410 is transmitted from client station 120 to client station 130, followed by an acknowledgement (ACK) frame response 420 from client station 130 to client station 120. Ex. 1001, 5:32–34. After receiving the ACK frame, client station 120 sends the announced transmission Tx 430 to client station 130. *Id.* at 5:34–35.

Figure 5 of the '122 patent, reproduced below, shows an embodiment where an indicated transmission is sent immediately after the initial transmission including a TxA.

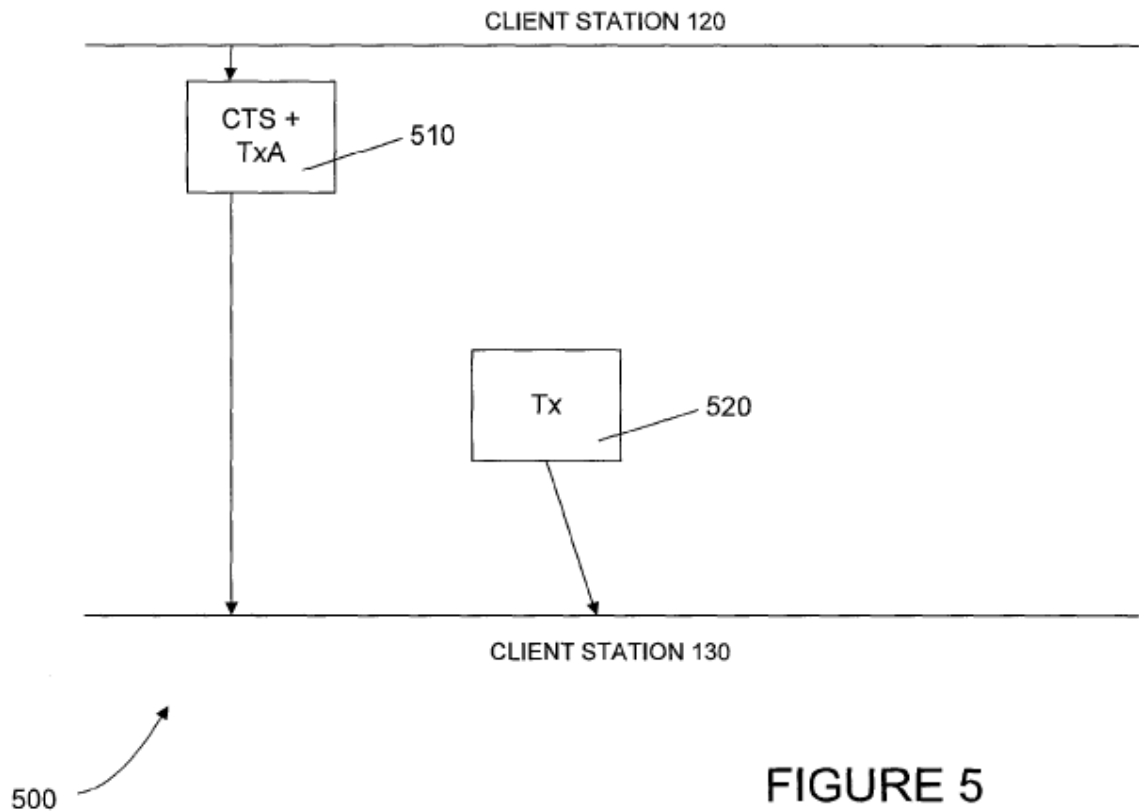


FIGURE 5

Figure 5 of the '122 patent shows a system of transmission announcement in accordance with yet another embodiment of the invention. Ex. 1001, 2:55–57, Fig. 5.

As shown in Figure 5, client station 120 sends a CTS frame 510 with TxA to client station 130, followed by the announced transmission Tx 520.

Ex. 1001, 5:45–50. The announced transmission “follows substantially immediately (i.e., SIFS) after the frame which announces it, with the effect of postponing a potential SIFS response until after the announced transmission.” *Id.* at 5:54–57.

E. Illustrative Claim

Of the challenged claims, claims 1, 11, 16, 27, 34, and 38 are independent. Claim 1 is illustrative and is reproduced below.

1. [pre] A method comprising:
 - [1.1] transmitting a first communication frame from a first station to a second station
 - [1.2] wherein the first communication frame comprises an address of the second station and a transmit announcement indication indicating that a second communication frame intended for the second station will follow the first communication frame
 - [1.3] that the second communication frame will not include the address of the second station, and
 - [1.4] wherein the second communication frame follows after a short inter frame space (SIFS) after the first communication frame with the transmit announcement indication.

Ex. 1001, 7:55–67 (bracketed paragraph identifiers added).

F. Prosecution History of the '122 Patent

Prior to the first office action, prosecution claim 1 of the application that became the '122 patent was amended by a Preliminary Amendment to recite the following.

1. A method comprising:
transmitting a first communication frame from a first station to a second station; and

providing, at the first station, a transmit announcement indication in the first communication frame, wherein the transmit announcement indication indicates that a second communication frame intended for the second station will follow the first communication frame.

Ex. 1002, 695.

The Examiner rejected prosecution claim 1 as anticipated by Larsson (Ex. 1006), relying on, *inter alia*, Figure 5 and paragraphs 18 and 28.

Ex. 1002, 665–66. Paragraph 18 of Larsson describes a system in which “a designated originating node sends a first message, including an indication of a current transmit duration,” after which “[t]he receiving node sends a second message, including an indication of the updated indicated transmit duration” to the originating node. Ex. 1006 ¶ 18. Paragraph 28 explains that “the tentative (current) transmit duration is preferably indicated in” an initial RTS message, “the updated transmission duration is preferably indicated in [a] CTS message” following the RTS message, and “transmit duration information may alternatively or as a complement be indicated in data fragment messages and corresponding acknowledgement messages.” *Id.* ¶ 28. This operation is illustrated in Larsson’s Figure 5, reproduced below.

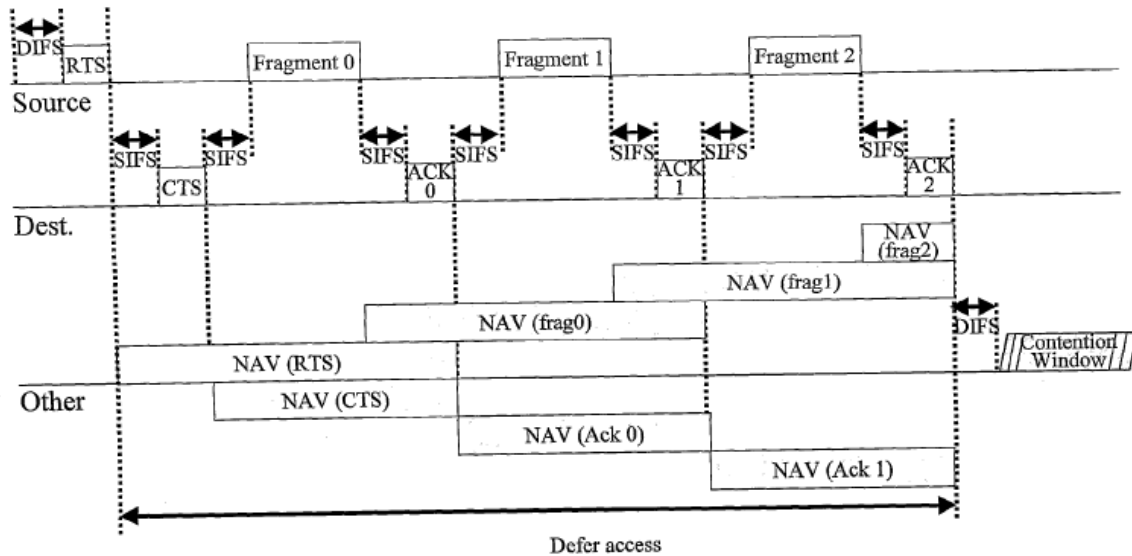


Fig. 5

Figure 5 of Larsson is a schematic frame exchange diagram with fragmentation of data. Ex. 1006 ¶ 46, Fig. 5.

Figure 5 of Larsson shows a payload fragment sent by the source acting as an implicit RTS frame and additional fragments (Fragment 0, Fragment 1, and Fragment 2) sent by the source after the original RTS frame. Ex. 1006, Fig. 5, ¶ 87. The destination sends a CTS frame between the RTS frame and Fragment 1, and an ACK frame between each of the subsequent fragments. *Id.* An SIFS is shown before and after each of the CTS and ACK frames. *Id.* Thus, as shown in Figure 5, the destination sends either a CTS or ACK frame after each of the frames sent by the source.

In response to the first office action, the applicant amended prosecution claim 1 to recite, *inter alia*, that “the second communication frame will not include an address of the second station,” and argued that this

limitation was not met by Larsson.¹ Ex. 1002, 644, 652–53. The examiner responded by issuing a final office action rejecting prosecution claim 1 as obvious over Larsson in view of another reference, Yonge (Ex. 2001), and argued that Yonge teaches the limitation reciting that the second communication frame does not include an address of the second station. *Id.* at 561–62. The applicant responded to the final office action by arguing, *inter alia*, that the “unique error codes” identified in Yonge are “substantially equivalent to a destination address,” and therefore that Yonge did not teach a second communication frame lacking an address of the second station. *Id.* at 522.

Following the applicant’s response, the examiner held an interview with the applicant, the substance of which was recorded as follows:

Discussed cancelation of claims 2–3 and 30–31, and discussed including subject matter in claim 2 in all independent claims.
Attorney authorized and agreed to the changes.

Ex. 1002, 39. At the time of the interview, dependent prosecution claims 2 and 3 recited the following:

2. The method of claim 1, wherein the second communication frame follows after a short inter frame space (SIFS) after the first communication frame with the transmit announcement indication.
3. The method of claim 1, wherein the second communication frame follows after a short inter frame space (SIFS) after a response to the first communication frame with the transmit announcement indication.

Id. at 510.

¹ The applicant also revised claim 1 to replace the “providing” language at the beginning of this element with a “wherein” clause. Ex. 1002, 644.

Following the interview, the examiner entered the amendment and issued a Notice of Allowance. Ex. 1002, 40–49. In particular, the amendment incorporated the limitation of prosecution claim 2 into prosecution claim 1 (and the other independent prosecution claims) and cancelled prosecution claims 2 and 3. *See id.*

G. Applied References

Petitioner relies upon the following references:

Gu et al., US 8,374,096 B2, issued Feb. 12, 2013
(Ex. 1007, “Gu”);

Trainin et al., US 8,200,164 B2, issued Jun. 12, 2012
(Ex. 1011, “Trainin”);

Hansen, US 2005/0232208 A1, pub. Oct. 20, 2005
(Ex. 1008, “Hansen”);

IEEE 802.11e-2005 Part 11: Wireless LAN Medium
Access Control (MAC) and Physical Layer (PHY)
Specifications Amendment 8: Medium Access Control (MAC)
Quality of Service Enhancements, (Ex. 1020, “802.11e-2005”).

Pet. 2.

Petitioner submits the Declaration of Dr. Christopher J. Hansen
(Ex. 1003).

H. Asserted Grounds of Unpatentability

Petitioner challenges the patentability of claims 1–8 and 11–42 of the ’122 patent based on the following grounds:

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1–5, 16–20, 22–30, 38–41	103(a) ²	Gu, Trainin
6–8, 31–33	103(a)	Gu, Trainin, 802.11e-2005
11–15, 21, 34–37, 42	103(a)	Gu, Trainin, Hansen

Pet. 1.

II. DISCUSSION

A. Claim Construction

A claim “shall be construed using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. § 282(b).” 37 C.F.R. § 42.100(b). The parties dispute the proper construction of the phrase “the second communication frame follows after a short inter frame space (SIFS) after the first communication frame with the transmit announcement indication.” Pet. 20–23; Prelim. Resp. 20–34; Prelim. Reply; Prelim. Sur-reply. This term will be discussed in more detail below.

1. The Parties’ Contentions

Independent claim 1 includes the limitation that “the second communication frame follows after a short inter frame space (SIFS) after the

² The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (“AIA”), included revisions to 35 U.S.C. § 103 that became effective after the filing of the application that led to the ’122 patent. Therefore, we apply the pre-AIA version of 35 U.S.C. § 103.

first communication frame with the transmit announcement indication,” and independent claims 11, 16, 27, 34, and 38 each include a similar limitation.

Ex. 1001, 7:64–67, 8:44–47, 9:7–10, 9:52–54, 10:21–23, 10:44–46.

Petitioner argues that this claim language should be construed to have its plain and ordinary meaning, which “is broad enough to encompass claimed embodiments in which the transmission indicated by the transmit announcement follows after a response to the frame with the transmit announcement indication.” Pet. 20. In support, Petitioner points to the ’122 patent Specification’s statement that the transmission indicated by the TxA indication “may start after a short inter frame space (SIFS), but there is no strict requirement on the timing.” *Id.* (citing Ex. 1001, 4:61–64, 4:67–5:2). Petitioner also argues that “SIFS is used to separate transmissions belonging to a single dialog,” and that “[e]xamples of a ‘single dialog’ include the request-to-send / clear-to-send dialog and the QoS-null / ACK dialog.” *Id.* at 20–21 (citing Ex. 1001, 5:2–3; Ex. 1006 ¶ 87; Ex. 1009, 14; Ex. 1010 § 9.2.3).

Petitioner uses annotated versions of Figures 3 and 4 of the ’122 patent to support its proposed construction. Petitioner’s annotated version of Figure 3 is reproduced below.

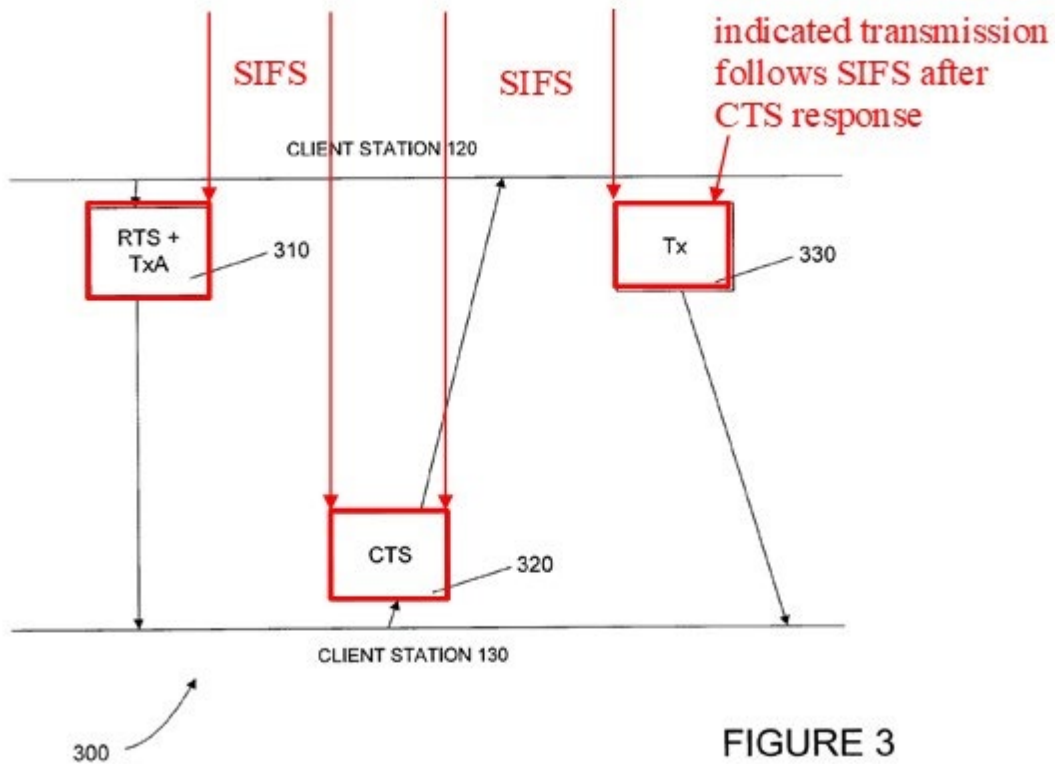


FIGURE 3

Petitioner's annotated version of Figure 3 of the '122 patent.
Pet. 21.

Petitioner argues that Figure 3 shows a request-to-send (RTS) with a transmit announcement indication (TxA) followed by a clear-to-send (CTS) response, “after which the announced transmission from station 120 to station 130 follows.” Pet. 21 (citing Ex. 1001, 5:21–29). Petitioner's annotated Figure 3 also shows a SIFS following the RTS and TxA, as well as another SIFS following the CTS. *Id.* at 21–22. Petitioner contends that claims 3–5 of the '122 patent cover the embodiment of Figure 3. *Id.* at 21–22.

Petitioner's annotated version of Figure 4 is reproduced below.

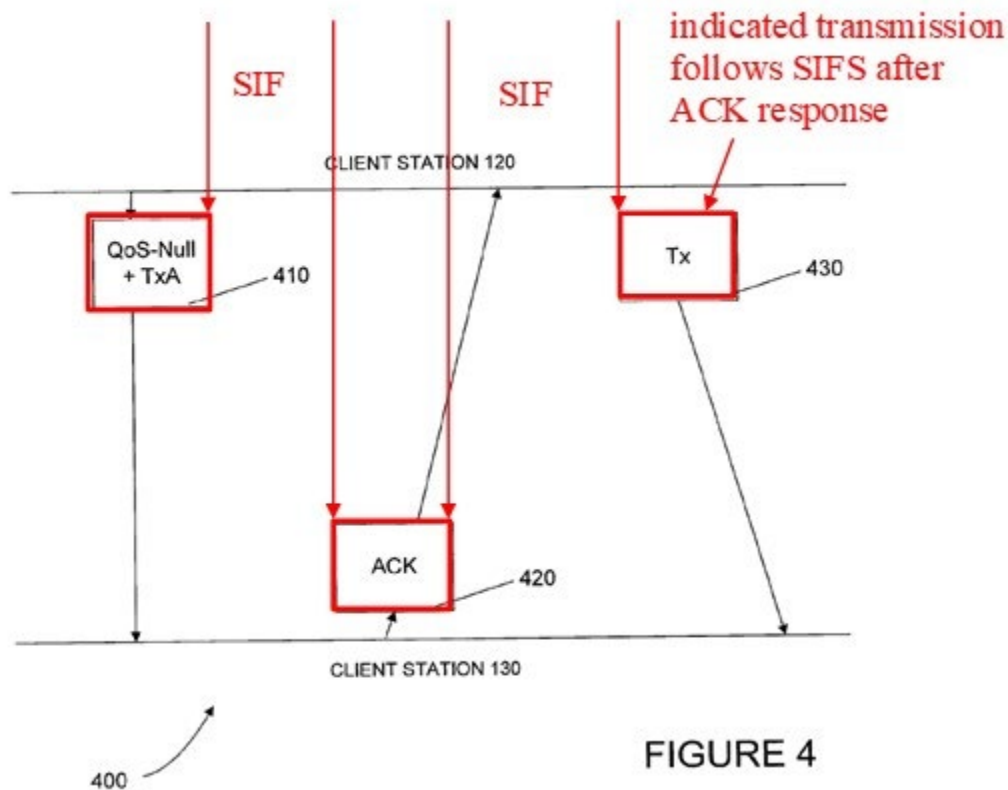


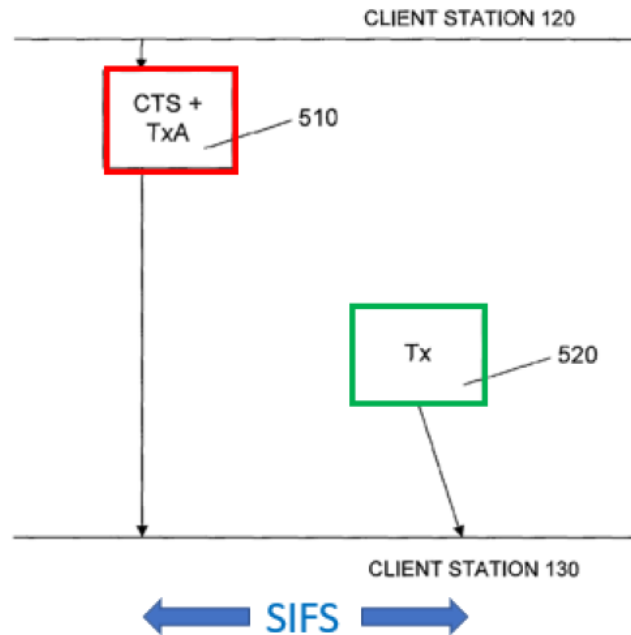
FIGURE 4

Petitioner's annotated version of Figure 4 of the '122 patent.
Pet. 22.

Petitioner argues that Figure 4 represents an embodiment where a “QoS-null with TXA indication is followed by an acknowledgement (ACK) response, after which the announced transmission follows.” Pet. 22 (citing Ex. 1001, 5:33–35). Like Figure 3, Petitioner's annotated Figure 4 shows a SIFS following the QoS and TxA, as well as another SIFS following the ACK. *Id.* at 22–23. Petitioner contends that claims 6–8 of the '122 patent cover the embodiment of Figure 4. *Id.* at 22.

Patent Owner disagrees with Petitioner's construction and instead construes the disputed claim phrase to mean that “the second communication frame follows substantially immediately after the first communication frame (without any intervening response to the first communication frame).” Prelim. Resp. 20. Patent Owner argues that this construction matches the

embodiment of Figure 5 of the '122 patent, and provides an annotated version of Figure 5, reproduced below, to illustrate its argument.



“the **announced transmission** follows **substantially immediately (i.e., SIFS)** after **the frame which announces it**”

Ex. 1001, 5:54-55 (emphasis added).

Patent Owner’s annotated version of Figure 5 of the '122 patent.
Prelim. Resp. 21.

As shown in Petitioner’s annotated Figure 5, the announced transmission (green box) follows substantially immediately (i.e., SIFS) after the frame that announces it (red box) with no intervening communications. Prelim. Resp. 20–21.

Patent Owner argues that the specification explicitly defines the term “SIFS” as meaning “substantially immediately,” referring to the sentence stating that “the announced transmission follows substantially immediately (i.e., SIFS) after the frame which announces it, with the effect of postponing

a potential SIFS response until after the announced transmission.” Prelim. Resp. 22 (quoting Ex. 1001, 5:54–55). “Specifically,” Patent Owner asserts, “by using the Latin term ‘*i.e.*,’ which means ‘*that is*,’ the patentee defined the case where the announced transmission follows a SIFS after the frame which it announced it to mean that the announced transmission follows substantially immediately after the frame which announces it.” *Id.*

Patent Owner also argues that its construction is supported by the prosecution history. Specifically, Patent Owner asserts, “the Examiner’s amendment (just prior to allowance) incorporating the limitations of dependent claim 2 into the independent claims while simultaneously canceling dependent claim 3, demonstrates that the independent claims were limited to embodiments where the second communication frame follows substantially immediately after the first communication frame and embodiments with an intervening response between the first and second communication frames were excluded from the scope of the claims.” *Id.* at 23.

Patent Owner does not dispute that its construction would exclude the embodiments of Figures 3 and 4 of the ’122 patent, but argues that “the Federal Circuit has made clear that it is appropriate to exclude disclosed embodiments from the scope of the claims where, as here, those embodiments are inconsistent with the prosecution history.” Prelim. Resp. 25–26 (citing *Sinorgchem Co. v. ITC*, 511 F.3d 1132 (Fed. Cir. 2007); *August Tech. Corp. v. Camtek, Ltd.*, 655 F.3d 1278, 1285 (Fed. Cir. 2011); *TIP Sys., LLC v. Phillips & Brooks/Gladwin, Inc.*, 529 F.3d 1364, 1373 (Fed. Cir. 2008); *Pacing Techs., LLC v. Garmin Int’l, Inc.*, 778 F.3d 1021 (Fed. Cir. 2015)). Patent Owner further asserts that none of dependent

claims 3–8 requires an intervening response between the first and second communication frames. *Id.* at 26. And, in any event, Patent Owner contends, claim differentiation is not a hard and fast rule and can be overcome where the written description or prosecution history dictates a contrary conclusion. *Id.* at 27–28.

Petitioner responds that the plain language of the claim limitation supports a broad construction because it merely recites that the second communication frame “follows after” a SIFS after the first communication frame, and “does not place a boundary on ‘after’ such that it must occur ‘substantially immediately.’” Prelim. Reply 1. Thus, according to Petitioner, “the plain language of cancelled claim 2 (‘after the first communication frame’) encompasses the scenario of cancelled claim 3 (‘after a response to the first communication frame’) rather than reflects a mutually exclusive scenario.” *Id.* at 2. Petitioner further argues that the ’122 patent specification does not define “SIFS” to mean “substantially immediately,” but rather “defines ‘substantially immediately . . . after’ to mean ‘SIFS . . .’ after.” *Id.* at 2–3 (alterations in original). Finally, Petitioner argues that the prosecution history does not amount to a “clear and unambiguous disclaimer” because “the examiner twice rejected claims 2 and 3 using the identical disclosure from Larsson” and thus “interpreted these claims to have sufficient overlap that a single disclosure from a single reference was sufficient to reject them both.” *Id.* at 4 (citing Ex. 1002, 562–63, 666). According to Petitioner, the Applicant “made no arguments on the record specifically pertaining to claims 2 and 3 to remove any ambiguity in the Applicant’s intent, even after the allowance.” *Id.* at 4–5 (citing Ex. 1002, 549, 654).

2. *Analysis*

Based on the present record, we find that the intrinsic evidence supports Patent Owner’s proposed construction. First, we note that, when describing the Figure 5 embodiment, the ’122 patent Specification states that “the announced transmission follows substantially immediately (i.e., SIFS) after the frame which announces it, with the effect of postponing a potential SIFS response until after the announced transmission.” Ex. 1001, 5:54–57. As Patent Owner points out, the Latin term “i.e.” means “that is” and is often definitional. See Prelim. Resp. 22; *Rembrandt Wireless Tech., LP v. Samsung Elecs. Co.*, 853 F.3d 1370, 1376 (Fed. Cir. 2017) (“A patentee’s use of ‘i.e.’ in the intrinsic record, however, is often definitional Indeed, the term ‘i.e.’ is Latin for *id est*, which means ‘that is.’”), citing *Edwards Lifesciences LLC v. Cook Inc.*, 582 F.3d 1322, 1334 (Fed. Cir. 2009) (“[U]se of ‘i.e.’ signals an intent to define the word to which it refers.”) and *Abbott Labs. v. Novopharm Ltd.*, 323 F.3d 1324, 1330 (Fed. Cir. 2003) (holding that a patentee “explicitly defined” a term by using “i.e.” followed by an explanatory phrase). Moreover, the claim language stating that “the second communication frame ***follows after a short inter frame space (SIFS) after*** the first communication frame with the transmit announce indication” closely tracks the Specification’s disclosure that “the announced transmission ***follows substantially immediately (SIFS) after*** the frame which announces it.” Ex. 1001, 5:54–55 (emphasis added). Thus, the Specification indicates that a second communication frame that “follows after a short inter frame space (SIFS) after the first communication frame,” as claim 1 recites, is a second communication frame that “follows substantially immediately (i.e., SIFS) after” the first communication frame. Additionally, the fact that the Specification included this discussion in the

context of Figure 5, which shows the announced transmission following immediately after the first communication frame, further suggests that the Figure 5 embodiment is being referred to here.

The prosecution history also supports Patent Owner's proposed construction. As noted above, during prosecution, the examiner rejected claim 1 over Larsson, which disclosed an intervening communication from the receiver between each communication sent by the source. This is shown in Patent Owner's annotated version of Larsson's Figure 5, reproduced below.

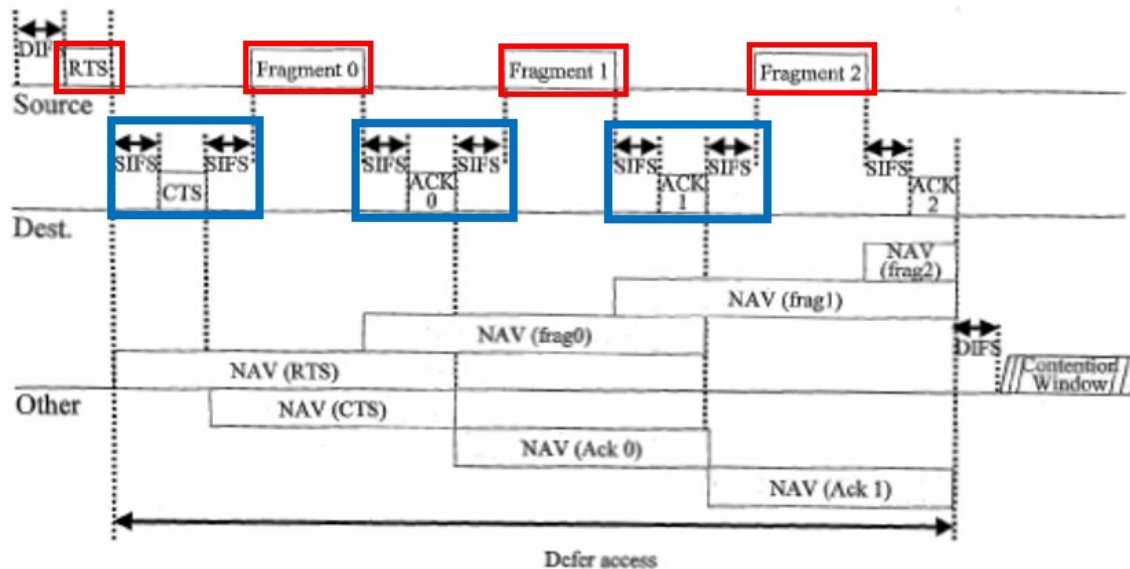


Fig. 5

Patent Owner's annotated version of Larsson's Figure 5.
Prelim. Resp. 12.

As shown in Figure 5, the blue boxes between the RTS frame and Fragment 0, and after each subsequent fragment, show the interval between successive transmissions from the source. Prelim. Resp. 11–12; Ex. 1006, Fig. 5, ¶¶ 18, 28. As shown, the destination sends an intervening CTS frame (bordered on

each end by a SIFS) between the RTS and the next transmission from the source (Fragment 0). Prelim. Resp. 11–12. The destination also sends an ACK frame (bordered on each end by a SIFS) between each of the succeeding fragments. *Id.* Thus, Larsson’s Figure 5 shows an intervening frame sent by the destination between the first communication frame and each succeeding communication frame.

As noted above, the applicant agreed in response to the examiner interview to incorporate prosecution dependent claim 2 into prosecution claim 1 and cancel prosecution dependent claim 3. *See* § I.F, *supra*. We determine that this agreement and the corresponding amendment constitutes a clear disavowal of subject matter that supports Patent Owner’s construction. Prosecution claim 2 required that the second communication frame follow the first communication frame after a SIFS (corresponding to Figure 5 of the ’122 patent), while prosecution claim 3 required that there be a SIFS *and* an intervening response between the first and second communication frames (corresponding to the embodiments of Figures 3 and 4 of the ’122 patent). Before the amendment, original claim 1 included both of these embodiments, but the incorporation of prosecution claim 2 into prosecution claim 1 and the cancellation of prosecution claim 3 limited issued claim 1 to only the embodiment of prosecution claim 2. Because Larsson disclosed an intervening response to the first communication frame before the second communication frame, the clear import of the amendment was to limit claim 1 to the embodiment where the second communication frame follows immediately after the SIFS in order to distinguish claim 1 from Larsson. Indeed, in the Reasons for Allowance, the examiner explained that claim 1 distinguishes over the prior art (including Larsson)

because “[t]he prior art of record fails to teach or fairly suggest ‘receiv[ing] the second communication frame after a short inter frame space (SIFS) that follows the first communication frame,’” as added from prosecution claim 2. Ex. 1002, 47. If, as Petitioner argues, prosecution claim 2 was broad enough to cover the embodiment of prosecution claim 3, then the amendment would have served no apparent purpose. Thus, we agree with Patent Owner that “[t]here is no other plausible explanation for why, when faced with Larsson’s disclosure of an intervening response, the Examiner initiated an interview to incorporate the SIFS limitation of dependent claim 2 into claim 1, and cancel dependent claim 3, which, like Larsson, included an intervening response.” *See* Prelim. Sur-reply 1–2.

We do not agree with Petitioner’s arguments to the contrary. First, we disagree with Petitioner’s argument that the language of claim 1 reciting that the second communication frame “follows after a short inter frame space (SIFS) after the first communication frame” does not “place a boundary on ‘after’ such that it must occur ‘substantially immediately,’” so that cancelled prosecution claim 2 encompasses the embodiment of cancelled prosecution claim 3. *See* Prelim. Reply 1–2. We determine that the language in issued claim 1 reciting that the second communication frame “follows after a short inter frame space (SIFS) after” the first communication frame is not, standing alone, completely clear as to whether there can be an intervening response between the first and second communication frames. However, the specification and the prosecution history discussed above resolves this ambiguity by equating (SIFS) to following “substantially immediately” (Ex. 1001, 5:53–57) and making clear that the applicant intended to excluded the embodiment of cancelled prosecution claim 3 (reciting an

intervening response between the first and second communication frames) in order to distinguish the Larsson reference used to reject claim 1 during prosecution (Ex. 1002, 39, 510).

We also do not agree with Petitioner's argument that dependent claims 3–5 and 6–8 necessarily cover the embodiments of Figures 3 and 4 showing an intervening response between the first and second communication frames. Pet. 21–22. To the contrary, none of these dependent claims expressly require an intervening response *between* the first and second communication frames. Claim 3 requires that the first communication is an RTS frame, claim 4 requires receiving a CTS frame after the RTS frame, and claim 5 requires that the second communication frame does not include the address of the second station. Ex. 1001, 8:3–13. Notably, claim 4 does not specify *when* the CTS frame is received by the first station other than stating that it is after the RTS frame. *Id.* at 8:6–9. Thus, claim 4 covers a situation where the second communication frame follows immediately after the first communication frame, and the CTS frame is received after the second communication frame. Indeed, the '122 patent Specification specifically describes such an embodiment in the context of Figure 5, explaining that “the announced transmission follows substantially immediately (i.e., SIFS) after the frame which announces it, with the effect of *postponing a potential SIFS response until after the announced transmission*” (the second communication frame). *Id.* at 5:52–57 (emphasis added).

Similarly, claim 6 requires that the first communication is a QoS-null frame, claim 7 requires receiving an ACK frame after the QoS-null frame, and claim 8 requires that transmitting the second communication frame

associated with the transmit announcement indication. Ex. 1001, 8:15–25. Like claim 4, claim 7 does not specify *when* the ACK frame is received by the first station other than stating that it is after the QoS-null frame. *Id.* at 8:19–22. Thus, claim 7 covers a situation where the second communication frame follows immediately after the first communication frame, and the ACK frame is received after the second communication frame.

Moreover, even were we to disagree with Patent Owner and find that claims 3–5 and 6–8 covered sending an intervening response between the first and second communication frames, any presumption created the doctrine of claim differentiation would be overcome by the specification and prosecution history showing that the applicant intended to limit claim 1 to exclude such an embodiment. As the Federal Circuit has explained, “the presumption created by the doctrine of claim differentiation is ‘not a hard and fast rule and will be overcome by a contrary construction dictated by the written description or prosecution history.’” *Regents of the Univ. of Cal. v. DakoCytomation Cal., Inc.*, 517 F.3d 1364, 1375 (Fed. Cir. 2008) (quoting *Seachange Int’l Inc. v. C-COR, Inc.*, 413 F.3d 1361, 1369 (Fed. Cir. 2005) (finding that the prosecution history overcame the presumption created by the doctrine of claim differentiation)).

Finally, we reject Petitioner’s argument that the prosecution history is ambiguous and does not constitute a clear and unmistakable disclaimer. *See* Prelim. Reply 4–5. As discussed above, the amendment incorporating prosecution claim 2 into claim 1 and cancelling prosecution claim 3 clearly disclaimed the embodiment of prosecution claim 3 (reciting that the second communication frame follows after a response to the first communication frame) in order to distinguish over the Larsson reference. We do not find

persuasive Petitioner’s argument that the examiner previously rejected both prosecution claims 2 and 3 using the identical disclosure from Larsson because that rejection occurred before the examiner interview and does not necessarily reflect the interpretation that underlied the agreement between the applicant and the examiner that resulted in allowance of claim 1. *See id.* at 4. We also are not persuaded by Petitioner’s argument that the applicant made no arguments on the record specifically pertaining to prosecution claims 2 and 3 because the applicant agreed with and authorized the examiner’s proposed amendment. *See id.* at 4–5. As the Federal Circuit has made clear, prosecution history estoppel can occur by making a narrowing amendment to a claim, as well as by making arguments during prosecution. *Pharma Tech Solutions, Inc. v. LifeScan, Inc.*, 942 F.3d 1372, 1380 (Fed. Cir. 2019).

Consequently, we construe this limitation to require that “the second communication frame follows substantially immediately after the first communication frame (without any intervening response to the first communication frame),” as Patent Owner proposes. *See* Prelim. Resp. 20.

3. *Other Terms*

We determine that it is not necessary to provide an express interpretation of any other claim terms for purposes of this Decision. *See Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) (“The Board is required to construe ‘only those terms that . . . are in controversy, and only to the extent necessary to resolve the controversy.’”) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

B. Principles of Law

A claim is unpatentable under 35 U.S.C. § 103 if “the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) where in evidence, objective evidence of non-obviousness.³ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). When evaluating a combination of teachings, we must also “determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)). Whether a combination of prior art elements would have produced a predictable result weighs in the ultimate determination of obviousness. *Id.* at 416–17.

In an *inter partes* review, the petitioner must show with particularity why each challenged claim is unpatentable. *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016); 37 C.F.R. § 42.104(b). The burden of persuasion never shifts to Patent Owner except in limited circumstances not present here. *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

³ At this stage of the proceeding, Patent Owner has not presented objective evidence of non-obviousness.

We analyze the challenges presented in the Petition in accordance with the above-stated principles.

C. Level of Ordinary Skill in the Art

Petitioner contends that a person of ordinary skill in the art at the time of the alleged invention would have had “(1) at least a bachelor’s degree in computer science, computer engineering, electrical engineering, or a related field, and (2) at least two years of industry experience in wireless communications standards and/or product development.” Pet. 26 (citing Ex. 1003 ¶¶ 25–26). Petitioner also states that “[a]dditional graduate education could substitute for professional experience, and *vice versa*.” *Id.* Patent Owner does not advance a proposed level of ordinary skill at this stage of the proceeding. *See* Prelim. Resp.; Prelim. Sur-reply.

At this stage of the proceeding, we adopt Petitioner’s assessment of the level of skill in the art, which is consistent with the ’122 patent and the asserted prior art of record.

D. Ground 1A: Obviousness of Claims 1–5, 16–20, 22–30, and 38–41 Based on Gu in view of Trainin

1. Overview of Gu (Ex. 1007)

Gu is directed to “[a] computer implemented method” that “selects antennas in a multiple-input, multiple-output wireless local area network that includes multiple stations,” each of which “includes a set of antennas.” Ex. 1007, code (57). “Multiple consecutively transmitted sounding packets are received in a station,” and “[e]ach sounding packet corresponds to a different subset of the set of antennas.” *Id.* A channel matrix “is estimated from the multiple consecutively transmitted sounding packets.” *Id.* Additionally, “[a] frame including a high throughput (HT) control field is

sent to initiate a selecting of antennas, and a subset of antennas is selected according to the channel matrix.” *Id.*

2. *Overview of Trainin (Ex. 1011)*

Trainin is directed to “[a] wireless device, a system and a method to establish a wireless communication channel with one or more remote devices.” Ex. 1011, code (57). The channel is established “by generating and/or receiving a protocol data unit(s) (PDU) including a control field.” *Id.* The control field “includ[es] one or more of link adaptation control information, calibration control information and feedback request information.” *Id.*

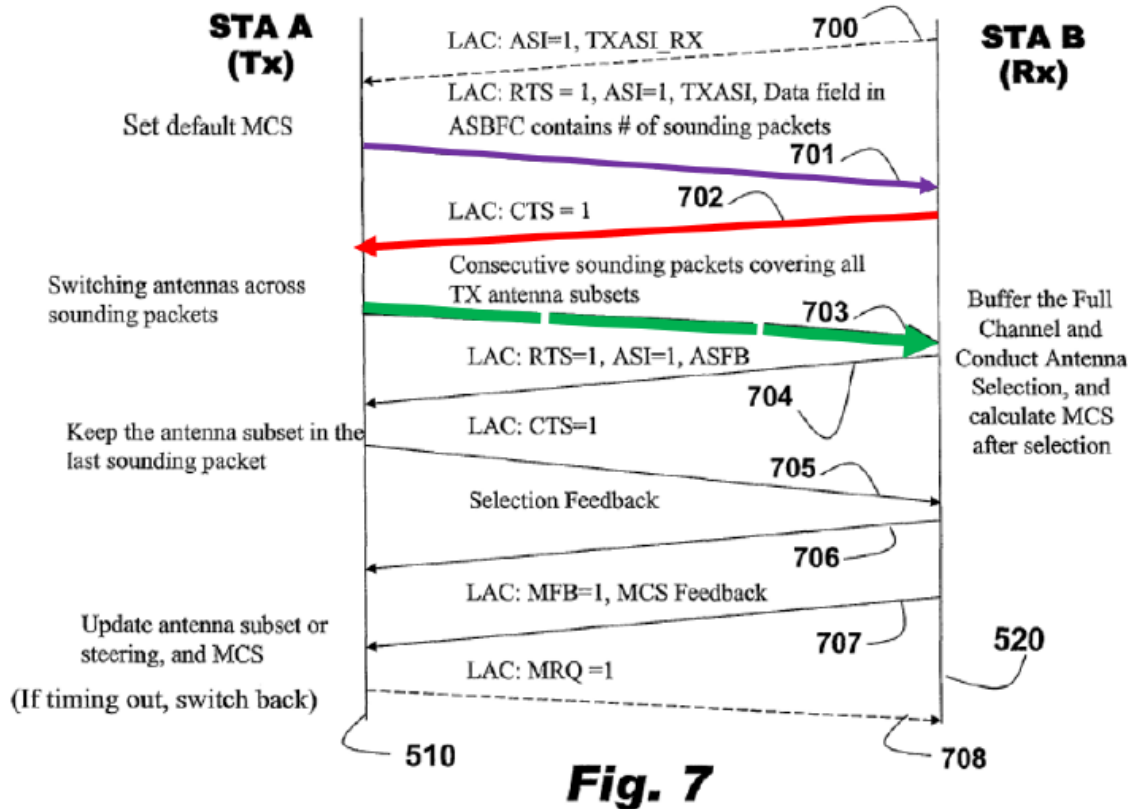
3. *Analysis of Independent Claim 1*

As explained above, claim 1 includes limitation [1.4], which recites that “the second communication frame follows after a short inter frame space (SIFS) after the first communication frame with the transmit announcement indication.” Ex. 1001, 7:64–67. As also discussed above, we construe this limitation to require that “the second communication frame follows substantially immediately after the first communication frame (without any intervening response to the first communication frame),” as Patent Owner proposes. *See* § II.A, *supra*; Prelim. Resp. 20. As discussed below, Petitioner fails to make a sufficient showing that the prior art meets this construction.

Petitioner argues that Gu teaches or renders obvious this limitation. Pet. 51. Specifically, Petitioner argues that, in Gu, a link adaptation control (LAC) frame is transmitted with a request-to-send (RTS) field set. *Id.* “In response,” according to Petitioner, “the second station (STA B) transmits a clear-to-send (CTS) message.” *Id.* “After receiving the CTS=1 message”

Petitioner contends, “the transmitter sends 703 consecutive sounding packets.” *Id.* Petitioner argues that, “[b]ecause Gu uses RTS/CTS,” one of ordinary skill “would have known or found it obvious to separate transmissions belonging to the link adaptation dialog using SIFS.” *Id.* Thus, Petitioner contends, one of ordinary skill “would have known that the sounding packets (second communication frame) are transmitted after a SIFS following the CTS response to the transmission of the LAC frame (the first communication frame) indicating RTS.” *Id.* at 52. Petitioner argues that one of ordinary skill “would also have found it obvious to use SIFS for transmitting the second communication frame when the antenna/beam selection indicator (ASI) transmit announcement indication was encoded in any MAC layer frame.” *Id.*

Patent Owner responds that Gu fails to disclose “a second communication frame that follows after a short interframe space (SIFS) after the first communication frame with the transmit announcement indication.” Prelim. Resp. 40. To illustrate its argument, Patent Owner provides an annotated version of Gu’s Figure 7, reproduced below.



Patent Owner’s annotated version of Gu’s Figure 7. Prelim. Resp. 41.

Patent Owner argues that “the Petition maps the ‘first communication frame’ transmitted ‘from a first station to a second station’ in claim 1 to signal 701 [purple line], which is a LAC frame transmitted from station 510 (STA A) to station 520 (STA B),” and maps “the second communication frame that follows after a short inter frame space (SIFS) after the first communication frame” in claim 1 “to the sounding packets 703 (green line) sent from station 510 (STA A) to station 520 (STA B).” Prelim. Resp. 40–41 (citing Pet. 43, 47) (alteration in original). However, Patent Owner contends, “[s]ignal 701 [purple line] and sounding packets 703 (green line) do not map to the first and second communication frames, respectively, recited in claim 1, because there is an *intervening* response 702 (red line) between signal 701 (mapped to the ‘first communication frame’) and signal

703 (mapped to the ‘second communication frame’).” *Id.* at 41 (second alteration in original).

We agree with Patent Owner that Petitioner fails to show that Gu teaches that “the second communication frame follows after a short inter frame space (SIFS) after the first communication frame with the transmit announcement indication.” Ex. 1001, 7:64–67. As discussed above, we construe this limitation to require that “the second communication frame follows substantially immediately after the first communication frame (without any intervening response to the first communication frame),” as Patent Owner proposes. *See* § II.A, *supra*. Petitioner has not shown that Gu meets this construction because Gu includes an intervening response between the first and second communication frames.

Consequently, Petitioner has failed to demonstrate a reasonable likelihood that claim 1 is unpatentable over the combination of Gu and Trainin.

4. *Claims 2–5, 16–20, 22–30, and 38–41*

Petitioner contends that independent claims 16, 27, and 38, and dependent claims 2–5, 17–20, 22–26, 28–30, and 39–41 are unpatentable over Gu and Trainin. Each of independent claims 16, 27, and 31 includes a similar limitation as limitation [1.4] of claim 1 requiring that the second communication frame follows after a short inter frame space (SIFS) after the first communication frame with the transmit announcement indication. Ex. 1001, 9:7–10, 9:52–54, 10:44–46. For the reasons discussed above with respect to limitation [1.4], we find that Petitioner has failed to show that this limitation is taught by the combination of Gu and Trainin, and thus has failed to demonstrate a reasonable likelihood that these claims are

unpatentable over the prior art. Because each of the dependent claims incorporates the limitations of the independent claim from which it depends, Petitioner has also necessarily failed to demonstrate a reasonable likelihood that these claims are unpatentable over the prior art.

E. Remaining Grounds

Each of the independent claims challenged in Grounds 1B and 1C includes a similar limitation as limitation [1.4] of claim 1 requiring that the second communication frame follows after a short inter frame space (SIFS) after the first communication frame with the transmit announcement indication. In Grounds 1B and 1C, for the independent claims, Petitioner relies on the same disclosures of Gu to meet this limitation as for limitation [1.4] in Ground 1A. Pet. 82–87. For the reasons discussed above with respect to limitation [1.4], we find that Petitioner has failed to show that this limitation is taught by the combination of Gu and the other asserted references, and thus has failed to demonstrate a reasonable likelihood that the independent claims are unpatentable over the prior art. Because each of the dependent claims incorporates the limitations of the independent claim from which it depends, Petitioner has also necessarily failed to demonstrate a reasonable likelihood that these claims are unpatentable over the prior art.

III. CONCLUSION

After considering the evidence and arguments presented in the current record, we determine that Petitioner has not demonstrated a reasonable likelihood of success in proving that any of the challenged claims of the '122 patent is unpatentable. We therefore do not institute trial on any of the challenged claims and grounds raised in the Petition.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that the Petition is denied and no *inter partes* review is instituted in this proceeding.

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Patent 8,594,122 B2

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