

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TP-LINK CORPORATION LIMITED,
Petitioner,

v.

NETGEAR, INC.,
Patent Owner.

IPR2023-01469
Patent 10,681,698 B2

Before LYNNE H. BROWNE, SHEILA F. McSHANE, and
JASON M. REPKO, *Administrative Patent Judges*.

REPKO, *Administrative Patent Judge*.

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

I. INTRODUCTION

TP-Link Corporation Limited (“Petitioner”) filed a petition requesting *inter partes* review of claims 1–22 of U.S. Patent No. 10,681,698 (Ex. 1001, “the ’698 patent”). Paper 2 (“Pet.”). Netgear, Inc. (“Patent Owner”) filed a Preliminary Response. Paper 7 (“Prelim. Resp.”).

To institute an *inter partes* review, we must determine “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(a). For the reasons discussed below, Petitioner has shown a reasonable likelihood that it would prevail with respect to all claims challenged in the Petition. Thus, we institute an *inter partes* review.

A. Related Matters

The parties indicate that the ’698 patent is a subject of International Trade Commission investigation, Inv. No. 337-TA-1361 (ITC) and *Netgear Inc. v. TP-Link USA Corp. et al.*, Case No. 2:23-cv-02540 (C.D. Cal.). Pet. 76–77; Paper 3, 1.

B. Real Party in Interest

Petitioner identifies TP-Link Corporation Limited f/k/a TP-Link International Ltd., TP-Link Technologies Co., Ltd., TP-Link USA Corp., and TP-Link Institute USA Corp. d/b/a TP-Link Research America Corp. as the real parties-in-interest. Pet. 76. Patent Owner identifies Netgear, Inc. as the real party-in-interest. Paper 3, 1.

C. The ’698 Patent

The ’698 patent discloses that a system of smart Wi-Fi nodes that form a dedicated backhaul in a mesh network to provide whole-home coverage and Internet connectivity. Ex. 1001, 2:40–42. In a mesh network, various access points (APs) are wirelessly connected and forward traffic to

and from a gateway. *Id.* at 1:32–35. According to the '698 patent, mesh networks can be difficult to setup and maintain. *Id.* at 1:37–41.

To address this purported difficulty, the system attempts to optimize communication between the APs by using a 5 GHz high band or low band as a dedicated backhaul and a 2.4 GHz band as a backup if the 5 GHz band is unsuitable. *Id.* at 1:45–50. In one embodiment, the dedicated backhaul is used if the received signal strength indication (RSSI) of the dedicated channel is above a threshold. *Id.* at 3:6–10. The threshold can be defined and modified on the hardware. *Id.*

D. Claims

Of those challenged, claims 1 and 12 are independent. Claim 1 is reproduced below.

1. A computer-implemented method for establishing a backhaul communication among nodes in a mesh wireless network, the method comprising:

performing an attempt to utilize a first channel in a default frequency band as a backhaul with second node in the network, wherein the backhaul is to provide communication of management functions between the nodes in the network, as opposed to a front haul that provides wireless data communication to clients in the network; and

upon detecting that a received signal strength of the first channel from the second node is below a threshold, performing an attempt to utilize a different channel in the default frequency band and/or a channel in a different frequency band that has a lower frequency range than the default frequency band, to establish the backhaul with the second node,

wherein, in any of said attempts, channels in a given frequency band are prioritized based on a corresponding received signal strength.

Id. at 10:61–11:13.

E. Evidence

Name	Reference	Exhibit No.
Gatewood	US 9,001,767 B1, issued Apr. 7, 2015	1005
Ho	US 9,247,440 B2, issued Jan. 26, 2016	1009
Farid	US 2016/0007273 A1, published Jan. 7, 2016	1014

F. Asserted Grounds

Petitioner asserts that claims 1–22 are unpatentable on the following grounds. Pet. 1.

Claims Challenged	35 U.S.C. §	Reference(s)/Basis
1–6, 12–17	103	Gatewood, Ho
1–22	103	Ho
9, 20	103	Ho, Farid

II. ANALYSIS

A. Level of Ordinary Skill in the Art

Petitioner asserts that a person of ordinary skill in the art “would have had a Bachelor’s degree in electrical engineering, computer engineering, computer science, or a related field, and three years of experience in the design and analysis of wireless communication systems or equivalent work experience.” Pet. 6 (citing Ex. 1002¹ ¶¶ 53–56). According to the Petition, “[a]dditional education might compensate for less experience, and vice-versa.” *Id.*

Patent Owner argues that a person of ordinary skill in the art “would be a person with a bachelor’s degree in a technical field such as electrical engineering, computer engineering, computer science, or physics, and/or 2–3 years of relevant practical experience in wireless communication, data

¹ Exhibit 1002 is the declaration of Dr. Zhi Ding.

communication, or wireless networking systems.” Prelim. Resp. 8 (citing Ex. 2001² ¶ 25).

We do not see any differences between these definitions that would affect our decision whether to institute. Here, we apply the level of skill proposed by Petitioner. Pet. 6. If Patent Owner disagrees, the parties are encouraged to discuss how the differences between these definitions affect the Board’s assessment of Petitioner’s obviousness analysis in the final decision.

B. Claim Construction

The Board is required to construe only those terms that are in controversy, and only to the extent necessary to resolve the controversy. *Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) (citing *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

Petitioner offers two alternative constructions for “default frequency band”: (1) “a preferred frequency band” and (2) “a preset frequency band used automatically in the absence of a choice made by the user.” Pet. 6 (citing Ex. 1017, Attachment A, 4). Patent Owner asserts that the Administrative Law Judge in the parallel ITC action construed “default frequency band” to mean “a first selected frequency band.” Prelim. Resp. 9 (citing Ex. 1003, 32).

In this decision, we do not see a need to construe this term to resolve any issues because Petitioner has shown a reasonable likelihood of prevailing on its challenge under any of the offered constructions. *See infra* § II.D.2.b.i.

² Exhibit 2001 is the declaration of Dr. Zygmunt J. Haas.

C. 35 U.S.C. 325(d)

Patent Owner asserts that the Petition should be denied under 35 U.S.C. § 325(d). Prelim. Resp. 15–23.

I. *The Two-Part Framework*

Under 35 U.S.C. § 325(d), the Board may exercise discretion to deny a petition that presents the same or substantially the same art or arguments as were previously presented to the Office. To evaluate arguments for discretionary denial under § 325(d), the Board uses a two-part framework:

(1) whether the same or substantially the same art previously was presented to the Office or whether the same or substantially the same arguments previously were presented to the Office; and

(2) if either condition of first part of the framework is satisfied, whether the petitioner has demonstrated that the Office erred in a manner material to the patentability of challenged claims. If a condition in the first part of the framework is satisfied and the petitioner fails to make a showing of material error, the Director generally will exercise discretion not to institute *inter partes* review.

Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH, IPR2019-01469, Paper 6 at 8–9 (PTAB Feb. 13, 2020) (precedential).

a. *The First Part*

Under the first part of the *Advanced Bionics* framework, previously presented art includes art listed on an Information Disclosure Statement (IDS) and “art made of record by the Examiner.” *Advanced Bionics* at 7–8. Here, Petitioner’s challenges are based on Farid, Gatewood, and Ho. Pet. 1. Farid and Gatewood were listed on an IDS considered by the Examiner.

Ex. 1004, 138 (IDS identifying Farid as item 16, signed by the Examiner),³ 148 (IDS identifying Gatewood as item 1, signed by the Examiner). And the Examiner made Ho of record by using it in a rejection under § 103.

Id. at 126.⁴ Thus, the first part of the framework is met because “the same art previously was presented to the Office.” *Advanced Bionics* at 8.

b. The Second Part

The second part of the framework asks whether the petitioner has demonstrated that the Office erred in a manner material to the patentability of the challenged claims. *Id.* “An example of a material error may include misapprehending or overlooking specific teachings of the relevant prior art where those teachings impact patentability of the challenged claims.” *Id.* at 8–9 n.9.

Patent Owner argues that Ho was expressly used by the Examiner to reject the claims, which shows that the Examiner considered and evaluated Ho. Prelim. Resp. 22. Patent Owner argues that Petitioner did not identify any errors in the Examiner’s evaluation of Ho, Gatewood, or Farid, and Petitioner’s arguments about reconsideration of the prior art are unsupported and conclusory. *Id.* at 22–23. We disagree.

Petitioner shows that the Examiner overlooked specific teachings of the relevant prior art: Ho’s RSSI threshold. *See* Pet. 55 (quoting Ex. 1009, 14:38–41). Although Ho was the basis for a rejection, the Examiner cited Ho

³ Item 16 of the IDS lists “PANG, et al.” in the column “Name of Patentee or Applicant of cited Document,” but the Publication Number matches Farid: “20160007273.” Ex. 1004, 138. Tak Ming Francis Pang is the third named inventor on the published application. Ex. 1014, code (72).

⁴ The Examiner’s rejection used US 2015/0049616 A1 (Ex. 1004, 126), which is the published version of the application that led to the Ho patent (US 9,247,440 B2) that is cited in the Petition (Ex. 1009, code (65)).

for the limited purpose of showing that it would have been obvious to use the spanning-tree based protocol recited in dependent claims 5 and 16.

Ex. 1004, 126; Pet. 75. The Examiner's rejection of the independent claims under § 102 relied on Mallik⁵ as disclosing the recited threshold. Ex. 1004, 124; Pet. 75–76. That rejection was not based on Ho in any way. Ex. 1004, 124.

In response to the rejection,⁶ applicant's counsel argued that Mallik does not disclose establishing the backhaul upon detecting that the signal strength is below a threshold. *Id.* at 168. No claim amendments were made. *Id.* at 162–165. The Examiner then withdrew the rejection. *Id.* at 877. In the reasons for indicating allowable subject matter, the Examiner found persuasive counsel's "remarks concerning switching for a mesh wireless network backhaul communication, upon detection that the received signal strength of the first backhaul channel is below a threshold." *Id.*; *see also* Pet. 4–6 (summarizing the prosecution history).

The Examiner, though, overlooked Ho's disclosure that "if the RSSI of the signal received from the CAP is less than the predetermined *RSSI threshold* (e.g., the *RSSI_moderate_threshold*) the WLAN connection quality is deemed inadequate." Ex. 1009, 14:38–41 (emphasis added). Petitioner explains that Ho's monitoring unit 108 detects this condition and triggers operations to select a backhaul. Pet. 55–56 (citing Ex. 1009, 14:38–41, 19:64–20:3). Ho's teaching of a threshold affects patentability of the

⁵ US 2013/0194948 A1 to Mallik et al. is Exhibit 1007. The Examiner rejected all claims in the Office Action dated April 29, 2019. Ex. 1004, 122–127.

⁶ The arguments were made in the response filed on October 25, 2019. Ex. 1004, 162–170.

challenged claims because, at this stage and on this record, the Petition’s analysis demonstrates a reasonable likelihood that the challenged claims are unpatentable over Ho. *See infra* § II.D. Thus, Petitioner has shown that the Office erred in a manner material to the patentability of the challenged claims. Pet. 4–6, 55–56, 75–76.

As discussed in § II.E, the record at this stage favors Patent Owner’s arguments against Petitioner’s challenges based on Gatewood. But, under *SAS Institute, Inc. v. Iancu*, 584 U.S. 357 (2018), the Board must “either (1) institute as to all claims challenged in the petition and on all grounds in the petition, or (2) institute on no claims and deny institution.” Consolidated Trial Practice Guide 5–6 (Nov. 21, 2019).⁷ The Board “will not institute on fewer than all claims or all challenges in a petition.” *Id.* at 5; *see also PGS Geophysical AS v. Iancu*, 891 F.3d 1354, 1360 (Fed. Cir. 2018) (stating a decision to institute is “a simple yes-or-no institution choice respecting a petition, embracing all challenges included in the petition”). Thus, the Board must determine whether § 325(d) is sufficiently implicated that its statutory purpose would be undermined by instituting on all challenges. *See SAS Q&As*, D1 (June 5, 2018).⁸

In this case, the Petition’s merits as to the ground based on Ho, challenging all claims in the ’698 patent, are sufficient to outweigh any weakness in the ground based on Gatewood, challenging a subset of the claims. This case is different from those in which the Board denied institution under § 325(d) for an insufficient number of grounds meeting the institution standard because, here, protecting the patent system’s integrity

⁷ <https://www.uspto.gov/TrialPracticeGuideConsolidated>

⁸ https://www.uspto.gov/sites/default/files/documents/sas_qas_20180605.pdf

outweighs any inefficiencies in addressing the potentially weaker Gatewood-based ground. *See Deeper, UAB v. Vexilar, Inc.*, IPR2018-01310, Paper 7 at 43 (PTAB Jan. 24, 2019) (informative) (concluding that “instituting a trial with respect to all twenty-three claims and on all four grounds based on evidence and arguments directed to only two claims and one ground would not be an efficient use of the Board’s time and resources”); *Chevron Oronite Co. v. Infineum USA L.P.*, IPR2018-00923, Paper 9 at 11 (PTAB Nov. 7, 2018) (informative) (concluding that “instituting a trial with respect to all twenty claims based on evidence and arguments directed to dependent claims 3 and 4 is not an efficient use of the Board’s time and resources”); *see also Dril-Quip, Inc., v. FMC Tech., Inc.*, PGR2021-00049, Paper 10 at 13–14 (PTAB Aug. 4, 2021) (declining to exercise discretion to deny under § 325(d) even though one ground was “weak” on the merits).

Thus, the second part of the *Advanced Bionics* framework is satisfied, and we do not exercise discretion to deny institution under 35 U.S.C. § 325(d).

D. Obviousness over Ho

Petitioner asserts that claims 1–22 are unpatentable as obvious over Ho. Pet. 44–71.

I. Ho

Ho is generally directed to a home network of hybrid devices that automatically configure themselves. Ex. 1009, Abstr. The hybrid devices can function as a central access point (CAP) or a non-CAP device. *See id.* at 4:64–5:25. A CAP is connected to a network gateway via a single communication link. *Id.* at 4:66–5:3. The non-CAP devices can set their operating parameters and “personality.” *Id.* at 3:17–19, 5:46–50. These personalities determine whether the hybrid device is configured as an access

point or client station. *Id.* at 5:41–56. A device’s personality may change based on the network’s performance. *Id.* at 19:64–20:3.

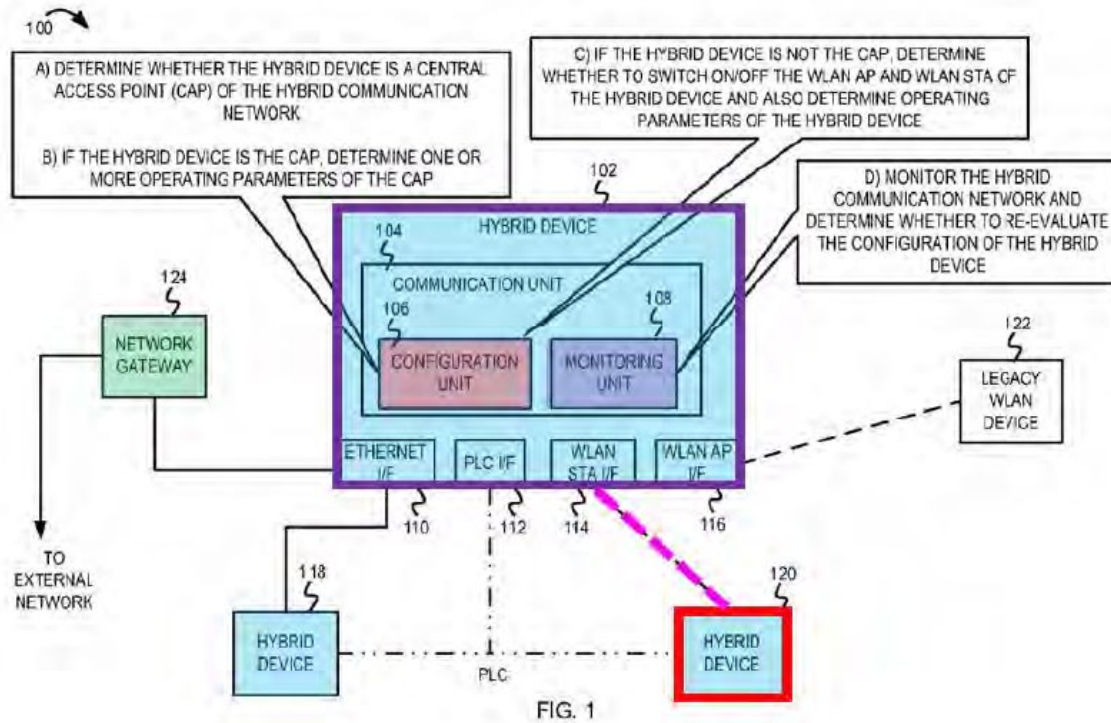
2. *Claims 1 and 12*

a. *The Preamble*

The preambles of claims 1 and 12 recite “establishing backhaul communication among nodes in a mesh wireless network.” Ex. 1001, 10:61–63, 11:53–56. Claim 1 recites a method. *Id.* at 10:61–63. Claim 12 recites a network “device including a network controller configured to perform operations” similar to the method steps of claim 1. *Id.* at 11:53–12:13.

i. *The Petition*

Petitioner maps Ho’s hybrid devices to the claimed nodes (in claims 1 and 12) and network device (in claim 12). *See* Pet. 45. Ho’s hybrid devices (102, 118, 120) and associated links and modules (110, 112, 114, 116) are shown in Figure 1, below with annotations by Petitioner. *See id.* at 49.



In annotated Figure 1 above, Petitioner highlights in magenta the recited backhaul under its mapping. *Id.* The magenta link connects hybrid device 120 (blue with red outline) and hybrid device 102 (blue with purple outline). *Id.*

Ho's hybrid devices self-organize and automatically configure their "personalities." Ex. 1009, 3:17–19. These personalities determine whether the WLAN station (STA) and AP modules (114, 116) are enabled. *Id.* at 5:41–43. WLAN STA module 114 configures the device as a client station. *Id.* at 5:56–57. WLAN AP module 116 configures the device as an access point. *Id.* at 5:55–56.

Configuration unit 106 (red) determines whether the hybrid device is a central access point ("CAP") of the network. *Id.* at 4:63–66. A CAP is an access point connected to a network gateway via a single communication link. *Id.* at 4:66–5:3. Non-CAP devices coordinate with the CAP to

determine their personality and operating parameters. *Id.* at 5:46–50. A device’s personality may change if monitoring unit 108 detects changes in the network’s performance measurements or data rate. *Id.* at 19:64–20:3.

According to the Petition, configuration unit 106 executes a “total configuration algorithm,” which determines the backhaul-communication bands and channels. Pet. 46–47 (citing Ex. 1009, 2:48–3:14, 12:22–25). Petitioner argues that hybrid device 120 can be a non-CAP device (the “network device” in claim 12), and hybrid device 102 can be a CAP (the “second node” in both claims). *Id.* at 49 (citing 1002 ¶ 143).

ii. Patent Owner’s Response

Patent Owner argues that the Petition does not explain how limitation [1.1]/[12.1] is met when the configuration unit determines the hybrid device 120 is a non-CAP. Prelim. Resp. 40. Patent Owner argues that, if hybrid device 102 were configured as a CAP, the link that Petitioner maps to the claimed backhaul would not exist, and the hybrid device will disable its WLAN STA interface. *Id.* at 39–40 (citing Ex. 1009, 11:13–19; Ex. 2001 ¶ 54).

iii. Analysis

We disagree, at this stage, that Petitioner needs to show that every possible combination of personalities of Ho’s hybrid device meets the claim limitation. Rather, “a prior art reference may anticipate or render obvious an apparatus claim—depending on the claim language—if the reference discloses an apparatus that is reasonably capable of operating so as to meet the claim limitations, even if it does not meet the claim limitations in all modes of operation.” *ParkerVision, Inc. v. Qualcomm Inc.*, 903 F.3d 1354, 1361 (Fed. Cir. 2018). Here, the Petition sufficiently sets forth a particular mode of operation that is the basis for its challenge: hybrid device 120 is a

non-CAP device and hybrid device 102 is a CAP. Pet. 49 (citing 1002 ¶ 143). For the reasons discussed below, Petitioner has shown at this stage that this configuration meets the claim limitations. *See infra* § II.D.2.b. Thus, we disagree with Patent Owner’s arguments on this record. *See* Prelim. Resp. 39–40.

b. Backhaul

Claim 1 and 12 further recites,

performing an attempt to utilize *a first channel in a default frequency band as a backhaul* with second node in the network, wherein the backhaul is to provide *communication of management functions* between the nodes in the network, as opposed to a front haul that provides wireless data communication to clients in the network.

Ex. 1001, 10:64–11:3 (emphasis added).

i. A First Channel in a Default Frequency Band

Petitioner argues that Ho teaches the claimed “first channel” because the channel having the highest RSSI is selected, for example. Pet. 52 (citing Ex. 1009, 16:30–33; 16:54–57). The Petition contains two rationales for how Ho discloses or teaches the channel’s “default frequency band.” *Id.* at 49–52.

First, Petitioner argues that the 5 GHz band selected by the non-CAP device for backhaul communication is the “default frequency band” under a first construction: “a preferred frequency band.” *Id.* at 49–50 (citing Ex. 1017, 4). According to Petitioner, the band is preferred because Ho teaches that it provides “better connectivity.” *Id.* at 50 (citing Ex. 1009, 18:38–46; Ex. 1002 ¶ 144).

Second, Petitioner argues that “default frequency band” means “present frequency band used automatically in the absence of a choice made by the user.” *Id.* at 52 (citing Ex. 1017, 4). Under this construction, Ho

teaches the band because (1) the CAP device may only be configured to use a single band for backhaul, and (2) the non-CAP device must choose that band for establishing backhaul communication. *Id.* at 50–52 (citing Ex. 1009, Fig. 4, 1:54–56, 12:22–31, 12:58–61, 17:18–22, 17:61–65).

Patent Owner argues that Petitioner has not shown that Ho’s frequency band used for backhaul is not also used for front-haul communications, as claimed. Prelim. Resp. 39. In Patent Owner’s view, Ho’s STA connections use 5 GHz and 2.4 GHz links, unlike the claim. *Id.* (citing Ex. 1009, 6:43–57, Fig. 1; Ex. 2001 ¶ 55). Patent Owner argues that the ’698 patent describes the “use of dedicated 5 GHz backhaul that is not used for fronthaul, as compared to 2.4 GHz band used for shared front haul and backhaul.” *Id.* (Ex. 1001, 2:48–54, 3:45–47).

We see no limitation that would require that frequency band used for backhaul is not also used for front-haul communications. *Id.* Here, the claim limitation “as opposed to a front haul” sets up a comparison between the communications that the backhaul provides (“management functions”) and those provided by the front haul (“wireless data communication to clients in the network”). Apart from distinguishing the type of communications, the limitation does not expressly recite anything about the frequency bands being different.

The claim further recites “a different channel in the default frequency band and/or a channel in a different frequency band.”⁹ Ex. 1001, 11:6–9. But the claim does not tie this limitation to front-haul communications. *Id.*

⁹ We address the Petition’s assertions regarding the prior art teaching of this limitation in § II.D.2.c.

Instead, this claim limitation recites attempting to use this different channel to establish the backhaul with the second node. *Id.* at 11:4–10.

Although Patent Owner identifies some embodiments in which the dedicated backhaul is not used for front-haul communications, at this stage, our view is that the identified embodiments described in the challenged patent should not be imported as limitations into the claim. *See id.* at 2:48–54, 3:45–47. Rather, the patent states that the disclosed embodiments are merely exemplary. *See id.* at 10:53–58. Thus, at this stage and on this record, we do not view claims 1 and 12 to require a frequency band used for backhaul that is not also used for front-haul communications.

As for the recited default frequency, at this juncture, Petitioner has sufficiently shown that Ho teaches that limitation based on Ho’s flowchart, which is shown below with Petitioner’s annotations.

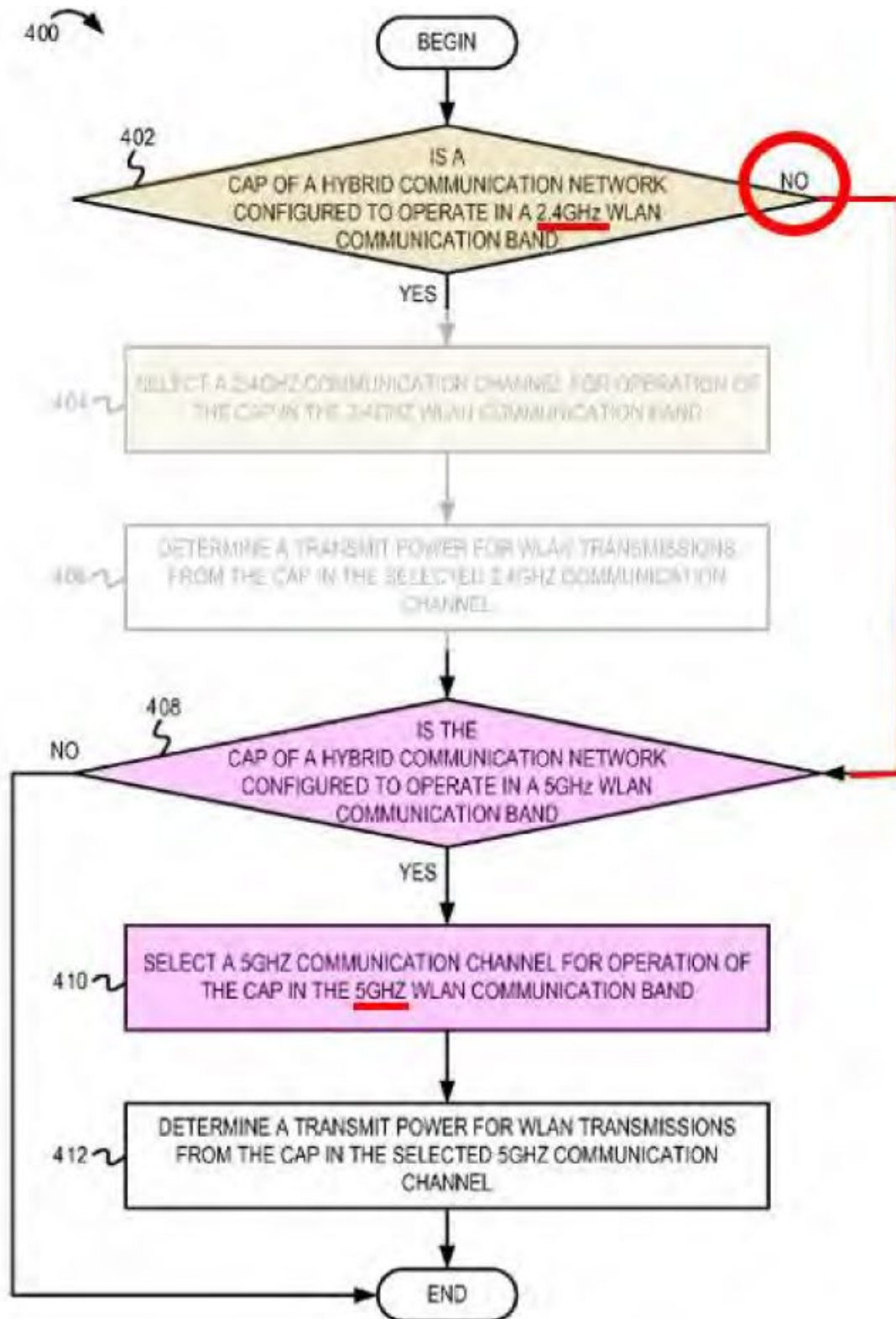


FIG. 4

The flowchart in Ho’s annotated Figure 4 shows a decision at 402: “Is a CAP of a hybrid communication network configured to operate in a 2.4 GHz WLAN communication band?” Pet. 51. If no, then a decision at 408 is made: “Is a CAP of a hybrid communication network configured to operate in a 5 GHz WLAN communication band?” *Id.* At this stage, we agree with Petitioner that the steps 410 and 412 must use the 5 GHz communication channel, not the 2.4 GHz one, for the remainder of the method. *Id.* at 49–52. Petitioner explains that the CAP can only operate in one band at a time. *See id.* at 50 (citing Ex. 1009, 17:18–22, 17:61–65).

In this way, we agree at this stage that Petitioner has established that the 5 GHz band is the “default” under one of its proposed constructions: the “preset frequency band used automatically in the absence of a choice made by the user.” *Id.* at 6, 50–51. For the same reasons, we also preliminarily determine that the 5 GHz band is also the first selected frequency band. *See* Prelim. Resp. 9. Also, as Petitioner asserts, Ho selects the band that provides “better connectivity.” Pet. 50 (citing Ex. 1009, 18:38–46). For this reason, we agree at this stage that the selected band is “a preferred frequency band,” under Petitioner’s other construction for “default frequency band.” *Id.* at 49–50 (citing Ex. 1017, 4). Thus, Petitioner has shown that Ho discloses or teaches the “default frequency band” under all three proposed constructions. *See id.* at 6; Prelim. Resp. 9.

ii. Communication of Management Functions

Petitioner asserts that Ho discloses or teaches “wherein the backhaul is to provide communication of management functions between the nodes in the network,” as claimed. *See* Pet. 48, 52–53. Petitioner maps the connection between a non-CAP hybrid device and the CAP to the claimed backhaul. *Id.* at 48 (citing Ex. 1009, 13:24–41, 18:38–46). Petitioner argues that hybrid

device 120 (the “network device”) is a non-CAP, and hybrid device 120 (the “second node”) is a CAP. *Id.* at 49 (citing Ex. 1009, Fig. 1; Ex. 1002 ¶ 143). Petitioner argues that, in this configuration, “Ho’s hybrid devices (APs) communicate over the backhaul to identify themselves, to exchange capability and configuration information with other access nodes, and to coordinate their operations.” *Id.* at 52–53 (citing Ex. 1002 ¶¶ 150–151; Ex. 1009, 4:46–55, 13:39–41, 14:4–6).¹⁰

Patent Owner argues that Ho’s hybrid device 120 does not need a backhaul because Figure 1 does not show that hybrid device 120 serves any clients. Prelim. Resp. 38. In Patent Owner’s view, any WLAN link between hybrid devices 102 and 120 would be a front haul because it would be used for the hybrid device’s own client data. *Id.* (citing Ex. 2001 ¶ 53). Patent Owner argues that Ho never uses the term “backhaul” to describe these links, rather Petitioner interjects “backhaul” into its quotations from Ho without justification. *Id.* (citing Pet. 48; Ex. 1009, 13:24–41). Patent Owner argues that Ho only uses the term “backhaul” in reference to the link between network gateway 127 and an external network. *Id.* (citing Ex. 1009, 22:57–62).

The record at this stage better supports Petitioner’s arguments than Patent Owner’s because Ho teaches that the link that Petitioner maps to the backhaul is used to indicate that CAP is in operation (Ex. 1009, 13:39–41), to indicate the selected channel (*id.*), to identify the CAP (*id.* at 14:4–46),

¹⁰ Petitioner cites “14:4-4-6” then quotes from column 14, lines 4–6: “one or more messages are broadcast to identify the CAP and to determine WLAN credentials associated with the CAP.” Pet. 53. Thus, we deem the extra “-4” here a typographical error and understand Petitioner to be relying upon 14:4–6. *Id.*

determine the CAP's WLAN credentials (*id.*), and to communicate link-metric information (*id.* at 4:46–55). Petitioner explains that Ho's hybrid devices exchange ability and configuration information with other nodes and coordinate their operations. Pet. 53. Thus, at this stage and on this record, Petitioner has sufficiently shown that the identified backhaul “is to provide communication of management functions between the nodes in the network,” as claimed. *Id.* at 52–53. That is, even if Ho does not use the term “backhaul,” Petitioner has sufficiently shown at this stage that the identified communication link in Ho meets the claimed requirements for a backhaul. *Id.*

Patent Owner argues that the Board and Patent Owner must fill in the details of Petitioner's mapping because Petitioner ignores the second level personalities of Ho's non-CAP devices. Prelim. Resp. 40 (citing Ex. 1009, 8:13–23; Pet. 49). In Patent Owner's view, Petitioner does not distinguish between these four personalities or argue that any particular personality meets the claims, but instead, merely assumes that any non-CAP-to-CAP link is a backhaul. *Id.*

At this stage, we preliminarily determine that Petitioner's mapping is sufficient. Pet. 52–53. In particular, Petitioner identifies a particular configuration of non-CAP and CAP devices. *Id.* Petitioner then maps the links carrying the configuration messages to the claimed backhaul. *Id.* at 53. These messages are exchanged between the non-CAP and CAP devices, according to the Petition. *Id.* As discussed above, these links need not “meet the claim limitations in all modes of operation”—i.e., in all possible combinations of personalities. *See ParkerVision*, 903 F.3d at 1361.

To the extent that Patent Owner's argument depends on an unstated claim construction that excludes the backhaul from also providing “wireless

data communication to clients in the network” at least some of the time, we see no persuasive reason to impose this limitation at this stage and on this record. *See* Prelim. Resp. 38–40; *see also id.* at 8–9 (not proposing any claim construction for “backhaul”). During trial, the parties may wish to discuss whether the Board should address the interpretation of this claim limitation.

Thus, Petitioner has sufficiently shown at this stage that Ho teaches that “the backhaul is to provide communication of management functions between the nodes in the network.” *See* Pet. 52–53.

c. The Different Channel

Claims 1 and 12 recite, in part,

[1.2/12.2] upon detecting that a received signal strength of the first channel from the second node is below a threshold, performing an attempt to *utilize a different channel* in the default frequency band and/or a channel in a different frequency band that has a lower frequency range than the default frequency band, to establish the backhaul with the second node,

[1.3/12.3] wherein, in any of said attempts, channels in a given frequency band are prioritized based on a corresponding received signal strength.

Ex. 1001, 11:4–13 (emphasis added).¹¹

Petitioner argues that Ho discloses or renders obvious this limitation. Pet. 53. Petitioner argues that, Ho’s non-CAP hybrid device (the recited “network device”) continuously monitors the RSSI of the wireless signals from the CAP (the recited “second node”) to continuously assess the backhaul connection’s quality. *Id.* at 53–55 (citing Ex. 1002 ¶¶ 153–155; Ex. 1009, 14:11–20, 14:21–27, 19:52–60). Petitioner argues that, when the

¹¹ Here, the limitation numbers that the Petition uses have been added to the claim.

RSSI drops below a threshold, the non-CAP will try to select another channel (the recited “different channel”) with the highest RSSI. *Id.* at 55–56 (citing Ex. 1009, 16:30–33, 16:54–57).

Petitioner argues that Ho teaches the claimed channel in two ways. *Id.* at 56. First, Petitioner argues that the new preferred channel (the claimed “different channel”) can be in the 5 GHz frequency band (the recited “default frequency band”) when the CAP establishes backhaul in a single frequency band. *Id.* (citing Ex. 1002 ¶ 157). Second, the new preferred channel is a channel in the 5 GHz band or in the lower 2.4 GHz band when (1) the CAP establishes the backhaul in both bands and (2) the non-CAP establishes the backhaul with the CAP over the 5 GHz band in its first attempt. *Id.* (citing Ex. 1009, 18:38–46).

As for the final wherein clause of the claims, Petitioner argues that, in any of the attempts, Ho’s non-CAP hybrid device selects a preferred channel based on the highest RSSI—i.e., the in-band channels are “prioritized based on a corresponding received signal strength,” as claimed. *Id.* at 56–57 (citing Ex. 1009, 16:30–33, 16:54–57). According to Petitioner, Ho’s non-CAP hybrid device performs the same backhaul-selection procedure in each attempt to ensure a good connection to the CAP. *Id.* at 57 (citing Ex. 1009, 14:11–27, 16:30–33, 16:53–60).

At this stage and on this record, Petitioner’s arguments are adequately supported. As discussed in II.D.2.b, Petitioner adequately shows that Ho’s non-CAP and CAP devices use a first channel in a default frequency band as a backhaul. *Id.* at 49–52. As for using a different channel upon detecting a below-threshold RSSI, Ho’s non-CAP device executes “channel scan operations to select candidate channels.” Ex. 1009, 16:30–33. Ho explains that the configuration identifies a “preferred channel” from those candidate

channels. *Id.* at 16:53–60. This preferred channel can be the one “with the best performance, such as the highest RSSI.” *Id.* And, at this stage, Petitioner’s reasoning about Ho’s 5 and 2.4 GHz bands (Pet. 56) is adequately supported by Ho’s discussion about the non-CAP device attempting to connect to the CAP on the band that has better connectivity (*see, e.g.*, Ex. 1009, 18:38–46).

Thus, on this record and at this stage, Petitioner has shown that Ho discloses or renders obvious limitations [1.2], [1.3], [12.2], and [12.3].

d. Conclusion

Petitioner has shown a reasonable likelihood of prevailing on showing that claims 1 and 12 are unpatentable.

3. Claims 2–11 and 13–22

Petitioner contends that the subject matter recited in claims 2–11 and 13–22 would have been obvious over Ho, and that claims 9 and 20 would have been obvious over Ho and Farid. Pet. 57–74. Patent Owner does not present arguments specifically directed to these claims. *See* Prelim. Resp. Even so, Petitioner has the burden to show that the challenged claims are unpatentable.

We have reviewed Petitioner’s arguments made in connection with claims 2–11 and 13–22 and find them to be sufficient at this stage of the proceeding and on this record. *See* Pet. 57–74.

E. Gatewood and Ho

Petitioner asserts that claims 1–6 and 12–17 are unpatentable as obvious over Gatewood and Ho. *Id.* at 13–44.

1. Gatewood

According to Gatewood, wireless local area networks (WLANs) use backhaul links to transport its communications to other networks such as the

Internet or other external networks. Ex. 1005, 1:30–33. But a wireless backhaul link may have transmission issues causing frequent downtimes. *Id.* at 1:33–35. So Gatewood uses a selection process to select a first backhaul link and another as its backup. *Id.* at 4:59–61. The WLAN access node may make this selection by comparing signal strength and uptime of a set of available links. *Id.* at 3:5–7, 20–22.

2. *Claims 1 and 12*

Claims 1 and 12 recite “performing an attempt to utilize a first channel in a default frequency band as a backhaul with [a] second node in the network” and “performing an attempt to utilize a different channel . . . to establish a backhaul with the second node.” Petitioner and Patent Owner agree that these limitations mean that the attempts must be made to establish a backhaul with the same node—i.e., the “second node.” Pet. 29; Prelim. Resp. 24.

Petitioner relies on Gatewood’s Figure 3, reproduced below.

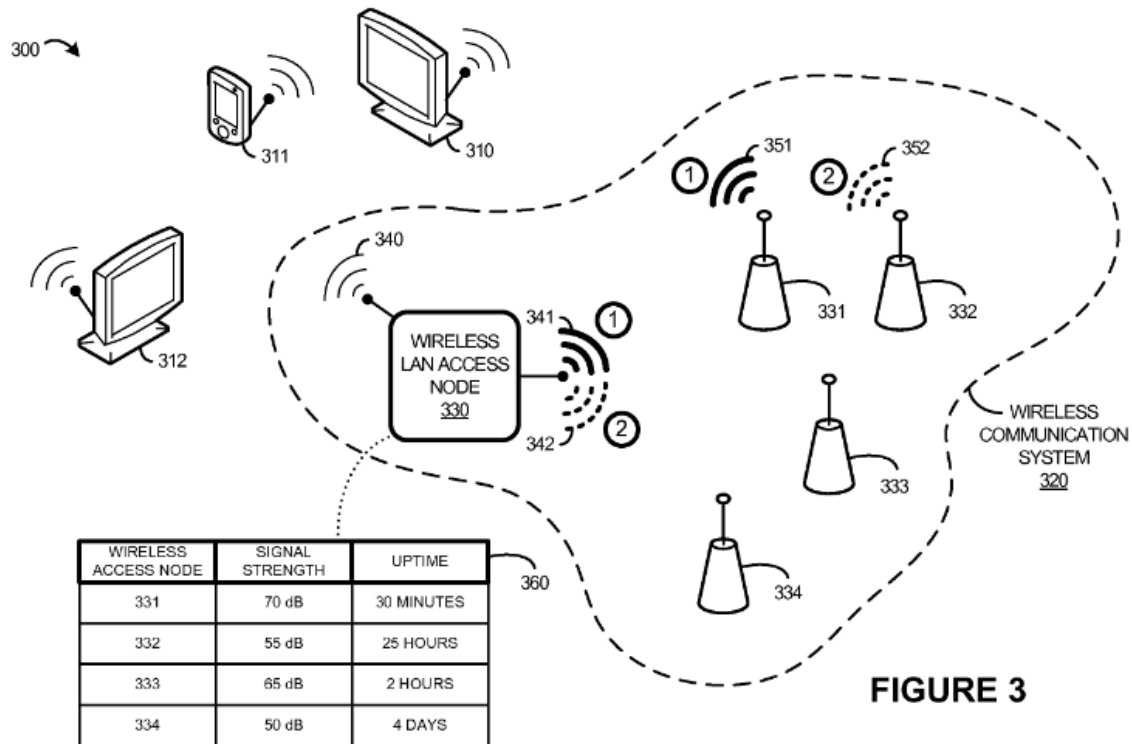


FIGURE 3

Petitioner argues that MAP 331 corresponds to the claimed “second node.” Pet. 29. According to Petitioner, Ho “establishes a single-hop backhaul path between MAP.330 (network device) and the gateway” and another backhaul path “is part of a multi-hop backhaul path (e.g., MAP.330-to-MAP.333-to-MAP.331) to the same gateway.” *Id.* (citing Ex. 1002 ¶ 100).

Patent Owner argues that Gatewood does not select a multi-hop route to node 331. Prelim. Resp. 26 (citing Ex. 2001 ¶¶ 33, 39). According to Patent Owner, Gatewood discloses that all WLAN nodes 332–334 are coupled to other networks, so there is no need for a multi-hop path through the nodes to the network. *Id.*

The record at this stage favors Patent Owner’s argument because Gatewood discloses that link 342 is a backup for link 341. Ex. 1005, 6:33–47. As a backup, link 342 provides a parallel connection from node 330 to

an external network. *See id.* at 3:58–66. Link 342 may be used when link 341 is unavailable, underperforming, or does not meet other performance criteria. *Id.* at 6:33–42.

Alternatively, Petitioner argues that Gatewood teaches forming multiple parallel wireless links between any two MAPs, including MAP 330 and MAP 331. Pet. 30 (citing Ex. 1005, 10:23–31).

Patent Owner disagrees and argues that the cited teachings relate to Gatewood’s Figure 1, which is different from Figure 3. Prelim. Resp. 27 (citing Pet. 30; Ex. 1005, 10:23–27).

The record at this stage favors Patent Owner’s argument because, although Gatewood explains that, in other examples, there may be additional wireless links, neither Figure 1 nor these other examples show the specific configuration that Petitioner relies upon. *See* Ex. 1005, 10:28–31. And, as with the first rationale, Petitioner does not give sufficient weight to Gatewood’s disclosure that link 342 is a backup for link 341. *Id.* at 6:33–47.

Lastly, Petitioner argues that “Ho also teaches forming multiple parallel backhaul connections (‘upstream links’) between a non-CAP hybrid device and a CAP using different frequency channels and, thus, Ho further confirms Gatewood’s teachings.” Pet. 31 (citing Ex. 1009, 21:7–12; Ex. 1002 ¶ 103). Petitioner also discusses Handforth and Sinha. *Id.* (citing Ex. 1006, 4:54–63; Ex. 1008 ¶ 103).

At this stage, however, we agree with Patent Owner that Petitioner has not proposed a modification to Gatewood using Ho, Handforth, or Sinha for the backhaul limitation. Prelim. Resp. 29–32. Rather, Petitioner merely explains that Ho “confirms Gatewood’s teachings” (Pet. 31) and has similar features (*id.* at 13). That is, “[a] claimed invention may be obvious even when the prior art does not teach each claim limitation, so long as the record

contains some reason why one of skill in the art would modify the prior art to obtain the claimed invention.” *Nike, Inc., v. Adidas AG*, 812 F.3d 1326, 1335 (Fed. Cir. 2016). But, here, the Petition neither discusses any particular modification to Gatewood to arrive at the claimed backhaul nor provides a reason for making a modification. *See* Pet. 13, 31.

Thus, at this stage, the record favors Patent Owner’s arguments directed to the Gatewood-Ho combination. *See* Prelim. Resp. 24–32.

III. CONCLUSION

Petitioner has shown a reasonable likelihood of prevailing as to the unpatentability of all challenged claims, and we are not persuaded that we should exercise our discretion to deny institution of trial. Thus, we institute an *inter partes* review on all claims challenged in the petition and on all grounds in the petition.

IV. ORDER

It is

ORDERED that, under 35 U.S.C. § 314(a), an *inter partes* review of claims 1–22 of the ’698 patent is instituted for all grounds in the Petition; and

FURTHER ORDERED that, under 35 U.S.C. § 314(a), *inter partes* review of the ’698 patent is instituted on this Decision’s entry date, and under 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is given of the trial’s institution.

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