

UNITED STATES INTERNATIONAL TRADE COMMISSION

Washington, D.C.

In the Matter of

**CERTAIN WI-FI ROUTERS, WI-FI DEVICES, MESH
WI-FI NETWORK DEVICES, AND HARDWARE
AND SOFTWARE COMPONENTS THEREOF**

Inv. No. 337-TA-1361

ORDER NO. 33: CONSTRUING CERTAIN CLAIM TERMS

(December 15, 2023)

I. BACKGROUND

The Commission instituted this investigation to determine whether certain Wi-Fi routers, Wi-Fi devices, mesh Wi-Fi network devices, and hardware and software components thereof infringe various claims of U.S. Patent Nos. 7,936,714; 9,468,025; 10,278,179; 10,681,698; 10,356,681; and 10,327,242. 88 Fed. Reg. 29693 (May 8, 2023). The complainant is Netgear Inc. The respondents are TP-Link Technologies Co., Ltd.; TP-Link Corporation Limited, f/k/a TP-Link International Limited; TP-Link USA Corporation; and TP-Link Research Institute USA Corp., d/b/a TP-Link Research America Corp.

Netgear's complaint asserts infringement of 101 claims across six patents. *See* Complaint (EDIS Doc. ID 793590). Netgear terminated certain asserted claims, Motion Docket No. 1361-09 (EDIS Doc. ID 808132); Order No. 25 (EDIS Doc. ID 808223), *unreviewed by* Comm'n Notice (Dec. 11, 2023) (EDIS Doc. ID 810139); Motion Docket No. 1361-14 (EDIS Doc. ID 810313); and Order No. 31 (EDIS Doc. ID 810404). At present, there are three asserted patents and 23 asserted claims. I allowed the parties to exceed the ten-term limit identified in the Ground Rules and allowed the parties extra words for their claim construction briefs. 8/30/2023 Tr. at 90–91

(EDIS Doc. ID 803590); Order No. 12 (EDIS Doc. ID 803608); and Order No. 13 (EDIS Doc. ID 804119).

The parties filed several joint charts, identifying agreed and disputed claim terms, Joint Chart (EDIS Doc. ID 803469); Amended Joint Chart (EDIS Doc. ID 803927); and Second Amended Joint Chart (EDIS Doc. ID 805163), filed a notice regarding a mooted claim term, Notice (EDIS Doc. ID 808133), and filed claim construction briefs, Netgear Br. (EDIS Doc. ID 804326); TP-Link Br. (EDIS Doc. ID 803928); Netgear Reply (EDIS Doc. ID 804519); and TP-Link Reply (EDIS Doc. ID 804529). The parties submitted initial and reply expert declarations with their claim construction briefs. Netgear Br., Ex. J (Haas Decl.); Netgear Reply, Ex. P (Haas Reply Decl.); TP-Link Br., Ex. 1 (Almeroth Decl.); and TP-Link Reply, Ex. 13 (Almeroth Reply Decl.). A claim construction hearing was held. 9/27/2023 Tr. (EDIS Doc. ID 808177). At the hearing, both parties used demonstrative exhibits. CDMX-0001 (Netgear) (EDIS Doc. ID 809981); and RDMX-0001 (TP-Link) (EDIS Doc. ID 809993). No expert testified at the hearing.

This order addresses certain claim construction issues raised by the parties.

II. RELEVANT LAW

It is a bedrock principle of patent law that the claims of a patent define the invention to which the patentee is entitled the right to exclude. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005). “[T]here is no magic formula or catechism for conducting claim construction.” *Id.* at 1324. Instead, weight may be attached to appropriate sources “in light of the statutes and policies that inform patent law.” *Id.*

The terms of a claim are generally given their ordinary and customary meaning, which is the meaning that the term would have to one of skill in the art at the time of the invention. *Id.* at 1312–13. The ordinary meaning of a claim term is its meaning to one of skill in the art after reading the entire patent. *Id.* at 1321. The patent specification “is always highly relevant to the claim

construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.” *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996).

In addition to the specification, a court “should also consider the patent’s prosecution history, if it is in evidence.” *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 980 (Fed. Cir. 1995), *aff’d*, 517 U.S. 370 (1996). The prosecution history, which is intrinsic evidence, is “the complete record of the proceedings before the PTO and includes the prior art cited during the examination of the patent.” *Phillips*, 415 F.3d at 1317. “[T]he prosecution history can often inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be.” *Id.* “[B]ecause the prosecution history represents an ongoing negotiation between the PTO and the applicant, rather than the final product of that negotiation, it often lacks the clarity of the specification and thus is less useful for claim construction purposes.” *Id.*

In some situations, a “court will need to look beyond the patent’s intrinsic evidence and to consult extrinsic evidence in order to understand, for example, the background science or the meaning of a term in the relevant art during the relevant time period.” *Teva Pharmaceuticals USA, Inc. v. Sandoz, Inc.*, 574 U.S. 318, 331 (2015). Extrinsic evidence is “all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises.” *Markman*, 52 F.3d at 980.

While expert testimony can be useful “to ensure that the court’s understanding of the technical aspects of the patent is consistent with that of a person of skill in the art,” such testimony is “generated at the time of and for the purpose of litigation and thus can suffer from bias that is not present in intrinsic evidence.” *Phillips*, 415 F.3d at 1318. “The effect of that bias can be

exacerbated if the expert is not one of skill in the relevant art or if the expert's opinion is offered in a form that is not subject to cross-examination." *Id.* Further, while extrinsic evidence may be useful, it is less reliable than intrinsic evidence, and its consideration "is unlikely to result in a reliable interpretation of patent claim scope unless considered in the context of the intrinsic evidence." *Id.* at 1319. Where the intrinsic record unambiguously describes the scope of the patented invention, reliance on extrinsic evidence is improper. *See Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1308 (Fed. Cir. 1999), *citing Vitronics*, 90 F.3d at 1583.

III. LEVEL OF ORDINARY SKILL IN THE ART

Netgear contends that for all asserted patents one of ordinary skill in the art:

would be a person with a bachelor's degree in a technical field such as electrical engineering, wireless communication, computer engineering, computer science, or physics, and/or 2-3 years of relevant practical experience in data communication or wireless networking systems. Either as an individual or as a team, [one of skill] would have access to, consult with, or otherwise possess, the skills and experience of individuals with additional specialties, such as in mechanical engineering, industrial and product design, and radio frequency transmission and reception.

Netgear Br. at 3. Netgear's expert, Dr. Zygmunt Haas, largely agrees. Haas Decl. at ¶ 17; and Haas Reply Decl. at ¶ 10.

TP-Link does not address the level of ordinary skill in its briefs. *See* TP-Link Br. at 1–46; and TP-Link Reply at 1–23. TP-Link's expert, Dr. Kevin C. Almeroth, opined in his first declaration that:

a person of ordinary skill in the art would have had a Bachelor's degree from an accredited program in electrical engineering, computer engineering, computer science, or a related field, and approximately three years of experience in the design and analysis of wireless communication systems or equivalent work experience. Superior education would compensate for a deficiency in experience, and vice-versa.

Almeroth Decl. at ¶ 35.

The parties' proposals do not appear to materially differ. Nor do the parties contend that the level of ordinary skill in the art affects any of the claim construction issues. As a result, I will defer making a finding on the level of ordinary skill in the art.

IV. AGREED CONSTRUCTION

The parties agree on the following construction:

Claim Term	Asserted Patent Claim(s)	Agreed Construction
frequency band	'714 patent, claims 1, 13, 31, 32	A generally contiguous portion of the electromagnetic spectrum which is regulated by a governmental entity, such as the Federal Communications Commission (FCC) for the United States.

Second Amended Joint Chart at 1.

For purposes of this investigation, the agreed construction is adopted.

V. TP-LINK'S MOTION FOR LEAVE TO SUPPLEMENT

TP-Link filed a motion for leave to supplement its claim construction evidence. Motion Docket No. 1361-08 (EDIS Doc. ID 806858). Netgear opposed. Netgear Opp'n (EDIS Doc. ID 807784).

TP-Link seeks to add inventor deposition testimony relating to the "receiving" and "transmitting" terms of the '714 patent, and the "default frequency band" term of the '698 patent. Mot. at 1.

TP-Link's motion does not address whether good cause exists for it to supplement the claim construction record. *See* TP-Link Mot at 1–2; and TP-Link Mem. at 1–3. In addition, the Federal Circuit has "stated that an inventor's 'after-the-fact testimony is of little weight compared to the clear import of the patent disclosure itself.'" *Roton Barrier, Inc. v. The Stanley Works*, 79 F.3d

1112, 1126 (Fed. Cir. 1996), *quoting North American Vaccine, Inc. v. American Cyanamid Co.*, 7 F.3d 1571, 1577 (Fed.Cir.1993).

For these reasons, Motion No. 1361-08 is DENIED. To the extent not decided in this Order, either party may revisit the issues implicated by the deposition testimony identified in TP-Link's motion.

VI. CONSTRUCTION OF DISPUTED CLAIM TERMS

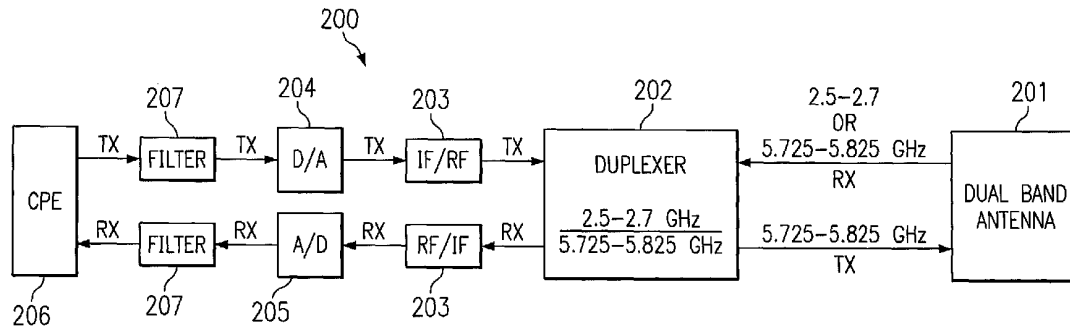
The parties' disputed constructions are addressed below.

A. The '714 Patent

1. The '714 Patent Specification

The '714 patent is titled "Spectrum Allocation System and Method for Multi-Band Wireless RF Data Communications" and relates generally to spectrum allocation for multi-band RF data communications. '714 patent at 1:7–10. The patent states that data transmission systems delivering high speed and/or high data capacity from the internet to an end user typically use RF transmissions on one frequency band, generally, transmitting and receiving on separate frequencies within the same band using either frequency division duplexing (FDD) or time division duplexing (TDD). *Id.* at 1:14–64. Because of problems with previous approaches, the patent states that the "present invention is directed to systems and methods for providing wireless data transmission spectrum allocation by utilizing separate bands for upstream and downstream wireless data communication." *Id.* at 3:30–33. By using "separate bands, particularly bands separated by an octave or more," the patent states that the "present invention increases the efficiency and capacity of a wireless data communication system by allowing use of the full bandwidth available, in each band, to an operator." *Id.* at 4:18–22.

Figure 2 shows an embodiment of a subscriber unit 200 with a multi-band antenna 201 and a duplexer 202.



Id. at Fig. 2. Duplexer 202 “preferably accommodates upstream and downstream communications on at least two greatly different bands of operation” and in a “preferred embodiment duplexer 202 operates in two separate bands of operation, as opposed to transmitting and receiving on frequencies within the same band of operation, as with prior art duplexers.” *Id.* at 7:50–55. Figure 2 shows reception on 2.5–2.7 or 5.725–5.825 GHz bands and transmission on the 5.725–5.825 GHz band.

Figure 3 illustrates a base station, which includes a duplexer 302. The patent discloses that in a preferred embodiment, duplexer 302 enables “use of at least two different transmit and receive bands.” *Id.* at 8:52–54. According to the patent, a “preferred embodiment of duplexer 302 operates in separate bands of operation, as opposed to prior art duplexers which transmit and receive on frequencies within a single band of operation.” *Id.* at 8:56–60. Similar to Figure 2, Figure 3 shows transmission on 2.5–2.7 or 5.725–5.825 GHz bands and reception on the 5.725–5.825 GHz band.

2. The Disputed Terms of the '714 Patent

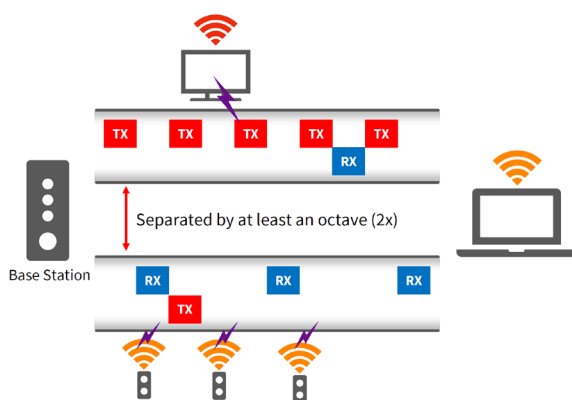
a) Receiving ... and Transmitting ...

The parties propose:

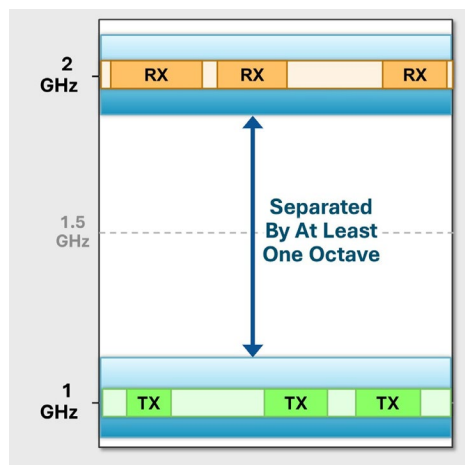
Term and Asserted Patent Claim(s)	Netgear's Construction	TP-Link's Construction
receiving ... in a frequency band expected to experience [low/high] interference transmitting ... in a frequency band expected to experience [high/low] interference '714 patent, claims 1, 12, 31, and 32	Plain and ordinary meaning.	The claims require separate bands for receiving and transmitting.

Second Amended Joint Chart at 2.

Though not clearly reflected in the language of the parties' proposals, the dispute is whether the band recited as receiving is used exclusively for receiving and whether the band recited as transmitting is used exclusively for transmitting. The parties' arguments and presentations support that this is the actual dispute. In describing what it contends is the patent's solution, Netgear shows transmitting and receiving occurring on both bands. CMDX-001.0009 (below, left). TP-Link shows the patent as directed to either transmitting or receiving on a respective band, not both. RMDX-0001.0013 (below, right).



CMDX-001.0009



RMDX-001.0013

TP-Link contends that “[t]he plain language of the ’714 patent’s claims recite two separate frequency bands, one for ‘receiving’ and one for ‘transmitting.’” TP-Link Br. at 4. Netgear contends that TP-Link is rewriting the claims with “novel negative limitations, i.e., that a recited band used for ‘transmitting’ is ‘not used for receiving,’ and the band for ‘receiving’ is ‘not used for transmitting.’” Netgear Br. at 5–6.

Each party argues that the intrinsic evidence supports its proposed construction. *See, e.g.*, Netgear Br. at 6 (“The claim language, specification, and prosecution history all directly refute TP-Link’s negative limitation.”); and TP-Link Br. at 4 (“Because Netgear’s interpretation runs contrary to the claims’ plain language, the specification, and the prosecution history, it should be rejected.”).

The intrinsic record supports that the exclusivity advocated by TP-Link is not mandated by the claims. The claim language itself, the specification, and the prosecution history, each support that the claimed actions of “receiving” and “transmitting” do not require exclusive bands.

Starting with the claim language, claims 13 and 32 recite:

13. A method for increasing capacity of a wireless data communication system, said method comprising the steps of:

transmitting, at a base station, data on a first frequency in a *frequency band expected to experience low interference*;

receiving, at said base station, data on a second frequency in a *frequency band expected to experience high interference*;

wherein said first frequency and said second frequency are *separated by at least one octave*; and

wherein at least a portion of said receiving and at least a portion of said transmitting occur at the same time.

'714 patent, claim 13 (emphases added).

32. A method for increasing capacity of a wireless data communication system, said method comprising the steps of:

transmitting, at a base station, data on a first frequency in a first *frequency band expected to experience low interference*;

receiving, at said base station, data on a second frequency in a second *frequency band expected to experience high interference*;

wherein said first frequency and said second frequency are *separated by at least one octave*; and

wherein said transmitting and said receiving occur during the same communication session.

Id., claim 32 (emphases added).

The phrases in which the disputed claim terms appear do not use any terms of restriction, nor do the limitations that follow. The terms themselves recite transmitting on a first frequency in a first frequency band and receiving on a second frequency in a second frequency band. There is nothing in this language that precludes receiving in the first band or transmitting in the second band.

TP-Link contends “[t]he claims’ plain language indicates separate bands are required for transmitting and receiving” and that the claim language establishes “a clear dichotomy: the subscriber station receives on one band (expected to experience low interference) and transmits on

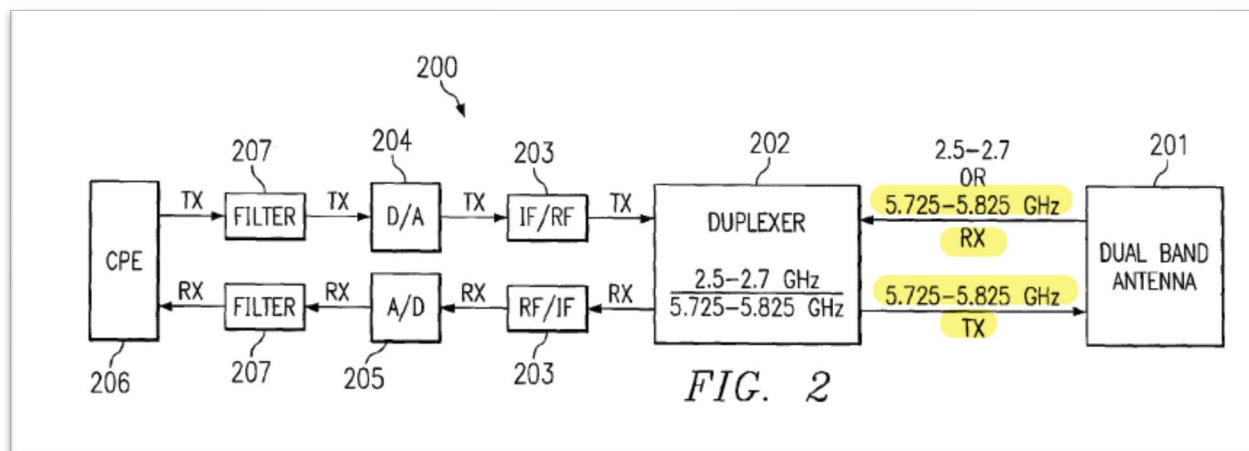
another (expected to experience high interference).” TP-Link Br. at 4 (emphases removed). It is true that claim recites separate bands. It is also irrelevant. TP-Link points to nothing in the claim language that mandates exclusivity of transmitting on a first frequency in a first band or exclusivity of receiving on a second frequency in a second band.

The limitation after the disputed terms recites the amount of separation between the first and second bands: they must be “separated by at least one octave.” The final limitation of claim 13 recites that “at least a portion” of the receiving and transmitting occur at the same time. *See id.* at claim 13. The final limitation of claim 32 recites that “transmitting and said receiving occur during the same communication session.” As with the disputed terms themselves, none of these limitations impose exclusivity of transmitting on the first band or exclusivity of receiving on the second band.

Netgear correctly points out that the claims use the open-ended “comprising” transition, which signals that the claims allow for additional steps. Netgear Br. at 7. *Crystal Semiconductor Corp. v. TriTech Microelectronics Int’l., Inc.*, 246 F.3d 1336, 1348 (Fed. Cir. 2001) (“In the parlance of patent law, the transition ‘comprising’ creates a presumption that the recited elements are only a part of the device, that the claim does not exclude additional, unrecited elements”). That presumption supports, but does not dictate, that exclusivity of transmission or reception on the claimed bands is not required. The claim language itself does not require exclusivity. Nor do the specification or prosecution history.

The specification discloses embodiments in which a frequency band is used for both transmitting and receiving. Figure 2 is described as “a diagrammatic illustration of an embodiment of a subscriber station employing dual-band wireless data communication in accordance with the

present invention.” ’714 patent at 6:37–39. Figure 2 shows that the same band, the “5.725–5.825 GHz” band, is used for both transmitting and receiving at a subscriber station:



Id. at Fig. 2 (annotated). The specification states that “[d]uplexer 202 preferably accommodates upstream and downstream communications on at least two greatly different bands of operation. A preferred embodiment duplexer 202 operates in two separate bands of operation, as opposed to transmitting and receiving on frequencies within the same band of operation, as with prior art duplexers.” *Id.* at 7:50–55. The embodiment shown in Figure 3 is similar. *Id.* at Fig. 3; 6:40–42; and 8:57–59.

TP-Link contends that while Figures 2 and 3 “depict a radio that appears capable of transmitting and receiving in the same band, there is no indication such functionality was intended to form part of the claimed invention.” TP-Link Reply at 1. TP-Link contends that “the patentee could not have been clearer that ‘the present invention’ uses *separate* bands to transmit and receive.” *Id.* (emphasis in original). As noted, however, the claims unambiguously require separate bands for receiving and transmitting. The claims do not require, and the specification supports that the claims do not require, exclusive use of those separate bands for receiving or transmitting.

TP-Link's reference to prior art addressed in the specification is also unavailing. TP-Link Reply at 1–2. The patent explains that the prior art used a single band for transmitting and receiving. '714 patent at 1:30–40 (prior art systems typically “utilize one frequency band of operation, generally, transmitting and receiving on separate frequencies within the same basic band”); and *see id.* at 4:27–30 (“Prior art ... systems do not use over one octave of separation”). Figures 2 and 3 disclose multiple separated (but not exclusive) bands.

TP-Link contends that “[t]he specification confirms that the invention uses separate bands for transmitting and receiving.” *See* TP-Link Br. at 4–6, citing '714 patent at Abstract (“A dual band spectrum allocation system and method for wireless data communications uses discrete bands for upstream and downstream data communications”); 3:30–33 (“The present invention is directed to systems and methods for providing wireless data transmission spectrum allocation by utilizing separate bands for upstream and downstream wireless data communication”); 4:18–22 (“By utilizing separate bands, particularly bands separated by an octave or more, the present invention increases the efficiency and capacity of a wireless data communication system by allowing use of the full bandwidth available, in each band, to an operator”); 4:55–57 (“Whereas the present invention uses separate bands of operation to carry out upstream and downstream data transmission, the present invention necessarily addresses some distinctive technical problems”); and 5:24–26 (“In accordance with the present invention, transmit and receive signals occupy different parts or bands of the EM spectrum, preferably separated by at least an octave of frequency”). There is no dispute, however, that the claims require separate bands. The statements in the specification do not limit the invention to exclusively transmitting on one band and exclusively receiving on another. *See, for example*, '714 patent at Figs. 2 and 3; 7:53–55; and 8:57–59.

TP-Link contends that during prosecution, the “patentee repeatedly characterized the invention’s novel aspect as transmitting and receiving in different bands.” TP-Link Br. at 6. There, the applicant noted that the prior art allocated one “band for communication of the uplink and downlink.” JMX-0006.478 (EDIS Doc. ID 810237). Applicant argued that its claimed invention “solves the problem in a different way” such that “communication of the downlink is allocated on the licensed band to achieve a higher, cleaner throughput, while communication on the uplink is achieved on the unlicensed band” such that “a subscriber would receive in one band, and then transmit in a different band.” *Id.* Applicant further explained that that the difference between the prior art and the claimed invention was that in the prior art “receiving and transmitting [are] in one band,” while in the claimed invention, “the transmission and reception occur in different bands.” *Id.* at 479. *See also id.* at 480 (“the transmission occurs in one band, and reception occurs in another band, at the same time”); and *id.* at 482 (“the reception and the transmission in different bands, during the same communication session”). Applicant’s statements demonstrate that separate bands are required for reception and transmission. Applicant’s statements do not require exclusivity of receiving or transmitting on those separate bands.

Netgear contends that applicant’s argument rebutting a rejection under 35 U.S.C. § 112 supports its position. Netgear Reply at 2–3. The Examiner rejected certain claims for indefiniteness, stating that “providing communications on ‘a first frequency’ or a ‘second frequency’ are unclear, because communication systems [] typically utilize a spectrum of frequencies for communication. The transmit or receive signal comprises a group/spectrum of frequencies, as transmitting and receiving data on a single frequency is not possible.” JMX-0006.315. In response, applicant contended that “[t]here is nothing in the claim language to suggest that Appellant intends to limit transmitting on only the ‘first’ or ‘second’ frequency” and that one

of ordinary skill “would understand the phrase ‘transmitting data . . . on a first frequency’ to mean transmitting data on or about a first frequency.” *Id.* at 381. Contrary to Netgear’s assertion, the applicant’s explanation of the claimed first frequency as being “on or about a first frequency” does not address the issue disputed here.

Based on the arguments presented in the briefs and at the hearing, the “receiving” and “transmitting” terms are construed to have their plain and ordinary meanings, which do not require exclusive bands for receiving and transmitting.

b) Low Interference/High Interference

The parties propose:

Term and Asserted Patent Claim(s)	Netgear’s Construction	TP-Link’s Construction
frequency band expected to experience low interference frequency band expected to experience high interference '714 patent, claims 1, 12, 31, and 32	Not indefinite. Plain and ordinary meaning, where a “frequency band expected to experience low interference” is relative to “a frequency band expected to experience high interference.”	Indefinite.

Second Amended Joint Chart at 2.

TP-Link contends that the disputed terms are indefinite because they are “subjective terms of degree, yet the specification provides no objective boundary for these terms.” TP-Link Br. at 8; *see id.* at 8–12, TP-Link Reply at 3–7. TP-Link submits a declaration from Dr. Almeroth, with several pages dedicated to his opinion that the claim terms “frequency band expected to experience low interference” and “frequency band expected to experience high interference” are indefinite. Almeroth Decl. at ¶¶ 36–48. TP-Link’s claim construction presentation relies on the declaration of its expert. RDMX-0001.45, and 51.

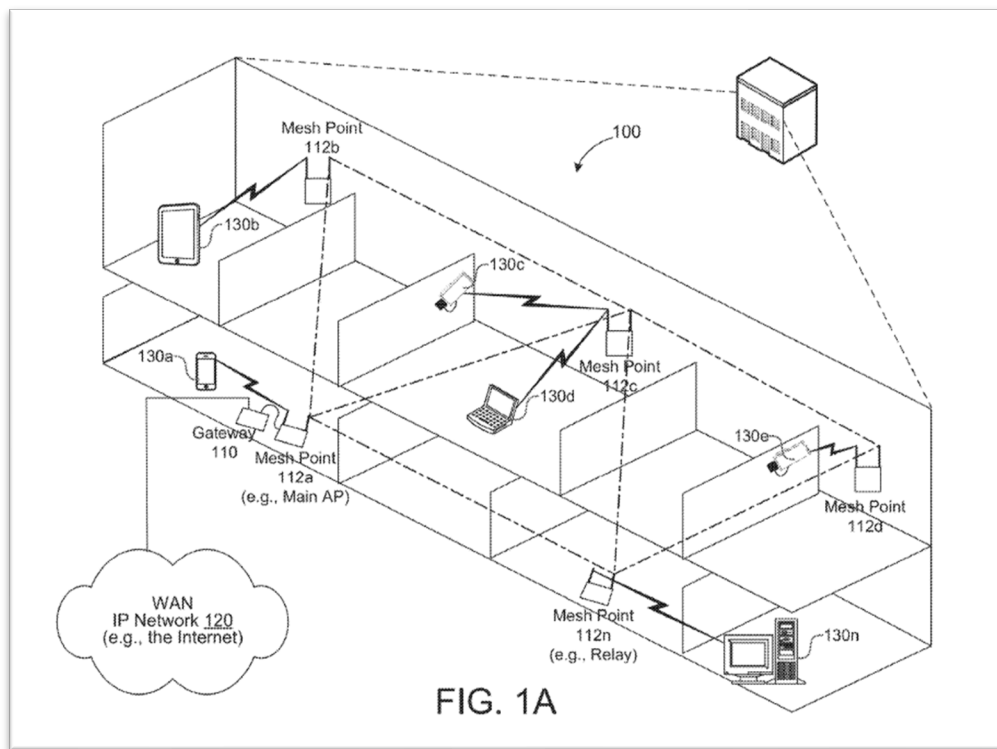
Netgear refutes indefiniteness, contending that “[t]he intrinsic evidence demonstrates the terms are used in the relative sense, rather than as reference to strict numerical values, and how [one of ordinary skill] can objectively distinguish the relative expected interference characteristics of two given frequency bands.” Netgear Br. at 10; *see id.* at 9–13; and Netgear Reply at 4–7. Netgear submits a declaration from Dr. Haas, who like Dr. Almeroth, spends several pages explaining why the same terms are not indefinite. Haas Decl. at ¶¶ 13–31. Netgear’s claim construction presentation relies on the declarations of its expert. CDMX-0001.41, 44, and 55; *see also* Tr. 50, 58–59, 60–61, and 65.

Both parties thus appear to contend that consideration of extrinsic expert testimony is required to resolve this dispute. Without taking a position on whether extrinsic expert testimony is necessary (or even helpful), the present record is incomplete because neither expert testified at the claim construction hearing and neither expert was cross-examined. *See Phillips*, 415 F.3d at 1318 (the effect of bias may be exacerbated if the expert’s opinion is offered in a form that is not subject to cross-examination.) As a result, and because of the complexity of the underlying technology, a finding on indefiniteness will be deferred until after the evidentiary hearing. *Certain Video Processing Devices and Products Containing the Same*, Inv. No. 337-TA-1341, Order No. 27 at 2–3 (Sept. 22, 2023) (EDIS Doc. ID 804718); *see also Int’l Dev. LLC v. Richmond*, No. 09-2495, 2010 WL 4703779 at *7 (D.N.J. Nov. 12, 2010) (deferring the parties’ indefiniteness arguments until summary judgment because of “(1) the high burden of proof required to show indefiniteness and (2) its potentially dispositive, patent-invalidating nature”).

B. The '179 Patent

1. The '179 Patent Specification

The '179 patent is titled “Dedicated Backhaul Link for a Robust Wireless Mesh Network” and generally relates to “techniques for implementing a local area wireless mesh network.” '179 patent at 1:43–44. Techniques are disclosed “to provide automated mesh point survey and guided installation for assisting the installation and configuration of a wireless mesh network.” *Id.* at 4:11–14. Figure 1A shows a wireless mesh network environment 100 “within which some embodiments may be implemented.” *Id.* at 4:65–67.¹

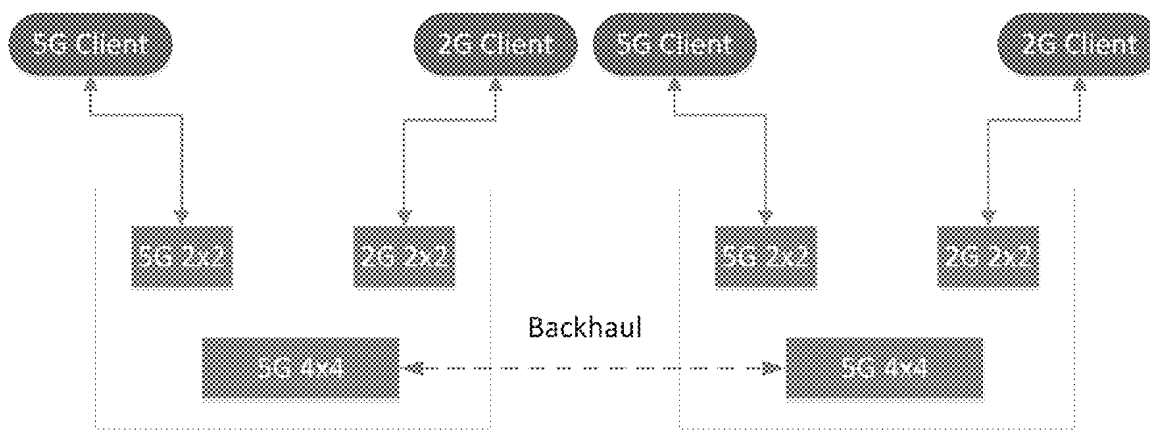


Id. at Fig. 1A. Environment 100 includes a gateway 110, a main mesh point 112a, additional mesh points 112b-112n, a wide area network (WAN), and a plurality of client devices 130a-130n. *Id.* at

¹ Netgear addresses the '179 and '698 patents together because they claim priority to the same provisional applications. *See* Netgear Br. at 30. The '179 and '698 patents, however, have different disclosures and are therefore more appropriately addressed separately.

4:67–53. The main mesh point 112a, which may operate in a “main access point (AP) mode,” is connected to the internet and directly or indirectly provides network access to the internet for other mesh points 112b-112n. *Id.* at 5:20–29. Client devices are thus also connected to the network. *Id.*

The '179 patent discloses wireless mesh networks that implement a backhaul communication between mesh points, which is dedicated to servicing data traffic between the mesh points. Figure 19 illustrates a backhaul link established between two mesh points in a mesh network.



Id. at Fig. 19. In addition to “data packet forwarding to and from the gateway and the Internet,” the mesh points can use circuits to form one or more dedicated backhaul links among them. Such backhaul links can be used “to perform control and management functions, for example, the controlling entity to instruct a mesh point to execute a roaming decision for a client.” *Id.* at 27:5–21. Forming a dedicated backhaul communication “can be utilized to provide more throughput,” or to increase the amount of data that can be transmitted and received during a specific time. *Id.* at 27:17–21. The '179 patent explains that a dedicated backhaul communication between mesh points is preferred, but an alternative backhaul communication may be used if the dedicated backhaul communication is not functioning or has poor performance. *Id.* at 27:55–64 and 28:20–41.

2. Disputed Claims Terms of the '179 Patent

a) Forward Wireless Communication

The parties propose:

Term and Asserted Patent Claim(s)	Netgear's Construction	TP-Link's Construction
forward wireless communication backhaul communication, separate from the forward wireless communication '179 patent, claims 1 and 11	Not indefinite. A “forward wireless communication” is a “client-facing wireless communication,” and remainder of the term, plain and ordinary meaning.	Indefinite.

Second Amended Joint Chart at 3.

The full limitations of claims 1 and 11 with the disputed terms are:

establishing a *forward wireless communication* with a second mesh point;

establishing a *backhaul communication, separate from the forward wireless communication*, with the second mesh point,

'179 patent, claims 1 and 11 (emphases added).

TP-Link contends “[t]he '179 patent’s claims should be held indefinite because [one of ordinary skill] could not reasonably ascertain the distinction between the claimed ‘forward wireless communication’ and the separate ‘backhaul communication.’ While these terms have multiple *potential* definitions, [one of ordinary skill] would be unable to know which is correct.” TP-Link Br. at 27 (emphasis in original). TP-Link submitted a declaration from its expert, who spent several pages explaining why these terms are indefinite. Almeroth Decl. at ¶¶ 49–60.

Netgear argues that “forward wireless communication” “is not a term of art, but [one of ordinary skill] would understand the intrinsic record to implicitly define it as a wireless communication established using a radio that is available for client communications” and that its

“proposed construction of ‘forward wireless communication’ as a ‘client-facing wireless communication,’” “makes explicit its distinction from the claimed ‘backhaul communication’” and that “[w]ith that, no further construction is necessary as [one of skill] would understand a ‘backhaul, separate from the [client-facing] wireless communication’ according to its plain and ordinary meaning.” Netgear Br. at 35. Netgear submitted a declaration from its expert, 20 pages of which is dedicated to explaining why these terms are not indefinite. Haas Decl. at ¶¶ 69–90.

Based on the arguments presented on these terms at the hearing, I asked the parties to meet and confer and provide proposed constructions for the term “alternative backhaul communication.” Tr. 274:5–22. They did so, proposing:

Term and Asserted Patent Claim(s)	Netgear’s Construction	TP-Link’s Construction
alternative backhaul communication ’179 patent, claims 1, 4, 5, 6, 11, 14, 15, and 16	Plain and ordinary meaning.	The alternative backhaul communication is (1) a distinct link relative to the forward wireless communication; and (2) an alternative “backhaul communication,” <i>i.e.</i>, “is established using a communication technology selected from the group consisting of: a power line based communication, a 2.4 GHz or 5 GHz radio frequency (RF) technology using a dedicated radio, and a sub-1GHz RF technology.”

Parties’ Proposed Constructions for “Alternative Backhaul Communication.” (EDIS Doc. ID 805421).

For the reasons previously given, resolution of this issue will be deferred until after the hearing. Also, to the extent necessary to resolve this issue, the parties should address their proposed constructions of “alternative backhaul communication.”

b) Markush Group

The parties propose:

Term and Asserted Patent Claim(s)	Netgear’s Construction	TP-Link’s Construction
wherein the [forward wireless]/[backhaul] communication is established using a [wireless] communication technology . . . selected from the group consisting of: . . .” ’179 patent, claims 1 and 11	These limitations are closed-form Markush groups, wherein the “[forward wireless] / [backhaul] communication is established using” any one of the alternatives in the corresponding Markush group.	These limitations are closed-form Markush groups. The claimed communication must be capable of being established using each of the elements in the closed-form Markush group.

Second Amended Joint Chart at 3–4.

The complete language of the portions of the claims containing the disputed limitations is:

wherein the forward wireless communication is established using a wireless communication technology using frequency bands selected from the group consisting of: a 2.4 GHz band, and a 5 GHz band, and

wherein the backhaul communication is established using a communication technology selected from the group consisting of: a power line based communication, a 2.4 GHz or 5 GHz radio frequency (RF) technology using a dedicated radio, and a sub-1GHz RF technology; and

’179 patent, claims 1 and 11.

The parties agree that “selected from the group consisting of” means that the limitations are closed-form Markush groups such that the claimed “communication technology” is respectively selected from only the specifically recited technologies. *See* Netgear Br. at 43; and TP-Link Br. at 31.

TP-Link recognizes that a Markush group is “a listing of specified alternatives of a group in a patent claim, typically expressed in the form: a member selected from the group consisting of A, B, and C,” but contends that during prosecution, “the patentee clearly and unmistakably

disavowed solutions that did not practice all members of the claimed group[s].” TP-Link Br. at 31. Netgear argues the claimed communications need only be established using one of the specific alternatives in the recited groups. Netgear Br. at 44.

TP-Link notes that after a prior art rejection during prosecution, the applicant amended the claims to place them in their current Markush form where they had previously recited “one or more” of the claimed groups. TP-Link Br. at 32–33. In arguing patentability, the applicant stated that the prior art did not disclose “each and every element” of the claims. *Id.* at 33. TP-Link contends that this means that the applicant argued that the prior art did not disclose each and every member of the amended Markush group limitations. *Id.* I disagree. Under no reasonable interpretation of the prosecution history did arguing that the prior art does not disclose “each and every” limitation of the claims transform either of the Markush limitations, which TP-Link recognizes as “a listing of specified alternatives,” into a listing of specified requirements. TP-Link Br. at 31; and Tr. 213:10–11. Nor did the Examiner, by simply repeating the claim language, accept any disclaimer, as TP-Link argues. *Id.* at 33. In addition, the applicant’s citation to MPEP section 803.2, which explains how examiners should examine Markush claim limitations, did not transform the Markush groups’ lists of alternatives into lists of requirements.

A patent’s prosecution history, though “less useful for claim construction purposes” than the claim language and written description, can play various roles determining claim scope. *Phillips*, 415 F.3d at 1317. “When the prosecution history is used solely to support a conclusion of patentee disclaimer, the standard for justifying the conclusion is a high one.” *Avid Tech., Inc. v. Harmonic, Inc.*, 812 F.3d 1040, 1045 (Fed. Cir. 2016). Federal Circuit “precedent requires that the alleged disavowing actions or statements made during prosecution be both clear and unmistakable.” *Id.*, quoting *Omega Eng’g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1325–26

(Fed.Cir.2003); *see also Storage Tech. Corp. v. Cisco Sys., Inc.*, 329 F.3d 823, 833 (Fed.Cir.2003).

When an alleged disavowal is ambiguous or amenable to multiple reasonable interpretations the Federal Circuit has declined to find prosecution disclaimer. *Omega*, 334 F.3d at 1325 (“[W]e have thus consistently rejected prosecution statements too vague or ambiguous to qualify as a disavowal of claim scope”). The record here does not support a clear and unmistakable prosecution disclaimer.

Based on the arguments presented in the briefs and at the hearing, I reject TP-Link’s proposal and conclude that the disputed terms require selection from any one of the alternatives in the claimed group.

c) Preambles of Claims 1 and 11

The parties propose:

Term and Asserted Patent Claim(s)	Netgear’s Construction	TP-Link’s Construction
“A computer-implemented method for implementing a dedicated backhaul in a wireless mesh network formed with one or more mesh points, the method being performed by a first mesh point and comprising: A computing device comprising: one or more processors, that implements a mesh point in a wireless mesh network formed with a plurality of mesh points, the computing device being configured to perform a method comprising: ... ’179 patent, claims 1 and 11	Claim 1: Preamble is limiting, wherein a first mesh point performs a method for implementing a dedicated backhaul in a wireless mesh network, the method comprising: Claim 11: Preamble is limiting, wherein one or more processors implementing a mesh point in a wireless mesh network being configured to perform a method comprising:	Preambles are limiting. The claimed “a [first] mesh point” performs each of the limitations recited in the claim.

Second Amended Joint Chart at 4.

The parties agree that the preambles of claims 1 and 11 are limiting. Netgear Br. at 46; and TP-Link Br. at 25. That much is clear. What is less clear is the dispute between the parties. As to claim 1, TP-Link contends that a first mesh point must perform each step recited in the claim. TP-Link Br. at 26. Netgear contends that TP-Link's use of "each of" in its proposed construction "implies the mesh point must perform each recited step exclusively, without any other entities within the mesh network." Netgear Br. at 46–47. TP-Link responds that it is not importing an exclusivity requirement. TP-Link Reply at 16. At the hearing, TP-Link stated that it "categorically" is not arguing "that the word 'exclusive' or 'exclusively' should be imported into this claim." Instead, TP-Link contends that "the plain language of the claims requires that a first mesh point performs each verb of the limitations; that is, in each of these verb phrases, the subject of that is a first mesh point." Tr. 160:19–25. Netgear appears to agree that the first mesh point must be involved in each of the method steps. Tr. 157:6–9.

What remains unclear is whether TP-Link agrees that other components or entities (*i.e.*, other than the first mesh point) can be involved in the claimed method steps. The claim language itself does not preclude such involvement because there is no language in the claim suggesting that only the first mesh point performs each of the claimed steps. And to the extent the steps recited in claim 8 are part of "establishing the backhaul communication" in claim 1, claim 8 supports that another entity, there "a controlling entity," may be involved in that step. Dependent claim 8 thus confirms that entities in addition to the first mesh point may be involved in the claimed steps.

As for claim 11, the preamble recites: "A computing device comprising: one or more processors, that implements a mesh point in a wireless mesh network formed with a plurality of mesh points, the computing device being configured to perform a method comprising." '179 patent, claim 11. TP-Link proposes that the mesh point "performs each of the limitations recited

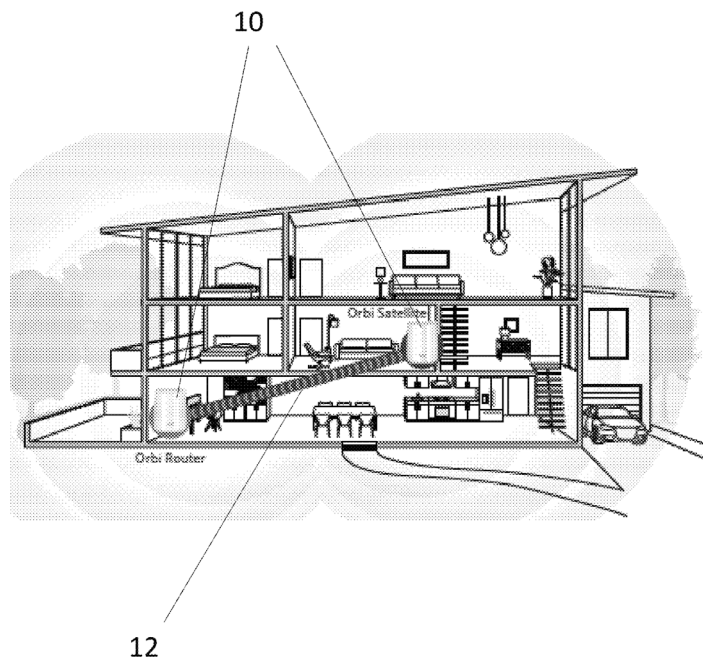
in the claim.” Second Amended Joint Chart at 4; *see also* TP-Link Reply at 17; and Tr. 164:13–21. The claim, however, recites “the computing device being configured to perform a method comprising.” The computing device, per the claim language, performs the claimed method.

The claim also recites that the computing device comprises “one or more processors” and that the computing device comprising one or more processors implements the mesh point. These recitations do not change that it is the claimed computing device that performs the claimed method. And similar to claim 1 and dependent claim 8, claim 17 recites that “a controlling entity” may be involved. Based on the claim language itself, I conclude that the claimed computing device is configured to perform the claimed method and that other entities may also be configured to be involved in the recited steps.

C. The ’698 Patent

1. The ’698 Patent Specification

The ’698 patent is titled “Dedicated Backhaul for Whole Home Coverage” and discloses “techniques for establishing and maintaining a dedicated backhaul for whole home coverage.” ’698 patent at 2:36–38. Figure 1 is described as a schematic diagram showing a dedicated backhaul for whole home coverage in which a system of smart Wi-Fi nodes 10 includes a dedicated backhaul 12.



Id. at Fig. 1.

The specification discloses that “[e]mbodiments of the invention variously apply optimization techniques, such as using the 5 GHz high band or low band as a dedicated backhaul; using the 2.4 GHz band as backup if the 5 GHz band fails to reach between nodes; using Ethernet when it is better than the 5 GHz and 2.4 GHz bands and it is available; and using a spanning tree protocol or a variant to avoid loops.” *Id.* at 2:48–54. Further, in “embodiments of the invention, the dedicated backhaul is used if the received signal strength indication (RSSI) of the dedicated channel is above a threshold.” This threshold “can be defined and modified on the hardware after hardware qualification is done.” *Id.* at 3:6–10.

Figure 2 “is an example in which the dedicated 5 GHz band is used as a method of communication between two devices.” *Id.* at 3:52–53.

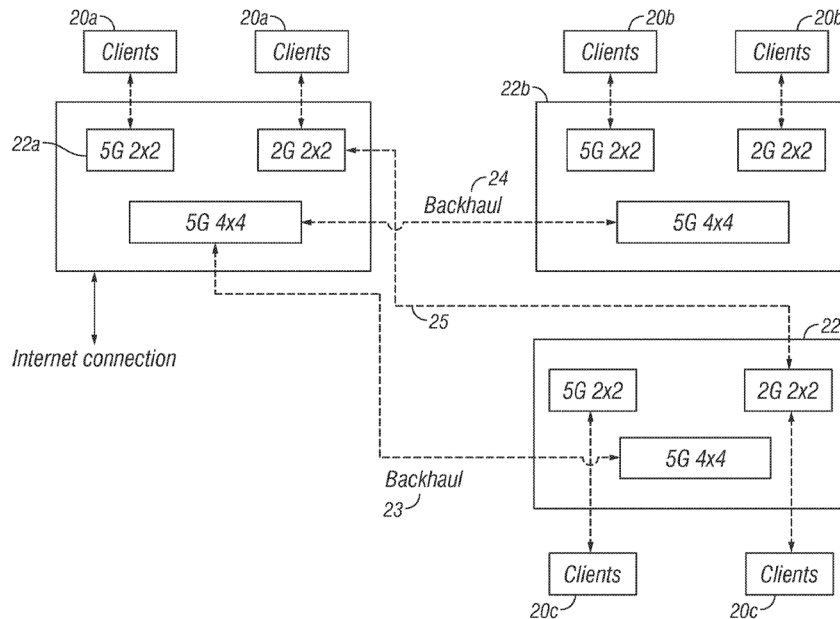


FIG. 2

Id. at Fig. 2.

Client devices 20a-20c are associated with respective nodes 22a-22c, which each include one or more 2.4 GHz radios and one or more 5 GHz radios. *Id.* at 3:54–55. The nodes are connected by dedicated 5 GHz backhaul connections 23 and 24, though a 2.4 GHz connection 25 may be used as a backhaul when a 5 GHz connection is not available. *Id.* at 3:56–59. The patent explains that “[t]hose skilled in the art will appreciate that any other connection may be substituted for the 5 GHz backhaul connection when such connection is not available, including for example another 5 GHz radio, a radio in a band other than 5 GHz and 2.4 GHz, etc.” *Id.* at 3:61–65. The patent also states that “[a] dedicated wireless band is the preferred method of wireless communication if the dedicated band is available for communication and the quality of the dedicated link is better than a defined threshold.” *Id.* at 4:28–31.

2. Default Frequency Band

The parties propose:

Term and Asserted Patent Claim(s)	Netgear's Construction	TP-Link's Construction
default frequency band '698 patent, claims 1 and 12	A preferred frequency band.	Preset frequency band used automatically in the absence of a choice made by the user.

Second Amended Joint Chart at 4.

The parties' dispute centers on the meaning of "default" in the "default frequency band" term. *See* Netgear Br. at 48–52; TP-Link Br. at 42–46; Netgear Reply at 24–26; and TP-Link Reply at 15–16. The parties' experts also extensively address the meaning of "default." Haas Decl. at ¶¶ 24–34; Almeroth Decl. at ¶¶ 104–111; Haas Reply Decl. at ¶¶ 54–68; Almeroth Reply Decl. at ¶¶ 23–24.

Netgear argues "default frequency band" should be construed as "a preferred frequency band." Netgear Br. at 49; *see id.* at 48–52, Netgear Reply at 24–26. TP-Link contends that the term should be construed as a "preset frequency band used automatically in the absence of a choice made by the user." TP-Link Br. at 42; *see id.* at 42–46, TP-Link Reply at 15–16.²

The claim language provides context for the claimed "default frequency band." Claims 1 recites:

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,

² At the claim construction hearing, I asked the parties whether the "default frequency band" term could be construed as "dedicated frequency band." *See* Tr. 191:6–13. TP-Link disagreed and Netgear agreed. *See* Tr. 191:14–192:10 and 198:1–17.

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.

'698 patent, claim 1 (emphases added).

12. A network device capable of establishing a backhaul communication among nodes in a mesh wireless network, the device including a network controller configured to perform operations 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 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., claim 12 (emphases added).

Claims 1 and 12 recite “establishing a backhaul communication between nodes in a mesh network.” ’698 patent, claims 1 and 12. To establish the backhaul communication, an attempt is made “to utilize a first channel in a default frequency band as a backhaul with [a] second node in the network.” *Id.* If “the received signal strength of the first channel” of the default frequency

band “is below a threshold,” an attempt is made “to establish the backhaul with the second node” using “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.” *Id.* Based on the explicit claim language, the “default frequency band” is the frequency band that is attempted first. A different frequency band with a lower frequency range is used as a backup “upon detecting the received signal strength of the first channel” if the default frequency band is below a threshold.

The specification does not use the term “default frequency band” but discloses operations like those recited in the claims. The specification explains that “[a] dedicated wireless band is the preferred method of wireless communication if the dedicated band is available for communication and the quality of the dedicated link is better than a defined threshold.” ’698 patent at 4:28–31. The specification is consistent with the claims that a first frequency band is attempted for backhaul communications and if the signal strength is below a threshold, a different frequency band may be attempted. For example, the specification teaches that “[i]n embodiments of the invention, ... [a] 5 GHz dedicated band is preferred if the [received signal strength indicator] RSSI meets predetermined thresholds.” *Id.* at 5:1–3. “If 5 GHz does not work ..., the system tries using 2.4G as a last resort.” *Id.* at 5:5–7. This disclosure is consistent with claims 1 and 12 in which a backhaul attempt is made on a “frequency band with lower frequency range,” such as 2.4 the GHz band, after determining that the received signal strength of the default frequency band, such as the 5 GHz band, is below a threshold.

The specification is consistent in this regard, disclosing that in establishing a backhaul communication, an attempt is made to use a first frequency band before resorting to an alternative. For example, “a scan is performed on all radios” and “[i]f base radios are detected (106) they are associated to a base in a dedicated 5 GHz and 2.4 GHz band.” *Id.* at 4:51–56. The system checks

if the base radio's RSSI is above a threshold, and if so, a dedicated radio is used as a backhaul. *Id.* at 4:56–58. “The system then tries to associate a dedicated 5 GHz radio” and makes another RSSI threshold comparison. *Id.* at 4:58–61. If the RSSI is below the threshold, then a “2.4 GHz is used as a backhaul” if available and if the band's RSSI is above a threshold. *Id.* at 4:61–66; *see also id.* at 5:10–28, Figs. 4–5.

Based on the claim language and specification, I disagree with both parties' proposed constructions. The “default frequency band” in the context of the claims is clearly something more than just a “preferred frequency band,” as argued by Netgear. Instead, the “default frequency band” is a first-attempted frequency band, not just a frequency band that may be preferred. The “default frequency band” is also not “preset,” as argued by TP-Link because the claims make clear that the default frequency band is not used if “a received signal strength of the first channel from the second node is below a threshold.” TP-Link's use of the word “preset” suggests that the “default frequency band” will necessarily be used, when the claim language is clear that it may not. In addition, TP-Link's injection of user choice in its proposed construction confuses the issue. The claims recite that the “default frequency band” may not be used if a received signal strength is below a threshold. It is unclear from the context of the claims, how user choice is involved in whether the “default frequency band” is used.³

I have also considered the parties' expert declarations and though they are extensive, they are largely unhelpful, particularly because the claim language and specification address the meaning of the term. For example, in arguing Netgear's position that “default frequency band” means “preferred frequency band,” Netgear's expert, Dr. Haas, states that “[i]n the claims' recited

³ Whether the “default frequency band” can be selected by the user is separate from what the “default frequency band” is and is not addressed by this construction.

operation and functions, preference is given to establishing the backhaul on the default frequency band.” Haas Decl. at ¶ 27. That is inconsistent with the claim language, which recites not just a preference but that the “default frequency band” will be used if the received signal strength is above a threshold. Dr. Almeroth, TP-Link’s expert, states that “[t]he term ‘default,’ as used in the computer science field, generally relates to a preset option that is used automatically unless the user or system chooses otherwise.” Almeroth Decl. at ¶ 105. First, Dr. Almeroth’s definition appears to conflict with that proposed by TP-Link, which is “preset frequency band used automatically in the absence of a choice made by the user,” and does not include “in the absence of a choice by the system,” as does that proposed by Dr. Almeroth. In addition, Dr. Almeroth proposes a definition “as used in the computer science field,” though he contends that his proposed level of ordinary skill in the art is directed to “wireless communication systems.” Almeroth Decl. at ¶ 35.

Based on the arguments presented in the briefs and at the hearing, I construe “default frequency band” to mean “a first selected frequency band.”

* * *

SO ORDERED.


Doris Johnson Hines
Administrative Law Judge

CERTIFICATE OF SERVICE

I, Lisa R. Barton, hereby certify that the parties listed have entered an appearance in the above captioned investigation, and a copy of the PUBLIC CERTIFICATE OF SERVICE was served upon the following parties via first class mail and air mail where necessary.

Document	Security	Document Type	Official Rec'd Date	Title
810476	Public	Order	12/15/2023 04:43 PM	Construing Certain Claim Terms

Service Date: December 15, 2023

/s/

Lisa R. Barton
U.S. International Trade Commission
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CERTIFICATE OF SERVICE

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