

**UNITED STATES INTERNATIONAL TRADE COMMISSION
WASHINGTON DC**

**Before the Honorable Doris Johnson Hines
Administrative Law Judge**

In the Matter of

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

Investigation No. 337-TA-1361

TP-LINK'S INITIAL CLAIM CONSTRUCTION BRIEF

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J.Ex. 1	U.S. Patent No. 7,936,714
J.Ex. 2	U.S. Patent No. 9,468,025
J.Ex. 3	U.S. Patent No. 10,278,179
J.Ex. 4	U.S. Patent No. 10,681,698
J.Ex. 5	U.S. Patent No. 10,356,681
J.Ex. 6	File History for U.S. Patent No. 7,936,714
J.Ex. 7	File History for U.S. Patent No. 9,468,025
J.Ex. 8	File History for U.S. Patent No. 10,278,179
J.Ex. 9	File History for U.S. Patent No. 10,681,698
J.Ex. 10	File History for U.S. Patent No. 10,356,681

Exhibits Submitted With This Brief

<u>Exhibit</u>	<u>Description</u>
1	Expert Declaration of Dr. Kevin Almeroth
2	A. Scalia & B. Garner, <i>Reading Law: The Interpretation of Legal Texts</i> 116 (2012)
3	Vlavianos A., et al, Assessing Link Quality in IEEE 802.11 Wireless Networks: Which is the Right Metric, <i>IEEE</i> (2008)
4	Excerpts of United States Patent Application No. 15/287706
5	G. Zanetti & C. Palazzi, Non-invasive Node Detection in IEEE 802.11 Wireless Network, <i>IEEE</i> (2010)
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8	Papagiannaki et al., "Experimental Characterization of Home Wireless Networks and Design Implications," <i>Proc. IEEE Int'l Conf. on Comput. Comm'cns</i> (Apr. 23–29, 2006).
9	Jardosh et al., "Understanding Link-Layer Behavior in Highly Congested IEEE 802.11b Wireless Networks," <i>SIGCOMM'05 Workshops</i> (Aug. 22–26, 2005)
10	Series G: Transmission Systems and Media, Digital Services and Network, G.114, Telecommunication Standardization Section of ITU, 5/2003
11	Katz, D. et al., "How VoIP works: protocols, codecs, and more," <i>EE Times</i> , (07/28/2006)
12	Curriculum Vitae of Dr. Kevin C. Almeroth

I. INTRODUCTION

Claim construction's purpose is to determine the meaning of claim terms as understood by persons of skill in the art ("POSITAs"). See *Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005) (*en banc*). Because this meaning "is often not immediately apparent," courts consult various sources to establish how a POSITA would have understood the claims, including "the words of the claims themselves, the remainder of the specification, the prosecution history, and extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art." *Id.* Where, as here, the parties have "fundamental dispute[s] regarding the scope of [] claim term[s]," such evidence must be carefully evaluated, applying guidance from Federal Circuit precedent, to resolve the disputes. *O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1362 (Fed. Cir. 2008).

Netgear's constructions are improper because they do not reflect the relevant intrinsic and extrinsic evidence, and they disregard binding Federal Circuit law. In many of its constructions, Netgear seeks to improperly broaden the claims to encompass subject matter that it neither invented nor claimed. Netgear's constructions also disregard multiple bedrock principles of claim construction, including: the limiting significance of statements describing "the present invention"; the patentee's obligation to disclose adequate corresponding structure in exchange for engaging in broad functional claiming; and 35 U.S.C. § 112(b)'s requirement that claims "particularly point[] out and distinctly claim[] the subject matter" of the invention.

In contrast with Netgear's legally unsupported proposals, TP-Link's constructions properly apply Federal Circuit precedent to the claim language and the other relevant intrinsic and extrinsic evidence. TP-Link's well-supported constructions should be adopted.

II. APPLICABLE LEGAL PRINCIPLES

Claim construction is a matter of law. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995), *aff'd*, 517 U.S. 370 (1996). “Words of a claim are generally given their ordinary and customary meaning, which is the meaning a term would have to a person of ordinary skill in the art after reviewing the intrinsic record at the time of the invention.” *O2 Micro*, 521 F.3d at 1360 (citing *Phillips*, 415 F.3d at 1312–13). The specification is “the single best guide to the meaning of a disputed term,” and “[u]sually, it is dispositive.” *Phillips*, 415 F.3d at 1315. For instance, courts “have frequently found that a definition set forth in the specification governs the meaning of the claims.” *Sinorgchem Co., Shandong v. Int’l Trade Comm’n*, 511 F.3d 1132, 1138 (Fed. Cir. 2007).

“Like the specification, the prosecution history provides evidence of how the PTO and the inventor understood the patent.” *Phillips*, 415 F.3d at 1317. The “public notice function of a patent and its prosecution history requires that a patentee be held to what he declares during the prosecution of his patent.” *Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 789 F.3d 1335, 1344 (Fed. Cir. 2015). For example, courts “cannot construe the claims to cover subject matter broader than that which the patentee itself regarded as comprising its inventions and represented to the PTO.” *Microsoft Corp. v. Multi-Tech Sys., Inc.*, 357 F.3d 1340, 1349 (Fed. Cir. 2004).

Courts may also consider extrinsic evidence, which “consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises.” *Phillips*, 415 F.3d at 1317. “[E]xtrinsic evidence can shed useful light on the relevant art, ... [but] it is less significant than the intrinsic record in determining the legally operative meaning of claim language.” *Id.* (internal quotations omitted).

III. U.S. PAT. NO. 7,936,714

A. Technology Overview

The '714 patent is directed to utilizing separate frequency bands for transmitting and receiving data between a base station (or hub) and a subscriber station (a user device such as a cell phone). '714 Patent (JMX-0001) at 3:30–33.¹

According to the '714 patent, a problem with prior art wireless communication systems was that they performed transmitting and receiving “on separate frequencies within the *same* basic band.” *Id.* at 1:30–33. Use of the same band resulted in frequencies for transmitting and receiving being “relatively closely spaced.” *Id.* at 1:35–37. This close spacing caused interference, requiring “extensive use of filters resulting in increased size and cost for data communication systems, particularly for subscriber stations.” *Id.* at 1:37–40, 2:11–19.

The alleged “present invention” of the '714 patent was to split out transmitting and receiving into separate bands, one for upstream and the other for downstream communication. *See id.* at 3:30–33, 4:17–31, 4:55–58, 5:24–27, 6:46–59. This separation of upstream and downstream into “different parts or bands of the EM spectrum,” the patent contends, “prevents interference between transmit and receive signals without requiring exotic filters ... [which] enables the size [and cost] of a data communications device to be reduced.” *Id.* at 5:45–49, 5:15–30. The patent further proposes that because traffic is “asymmetric,” with significantly more downstream traffic than upstream traffic, a “relatively interference-free licensed band” should be used for the downstream, and a “noisier unlicensed frequency band” for the less demanding upstream communication. *Id.* at 3:33–40, 4:5–12.

¹ Communication from the hub to the subscriber is referred to as downstream communication, and communication from the subscriber station to the hub is referred to as upstream communication. *E.g.*, '714 Patent at 4:7–13.

B. Disputed Terms

1. “receiving ... data on a [first/second] frequency” and “transmitting ... data on a [second/first] frequency” (claims 1, 13, 31, 32)

Term	Netgear	TP-Link
“receiving ... in a frequency band expected to experience [low/high] interference” and “transmitting ... in a frequency band expected to experience [high/low] interference”	Plain and ordinary meaning.	The claims require separate bands for receiving and transmitting.

The plain language of the '714 patent's claims recites two separate frequency bands, one for “receiving” and one for “transmitting.” Netgear, however, argues that receiving *and* transmitting can occur on *both* bands. Because Netgear's interpretation runs contrary to the claims' plain language, the specification, and the prosecution history, it should be rejected.

The claims' plain language indicates separate bands are required for transmitting and receiving. For example, claim 1 recites “*receiving*, at a subscriber station, data on a first frequency *in a frequency band expected to experience low interference*” and “*transmitting*, at said subscriber station, data on a second frequency *in a frequency band expected to experience high interference*.” This language established a clear dichotomy: the subscriber station *receives* on one band (expected to experience low interference) and *transmits* on another (expected to experience high interference). But Netgear's interpretation encompasses a subscriber station that receives and transmits on *both* bands, which is inconsistent with the basic structure of the claims.

The specification confirms that the invention uses separate bands for transmitting and receiving. The first sentence of the Summary of the Invention states: “*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.” '714 Patent at 3:30–33. This description of “the present invention” is repeated throughout the specification. *See id.* at 4:18–22, 4:55–57 (“Whereas *the present invention uses separate bands*

of operation to carry out upstream and downstream data transmission”), 5:24–26 (“In accordance with *the present invention*, transmit and receive signals occupy *different parts or bands* of the EM spectrum...”), 6:46–49.

The specification’s descriptions of the invention’s purpose, as well as its distinctions over the prior art, further confirm separate bands are required for transmitting and receiving. *See Sequoia Tech., LLC v. Dell, Inc.*, 66 F.4th 1317, 1326 (Fed. Cir. 2023) (“We have explained that a patent’s express purpose of the invention ‘informs the proper construction of claim terms.’”) (quoting *Kaken Pharm. Co. v. Iancu*, 952 F.3d 1346, 1352 (Fed. Cir. 2020)); *Retractable Techs., Inc. v. Becton, Dickinson & Co.*, 653 F.3d 1296, 1305 (Fed. Cir. 2011) (specification statements that “expressly distinguish the invention from the prior art based on [a] feature” impose limitations on claim terms). The specification explains that a problem in the prior art was it generally utilized “transmitting and receiving ... within *the same basic band*.” ’714 Patent at 1:30–33. In the prior art, the proximity of both signals on the same band required complex filters to reduce interference. *Id.* at 2:11–19. The ’714 patent allegedly solves this problem by using separate bands for transmitting and receiving, thereby “prevent[ing] interference between transmit and receive signals without requiring exotic filters.” *Id.* at 5:12–30. By dedicating a high-interference (or unlicensed) band to upstream communications, and a low-interference (or licensed) band to downstream communications, the alleged invention “enables an operator to use the more expensive and complicated filter in the base station, and the less expensive, smaller filters in subscriber stations,” which is “economically advantageous ... since only one large, expensive filter is needed at the base station,” as opposed to in each mobile device. *Id.* at 5:31–47. Unlike Netgear’s interpretation, TP-Link’s construction is consistent with this allegedly inventive purpose, enabling simplified and less expensive filters on subscriber stations.

The patentee's description of the invention during prosecution provides further confirmation of TP-Link's construction. The patentee repeatedly characterized the invention's novel aspect as transmitting and receiving in different bands, including in oral argument before the PTAB on appeal from examiner rejections. *See, e.g.*, J.Ex. 6 at 2840–41 (9/21/10 Hearing at 3:23–4:4) (“[T]he result of *Appellant's invention* is that ... a subscriber would **receive in one band, and then transmit in a different band.**”), *id.* at 2845 (9/21/10 Hearing at 8:9–19); *id.* at 2566–67 (11/6/07 Hearing at 2:20–3:2) (“Generally, *Appellant's invention* provides a wireless system where stations on the network communicate with each other over **different frequency bands.**”).

Netgear's position appears to be that as long there is some receiving on a first band, and some transmitting on a second band, and this occurs “at the same time” (claims 1, 13) or “during the same communication session” (claims 31, 32), that is enough to meet the claims—even if during the same time period, transmitting **and** receiving occurs on **both** bands. This interpretation is inconsistent with the claim language, especially when read in view of the specification. *See Phillips*, 415 F.3d at 1315 (“claims ‘must be read in view of the specification, of which they are a part’”) (quoting *Markman*, 52 F.3d at 979). As discussed above, throughout the intrinsic record the applicant repeatedly states that its “invention” uses **different, separate** bands for transmission and receipt. Indeed, the very first sentence of the Abstract summarizes the patent as “[a] dual band spectrum allocation system and method for wireless data communications [that] uses **discrete bands for upstream and downstream** data communications.” ’714 Patent at Abstract. Netgear's interpretation would impermissibly read the claims to encompass “the opposite structure” to what the patentee repeatedly characterized as “the present invention.” *See SciMed Life Sys., Inc. v. Adv. Cardiovascular Sys., Inc.*, 242 F.3d 1337, 1343 (Fed. Cir. 2001) (“the characterization of [one]

configuration as part of the ‘present invention’ is strong evidence that the claims should not be read to encompass the opposite structure”).

Importantly, even if Netgear’s wooden view of the claim language could be characterized as the plain meaning in view of the specification—which it cannot, because it contradicts the specification—the applicant’s repeated and consistent descriptions of “the present invention” would still operate as a clear and unmistakable disclaimer of that scope. As the Federal Circuit has explained, “[w]hen a patentee ‘describes the features of the “present invention” as a whole,’ he alerts the reader that ‘this description limits the scope of the invention.’” *Pacing Techs., LLC v. Garmin Int’l, Inc.*, 778 F.3d 1021, 1025 (Fed. Cir. 2015); *see also, e.g., Regents of Univ. of Minnesota v. AGA Med. Corp.*, 717 F.3d 929, 936 (Fed. Cir. 2013) (holding where “the present invention” was characterized as comprising two separate disks, the claims were so limited); *GPNE Corp. v. Apple Inc.*, 830 F.3d 1365, 1371 (Fed. Cir. 2016) (statement that “the invention provides a two-way paging system which operates independently from a telephone system” limited claim, because “this is a summation sentence which describes ‘the invention’ as a whole”).

Here, where the patentee consistently characterized “the present invention” as requiring separate bands for transmitting and receiving during prosecution, its statements also operate as a prosecution disclaimer, precluding Netgear from recapturing the disclaimed scope. *See Omega Eng’g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1323 (Fed. Cir. 2003) (“The doctrine of prosecution disclaimer ... preclud[es] patentees from recapturing through claim interpretation specific meanings disclaimed during prosecution.”); *Seachange Int’l, Inc. v. C-COR, Inc.*, 413 F.3d 1361, 1372–73 (Fed. Cir. 2005) (disclaimer applies “[w]here an applicant argues that a claim possesses a feature that the prior art does not possess in order to overcome a prior art rejection”); *Andersen Corp. v. Fiber Composites, LLC*, 474 F.3d 1361, 1374 (Fed. Cir. 2007) (“[A]n applicant’s

argument that a prior art reference is distinguishable on a particular ground can serve as a disclaimer of claim scope even if the applicant distinguishes the reference on other grounds as well.”).

2. “frequency band expected to experience low interference” / “frequency band expected to experience high interference” (claims 1, 13, 31, 32)

Term	Netgear	TP-Link
“frequency band expected to experience low interference” / “frequency band expected to experience high interference”	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.

The terms “frequency band expected to experience low interference” and “frequency band expected to experience high interference” are subjective terms of degree, yet the specification provides no objective boundary for these terms. Accordingly, they should be held indefinite.

As an initial matter, the terms “low interference” and “high interference” are themselves terms of degree, because they “necessarily call[] for a comparison against some baseline” to determine what is “low” or “high” in context. *Liberty Ammunition, Inc. v. United States*, 835 F.3d 1388, 1395 (Fed. Cir. 2016). “Although ‘terms of degree are [not] inherently indefinite,’ the patent must provide ‘some standard for measuring that degree’ such that the claim language ‘provide[s] enough certainty to one of skill in the art when read in the context of the invention.’” *GE Lighting Sols., LLC v. Lights of Am., Inc.*, 663 F. App’x 938, 940 (Fed. Cir. 2016) (brackets in original) (quoting *Biosig Instruments, Inc. v. Nautilus, Inc.*, 783 F.3d 1374, 1378 (Fed. Cir. 2015)).

Yet, the specification provides no guidance regarding what level of interference a POSITA should consider “high” or “low.” The specification discusses interference levels only in the

context of “licensed bands” versus “unlicensed bands.”² For example, the specification compares the “*relatively noisier* band[s], such as the *[unlicensed]* UNII band,” ’714 Patent at 5:40–44, with the “*relatively interference-free licensed* bands,” *id.* at 3:33–40; *see also id.* at 3:64–4:2, 7:3–10, 7:17–22. But the observation that unlicensed bands tend to be noisier than licensed bands does not help a POSITA determine in practice when any particular band is “low interference” or “high interference.” In some applications, a licensed band may be heavily used (and thus have higher interference) while an unlicensed band may not to be used at all (and thus have lower interference). Ex. 1 (Almeroth Decl.) ¶40. Accordingly, the concept of “licensed” versus “unlicensed” bands does not necessarily correspond to interference levels in any particular application. For the specification to provide adequate notice regarding the boundaries of “low” and “high” interference, it would need to provide some other objective guidance—but it provides none. As a result, a POSITA is left with no objective guidepost to determine when the claims are satisfied, *i.e.*, when an interference level is to be considered “low” or when it is to be considered “high.”

Courts routinely hold claims indefinite where the specification fails to provide objective boundaries for terms of degree such as “high” or “low.” *See, e.g., U.S. Well Servs., Inc. v. Halliburton Co.*, No. 6:21-CV-00367-ADA, 2022 WL 819548, at *6–8 (W.D. Tex. Jan. 17, 2022) (“high pressure” indefinite); *Arctic Cat Inc. v. Bombardier Recreational Prods. Inc.*, No. 12-2692 (JRT/LIB), 2016 WL 6832623, at *14–17 (D. Minn. Nov. 18, 2016) (“normal” and “low temperature” indefinite); *Delaware Display Grp. LLC v. Lenovo Grp. Ltd.*, No. CA 13-2108-RGA, 2015 WL 6870031, at *7 (D. Del. Nov. 6, 2015) (“relatively low angles” indefinite); *Graphics Properties Holdings, Inc. v. ASUS Computer Int’l, Inc.*, No. 12-CV-1394-LPS, 2014 WL 4929340,

² A licensed band is one that the local governmental regulator has assigned for exclusive use by a specific entity (*e.g.*, a particular mobile carrier), whereas an unlicensed band may be used without an express license to do so. Ex. 1 (Almeroth Decl.) ¶40.

at *19 (D. Del. Sept. 29, 2014) (“high information content” indefinite); *Vaxcel Int’l Co. v. Heathco LLC*, No. CV 20-224-LPS, 2021 WL 7209508, at *11 (D. Del. Nov. 22, 2021) (“low color temperature” and “high color temperature” indefinite); *Signal IP v. Am. Honda Motor Co.*, 2015 WL 5768344, at *56–58 (C.D. Cal. Apr. 17, 2015) (“relatively high and low efficiency” indefinite); *Input/Output, Inc. v. Sercel, Inc.*, No. CIV.A. 5:06-CV-236, 2008 WL 5427982, at *26–27 (E.D. Tex. Apr. 28, 2008) (“small positive difference” indefinite);

Moreover, the surrounding claim language—“***expected to experience*** high interference” and “***expected to experience*** low interference”—only compounds the terms’ indefiniteness, by introducing the further subjective concept of “expected” interference levels. A term of degree that “depends on the unpredictable vagaries of any one person’s opinion” is indefinite. *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1351 (Fed. Cir. 2005). The “expected” limitations were introduced via amendment during prosecution. J.Ex. 6 at 2665 (Aug. 12, 2008 Response). The specification, though, does not mention “expected” interference levels, let alone provide objective guidance regarding when a band is “expected to experience” high or low interference. Ex. 1 (Almeroth Decl.) ¶42. Indeed, introducing the “expectations” of some undefined person only makes the determination more subjective, as different people may have different opinions and expectations regarding what constitutes “high” and “low” interference, which can vary according to intended usage and environmental factors. *Id.* ¶¶42–46. The specification provides no objective guidance to determine whose expectation meets the claims and in what circumstances. *Id.*

Certain dependent claims further underscore the claims’ indefiniteness. For example, claims 11 and 23 recite “wherein said interference frequency band expected to experience low interference is determined to be low interference and said interference frequency band expected to experience high interference is determined to be high interference ***according to regulation of each***

of said frequency bands by a governmental entity.” These dependent claims provide a criterion for which bands are “expected to experience [high/low] interference”: whichever the government regulation says are high/low interference. The fact that certain dependent claims recite this limitation highlights that the corresponding independent claims are *not* so limited. For the independent claims, a POSITA is left with numerous possible metrics to evaluate—government regulation, licensed vs. unlicensed, (unspecified) amount of actual interference—with no guidance as to *which* of these metrics should be evaluated, and in what way, to objectively categorize a frequency band as “expected to experience [high/low] interference.” This renders the claims indefinite. *See Media Rts. Techs., Inc. v. Cap. One Fin. Corp.*, 800 F.3d 1366, 1371 (Fed. Cir. 2015) (“[A] claim is indefinite if its language ‘might mean several different things and no informed and confident choice is available among the contending definitions.’”) (quoting *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 911 n.8 (2014)).

Netgear’s construction—that the “frequency band expected to experience low interference” is relative to the “frequency band expected to experience high interference”—does not save the claims from indefiniteness. By inserting this “relative to” language, Netgear appears to seek to rewrite the limitations such that they are met by any two bands where one is expected to experience higher (or lower) interference than the other. But that is not what the claims say. Indeed, if all the claims required were one band with higher interference than another, then the “high interference” requirement could be satisfied by a very low interference band (as long as the other band had even lower interference), and the “low interference” requirement likewise could be satisfied by a very high interference band (as long as the other band had even higher interference). Netgear’s apparent interpretation—“relatively lower” and “relatively higher”—thus has a fundamentally different meaning from the claim language as written: “low” and “high.” Moreover,

Netgear’s construction does nothing to resolve the additional ambiguity injected by the “expected” language, as different people may have different expectations regarding which frequency band will have higher or lower interference, and it is unclear how the relevant “expectation” is to be determined. Ex. 1 (Almeroth Decl.) ¶¶47–48.

IV. U.S. PAT. NO. 9,468,025

A. Technology Overview

The ’025 patent is directed to network-initiated roaming of a client device. The problem identified by the patent is that in mesh networks, a client device may not be able to connect to the optimal wireless access device (AP), including because it lacks information about the network’s backhaul topology. *See* ’025 Patent (JMX-0002) at 2:43–3:38. The solution proposed by the patent is for the network APs themselves to determine their connection quality with the client device, and on that basis identify which AP “provid[es] the highest quality wireless connection” with the client device. *Id.* at 3:50–63.

The claims recite this same general function: “identify[ing] the wireless access device providing the highest quality wireless connection based on wireless connection quality information.” *Id.* at Claim 7. While the claims do not describe any details underlying this function, the specification describes algorithms “implemented using hardware and/or software” whereby each AP collects, exchanges, and analyzes wireless connection quality information for potential AP-to-client and backhaul (AP-to-gateway) routes. *See id.* at 8:59–67, Fig. 4, 7:1–14:51.

Notably, the specification does not describe any objective criteria for deciding the “highest quality wireless connection,” but instead states that “[i]t is important to recognize that the highest quality connection may vary dependent upon the intended use of the wireless connection.” *Id.* at 13:54–67. The patent sets forth numerous criteria that could be considered in determining the highest quality connection, but does not provide any guidance as to how these factors should be

weighed and balanced relative to one another to identify the objectively “highest quality” connection. *See id.* at 11:12–21.

B. Disputed Terms

1. “wherein the gateway device and the wireless access devices include a processor executing the extended management function ...” (claim 7)

Term	Netgear	TP-Link
“wherein the gateway device and the wireless access devices include a processor executing the extended management function ...”	Plain and ordinary meaning.	Plain and ordinary meaning, <i>i.e.</i> , the claimed gateway device and the wireless access devices must include a processor executing the claimed extended management function.

Although the parties agree this term is used according to its plain and ordinary meaning, construction is necessary because the parties disagree regarding what that meaning is—specifically, the effect of the word “and.” Claim 7 recites a system with “a gateway device” and “at least two wireless access devices,” and further recites that “the gateway device **and** the wireless access devices include a processor executing the extended management function.” The plain reading of this limitation is that **both** “the gateway device” and “the [at least two] wireless access devices” include the recited “processor executing the extended management function.” Yet, when TP-Link sought Netgear’s agreement to a clarifying construction to that effect, Netgear refused. As such, Netgear apparently intends to improperly assert a broader interpretation of the claim, in which the limitation is met if “the gateway device” **or** one or more of “the wireless access devices” contains the recited processor. That interpretation not only flies in the face of the plain meaning of the conjunction “and”—effectively rewriting it as “and/or”—but also revives claim language that *Netgear expressly removed from the claims during prosecution*.

Federal Circuit law—not to mention basic grammar—specifies that “the term ‘and’ ... connotes a conjunctive list.” *SuperGuide Corp. v. DirecTV Enterprises, Inc.*, 358 F.3d 870, 886

(Fed. Cir. 2004). “[A]nd combines items while *or* creates alternatives.” Ex. 2, Scalia & Garner, *Reading Law: The Interpretation of Legal Texts* 116 (2012) (emphasis in original). When a verb—such as the word “include,” in the limitation here—is associated with a conjunctive list in a patent claim, the claim requires **all** members of the list to meet the limitation. *See, e.g., TIP Sys., LLC v. Phillips & Brooks/Gladwin, Inc.*, 529 F.3d 1364, 1375-76 (Fed. Cir. 2008) (finding term “switch ... electronically connected to said phone line and said electronic circuit” requires “switch must be electronically connected to the phone line *and* it must be electronically connected to the circuit board”) (emphasis in original); *N. Telecom Ltd. v. Samsung Elecs. Co.*, 215 F.3d 1281, 1292 (Fed. Cir. 2000) (finding that to infringe claim requiring etching of “aluminum and aluminum oxide” “*both* aluminum and aluminum oxide must be etched”) (emphasis in original). Thus, in the claim at issue here, “the gateway device and the [at least two] wireless access devices” **each** must “include a processor executing the extended management function.”

This conjunctive meaning is confirmed by the prosecution history. As originally drafted, claim 7 recited “the gateway device **and/or** wireless access devices ...” J.Ex. 7 at 332 (Application). Yet, the claim was rejected because prior art disclosed this limitation. *Id.* at 430 (6/9/15 Office Action). In response, the applicant amended claim 7 to strike the disjunctive term “/or,” leaving only the conjunctive word “and”:

wherein the gateway device **and/or the** wireless access devices include a processor executing the extended management function to identify the wireless access device

Id. at 450 (Response to 6/9/15 Office Action) (highlighting added). This amendment makes clear that the patentee did not understand “and” to have the same meaning as “and/or.” *See Ajinomoto Co. v. Int’l Trade Comm’n*, 932 F.3d 1342, 1351 (Fed. Cir. 2019) (“[W]hen a word is changed during prosecution, the change tends to suggest that the new word differs in meaning in some way

from the original word.”). Having made this amendment in response to a prior art rejection, Netgear should now be held to it. *See Aylus Networks, Inc. v. Apple Inc.*, 856 F.3d 1353, 1359 (Fed. Cir. 2017) (“[D]isclaimer can occur through amendment or argument.”).

2. “highest quality wireless connection” (claims 3, 7, 16)

Term	Netgear	TP-Link
“highest quality wireless connection”	Not indefinite. Plain and ordinary meaning.	Indefinite.

This term is indefinite because “highest quality wireless connection” is a subjective concept that depends on the connection’s intended use, yet the specification provides no objective guidance regarding what metric should be used to assess the connection’s quality. *See Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1373 (Fed. Cir. 2014) (“facially subjective claim language without an objective boundary” is indefinite).

As the specification itself recognizes, what constitutes the “highest quality wireless connection” cannot be determined objectively, but requires a subjective determination that “may vary dependent upon the intended use”:

It is important to recognize that the *highest quality connection may vary dependent upon the intended use of the wireless connection*. For example, if wireless device 110 is utilized to implement an IP telephony application, a link rate may be the primary factor in identifying a high quality wireless connection. Alternatively, if wireless device 110 does not include the capability to manage an excess amount of dropped packets, the wireless connection quality may be identified based on the fewest number of dropped packets.

’025 Patent at 13:54–67. As that excerpt states, for an IP telephony application, link rate might be the primary factor in assessing connection “quality”—or, depending on the device, “the fewest number of dropped packets” might be. A POSITA would readily think of other potential considerations. For example, for an Ultra-HD video streaming application, a POSITA might consider link rate the most important factor. Ex. 1 (Almeroth Decl.) ¶¶65–66. Alternatively, for a real-time manufacturing control system, connection reliability and minimal interference might be

most important. *Id.* ¶67. As such, the identity of the “highest quality wireless connection” will depend on the user’s subjective opinion regarding which connection properties are best for a particular application. Not only does this determination involve selecting the most important property, but it requires determining how many different factors are relevant and how they should be weighed against one another to identify the single “highest quality” connection. This dependence on a subjective, user-defined opinion—as opposed to a specific, objective metric of quality—to determine infringement renders the claims indefinite. *See Intell. Ventures I LLC v. T-Mobile USA, Inc.*, 902 F.3d 1372, 1381 (Fed. Cir. 2018) (holding term indefinite because “QoS [quality of service] requirements” is an “entirely subjective and user-defined ... relative term, finding different meanings for different users”); *Interval Licensing*, 766 F.3d at 1371 (terms that “depend[] on the unpredictable vagaries of any one person’s opinion” are indefinite); *Datamize*, 417 F.3d at 1354 (“[T]he identification of parameters one might consider fails to explain how the parameters should be evaluated or weighed to reach the conclusion that an interface screen is ‘aesthetically pleasing.’”).

Here, rather than provide a specific metric by which the highest quality connection can be objectively determined, the specification does the opposite, expressly stating that the relevant metric may vary depending on the intended use. ’025 Patent at 13:54–67. Indeed, beyond reciting both “link quality” and “fewest number of dropped packets” as potential factors that might determine the highest quality connection, *id.*, the specification recites that “management system 206 identifies highest-quality wireless connection based on at least the capability of the wireless device 110, the capability of the gateway wireless access device 122, and the capability of each wireless access device 122, 124 in the extended network 120, the path quality from the wireless access device to the gateway, etc.” *Id.* at 11:12–21. This disclosure includes no less than *six*

different potential metrics—all capped off with an unhelpful “etc.” This open-ended identification of factors that a user might consider when assessing connection quality—with no objective guidance as to how any of them should be prioritized or weighed—confirms the claims’ indefiniteness. Indeed, there was an active debate in the industry over how best to weigh these various quality metrics to determine connection quality. *See, e.g.*, Ex. 1 (Almeroth Decl.) ¶¶69–70; Ex. 3 (Vlavianos article) at 1 (noting that while “RSSI (Received Signal Strength Indication), SINR (Signal-to-Interference-plus-Noise Ratio), PDR (Packet-Delivery Ratio), and BER (Bit-Error Rate)” are “primary metrics for capturing the quality of a wireless link ... each metric has advantages and projects one or more limitations.”). That this issue was the subject of active industry debate heavily underscores that a POSITA would have needed objective guidance from the patent to determine which connection is the “highest quality wireless connection” in the context of the claims. The patent, however, fails to provide any such guidance. The term is therefore indefinite.

3. Means-plus-function: “processor executing the extended management function to” (claim 7)

Term	Netgear	TP-Link
“a processor executing the extended management function to identify the wireless access device providing the highest quality wireless connection based on wireless connection quality information, the wireless connection quality information including wireless connection quality information for at least one indirect communication path having at least one network extender device to establish the communication path between the gateway device and the wireless access device, exchanged among the wireless access devices and the gateway device”	Not indefinite. Plain and ordinary meaning.	§ 112(f) applies. <u>Function</u> : As claimed. <u>Structure</u> : Indefinite, or in the alternative Figure 2 (gateway 122 and constituent structures) implementing steps 406, 408, 410.

The term “a processor executing the extended management function ...” is a means-plus-function (“MPF”) term that is subject to 35 U.S.C. § 112(f), and therefore is limited to the corresponding structure disclosed in the specification. Section 112(f) allows patentees to draft limitations that recite a “means ... for performing a specified function,” but “without the recital of” any specific structure for performing that function. *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1347 (Fed. Cir. 2015) (en banc). In exchange, Congress “plac[ed] specific constraints on how such a limitation is to be construed”—limiting MPF terms “to only the structure, materials, or acts described in the specification as corresponding to the claimed function and equivalents thereof.” *Id.*

Here, the patentee has engaged in functional claiming. Claim 7 recites a generic “processor” executing an “extended management function,” effectively capturing any combination of hardware or software that implements the claimed function. As such, § 112(f) governs, and the scope of the claim should be limited to the corresponding structure disclosed in the specification: Figure 2 (gateway 122 and its constituent structures) implementing steps 406, 408, 410.

a. 35 U.S.C. § 112(f) Governs The “Processor” Term.

While it is presumed that a limitation that does not recite the word “means” is not MPF, that presumption is not strong, and “can be overcome ... if the challenger demonstrates that the claim term fails to ‘recite sufficiently definite structure’ or else recites ‘function without reciting sufficient structure for performing that function.’” *Williamson*, 792 F.3d at 1349. As the Federal Circuit held en banc in *Williamson*, nonce terms such as “module” can “operate as a substitute for the word ‘means’” because “‘module’ is simply a generic description for software or hardware that performs a specified function,” which typically does not connote sufficiently definite structure. *Id.* at 1350.

Here, the term “processor” is used as “a generic description for software or hardware that performs a specified function,” *id.* at 1350, and therefore is subject to § 112(f) under *Williamson*. A POSITA would generally understand “processor” to refer to a device that performs processing. This would encompass a hardware implementation (ASIC circuitry), a software implementation (a general-purpose processor), or any combination of the two. Ex. 1 (Almeroth Decl.) ¶¶76–78. Nothing in the claim suggests any more specific definition of the term. The claim simply recites that the processor “execut[es] the extended management function,” which is functionality that on its face could be performed with any combination of software and/or hardware. ’025 Patent at claim 7; Ex. 1 (Almeroth Decl.) ¶¶76–78. The specification expressly confirms this generic use of the term, stating that the invention encompasses “**any type** of computer processor configured to implement the functionality described herein,” and that this functionality “may be implemented using **hardware and/or software**.” ’025 Patent at 8:59–9:6. Such a term is exactly what the Federal Circuit held to be subject to § 112(f) in *Williamson*. See *Williamson*, 792 F.3d at 1350; see also, e.g., *Egenera, Inc. v. Cisco Sys., Inc.*, 972 F.3d 1367, 1374–75 (Fed. Cir. 2020) (holding “software, firmware, circuitry, or [a] combination thereof” is “no more than a ‘black box recitation of structure’ that is simply a generic substitute for ‘means’”).

Unlike in *Samsung v. Prisia*, where the Federal Circuit held the term “digital processing unit” was not subject to § 112(f), based on expert testimony that “the digital processing unit recited in the claims is ‘an image processing device that people in the art are generally familiar with,’” and the Board’s equating of the claim term “to a class of known structures—central processing units,” 948 F.3d 1342, 1354 (Fed. Cir. 2020), the claim here does not recite a particular class of processor such as a “digital processing unit” or a “CPU.” The claim instead recites a generic “processor,” which the specification confirms can broadly implement the claimed functionality in

“hardware and/or software.” ’025 Patent at 8:59–67. The facts here therefore fall squarely within the holdings of *Williamson* and *Egenera*, which held that terms broad enough to encompass “hardware and/or software” do **not** connote sufficiently definite structure. *See Williamson*, 792 F.3d at 1350; *Egenera*, 972 F.3d at 1374–75.

Claim terms such as “processor” also may escape the application of § 112(f) if the claimed function is simple enough that any generic processor can perform it. *See Egenera*, 972 F.3d at 1374–75. Here, however, the recited function is not within a generic processor’s capabilities. It reads:

the extended management function to identify the wireless access device providing the highest quality wireless connection based on wireless connection quality information, the wireless connection quality information including wireless connection quality information for at least one indirect communication path having at least one network extender device to establish the communication path between the gateway device and the wireless access device, exchanged among the wireless access devices and the gateway device.

’025 Patent at Claim 7. This is a complex functionality that goes to the core of what the applicant contended was novel about its invention. *See Ex. 1 (Almeroth Decl.)* ¶¶79-80; ’025 Patent at Abstract (“An extended network is configured to implement an extended management function to identify a wireless access device providing a highest quality wireless connection to a wireless device.”). Such functionality is well beyond the capabilities of the generic “processor” recited in the claim. *See Ex. 1 (Almeroth Decl.)* ¶¶79-80. Nor does the claimed function recite any hardware or software that might provide more structural specificity for the claimed “processor.” On the contrary, the claim uses purely functional language that could be implemented using any combination of hardware and/or software. *See id.* ¶¶76–78.

Consistent with the Federal Circuit’s holdings in *Williamson* and *Egenera*, many courts have found the generic term “processor” gave rise to an MPF limitation. *See, e.g., St. Isidore Rsch., LLC v. Comerica Inc.*, No. 2:15-cv-1390-JRG-RSP, 2016 WL 4988246, at *14 (E.D. Tex.

Sept. 19, 2016) (finding “processor configured to ...” was MPF term because it was “defined only by the function that it performs,” *i.e.*, “verify[ing] the authenticity of the account access request based on the response” and “identify[ing] a second device associated with the account”); *Parity Networks, LLC v. ZyXEL Communications, Inc.*, No. 20-cv-697-JVS-KESX, 2020 WL 8569299, at *11 (C.D. Cal. Dec. 22, 2020) (finding “packet processor” term was “defined only by the function it performs,” and explaining that “referring to a ‘processor’ does not tell a [POSITA] what programming would be necessary to perform the packet processor’s function”); *Konami Gaming, Inc. v. High 5 Games, LLC*, No. 2:14-cv-1483-RFB-NJK, 2018 WL 1020120, at *12–14 (D. Nev. Feb. 22, 2018) (finding “processor configured to execute a game” was MPF because “the multiple functions and outcomes associated with the invention would require unique and specific programming”), *aff’d*, 756 F. App’x 994 (Fed. Cir. 2019); *GoDaddy.com, LLC v. RPost Commc’ns Ltd.*, No. CV-14-00126-PHX-JAT, 2016 WL 212676, at *56 (D. Ariz. Jan. 19, 2016) (finding “processor” was MPF because the claimed functionality “is not a typical function found in a general purpose processor”), *aff’d*, 685 F. App’x 992 (Fed. Cir. 2017).

As one court usefully explained the distinction, “if the functions performed by the processor are functions typically found in a commercially available off-the-shelf processor, then a skilled artisan might understand the term ‘processor’ to provide sufficient structure for performing those functions.” *Kit Check, Inc. v. Health Care Logistics, Inc.*, No. 2:17-CV-1041, 2019 WL 4142719, at *8 (S.D. Ohio Aug. 30, 2019) (citing *GoDaddy*, 2016 WL 212676, at *56). In contrast, “if the functions are not those typically available in an off-the-shelf processor,” a generic reference to a “processor” will not suffice to avoid MPF claiming. *Id.* Here, because the claimed functionality is not typically available in an off-the-shelf processor, § 112(f) applies.

b. Figures 2 And 4 Disclose The Corresponding Structure.

Disclosed structure qualifies as the “corresponding structure” for an MPF limitation if the intrinsic evidence “clearly links” the structure to the function recited in the claim **and** the structure is “adequate” to achieve the function. *Williamson*, 792 F.3d at 1352. The structure the specification “clearly links” to the claimed “extended management function” is the “gateway wireless access device 122 or simply ‘gateway’” depicted in Figure 2, which the specification states is “configured to implement an **extended network management function.**” ’025 Patent at 5:20-23. As the specification states, “[g]ateway wireless access device 122 includes a wireless client interface 202, a wireless connection analyzer 204, an extended network management system 206, an extended network management table 208, and an extended network interface 224.” *Id.* at 9:25-29. The specification further purports to link each of these constituent structures to performing specific aspects of the claimed extended network management function. *See id.* at 9:34-11:21.³

The corresponding structure must also include steps 406, 408, and 410 of “flowchart 400.” Flowchart 400 in Figure 4 “illustrat[es] a method for implementing the extended network management system,” *id.* at 13:3-5, and as such is “clearly linked” to the claimed “extended management function.” Moreover, for the corresponding structure to be “adequate” to perform the claimed function, it must include steps 406, 408, and 410, because these steps provide necessary detail regarding how wireless connection quality information is generated (step 406, “Generate Connection Quality Information”), how this information is exchanged (step 408, “Transmit Quality Information to Network Management”), and how this information is analyzed

³ To be clear, TP-Link does **not** believe this disclosed structure is actually adequate to perform the claimed functions, for at least the reasons described above with respect to the “highest quality wireless connection” limitation. *See* Section VI.B.4, *supra*. However, in the event the specification’s discussion is deemed adequate to perform the claimed functions, the corresponding structure necessarily includes at least Figure 2 (gateway 122 and its constituent structures).

to identify the highest quality wireless connection (step 410, “Identify Best Wireless Access”).
See id. at 13:23–67, Fig. 4.

4. “the communication path” (claim 16)

Term	Netgear	TP-Link
“the communication path”	Plain and ordinary meaning, the path for communications between the gateway router and the wireless access device.	Indefinite.

Claim 16 should be held indefinite because, while it recites “the communication path,” there is no previously recited “communication path” to provide antecedent basis for this term. A claim is indefinite if “a term does not have proper antecedent basis where such basis is not otherwise present by implication or the meaning is not reasonably ascertainable.” *Halliburton Energy Servs., Inc. v. M-I LLC*, 514 F.3d 1244, 1249 (Fed. Cir. 2008). Applying this rule, courts routinely hold claims indefinite where they use terms that lack antecedent basis. *See, e.g., Bushnell Hawthorne, LLC v. Cisco Sys., Inc.*, 813 F. App’x 522, 526 (Fed. Cir. 2020) (holding “said different IP address” indefinite, where there were “three different IP addresses to choose from,” such that a POSITA “is left to wonder which ... is ‘said’ different one”); *WAPP Tech Ltd. P’ship v. Bank of Am., N.A.*, No. 4:21-cv-670, 2022 WL 2463569, at *20 (E.D. Tex. July 6, 2022); *Cellular Commc’ns Equip. LLC v. AT&T, Inc.*, No. 2:15-cv-576-RWS-RSP, 2016 WL 7364266, at *9 (E.D. Tex. Dec. 19, 2016) (holding “the apparatus” indefinite where term could refer to multiple different apparatuses); *24/7 Customer, Inc. v. LivePerson, Inc.*, 235 F. Supp. 3d 1102, 1108 (N.D. Cal. 2016) (holding “said interaction data” indefinite because while claim “recites elements containing different variations of the term ‘data,’” it is ambiguous to which the term refers).

Claim 16 recites “transmitting the wireless connection quality information from the wireless access device to at least a gateway router communicating indirectly using a network

extender device to establish *the communication path with the wireless access device* and communicating with a network external to the extended network.” Because there is no antecedent basis for “the communication path,” a POSITA would not be able to ascertain what this term refers to. Critically, there are numerous possible “communication path[s]” that *could* be established with the wireless access device, such as a communication path between the wireless access device and the gateway, a communication path between the wireless access device and the client device, or communication path between the gateway and the client device through the wireless access device. Ex. 1 (Almeroth Decl.) ¶¶85–88. Adding to the essential ambiguity, the identity of “the wireless access device” also is ambiguous. Claim 16 recites “*a plurality* of wireless access devices” and “generating wireless connection quality information at *each* wireless access device.” While the claimed communication path presumably relates to one of those wireless access devices, the claims do not specify *which one*. Accordingly, not only are the claims ambiguous as to which “communication path” is intended, they are unclear as to which “wireless access device” the claimed communication path travels to (or through). Because it is “entirely unclear” what these terms refer to, the claim is indefinite. *Bushnell*, 813 Fed. App’x at 526.

V. U.S. PAT. NO. 10,278,179

A. Technology Overview

The ’179 patent is directed to establishing backhaul links, *i.e.*, communications between mesh points (APs), in a wireless mesh network. Backhaul links can carry different kinds of traffic, including client traffic forwarded between mesh points and the gateway, and control and management instructions. ’179 Patent (JMX-0003) at 2:7–12, 27:8–17. Backhaul links can also utilize different types of wireless resources (frequency bands), including (i) dedicated backhaul resources (*i.e.*, frequency bands used only for backhaul traffic); and (ii) general-purpose resources (*i.e.*, frequency bands also used by client devices). *See id.* at 29:59–68, 27:34–50. The ’179 patent

claims recite establishing a “forward wireless communication” and a “backhaul communication, separate from the forward wireless communication,” and then utilizing an “alternative backhaul communication” if the quality of the initial backhaul falls below a threshold. *Id.* at Claim 1. However, “forward” is used in the specification to refer to client traffic “forward[ed]” between mesh points and the gateway, which necessarily takes place along “backhaul” links. *See id.* at 2:8–12, 4:6–11, 4:34, 5:39–45, 11:61–65, 27:5–10. It is therefore unclear what it means to have a “forward communication” as distinct from a separate “backhaul communication.”

B. Disputed Terms

1. Preambles of Claims 1, 11

Term	Netgear	TP-Link
“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” (claim 1)	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:	Preamble is limiting. The claimed “a [first] mesh point” performs each of the limitations recited in the claim.
“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” (claim 11)	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:	

Both parties agree the preambles of claims 1 and 11 are limiting, but apparently disagree on the implications of the limiting preamble. Claim 1 is directed to “[a] computer-implemented method,” with “the method being performed by *a first mesh point* and comprising” a list of steps. Claim 11 is directed to “[a] computing device ... that implements *a mesh point*” and is “configured to perform a method comprising” steps substantively identical to those recited in claim 1. During the meet and confer process, TP-Link sought Netgear’s confirmation that the recited “a mesh

point” of claim 1 performs the steps recited in the claim’s body and the recited “[a] computing device ... that implements a mesh point” of claim 11 likewise performs the steps recited in the body. Netgear refused to agree.

To practice the claims, “a [first] mesh point” must perform each step recited in the body of the claim. Both claims recite four steps, each including a verb denoting the action to be performed: (1) “establishing a forward wireless communication with a second mesh point;” (2) “establishing a backhaul communication ... with the second mesh point;” (3) “constructing a list of backhaul candidates ...”; and (4) “establishing an alternative backhaul connection ... with the second mesh point.” Claim 1 recites that “the method [is] performed by a first mesh point.” Accordingly, as a matter of grammar, it follows that “a first mesh point” is the subject of each verb and performs each of the recited actions. An accused system in which a “first mesh point” established only a single “backhaul communication” with the second mesh point, but not a “forward wireless communication” with that second mesh point, would not infringe.

Netgear’s construction should be rejected because it replaces the preamble language with similar but different language, without clarifying the parties’ dispute. To the extent Netgear contends “a [first] mesh point” need not perform each of the claimed method steps, its position should be rejected as inconsistent with the claims’ plain language. Netgear appeared to take the position during the meet-and-confer that entities other than the “[first] mesh point” could be involved in the method steps, even if the “[first] mesh point” still performs them. While it is unclear to TP-Link exactly what that means, TP-Link simply seeks at this claim construction stage to confirm the uncontroversial conclusion that the “[first] mesh point” performs each of the claimed method steps.

2. “forward wireless communication” / “backhaul communication, separate from the forward wireless communication” (claims 1, 11)

Term	Netgear	TP-Link
“forward wireless communication” / “backhaul communication, separate from the forward wireless communication”	Not indefinite. A “forward wireless communication is “a client-facing wireless communication,” and remainder of the term, plain and ordinary meaning.	Indefinite.

The ’179 patent’s claims should be held indefinite because a POSITA could not reasonably ascertain the distinction between the claimed “forward wireless communication” and the separate “backhaul communication.” While these terms have multiple *potential* definitions, a POSITA would be unable to know which is correct. *See HZNP Meds. LLC v. Actavis Lab ’ys UT, Inc.*, 940 F.3d 680, 698 (Fed. Cir. 2019) (“a claim is indefinite if its language might mean several different things and no informed and confident choice is available among the contending definitions”).

The claims’ plain language makes clear that a “forward wireless communication” is separate and distinct from a “backhaul communication.” It is a basic canon of claim construction that “different claim terms are presumed to have different meanings. *Helmsderfer v. Bobrick Washroom Equip., Inc.*, 527 F.3d 1379, 1381–82 (Fed. Cir. 2008); *see also Primos, Inc. v. Hunter’s Specialties, Inc.*, 451 F.3d 841, 847–48 (Fed. Cir. 2006) (“[T]he terms ‘engaging’ and ‘sealing’ are both expressly recited in the claim and therefore ‘engaging’ cannot mean the same thing as ‘sealing’; if it did, one of the terms would be superfluous.”). Here, the independent claims recite “a [first] mesh point” that performs (1) “establishing *a forward wireless communication* with a second mesh point” and (2) “establishing *a backhaul communication, separate* from the forward wireless communication, with the second mesh point.”⁴ This claimed dichotomy between a

⁴ It follows from this claim language that the “forward wireless communication” and “backhaul communication” both take place between first and second mesh points.

forward communication and a *backhaul* communication—along with their express characterization as “separate”—clearly indicates that the terms are directed to distinct types of communication. However, it would be unclear to a POSITA what these distinct types are. While a POSITA would recognize that there are multiple *potential* definitions, none would make sense in view of the intrinsic record, a POSITA’s understanding, and basic claim construction principles.

First, the term “forward wireless communication” could be understood to refer to client *traffic* forwarded across mesh points. This reading finds some support in the specification, which generally uses the term “forward” to refer to client traffic “forward[ed]” between mesh points along the backhaul path to the gateway. *See* ’179 Patent at 2:8–12, 4:6–11, 4:34, 5:39–45, 11:61–65, 27:5–10. However, traffic along the backhaul path between mesh points and the gateway is by definition also “backhaul” communication. Ex. 1 (Almeroth Decl.) ¶¶53–55. It therefore makes no sense to talk about a forward communication “separate from” the backhaul. *Id.* Indeed, Netgear does not propose this interpretation.

The above inconsistency could potentially be resolved by interpreting “backhaul communication” to also refer to traffic, in particular backhaul control/management traffic. *See* ’179 Patent at 27:14–17. Thus, the claims would recite two different kinds of communications: one for client traffic forwarded through the network (the “forward wireless communication”) and one for control/management traffic (the “backhaul communication”). Yet, while the specification states backhaul links can be used to perform control/management functions, it also states “backhaul links can be utilized to provide more throughput,” which refers to forwarding of client traffic. *Id.* at 27:17–21. Thus, the claimed “backhaul communication” cannot be limited to control/management functions. Indeed, the only additional limitation added by dependent claims 2 and 12 is that “the backhaul communication is dedicated for controlling packets,” indicating that

the independent claim is not so limited. *See Phillips*, 415 F.3d at 1315 (“The presence of a dependent claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim.”). Moreover, while the specification generally uses “forward” in the context of forwarding client traffic, dependent claims recite that the “forward wireless communication” can also have “backhaul traffic” redirected to it. ’179 Patent at Claims 3, 13. Thus, the claimed “forward wireless communication” cannot be limited to forwarded client traffic. In sum, based on the intrinsic record, a backhaul link can both transmit control/management data and forward client traffic (for more throughput); and the claimed “forward wireless communication” can forward client traffic and transmit backhaul traffic (which includes client/management functions). Accordingly, under this interpretation, there is no distinction between the claimed “backhaul communication” and “forward wireless communication,” because each encompasses both types of traffic. As a result, this interpretation fails as a matter of basic claim construction principles—because it finds no distinction in meaning between diametrically opposed claim language (“*forward*” and “*backhaul*”),.

Second, the applicant may have intended for the terms to refer to different kinds of *wireless resources* (e.g., frequency bands). Specifically, a backhaul communication would be a resource dedicated to backhaul (mesh point $\Leftrightarrow$ mesh point) communications, while a forward communication would be a general-purpose resource that could carry backhaul but also client-facing (client $\Leftrightarrow$ mesh point) communications. Ex. 1 (Almeroth Decl.) ¶¶56–58. Thus, the claims would be directed to a method comprising (1) establishing a dedicated backhaul; (2) establishing an alternative dedicated backhaul, if the quality of service of this backhaul drops below a threshold; and (3) redirecting backhaul traffic to the general-purpose resource (forward wireless communication), if the quality of all the dedicated backhauls drops below a threshold. *See, e.g.,*

'179 Patent at Claims 1, 3. This reading aligns with one of the described embodiments. *See id.* at 29:34–30:18. However, this reading is inconsistent with the terms' ordinary meaning and basic claim construction principles. While this reading requires interpreting “backhaul communication” as a “**dedicated** backhaul” link, the ordinary meaning of “backhaul” does not require a **dedicated** backhaul. Moreover, the applicant knew how to use the term “dedicated” when it wanted to (*see* '179 Patent claims 1, 2, 4, 11, 12), and it chose not to do so for the “backhaul” here. Further, this reading requires interpreting “forward wireless communication” as “general purpose resource,” yet there is no viable basis in the term's ordinary meaning or the specification for doing so.

Third, Netgear proposes that “forward wireless communication” means “a client-facing wireless communication,” and proposes no construction for “backhaul communication.” The specification equates “client-facing” with a “general purpose” resource, *i.e.*, a wireless resource (frequency band) that can carry both client-facing (client $\Leftrightarrow$ mesh point) communications, as well as backhaul (mesh point $\Leftrightarrow$ mesh point) communications. *See* '179 Patent at 30:2–11, 29:60–63. Netgear's interpretation is incorrect for the same reasons as discussed in connection with the second option above: there is no support for equating a “forward wireless communication” with a general-purpose resource, nor is there any support for construing “backhaul communication” as a dedicated backhaul resource (*i.e.*, a band carrying **only** mesh point $\Leftrightarrow$ mesh point communications). Because Netgear leaves “backhaul communication” without a construction, it presumably intends to argue for purposes of infringement that “backhaul communication” encompasses non-dedicated (general-purpose) resources used for mesh point $\Leftrightarrow$ mesh point communications. But that is the same meaning Netgear proposes for “forward wireless communication.” Thus, Netgear's proposal leaves no distinction between these two fundamentally different terms. *See Helmsderfer*, 527 F.3d at 1381–82; *Primos*, 451 F.3d at 847–48.

At bottom, the applicant’s use of these terms in the context of the claims is confused and would have no coherent meaning to a POSITA. Ex. 1 (Almeroth Decl.) ¶¶59–60. Because a POSITA would be presented with multiple potential definitions, with no viable choice among them, the claims are indefinite. *See HZNP Meds.*, 940 F.3d at 698.

3. Markush terms (claims 1, 11)

Term	Netgear	TP-Link
“wherein the [forward wireless]/[backhaul] communication is established using a [wireless] communication technology ... selected from the group consisting of: ...”	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.

The Markush group limitation of claims 1 and 11 should be construed to require that the claimed “forward wireless” or “backhaul” communication are capable of being established using each of the elements recited in the group,⁵ as the patentee clearly and unmistakably disavowed solutions that did not practice *all members* of the claimed group.

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.” *Abbott Lab’ys v. Baxter Pharm. Prod., Inc.*, 334 F.3d 1274, 1280 (Fed. Cir. 2003). As the parties agree, the effect of the transitional phrase “consisting of” renders the group “closed to unrecited elements.” *Multilayer Stretch Cling Film Holdings, Inc. v. Berry Plastics Corp.*, 831 F.3d 1350,

⁵ The “forward wireless communication” must be “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.” ’179 Patent at 31:14–17, 32:12–15. The “backhaul communication” must be “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-1 GHz RF technology.” *Id.* at 31:18–22, 32:16–20.

1358–59 (Fed. Cir. 2016). Accordingly, the claimed “forward wireless communication” and “backhaul communication” must be established using wireless technology selected only from among members of the claimed group.

It generally suffices to practice only *one* member of the claimed group to practice a Markush limitation. *See Abbott*, 334 F.3d at 1280–81. Here, though, the prosecution history shows the applicant clearly and unambiguously disclaimed coverage of all systems and methods except those in which the recited “forward wireless communication” and “backhaul communication” can be established with *each* member of their respective Markush groups. During prosecution, the Examiner rejected then-pending claims as being anticipated by the prior art Gatewood reference. J.Ex. 8 at 695–96 (5/17/18 Office Action). Then-pending claim 1 did not recite Markush group limitations, requiring instead that “the forward wireless communication is established using a wireless communication technology using frequency bands including *one or more of*: a 2.4 GHz band, or a 5 GHz band,” *id.* at 695, and that “the backhaul communication is established using a communication technology that is *one or more of*: a power line based communication, a 2.4 GHz or 5 GHz radio frequency (RF) technology using a dedicated radio, or a sub-1 GHz RF technology.” *Id.* at 696. The Examiner found Gatewood disclosed these limitations because it disclosed forward and backhaul communications using “one or more of” the claimed group, *i.e.*, the 5 GHz band. *Id.* at 695–96.

In response to this rejection, the applicant amended the claims into their present closed Markush form:

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

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

J.Ex. 8 at 718 (7/3/18 Response). In explaining this amendment, the applicant quoted the USPTO's *Manual of Patent Examining Procedure* for the position that "[i]f the members of a proper Markush group are sufficiently few in number or so closely related that a search and examination of the entire claim can be made without serious burden, the examiner **must** examine **all** the members of the Markush group in the claim on the merits, even though they may be directed to independent and distinct inventions." *Id.* at 724 (emphasis in original). Based on this, the applicant argued "Gatewood does not disclose ... each and every element of claim 1"—that is, each and every member of the amended Markush group limitations—"and therefore does not anticipate Applicant's claim 1." *Id.* The applicant thus set forth a clear interpretation of the claim scope—each member of the Markush group must be present in order to practice the claim—and distinguished prior art on that basis.

The Examiner accepted this disclaimer, finding Gatewood did not disclose the Markush group limitations (notwithstanding that it disclosed one of the members, 5 GHz). J.Ex. 8 at 767–68 (10/4/18 Final Rejection). The Examiner ultimately granted the patent, in express reliance on the prior art's failure to disclose each and every member of the claimed Markush groups. *See id.* at 819 (12/12/18 Notice of Allowance) ("The prior art of record fails to disclose the features wherein the backhaul communication is established using a communication technology selected

from the group consisting of: a power line based communication, a 2.4GHz or 5 GHz radio frequency (RF) technology using a dedicated radio, and a sub-1GHz RF technology ...”). The Examiner’s clear reliance on the applicant’s statements confirms they operated as a disclaimer. *See e2Interactive, Inc. v. Blackhawk Network, Inc.*, 561 F. App’x 895, 898 (Fed. Cir. 2014); *20/20 Vision Ctr., LLC v. Vision Precision Holdings, LLC*, 801 F. App’x 770, 775–76 (Fed. Cir. 2020). The applicant’s failure to challenge the Examiner’s understanding further confirms it abandoned any broader claim scope. *See SandBox Logistics LLC v. Proppant Express Invs. LLC*, 813 F. App’x 548, 554 (Fed. Cir. 2020) (“SandBox’s failure to challenge the Examiner’s understanding amounts to a disclaimer.... ‘[I]n ascertaining the scope of an issued patent, the public is entitled to equate an inventor’s acquiescence to the examiner’s narrow view of patentable subject matter with abandonment of the rest.’”) (quoting *TorPharm, Inc. v. Ranbaxy Pharm., Inc.*, 336 F.3d 1322, 1330 (Fed. Cir. 2003)).

Because the prosecution history shows an open-and-shut case of prosecution disclaimer, the claim scope as applied by both the applicant and the Examiner during prosecution is the same scope that must now apply in litigation, to “ensure[] that [the] claims are not ‘construed one way in order to obtain their allowance and in a different way against accused infringers.’”⁶ *SpeedTrack, Inc. v. Amazon.com*, 998 F.3d 1373, 1380 (Fed. Cir. 2021). Netgear’s construction fails to give effect to the disclaimer and should be rejected. *See Hockerson-Halberstadt, Inc. v. Avia Grp. Int’l, Inc.*, 222 F.3d 951, 957 (Fed. Cir. 2000) (an argument “that would erase from the prosecution

⁶ While the applicant’s disclaimer was in the context of prior art, not infringement, it is black-letter patent law that claims are applied the same way for infringement and invalidity. *See Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313, 1330 (Fed. Cir. 2003) (“It is axiomatic that claims are construed the same way for both invalidity and infringement.”); *Data Engine Techs. LLC v. Google LLC*, 10 F.4th 1375, 1381 (Fed. Cir. 2021).

history the inventor’s disavowal of a particular aspect of a claim term’s meaning” is “inimical to the public notice function provided by the prosecution history”).

VI. U.S. PAT. NO. 10,356,681

A. Technology Overview

The ’681 patent, like the ’025 patent, is directed to network-initiated roaming of a client device. The asserted claims recite “optimizing wireless connections” by using a “monitor mode” and a “sniffing mode” to determine when another AP is “better suited to handle a client” than the current AP. *See* ’681 Patent (JMX-0005) at Claims 3, 10. 8:64–67. “[M]onitor mode,” also known as RFMON, is a well-known mode in the art designed to “monitor all traffic received from the wireless network ... without having to associate with an access point or ad hoc network first.” ’681 Patent at 6:58–65. The ’681 patent uses monitor mode to allow non-serving APs—*i.e.*, APs that are not connected to a given client device—to measure signal strength from that client device, allowing signal strength to be compared across “different APs on different channels ... and a roaming decision [to be] made.” *Id.* at 8:1–13. With respect to “optimizing” connections, the specification identifies “various factors” that could be considered, but does not provide any objective guidance as to how these multiple competing factors should be weighed or balanced against one another to determine when one connection is objectively “optimized” or “better suited to handle a client” than another. *See, e.g.*, ’681 Patent at 4:57–62.

B. Disputed Terms

1. “dynamically optimiz[ing]” / “better suited to handle a client be a predetermined margin” (claims 3, 10)

Term	Netgear	TP-Link
“dynamically optimizing wireless connections to said client devices by ... making decisions to switch ... said decision ... further comprising: ... determining when a wireless network device ... is better suited to handle a client by a predetermined margin” (Claim 3)	Not indefinite. Plain and ordinary meaning.	Indefinite.
“dynamically optimizes wireless connections ... and that makes decisions ... to switch a client ... further comprising ... determines when a wireless network device ... is better suited to handle a client by a predetermined margin” (Claim 10)		

These terms are indefinite because they recite subjective terms of degree—*i.e.*, “optimizing wireless connections” and “better suited to handle a client”—yet the intrinsic record does not provide any objective guidance for determining when a “wireless connection” has been “optimiz[ed]” or when one wireless network device is “better suited to handle a client” than another. The Federal Circuit in *Intellectual Ventures* considered the similar term “optimiz[ing] ... QoS [Quality of Service],” and found it indefinite. *See* 902 F.3d at 1381. Like the ’681 patent, the patent at issue in that case “defined [the quality to be optimized] by what network performance characteristic is most important to a particular user,” and “characterized it as ‘a relative term, finding different meanings for different users,’ such that ‘the end-user experience is the final arbiter for QoS.’” *Id.* The Federal Circuit therefore found this “optimizing” term “is ‘purely subjective’ and depends ‘on the unpredictable vagaries of any one person’s opinion,’” and hence is indefinite. *Id.*

Applying that reasoning, district courts routinely find terms reciting “optimization” are indefinite when the subject matter involves various parameters that can be “optimized,” but the intrinsic record does not provide any guidance regarding which parameter to use or how to balance

them. *See, e.g., Nabors Drilling Techs. USA, Inc. v. Helmerich & Payne Int’l Drilling Co.*, No. 3:20-cv-03126-M, 2022 WL 1689444, at *15 (N.D. Tex. May 26, 2022) (finding “optimize” term indefinite for depending on “different, and possibly competing, priorities”); *ConocoPhillips Co. v. In-Depth Compressive Seismic, Inc.*, No. 18-cv-0803, 2019 WL 1877374, at *19 (S.D. Tex. Apr. 26, 2019) (finding “stochastic global optimization method” indefinite, where the claims and specification did not indicate which of multiple such methods to use); *Netgear, Inc. v. Ruckus Wireless, Inc.*, 5 F. Supp. 3d 592, 610 (D. Del. 2013) (finding “optimal conditions for said RF data transmissions” indefinite because intrinsic record does not permit POSITA “to discern what the ‘optimal conditions’ are, which parameters would allow one to achieve such conditions, or how to adjust said parameters”); *Optimum Processing Sols., L.L.C. v. Advanced Micro Devices, Inc.*, No. 1:09-cv-1098-TCB, 2012 WL 13001400, at *14 (N.D. Ga. July 10, 2012) (claim terms indefinite “[b]ecause it is not possible reasonably to tell when ‘optimization’ has occurred”), *R&R adopted*, 2012 WL 13001395 (N.D. Ga. Aug. 24, 2012); *Data Retrieval Tech., LLC v. Sybase, Inc.*, No. 08-cv-5481-VRW, 2010 WL 11586656, at *5 (N.D. Cal. Nov. 8, 2010) (finding “optimization [of a database]” indefinite because specification does not “actually define ‘optimize,’ which ... means to improve performance with respect to any of a large number of possible characteristics”).

The present limitation recites “dynamically optimiz[ing] wireless connections,” which includes determining when a wireless network device “is better suited to handle a client by a predetermined margin.” As with the “optimizing QoS” term considered in *Intellectual Ventures*, while the ’681 patent’s intrinsic record discloses many parameters that could be optimized, it does not indicate which parameters one should apply for the claimed “optimizing” or how to balance the various parameters to evaluate whether a client is “better suited.” On the contrary, the specification makes clear that whether a connection has been “optimiz[ed]”—such as by

connecting to a wireless network device that is “better suited to handle a client”—is a subjective determination that depends on the user’s intent and opinion. The ’681 patent’s specification states that the decision as to which channel and device are best “can be made based on various factors,” and lists five such factors, followed by an unhelpful “etc.” ’681 Patent at 4:57–62. The specification also provides a sixth factor, “client traffic type,” and notes that “[t]he system also checks the client traffic type and *makes sure the Quality of Service can be met* on the target channel”—using the same “quality of service” term the Federal Circuit found indefinite in *Intellectual Ventures*. *Id.* at 5:62–6:2. Further, an application incorporated by reference into the specification provides another six factors that could be considered for optimization. *See, e.g.*, Ex. 4 (’706 Application) at [0093]–[0094] (“*Some examples of the parameters* include: [7] the data rate being currently used, [8] packet aggregate size, [9] packet error rate (PER), [10] retry count, [11] available airtime, and [12] delay on the link.”). In this manner, the specification provides no less than **12** factors that could be considered for optimization—yet it fails to indicate how these 12 factors are to be prioritized or weighed to determine when a connection or device is “optimized” or is “better suited to handle a client,” as claimed. Indeed, these factors could be used in myriad combinations and ways to rank or judge connections and devices relative to one another.⁷

Moreover, the claim language requires determining not only when a device is “better suited to handle a client,” but also when it is better suited to handle the client “by a predetermined margin.” Again, however, the specification provides no guidance regarding what a “predetermined

⁷ To take but three of the factors as an example, suppose one connection has a high packet error rate, a medium retry count, and a low delay on the link, whereas another has a low packet error rate, a high retry count, and a medium delay on the link. Which connection is “better suited” to handle a client? The specification offers no way to say objectively. Ex. 1 (Almeroth Decl.) ¶¶91–94.

margin” might mean in the context of the at least 12 different factors that could be considered, each having its own “margin” of difference when used to compare two devices.

In sum, the patentee chose to claim the facially subjective terms “optimiz[ing]” and “better suited”—concepts that vary depending on user intent, judgment, and application—but the specification provides no objective way to determine when these limitations are met. The specification could have identified a specific factor to optimize and a standard for comparing suitability, but it does not. Instead, it lists no fewer than 12 different factors, and leaves it to the user to decide which matter and how much. Thus, the claims are indefinite.

2. “monitor mode” (claim 3, 10)

Term	Netgear	TP-Link
“monitor mode”	a mode of a wireless networking device that monitors for legacy client devices on the same channel.	a mode that allows a computer to monitor all traffic received from a wireless network, without having to associate with an access point or ad hoc network first.

“Monitor mode” is a term of art in the Wi-Fi industry, referring to a mode that allows a computer to monitor all traffic received from a wireless network, without having to associate with an access point or ad hoc network first.⁸ The claims use “monitor mode” in this ordinary sense, and do not show any intent by the patentee to employ a special meaning of the term. Claim 3, for example, recites a wireless network “operating a first one or more of said wireless network devices in a *monitor mode* for legacy clients with wireless network devices on a same channel.” ’681

⁸ See, e.g., Ex. 5 (Zanetti paper) at 4 (describing “*RFMON* (Radio Frequency *MON*itor) mode” in IEEE 802.11 standards as “very similar to the Promiscuous mode, but it has the advantage to read IEEE 802.11 frames and it is able to capture them *without having to associate with an access point (AP) or ad-hoc networks first*”). Moreover, Netgear’s own asserted ’025 patent, which is prior art to the ’681 patent, describes a mode in which a “wireless access device can *monitor* all packets sent from the wireless device ... *even when the wireless device is not connected to the the wireless access device* or the wireless packets are not intentionally transmitted to the wireless access device.” ’025 Patent at 3:54–58; Ex. 1 (Almeroth Decl.) ¶¶98–99.

Patent at Claim 3. Because monitor mode allows a wireless network device to monitor all of the traffic it receives, the wireless network device can monitor traffic from the claimed legacy clients on a given channel, without requiring the device to first be associated with the claimed legacy clients on that channel (and indeed, without requiring the wireless network device to be associated with any network at all, which is the main function of monitor mode). Ex. 1 (Almeroth Decl.) ¶¶97–99.

The specification further confirms this term’s ordinary meaning to a POSITA. In fact, TP-Link’s construction is drawn directly from the specification:

Embodiments of the invention operate in ***monitor mode***, or RFMON (Radio Frequency MONitor) mode, which ***allows a computer***, i.e. an AP, with a wireless network interface controller (WNIC) ***to monitor all traffic received from the wireless network***. Unlike promiscuous mode, which is also used for packet sniffing, ***monitor mode allows packets to be captured without having to associate with an access point or ad hoc network first***.

’681 Patent at 6:58–65. The specification’s definition of “monitor mode”—and thus TP-Link’s construction—also is consistent with the specification’s embodiments, in which an AP can use monitor mode to switch to another channel to make measurements on all packets received on that channel—despite not being associated with that channel. *Id.* at 7:56–8:13.

Netgear’s construction should be rejected because it is essentially not a construction at all, but rather a redundant incorporation of the surrounding claim language. *Compare* Netgear’s construction (“a mode of a wireless networking device that monitors for legacy client devices on the same channel”), *with* ’681 Patent at Claim 3 (“a monitor mode for legacy clients with wireless network devices on a same channel”). This replacement of a term with its surrounding claim language is fundamentally not how claim construction works, and here it results in a construction that is both too narrow and too broad. The construction is too narrow, because a POSITA would not understand “monitor mode” to be limited to legacy clients or the same channel. *See* Ex. 1

(Almeroth Decl.) ¶¶101–102. Those limitations are imposed by the surrounding claim language; they are not part of the definition of “monitor mode” itself, and therefore should not be included in the construction. Netgear’s construction is also too broad, because once the surrounding claim language is removed from the construction, all that is left is “a mode ... that monitors.” But this ignores the ordinary meaning of the term to POSITAs, as well as the specification’s consistent definition, for the apparent purpose of achieving a non-construction that Netgear will use to try to capture any feature that vaguely involves some form of “monitoring.” As the intrinsic and extrinsic evidence cited above make clear, however, “monitor mode” is *not* simply any mode wherein some monitoring occurs—it is a specific mode, known in the art, with a recognized functionality. Netgear should not be permitted to ignore the term’s well-established meaning and thereby divorce it from “the meaning [it] would have to a [POSITA] at the time of the invention.” *Phillips*, 415 F.3d at 1313.

VII. U.S. PAT. NO. 10,681,698

A. Technology Overview

The ’698 patent, like the ’179 patent, is directed to establishing backhaul communications between mesh points of a wireless mesh network. The problem identified by the ’698 patent is that “a mesh network is difficult to set up and maintain, especially where intermediate links between the edge and the access point are added.” ’698 Patent (JMX-0004) at 1:37–41. As an alleged “optimization technique” to improve these intermediate backhaul links, the patent describes using a “5 GHz ... band as a dedicated backhaul,” and then “using the 2.4 GHz band as backup if the 5 GHz band fails to reach between nodes.” *Id.* at 1:43–49; *see also id.* at 3:45–51, 5:1–11 (“The system tries to use 5 GHz dedicated ... if possible. ... If 5 GHz does not work ... the system tries using 2.4G as a last resort.”). The claims mirror this approach, reciting first “attempt[ing] to utilize ... a default frequency band as a backhaul” (corresponding to the dedicated

5 GHz band), and then if the signal strength of the default band is below a threshold, “attempt[ing] to utilize ... a different frequency band” (corresponding to the 2.4 GHz “backup” / “last resort” band). The specification does not contemplate any process whereby a different wireless band could be used as the default backhaul band, but discloses only a dedicated 5 GHz band for this purpose. *See id.* at 1:45–53, 2:48–54, 3:6–10, 3:45–4:7.

B. Disputed Terms

1. “default frequency band” (claims 1 and 12)

Term	Netgear	TP-Link
“default frequency band”	“a preferred frequency band”	“preset frequency band used automatically in the absence of a choice made by the user”

The parties’ dispute is over whether the term “default frequency band” should carry its plain and ordinary meaning consistent with the specification and as confirmed by numerous dictionary definitions (TP-Link’s position), or if it should be rewritten as the different term “preferred” based on a misinterpretation of descriptions of the preferred embodiments (Netgear).

The claims use “default” consistent with its plain meaning. The term appears in the first step of the claimed method: “performing an attempt to utilize a first channel *in a default frequency band* as a backhaul.” ’698 Patent at Claims 1, 12. The method thus commences by attempting to utilize a default frequency band. There is no on-the-fly selection process to determine *which* band is to be utilized. The claims simply recite attempting to utilize the default band, consistent with a “default” frequency band being a preset frequency band used automatically, without any choice by the user. The claims likewise do not contemplate giving one band any “preference” relative to other bands, as Netgear’s construction suggests—the claims simply recite attempting to utilize the “default” band. While the second method step recites attempting to utilize a different band as the backhaul, that is only a backup option if the “received signal strength” of the channel on the default

frequency band falls below a threshold. For the initial attempt to utilize the “default frequency band,” no selection process is contemplated.

The specification is consistent with this plain meaning. While the specification does not expressly use the word “default” in connection with a frequency band, its embodiments describe using the 5 GHz band as a dedicated backhaul, with other bands being utilized only as a backup option. *See, e.g.*, ’698 Patent at 3:45–51 (“The 5 GHz high band is defined as a dedicated backhaul If the dedicated wireless link falls below the quality threshold, the 2.4 GHz band may be used as a backup option.”), 3:56–59.⁹ The Provisional Applications similarly describe “[u]sing the 5GHz high band or low band as a dedicated backhaul,” and “[u]sing the 2.4 GHz band as backup if the 5GHz band fails to reach.” Ex. 6 (May 2016 Provisional) at 3. Thus, in each of these embodiments, the 5 GHz band has been preselected as the dedicated backhaul band, which is used automatically, with other bands used only as backup.

TP-Link’s plain-meaning construction also is supported by the extrinsic evidence. Indeed, it is drawn directly from both plain-English and computer-related dictionary definitions of “default.” *See* Ex. 7.1, *Merriam-Webster’s Collegiate Dict.* (11th ed. 2012) at 325 (“a selection automatically used by a computer program in the absence of a choice made by the user”); Ex. 7.2 *Webster’s New World College Dict.* (4th ed. 2010) at 378 (“a preset choice, setting, etc. for automatic use as by a program when no other is specified by a user”).¹⁰

⁹ Other embodiments also are consistent. *See* ’698 Patent at 3:66–4:7 (Fig. 3: nodes 27a, 27b connected by dedicated 5GHz backhaul connection, with 2.4 GHz used when 5 GHz not available), 4:42–46 (Fig. 4: “5 GHz dedicated channel is the primary backhaul channel. If 5 GHz does not work, the system tries to use the 2.4 GHz band.”), Fig. 5 (associates with dedicated 5G band unless three threshold checks (208, 212, 216) fail), 5:42–46 (Fig. 6: utilizes 5G band as long as RSSI is above threshold), 5:63–6:5 (connects to best 5 GHz as long as it is above an RSSI threshold).

¹⁰ *See also* Ex. 7.4 *Newton’s Telecom Dict.* (28th ed. 2014) at 387 (“The default is a factory-set ... setting or configuration. It is the preset value that the program or equipment comes with. It will work with default values in the absence of any other command from the user.”); Ex. 7.5, *Dict. of*

Netgear’s construction should be rejected because it seeks not to define “default,” but to replace it with a different word—“preferred”—with a different meaning. *See K-2 Corp. v. Salomon S.A.*, 191 F.3d 1356, 1364 (Fed. Cir. 1999) (“Courts do not rewrite claims; instead, we give effect to the terms chosen by the patentee.”). As discussed above, the plain meaning of “default,” as confirmed by dictionary definitions, is a preselected option that is used automatically (without the user’s choice). In contrast, the plain meaning of “preferred” encompasses a mere preference. *See, e.g., Ex. 7.3, Webster’s New World College Dictionary* (5th ed. 2014) at 1148–49 (“to put before something or someone else in one’s liking, opinion, etc.”). These concepts are different. Consider, for example, a system with three bands: A, B, and C. If band B is the “default” backhaul band, that means it has been preselected as the backhaul, such that the system would automatically attempt to utilize band B. This is the plain meaning of the word “default.” In contrast, suppose all three bands are considered for the backhaul, taking into account numerous quality characteristics, but giving band B a slight “preference” relative to A and C. Band B might then be a “preferred” band, but it is in no way a “default” backhaul, because it has not been preselected and is not used automatically as the backhaul. On the contrary, there is a selection process that may select any of the bands, depending on how various quality metrics and preferences are balanced. If a selection process is operating to select the best band out of multiple viable options, there is no “default” band. This clear distinction between “default” and “preferred” is uniformly confirmed by dictionaries, which give the terms different meanings. Hence, Netgear’s

Computing 6th ed. (2010) at 97 (“a predefined course of action or value that is assumed unless the operator alters it”); *Ex. 7.6, Dict. of Comp. Sci. & Eng.* (2014) at 57 (“The options that are used if no others are specified.”); *Ex. 7.7, Dict. of Comp. Sci.* (7th ed. 2016) at 149–50 (“A value that is used when no other value has been supplied.”); *Ex. 7.8, Authoritative Dict. of IEEE Standards Terms* (7th ed. 2000) at 281 (“Pertaining to a value, attribute, or option that is assumed in place of a value, attribute or option when one is required, but not specified explicitly”).

“preferred” construction is not a legitimate *definition* of “default”—rather, it is a *rewrite* that impermissibly *replaces* “default” with a different word having a fundamentally different meaning and claim scope. *See K-2 Corp.*, 191 F.3d at 1364.

Netgear argues its rewrite is appropriate because the specification uses the term “preferred” in reference to certain embodiments. *See, e.g.*, ’698 Patent at 5:1–9 (“5 GHz dedicated band is preferred if the RSSI meets predetermined threshold”). Yet, even if certain embodiments did use a mere “preference” in selecting a backhaul band, that would not justify rewriting the claims to replace the claimed “default” band with those embodiments’ “preferred” band. *See Hill-Rom Servs., Inc. v. Stryker Corp.*, 755 F.3d 1367, 1371 (Fed. Cir. 2014) (“[W]e do not read limitations from the embodiments in the specification into the claims. We depart from the plain and ordinary meaning of claim terms based on the specification in only two instances: lexicography and disavowal.”).

In fact, the specification uses “preferred” to describe embodiments where the dedicated 5 GHz band *is used* as long as its quality is good enough. *See* ’698 Patent at 4:28–31, 5:1–9. This description matches the structure of the claims, which recite “performing an attempt to utilize a first channel *in a default frequency band* as a backhaul” (*i.e.*, the dedicated 5 GHz band), and then “upon detecting that a received signal strength of the first channel [in the default frequency band] is below a threshold, performing an attempt to utilize ... [a channel in] a different frequency band” (*i.e.*, the backup 2.4 GHz band). The 5 GHz band thus is “preferred” in the sense that an attempt is made to utilize it first, with other bands being used only as backup. That does not mean, though, that “default” can be defined to *mean* “preferred.” And the specification never does that—that is, the specification never mentions employing a “preference” in selecting the initial band to be used as the default backhaul. On the contrary, the 5 GHz band has been preselected as the

default backhaul band, automatically and without user input, consistent with plain meaning and TP-Link’s construction. By substituting “default” with “preferred,” Netgear seeks to eviscerate this fundamental meaning of “default” in the context of the claims. Indeed, Netgear’s construction would expand the claims to cover on-the-fly algorithmic or user selection of a “preferred” band for the default band. That interpretation is flatly inconsistent with the plain meaning of “default,” which is *preselected* and *without* user choice. Netgear’s “preferred” construction also is inconsistent with the specification, where the 5 GHz band is a preselected, dedicated backhaul, with no option to select any other band as the default. While backup bands may be used if the default band’s quality is too low, they are the subject of the second claimed method step, which utilizes a different (non-default) band. The *default* band remains the dedicated 5 GHz backhaul, which has been preselected and is used automatically for the initial backhaul attempt. While it could be argued that all default bands could be considered “preferred” in this narrow sense, the converse—that all preferred bands are default bands—does not follow, and it certainly does not follow that “default” *means* “preferred.” All apples are fruit, but not all fruit are apples—and “apple” certainly does not *mean* “fruit.” Netgear’s attempts to misuse the specification to rewrite plain claim language should be rejected.

VIII. CONCLUSION

For the reasons set forth above, TP-Link respectfully submits that its proposed constructions should be adopted.

Dated: September 6, 2023

Respectfully Submitted,

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UNITED STATES INTERNATIONAL TRADE COMMISSION
WASHINGTON, DC
Before the Honorable Doris Johnson Hines
Administrative Law Judge

**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

CERTIFICATE OF SERVICE

I, Robert P. Leonard, hereby certify that on September 6, 2023, copies of the foregoing document were filed and served upon the following parties as indicated:

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