

**UNITED STATES INTERNATIONAL TRADE COMMISSION
WASHINGTON, D.C.**

**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

COMPLAINANT NETGEAR INC.'S OPENING CLAIM CONSTRUCTION BRIEF

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I. INTRODUCTION

The patents in this Investigation relate to systems and methods for improving the implementation of Wi-Fi networks. Complainant Netgear asserts six patents, U.S. Patent Nos. 7,936,714 (the “714 Patent”), 9,468,025 (the “025 Patent”), 10,681,698 (the “698 Patent”); 10,278,179 (the “179 Patent”); 10,327,242 (the “242 Patent”); and 10,356,681 (“681 Patent”) (collectively, “Asserted Patents”), directed to improving the connection quality and performance of user devices connected to a Wi-Fi network, commonly referred to as “client” devices or “stations” (abbreviated as STA). The six patents fall into three families, with four of the patents sharing one family.

There are 12 disputed claim terms, with all but one term being proposed by TP-Link. Netgear proposes that a majority of the terms should be given their plain and ordinary meaning or natural connotation in the context of the descriptions of the claimed inventions and defined embodiments in the patents. TP-Link, by contrast, attempts to contort the claims, interpreting them inconsistently with the intrinsic record, to manufacture indefiniteness and transparent non-infringement positions in an attempt to escape the consequences of infringing Netgear’s patented inventions.

II. APPLICABLE LAW

A. Claim Construction

Claims should be given their ordinary and customary meaning as understood by a person of ordinary skill in the art (POSA) in the context of the entire patent. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312-13 (Fed. Cir. 2005) (en banc). In some instances, the plain and ordinary meaning is readily apparent, involving little more than “the application of the widely-accepted meaning of commonly understood words.” *Id.* at 1314. Other times, claim terms have specialized meanings, determined by analyzing “the words of the claims themselves, the remainder of the specification,

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the prosecution history, and extrinsic evidence concerning relevant scientific principles, as well as the meaning of technical terms, and the state of the art.” *Id.*¹

The claims themselves provide “substantial guidance” regarding the meaning of claim language. *Phillips*, 415 F.3d at 1314. “[T]he context in which a term is used in the asserted claim can be highly instructive.” *Id.* Any claims, unasserted or asserted, may inform the scope and meaning of claim language. *See id.*

The specification is also the “single best guide to the meaning of a disputed term.” *Id.* at 1321. Thus, “[t]he construction that stays true to the claim language and most naturally aligns with the patent’s description of the invention will be, in the end, the correct construction.” *Id.* at 1316. However, specific examples or embodiments in the specification are generally not to be read into claims as limitations. *See id.* at 1323.

The prosecution history may inform the meaning of claim language, although “it often lacks the clarity of the specification and thus is less useful for claim construction purposes.” *Id.* at 1317. The prosecution history includes the entire record of the patent examination proceedings before the USPTO, including cited prior art. *See id.*

If the intrinsic evidence is inadequate to determine the meaning of particular claim language, a court may turn to extrinsic evidence. *Zodiac Pool Care, Inc. v. Hoffinger Indus., Inc.*, 206 F.3d 1408, 1414 (Fed. Cir. 2000). However, extrinsic evidence is “less reliable,” and “is unlikely to result in a reliable interpretation of patent claim scope unless considered in the context of the intrinsic evidence.” *Phillips*, 415 F.3d at 1318-19.

¹ All internal quotations and citations omitted and all emphasis added herein unless otherwise specified.

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B. Indefiniteness

Indefiniteness must be proven by clear and convincing evidence. *See Cox Commc'ns, Inc. v. Sprint Commc'ns Co. LP*, 838 F.3d 1224, 1228 (Fed. Cir. 2016). A patent claim is not indefinite if it “inform[s], with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901 (2014). The “definiteness inquiry trains on the understanding of a skilled artisan at the time of the patent application” and must be conducted in view of the intrinsic evidence. *Id.* at 911, 901.

In addition to these general legal principles, specific law applicable to the disputed terms is discussed below.

III. LEVEL OF SKILL IN THE ART

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

IV. ’714 PATENT (SIMULTANEOUS MULTI-BAND)

A. Introduction

The ’714 Patent was filed March 11, 2002 and is generally directed to multi-band wireless data communication systems. JMX-0001 (’714 Patent) 1:7-10. In data communication systems “designed to deliver high speed and/or high data capacity from the internet backbone to an end user,” communications are made between a “hub station” (also referred to as a “base station”) and a “subscriber station.” *Id.*, 1:14-29. These systems typically used a single frequency band of

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operation by “transmitting and receiving on separate frequencies within the same basic band employing frequency division duplexing (FDD).” *Id.*, 1:30-33. In this context, “frequency band” refers to “a generally contiguous portion of the electromagnetic spectrum which is regulated by a governmental entity, such as the Federal Communications Commission (FCC) for the United States, generally under a single designation.” *Id.*, 1:42-47. In these systems, “upstream” communications transmitted from subscriber station to the hub, and “downstream” communications received by the subscriber station from the hub, were “relatively closely spaced” and required sophisticated and expensive filters to address interference between the upstream and downstream connections. *Id.*, 2:3-19.

The '714 Patent reduced the need for expensive filters and provided better use of spectrum bandwidth by enabling “communication of upstream data on one band of operation while downstream data is communicated on a different band of operation.” *Id.*, 6:46-49. The transmit and receive signals are thus capable of occupying “different parts or bands of the EM spectrum,” and can be transmitted and received at the same time, because they are “separated by at least an octave of frequency.” *Id.*, 4:18-25 (“an octave is an interval between two frequencies having a ratio of two-to-one”); *see id.*, 4:25-35 (explaining that prior art FDD systems used frequency separation of less than one percent). The '714 Patent also recognized that there is generally more downstream data than upstream data, and that a frequency band that is “relatively interference-free” compared to another band will require less filtering. *Id.*, 4:5-7, 5:31-47. Thus, by using the disclosed system and methods using two sufficiently separate frequencies, the frequency band that is “relatively interference-free” is preferably used for heavier downstream traffic whereas the frequency band expected to experience high interference is preferably used for upstream traffic. *Id.*, 4:7-12. The same band can also be used for both transmitting and receiving, so as to be

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“adaptable to allow relatively high capacity data transmissions” as necessary. *Id.*, 4:12-17, Figs. 2, 3. The ’714 Patent explains that the disclosed frequency separation also reduced “a transmitted signal, or noise induced thereby” from interfering with a received signal because “as bands are further separated in the electromagnetic (EM) spectrum, the transmitter and receiver of a transceiver do not interfere with one another.” *Id.*, 5:21-23.

B. Disputed Terms

1. **“receiving ... in a frequency band expected to experience [low/high] interference” / “transmitting ... in a frequency band expected to experience [high/low] interference” (cls. 1, 13, 31, 32)**

Netgear’s Construction	TP-Link’s Construction
Plain and ordinary meaning	The claims require separate bands for receiving and transmitting.

The ’714 Patent does not create or specify a unique definition for these well-understood terms of “receiving...” and “transmitting...”, and there is nothing preventing the understanding of them. TP-Link does not even attempt to construe any part of the phrases in which these terms appear. Therefore, these terms should receive their plain and ordinary meaning.

The dispute between the parties is that TP-Link seeks to improperly exclude products that practice the claimed method on the basis that “each band is used for transmit and receive.” Ex. A (TP-Link Non-Infringement Contentions) at 19 (“the claim requires separate bands for transmit and receive ... the evidence relied upon by Netgear shows each band is used for transmit and receive.”). TP-Link therefore proposes to simply graft on a new limitation that the “claims require,” a practice the Federal Circuit has “repeatedly rejected.” *Source Vagabond Sys. Ltd. v. Hydrapak, Inc.*, 753 F.3d 1291, 1299 (Fed. Cir. 2014); *Quantum Corp. v. Rodime, PLC*, 65 F.3d 1577, 1584 (Fed. Cir. 1995) (observing “it is well settled that no matter how great the temptations of fairness or policy making, courts do not redraft claims”).

[REDACTED]

TP-Link would, in effect, rewrite the claims with novel negative limitations, i.e., that a recited band used for “transmitting” is “not used for receiving,” and the band for “receiving” is “not used for transmitting.” That is improper. The Federal Circuit has explained that claims should only be construed to include negative limitations if there is an “anchor ... in the explicit claim text” or “express disclaimer or independent lexicography in the written description [of the invention] that would justify adding that negative limitation.” *Omega Eng’g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1323 (Fed. Cir. 2003). There is no justification here. The claim language, specification, and prosecution history all directly refute TP-Link’s negative limitation.

Claim 13 is exemplary and reproduced below, with the terms at issue highlighted:

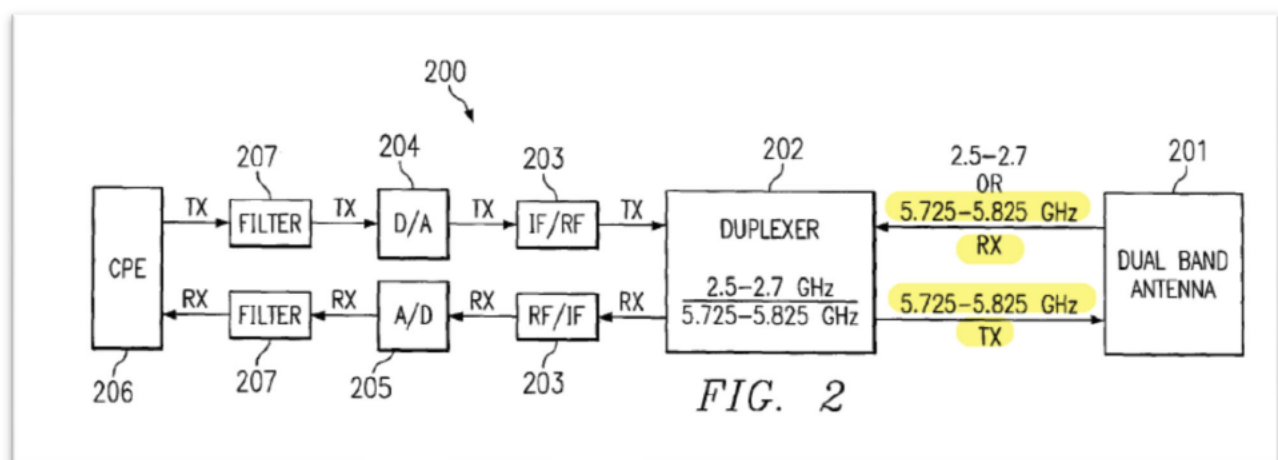
13. A method for increasing capacity of a wireless data communication system, said method comprising the steps of: transmitting, at a base station, data on a first frequency in a frequency band expected to experience low interference; receiving, at said base station, data on a second frequency in a frequency band expected to experience high interference; wherein said first frequency and said second frequency are separated by at least one octave; and wherein at least a portion of said receiving and at least a portion of said transmitting occur at the same time.

’714 Patent, cl. 13 (annotated).

There is no anchor in the claim language that the frequency bands used for transmitting are not used for receiving, or vice versa. The phrases where the disputed terms appear do not use any terms of restriction—nor do the limitations that follow. The limitation after the disputed terms describes the *amount* of separation between frequencies used in the two bands, i.e., the frequencies

are “separated by at least one octave,” and the final limitation recites that “at least a portion” of the receiving and transmitting occur at the same time. *See id.*, cl. 13. There is no limitation requiring exclusivity of transmitting or receiving on each band. To the contrary, the asserted claims are “comprising” claims and thus are “open-ended and do[] not exclude additional, unrecited elements or method steps.” *CollegeNet, Inc. v. ApplyYourself, Inc.*, 418 F.3d 1225, 1235 (Fed. Cir. 2005). For example, in *CollegeNet* the Federal Circuit found a “comprising” claim that did “not expressly provide for human intervention” was open to including unrecited human actions. *See id.* Similarly here, claim 13 requires “transmitting... on a frequency band expected to experience low interference” and is open to including additional unrecited steps of “receiving... on a frequency band expected to experience low interference.” *See id.*; *see also Omega* 334 F.3d at 1322 (rejecting negative limitation because the “express text of the claims does not prohibit the laser beam from striking the inside the energy zone.”).

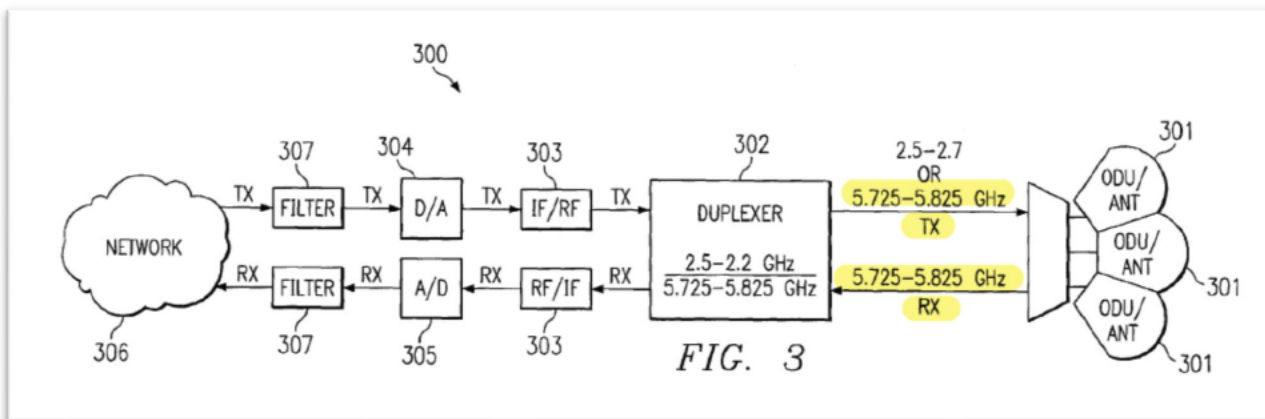
Turning to the specification, the '714 Patent expressly discloses embodiments wherein a frequency band is used for both transmitting *and* receiving. In Figure 2 below, for example, the “5.725-5.825 GHz” band is used for both “TX” (transmitting) and “RX” (receiving) at a subscriber station:



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'714 Patent, Fig. 2 (annotated), 4:5-17 (the “band at 5.8GHz[] is adaptable to allow” transmission and reception). The '714 Patent explains the station “preferably accommodates upstream **and** downstream communications on at least two greatly different bands.” *Id.*, 7:50-52.

The Figure 3 embodiment is similar, describing a base station using the 5.725-5.825 GHz “frequency band” for “receiving” (RX) and transmitting (TX).



Id., Fig. 3 (annotated).

TP-Link would exclude these embodiments from the claims. That is reason enough to reject TP-Link’s construction. *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1583 (Fed. Cir. 1996); *see also Epos Techs. Ltd. v. Pegasus Techs. Ltd.*, 766 F.3d 1338, 1347 (Fed. Cir. 2014) (“[A] claim construction that excludes a preferred embodiment . . . is rarely, if ever correct and would require highly persuasive evidentiary support.”). Although the '714 Patent discloses embodiments wherein “upstream and downstream data communications” use “separate antenna beams,” that is described as an “alternative.” '714 Patent, 7:41-44. And it would be error to import limitations from an embodiment into the claims. *See Phillips*, 415 F.3d at 1323

The prosecution history eviscerates any doubt that the claims are not limited to “separate” frequency bands used *only* for transmitting or *only* for receiving as TP-Link proposes. In appealing a rejection under 35 U.S.C. 112 to the PTAB, the Applicants expressly and unequivocally rejected

what TP-Link now proposes. They stated “there is nothing in the claim language to suggest that Applicant intends to limit transmitting on only the ‘first’ or second’ frequency” and “the claim language *does not require* transmitting and receiving on only a ‘first’ frequency”:

It is well understood in the art that transmitting can occur at a desired frequency or frequencies about the desired frequency. There is nothing in the claim language to suggest that Appellant intends to limit transmitting on only the “first” or “second” frequency. That is, the claim language does not require transmitting and receiving on only a “first” frequency. As such Appellant does not exclude transmitting or receiving of data that occur on frequencies near or about a desired frequency by using the phrase “transmitting . . . data on a first frequency.” A person possessing the ordinary level of skill in the pertinent art at the time the invention was made would understand the phrase “transmitting data. . . on a first frequency” to mean transmitting data on or about a first frequency. As such, a person of ordinary skill in the art

JMX-0006 (’714 FH), 381 (annotated).

These statements during prosecution definitively show that the “scope of the actual invention” does not require “separate bands for receiving and transmitting.” *See Fenner Invs., Ltd. v. Cellco P’ship*, 778 F.3d 1320, 1323 (Fed. Cir. 2015) (“Any explanation, elaboration, or qualification presented by the inventor during patent examination is relevant, for the role of claim construction is to ‘capture the scope of the actual invention’ that is disclosed, described, and patented”). TP-Link’s construction should therefore be rejected, and the Court should construe these terms to have their plain and ordinary meaning.

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

Netgear’s Construction	TP-Link’s Construction
Not Indefinite. Plain and ordinary meaning, “frequency band expected to experience low interference” is relative to “frequency band expected to experience high interference”	Indefinite

Claims 1, 13, 31 and 32 of the ’714 Patent each recite two frequency bands; a first band “expected to experience low interference” and a second band “expected to experience high

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interference.” ’714 Patent, cls. 1, 13, 31, 32. TP-Link argues that “expected to experience low” and “expected to experience high” are terms of degree that render the claim terms indefinite. TP-Link is wrong. Definiteness requires that a POSA would have reasonable certainty. That certainty exists here. The intrinsic evidence demonstrates the terms are used in the relative sense, rather than as reference to strict numerical values, and how a POSA can objectively distinguish the relative expected interference characteristics of two given frequency bands.

The specification does not itself use the terms “expected to experience high interference” or “expected to experience low interference” to describe the frequency bands used in various embodiments. Instead, the interference characteristics of any given frequency band is described repeatedly and exclusively as being *relative* to the interference of a second frequency band within the same networking system. *See, e.g.*, ’714 Patent, Abstract (“relatively interference free licensed bands” contrasted with “unlicensed bands”), 3:36-40 (“relatively interference-free”), 3:64-65 (“relatively interference-free”), 4:12-16 (“relatively underused”), 5:36-47 (“relatively noisier band”), 7:5-10 (“relatively interference-free”), 7:20-23 (“relatively interference-free”). As one example, the ’714 Patent explains that a frequency band that requires a license from the U.S. Government would be expected to be “relatively interference free” compared to a band that does not require a license. *Id.*, 3:59-4:4 (using “unlicensed bands” for “one direction of communication” and “relatively interference-free licensed” bands for the other direction), 2:20-51 (describing exemplary licensed bands), 2:66-3:8 (describing exemplary unlicensed bands). In other embodiments, the two bands that are used can be both licensed or both unlicensed (*id.*, 6:59-60), and their relative interference compared based on other characteristics, like relative usage (*id.*, 3:64-4:4, 4:14-15), regulatory specifications (*id.*, 5:33-36) or available spectrum bandwidth (*id.*, 4:44-45). A POSA would be able to distinguish between two bands based these relative

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characteristics because “interference” was a well-known and objectively measurable characteristic of frequency bands. *Id.*, 5:52-58 (explaining that “interference stud[ies]” were common in prior art systems); *see also* ’714 FH, 281 (examiner asserting “interference” was a “well-known quality parameter” to “provide appropriate quality level of communications”).

In view of the need for relative determinations, a POSA would not expect or require specific or absolute “values” to understand the asserted claims with reasonable certainty. *See Sonix Tech. Co. v. Publications Int’l, Ltd.*, 844 F.3d 1370, 1379 (Fed. Cir. 2017) (finding claim term definite in view of specification’s specific examples); *see also One-E-Way, Inc. v. Int’l Trade Comm’n*, 859 F.3d 1059, 1066-7 (Fed. Cir. 2017) (reversing the Commission’s determination that claims reciting “virtually free from interference” were indefinite).

Next, the prosecution history demonstrates that POSAs would have understood “expected to experience [low/high]” with reasonable certainty. In fact, these phrases were added during prosecution specifically in *response to* an indefiniteness rejection, and the examiner agreed that the claims were no longer indefinite in view of the amendment. *See Nature Simulation Sys. Inc. v. Autodesk, Inc.*, 50 F.4th 1358, 1367 (Fed. Cir. 2022) (reversing district court’s indefiniteness finding because it “gave no weight to the prosecution history showing the resolution of indefiniteness by adding the designated technologic limitations to the claims”). The claims originally recited “high interference frequency band” and “low frequency interference band” respectively. ’714 FH, 278-279. The examiner rejected those claims as indefinite because “in any frequency band interference and noise is subject to constant change and cannot identify the frequency band, as at some point ‘low interference band’ can have higher interference than ‘high interference band.’” *Id.*, 278-279. In response, the applicant “acknowledged that interference

[REDACTED]

and/or noise levels may change within a frequency band over time” and “amended the claims to additionally recite ‘expected’ high/low interference[] bands, where appropriate.” *Id.*, 303.

The definiteness of the amended phrases was then considered in a Final Office Action, wherein the examiner agreed “expected to” provided the requisite certainty to the claimed “high” and “low” interference bands. ’714 FH, 315 (in “light of Applicant’s amendment the rejection of claims ... under 35 U.S.C. 112, second paragraph, directed to ‘low interference frequency band’, ‘high interference frequency band,’ is withdrawn.”); see *Nature Simulation*, 50 F.4th at 1367. The examiner thereafter further demonstrated his understanding of “expected to experience [low/high]” by quoting the claim language and commenting on the newly added “expected to” limitation while rejecting the pending claims based on prior art. ’714 FH, 317; see *Tinnus Enterprises, LLC v. Telebrands Corp.*, 733 F. App’x 1011, 1020 (Fed. Cir. 2018) (finding “examiner’s own remarks regarding an amendment confirm that the claim language informs a person of ordinary skill of the objective boundaries of the claim term”). The Applicant appealed the examiner’s prior art rejection, putting the newly added “expected to interference [low/high]” to the examiner once again, as well as a panel of Patent Trial and Appeal (PTAB) judges. ’714 FH, 364. The examiner and PTAB each discussed “high” and “low” interference in the context of the ’714 Patent, with no difficulty parsing the meaning of the disputed terms applied to the prior art. ’714 FH, 402 (appeal response brief), 455-456 (Patent Board Decision); see *Cathx Research Ltd. v. 2G Robotics, Inc.*, 5-21-cv-00077 (EDTX) (Feb. 21, 2023) at 17-18 (holding claim term not indefinite where “examiner quoted the claim language and commented on the newly added limitation while rejecting the claim based on other prior art”). The PTAB reversed the examiner’s prior art rejection based on other limitations, and the claims were allowed. ’714 FH, 455-459.

[REDACTED]

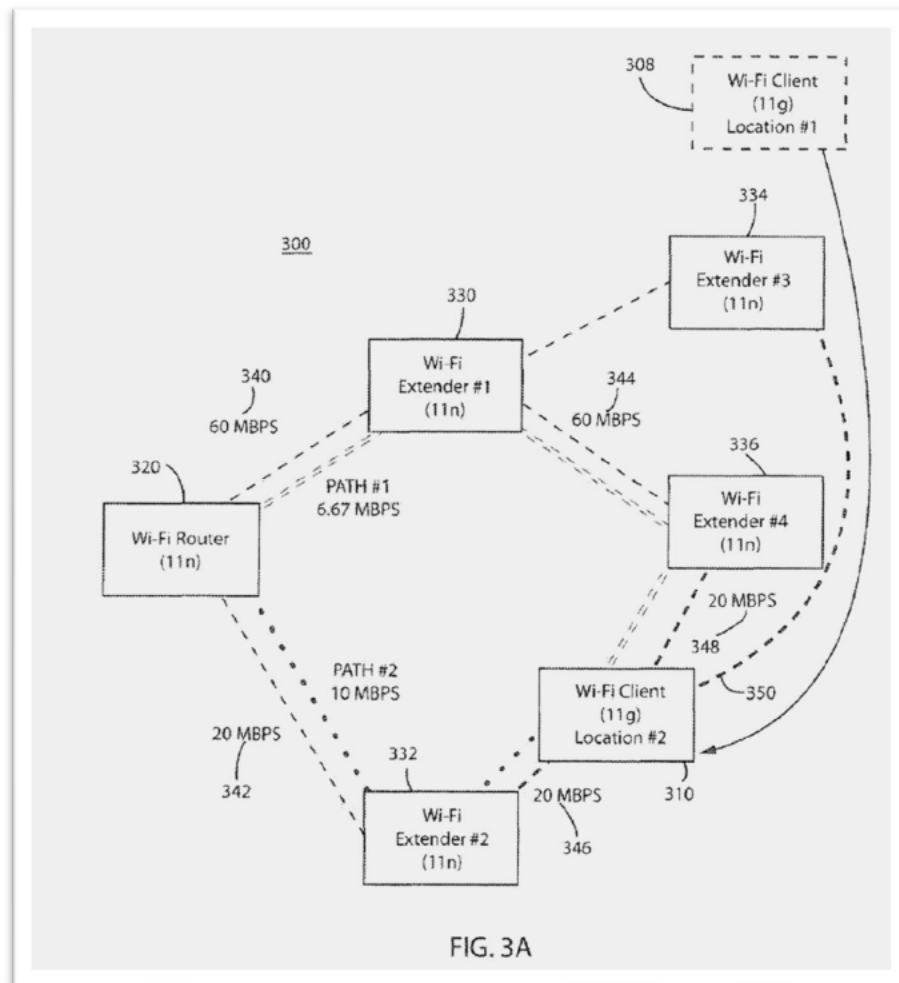
In summary, the “Patent Office allowed the patent to issue after the disputed claim term was added and considered by the patent examiner.” *Cathx*, 5-21-cv-00077 (EDTX) at 18. This shows that the “term is not indefinite and is discernible to one of ordinary skill in the art when considering the [’714 Patent’s] intrinsic evidence.” *Id.* TP-Link’s argument otherwise collapses under the well-established presumption that “public officials do their assigned jobs.” *See Timmus*, 733 F. App’x at 1020. Because TP-Link cannot prove by clear and convincing evidence that these terms are indefinite, their plain and ordinary meaning should control, where “frequency band expected to experience low interference” would be understood to be relative “frequency band expected to experience high interference.”

V. ’025 PATENT (AP SELECTION)

A. Introduction

The ’025 Patent is generally directed to systems and methods for improving extended wireless networks by identifying a wireless access device providing a highest quality wireless connection to a wireless device. JMX-0002 (’025 Patent) Abstract. In this context, a network refers to the system that enables wireless “client” devices (like phones and laptops) to connect to an external network, *e.g.*, the Internet. In traditional wireless networks, there is a single device called the router or gateway that provides wired or wireless access. *Id.*, 1:23-26. As a user gets further from the wireless access device, or based on other known connection quality factors, the quality of the wireless connection can deteriorate. *Id.*, 1:39-60. Thus, “users may add additional wireless access devices to their network, such as a WiFi extender, to increase the area where the user can maintain a high quality wireless connection.” *Id.*, 2:2-5. Those Wi-Fi extending wireless access devices typically do not themselves include a router directly connecting to an external network, instead providing an indirect connection for a wireless device to connect to the Internet through the gateway. *Id.*, 2:6-21.

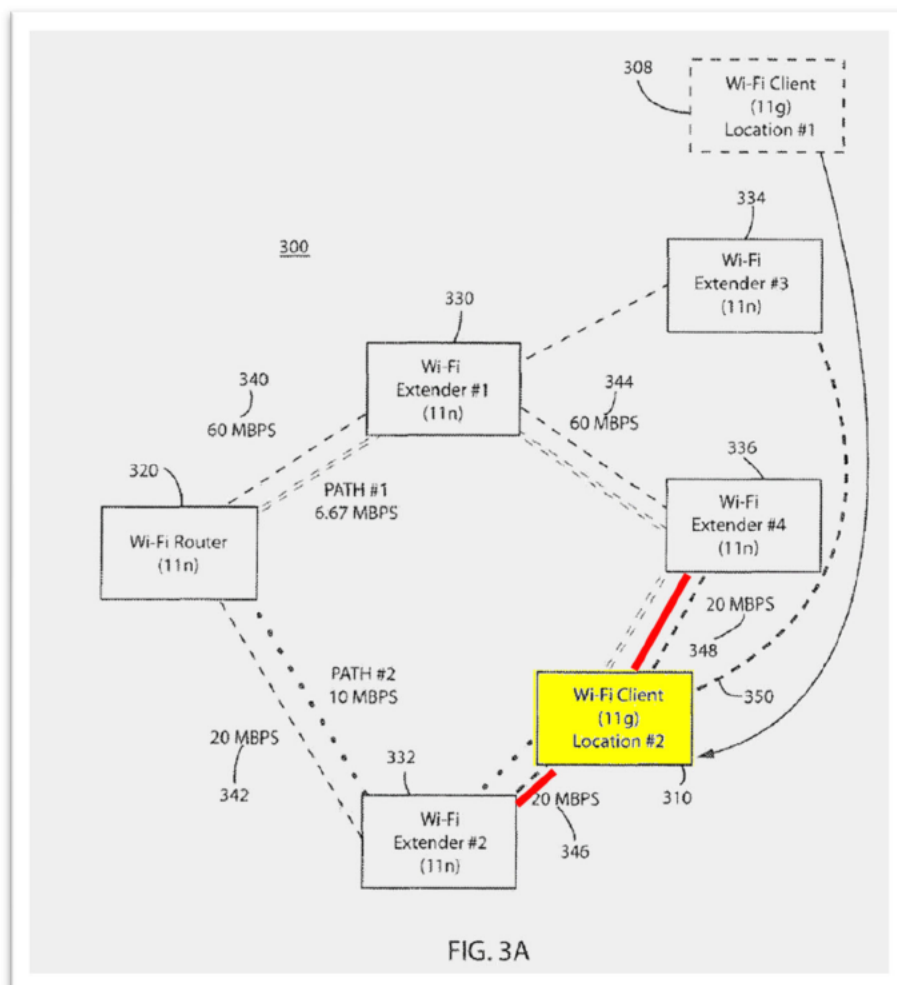
“A network including both a gateway wireless access device and one or more extender wireless access devices is referred to as an ‘extended network.’” *Id.*, 2:13-15. An exemplary extended network with a client device (Wi-Fi Client 310), gateway device (Wi-Fi Router 320) and four additional wireless access devices (Wi-Fi Extender #1-4 330, 332, 334, 336) is shown in Figure 3A:



Id., Fig. 3A (annotated).

Different access devices may provide overlapping coverage areas in an extended network, such that a wireless device in a particular location can connect to the network in alternative ways. *See id.*, 2:43-3:6. As annotated below, for example, “wireless device 310” (yellow) “may have a

good wireless connection if it connects to wireless access device 336 or wireless access device 332” as shown in red below. *Id.*, 12:6-8.



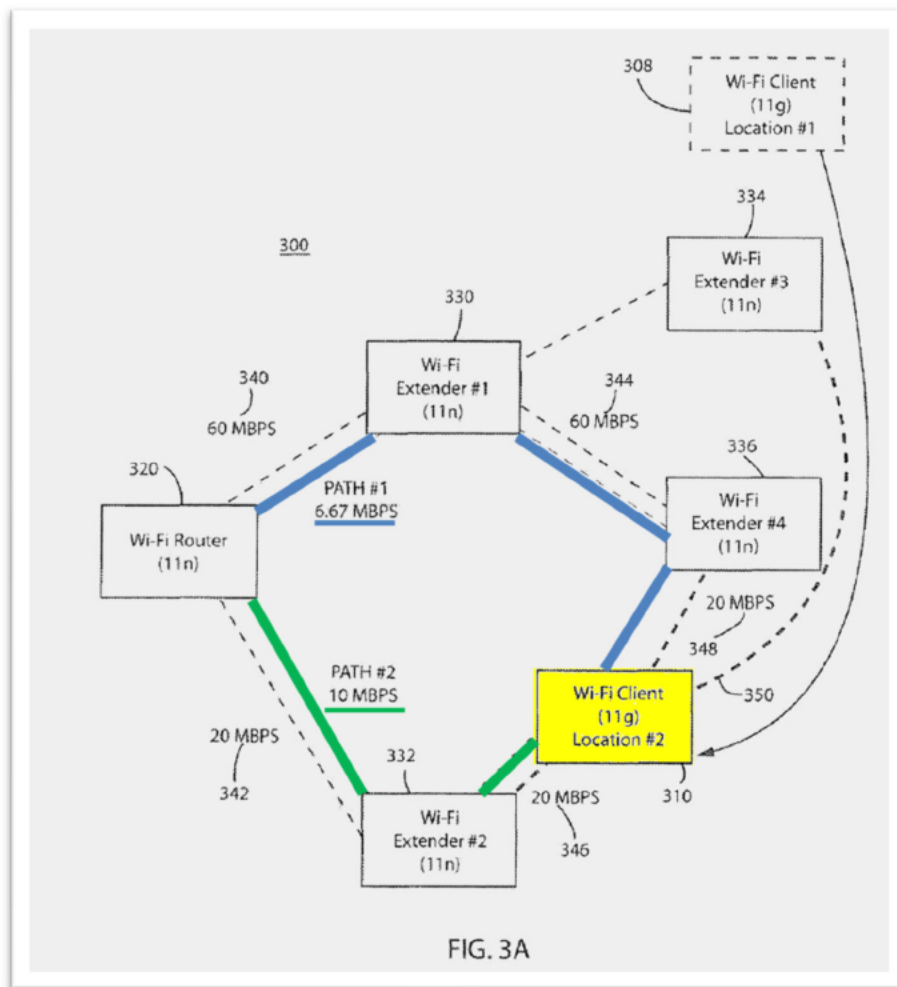
Id., Fig. 3A (annotated).

While there are two possible connections, “[t]ypically, wireless devices establish a connection with a single wireless device ... based on a determination of which wireless access device will provide the highest quality wireless connection.” *Id.* 2:43-46. In the prior art, the wireless device makes that determination and establishes the connection by comparing known “wireless connection quality factors” it detects for the two connections it can see. *Id.*, 2:55-58.

[REDACTED]

The '025 Patent explains that Wi-Fi clients often make the wrong decision in extended wireless networks, however, because clients do not “know which access device has a better connection to the router/gateway.” *Id.*, 3:13-25. Put another way, the wireless device only analyzes the direct connections shown in red above. Conversely, in the '025 Patent, the *network* devices (e.g., the gateway and/or wireless access devices) identify the “highest quality wireless connection” for a client device based on wireless connection quality of the *path* through the wireless access device to the router. *Id.*, 3:25-46.

In the '025 Patent, an extended wireless management function is “implemented on a gateway device [] and/or an extender access device” and identifies the highest quality wireless connection for the Wi-Fi Client. *Id.*, 8:50-58, 9:49-55, 10:20-37. Continuing the use of Figure 3A, the '025 Patent determines the highest quality wireless connection for two potential indirect communication paths, either through Wi-Fi Extender #4 (Path #1, blue) or Wi-Fi Extender #2 (Path #2, green).



Id., Fig. 3A (annotated), 12:6-34.

The system determines the “highest quality wireless connection” between the two paths based on objective comparisons of wireless connection quality information. For example, in this embodiment, the network “determin[es] the lowest speed among all links (between any two contiguous devices) in the connection path” and then divides that speed “by the number of links between the gateway” and the wireless device. *Id.*, 12:14-23. As applied to the two paths above:

- path #1 (blue) has three “links” and the lowest speed in those links is 20 MBPS.

Id., 12:23-27. Thus, the wireless connection quality of path #1 is 6.67Mbps (20Mbps divided by 3). *Id.*

- path #2 (green) has two “links,” and the lowest speed in those links is 20MBPS. *Id.* 12:27-31. Thus, the wireless connection quality of path #2 is 10Mbps (20Mbps divided by 2). *Id.*

In view of this, the network can simply identify the highest quality wireless connection between the two candidate paths: 10 is higher than 6.67, and so Extender #2 provides the “highest quality wireless connection.” *Id.*, 12:31-34. Other examples provide similar objective determinations of the highest quality connection. *See, e.g., id.*, 12:35-13:2.

B. Disputed Terms

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

Netgear’s Construction	TP-Link’s Construction
Plain and ordinary meaning, wherein the gateway device and the wireless access devices include one or more processors executing the extended management function	Plain and ordinary meaning, i.e., the claimed gateway device <i>and</i> the wireless access devices must include a processor executing the claimed extended management function.

Netgear’s construction of this term reflects that the presumptive plain meaning that “a” in open-ended patent claims means “one or more,” which is how “a processor” is expressly used in the ’025 Patent’s specification. TP-Link purports to agree that no construction is necessary, but its interpretation inserts the word “must” that does not appear in the claim and is anything but the ordinary meaning. TP-Link further clarified its “position is that *each* of ‘the gateway device’ and ‘the wireless access devices’ must include ‘a processor executing the extended management function...’” Ex. B (2023-08-28 Email from C. DeCoro). TP-Link’s insertion of the word “must” or “each” into the claims should be rejected because it is unsupported by the claim language and improperly reads in limitations from an alternative embodiment to the exclusion of other embodiments.

[REDACTED]

Starting with claim language, Claim 7 is a “comprising” claim reciting “wherein the gateway device and the wireless access devices include *a* processor.” Under Federal Circuit law, when a “comprising” claim uses the indefinite article “a” before a claim element, the claim is interpreted to encompass one or more of the prescribed elements. *See Baldwin Graphic Sys., Inc. v. Siebert, Inc.*, 512 F.3d 1338, 1342 (Fed. Cir. 2008). Because the claim recites “a processor,” the plain claim language encompasses wherein the “gateway device and the wireless access devices include *one or more* processors.” The claim also specifies what the one or more processors do: “execut[e] the extended management function to identify the wireless access device providing the highest quality wireless connection based on wireless connection quality information.” ’025 Patent, cl. 7.

The specification is consistent. It explains “references to ‘a server’ or ‘a processor’ can be understood to include *one or more* controllers or *processors*.” *Id.*, 14:57-64. It further explains “a processor” can refer to stand-alone processors in a single device **or** can refer to processors in different devices in a distributed environment. *Id.*, 14:57-64; *see also id.*, 8:54-56 (extended management can be “centralized on one device or distributed among a plurality of devices.”). For example, the gateway may provide “some” of the extended management function, such as routing protocols (*Id.*, 6:15-18, 6:37-40), whereas “some or all wireless access device[s]” are used for other “extended network management function[s]” like “configuring device connections in an extended network environment.” *Id.*, 6:52-57. In this manner, the processors in different devices can “*contribute* to the process” of identifying the highest quality wireless connection. *Id.*, 3:58-63. Netgear’s proposed construction reflects that the claims encompass these alternative embodiments, i.e., that “the gateway device and the wireless access devices include one or more processors” that are “executing the extended management function.”

[REDACTED]

The salient dispute involves TP-Link’s improper attempt to inject a requirement that the gateway device and the wireless access devices must “each” have a processor that executes *all* of the extended management function. But the language of other claims refutes TP-Link’s attempt to insert the word *each* in claim 7. Where the ’025 Patent claims require “each” wireless access device perform a particular function, it does so expressly. *Id.*, cl. 9 (“wherein *each* wireless access device is configured to generate wireless connection quality information for received packets from the wireless device.”). The absence of “each” or “every” in claim 7 demonstrates that the claim is not so limited. *See Hologic, Inc. v. Minerva Surgical, Inc.*, 44 F.4th 1358, 1368 (Fed. Cir. 2022) (finding inventor’s use of phrase in one claim but not another “indicates they did not intend to so limit the claim”).

In the absence of express claim language, TP-Link’s construction limiting the full scope of the plain meaning can only be supported if “the patentee explicitly redefines the term or disavows its full scope.” *Thorner v. Sony Computer Entm’t Am. LLC*, 669 F.3d 1362, 1367 (Fed. Cir. 2012). There is no disavowal nor lexicography here, so Netgear is entitled to the full, ordinary meaning scope of the term. Indeed, TP-Link’s construction is no more than an improper attempt to limit the claims to an “alternative embodiment” in the specification. ’025 Patent 14:43-51 (describing “an alternative embodiment” where an “embodiment of the network management system 206 is resident in *every* wireless access device within the extended network.”); *see Phillips*, 415 F.3d at 1323. The Court should reject TP-Link’s construction and construe this term to have its plain meaning, where “a processor” means “one or more processors.”

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

Netgear’s Construction	TP-Link’s Construction
Not indefinite. Plain and ordinary meaning	Indefinite

[REDACTED]

The term “highest quality wireless connection” in the ’025 Patent should be construed according to its ordinary meaning in the context of the claims where it appears. Put simply, “highest quality wireless connection” refers to one of a plurality of possible connections that a wireless device, like a phone or laptop, can connect to a network through a “network device” (claim 3) or “wireless access device” (claim 7, 16). ’025 Patent, cl. 3 (“identify network device in the extended network providing the highest quality wireless connection for the wireless device”), cl. 7 (“at least one wireless device having a wireless connection to a at least one of the wireless access devices ... identify the wireless access device providing the highest quality wireless connection”), cl. 16 (“identifying a wireless access device providing a highest quality wireless connection to a wireless device”). Each claim specifies that the metrics used to determine the “highest quality wireless connection” between a wireless device and a wireless access device is “wireless connection quality information.” *Id.*, cls. 3, 7, 16. And dependent claims provide granularity for “wireless connection quality information” which may include “a wireless signal strength, a noise level, a connection capability for a wireless device, a connection capability for a wireless access device, an extended network topology, a utilization status and a connection path quality.” *Id.*, cls. 13, 20.

TP-Link argues that “highest quality” in these claims is a term of degree and therefore the claims are indefinite. Not so. The Federal Circuit has explained that “[b]ecause language is limited, we have rejected the proposition that claims involving terms of degree are inherently indefinite.” *Sonix*, 844 F.3d at 1377. Here, the claim language described above and specification describe both the criteria and methods from which POSAs can determine, with reasonable certainty, the wireless access device with the highest quality wireless connection to a wireless device. *See Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1370 (Fed. Cir. 2014) (“Claim

[REDACTED]

language employing terms of degree has long been found definite where it provided enough certainty to one of skill in the art when read in the context of the invention.”).

To start, the '025 Patent explains that comparative measurements of wireless connection quality information to determine what was the “highest quality” connection were “typical” in the art. '025 Patent, 1:46-60 (describing as background the use of “multiple different wireless connection quality information” to determine a “high quality wireless connection”), 2:43-58 (“Typically, wireless devices establish a connection ... based on a determination of ... the highest quality wireless connection”). That POSAs were reasonably capable of determining what connection provides the “highest” quality is reflected in the prior art cited on the face of the '025 Patent too. *See V-Formation v. Benetton Group & Rollerblade, Inc.* 401 F.3d 1307, 1311 (Fed. Cir. 2005) (“prior art cited in a patent or cited in the prosecution history of the patent constitutes intrinsic evidence.”). For example, Smadi describes a mobile device that “rank[s]” a plurality of “access points according to their associated frame error rates from *lowest to highest*.” Ex. C (US Patent Application Number 2014/0241182) at Abstract; '025 Patent Cover. And “[p]recedent teaches that when ‘the general approach was sufficiently well established in the art and referenced in the patent’ this ‘render[s] the claims not indefinite.’” *Nature Simulation*, 50 F.4th at 1368.

In the context of the '025 Patent’s embodiments, “wireless connection quality information” are known, quantifiable metrics ripe for objective determinations of what wireless connection has the “highest” or “best” quality. *See, e.g.*, '025 Patent, 7:45-52 (“the wireless connection quality information may be either a simple value, such as a connection speed, or a number of different values, such as connection speed and ... the connection between the gateway wireless access device 122.”). And the specification’s specific numerical examples of determining the “highest quality wireless connection” provide sufficient guidance to a POSA. *See infra* at Section V.A

(describing Figure 3A example); *see also* '025 Patent, 12:35-13:2 (providing additional exemplary determinations of the highest quality connection in Figures 3B and 4B). These examples “support[] the conclusion that a skilled artisan would have understood the term [highest quality wireless connection] with reasonable certainty.” *Sonix*, 844 F.3d at 1379 (finding a term of degree definite where the specification provided sufficient examples to allow an accused infringer to understand the claim’s scope). They also show that the highest quality wireless connection is calculated by the system based on “certain objective criteria” that “provides an objective baseline through which to interpret the claims. Thus, although the term [“highest quality wireless connection”] may be a term of degree, it is not ‘purely subjective,’” like other claims the Federal Circuit has previously found to be indefinite. *Sonix*, 844 F.3d at 1378.

The prosecution history also demonstrates that the examiner had reasonable certainty as to the meaning of “highest quality wireless connection” by discussing that limitation expressly in the context of the prior art. *See* JMX-0007 ('025 FH), 124-125, 164-168; *see Tinnus*, 733 F. App'x at 1020 (The examiner also recited the “highest quality wireless connection” limitations as a basis for allowing the claims. '025 FH, 213-214. Thus “[t]he patent examiner clearly did not consider this term to be indefinite, or [they] would not have parroted the language in [their] statement of reasons for allowing the claims as phrased.” *Alifax Holding SpA v. Alcor Scientific Inc*, C.A. No. 14-440, S 2017 WL 1533430, at *9 (D.R.I. Apr. 27, 2017). Because the term is not indefinite and no other construction has been offered, its plain and ordinary meaning should govern.

3. “a processor executing the extended management function ...” (cl 7)

Netgear’s Construction	TP-Link’s Construction
§ 112(f) does not apply; plain and ordinary meaning	§ 112(f) applies. Function: as claimed

Netgear's Construction	TP-Link's Construction
	Structure: Indefinite. Alternatively, Figure 2 (gateway 122 and constituent structures) implementing steps 406, 408, 410.

The full term beginning with “a processor” that TP-Link identified for construction in claim 7 is highlighted below:

wherein the gateway device and the wireless access devices include 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.

'025 patent cl. 7 (annotated). There is no dispute that the foregoing “a processor...” limitation can be understood according to its plain and ordinary meaning, and that the claim language itself need not be construed. Instead, TP-Link argues that “a processor executing the extended management function...” invokes § 112(f). But § 112(f) presumptively does not apply because the term does not use “means.” *Williamson v. Citrix Online, LLC*, 792 F.3d at 1349 (Fed. Cir. 2015). The presumption is rebuttable only if TP-Link can “demonstrate[] that the claim term fails to ‘recite sufficiently definite structure’ or else recites ‘function without reciting sufficient structure for performing that function.’” *Id.* (quoting *Watts v. XL Sys., Inc.*, 232 F.3d 877, 880 (Fed. Cir. 2000)). Here, TP-Link cannot overcome this presumption. *See Williamson*, 792 F.3d at 1351.

[REDACTED]

The Federal Circuit’s decision in *VDPP LLC v. Vizio, Inc.* is instructive. 2022 WL 885771, (Fed. Cir. Mar. 25, 2022). In that case, the district court found limitations reciting a “processor” and “storage” were subject to 112(f) because the terms were allegedly a “black box for performance of a function without any description of how such a function is performed.” *Id.* at *2. The Federal Circuit reversed, concluding that the district court erred by failing to give the presumption against 112(f) any effect. *Id.* Applying that presumption, the Federal Circuit further explained that the district court overlooked evidence that “processor” and “storage” were “well known,” which showed that the terms “do connote structure to a skilled artisan,” *Id.* at 3 (emphasis original). Put differently, “a skilled artisan would not understand ‘processors’ or ‘storage’ to merely be ‘black box[es] for performance of a function.’” *Id.* Thus, 112(f) did not apply.

This conclusion is not unique to the patent in *VDPP*. The Federal Circuit similarly found in *Samsung Electronics America Inc. v. Prisia Engineering Corporation* that the terms “digital processing unit” and “computer processing unit” are “understood as a reference to structure” that do not invoke means plus function. 948 F.3d 1342, 1354 (Fed. Cir. 2020). Indeed, courts routinely find “processor” is not a generic placeholder for a nonce word, and that claim limitations requiring a processor implementing a claimed function do not invoke 112(f). *See e.g., Certain Smart Televisions*, Inv. No. 337-TA-1338, Order No. 15 (May 17, 2023) (“‘processor’ connotes structure to a person of ordinary skill in the art”); *Panoptis Patent Mgmt., LLC v. Blackberry Ltd.*, 2017 WL 497571, at *19 (E.D. Tex. Feb. 7, 2017) (“[t]he Court thus hereby construes the ‘a processor ...’ term to have its plain meaning.”).² As put by the PTAB, “processor and memory, very clearly refer

² *See also Advanced Mkg. Systems, LLC v. CVS Pharmacy, Inc.*, 2016 WL 1741396, at *20 (E.D. Tex. May 3, 2016) (“the ‘data processor for’ terms are not means-plus-function terms governed by 35 U.S.C. § 112, ¶ 6”); *Syncpoint Imaging, LLC v. Nintendo of Am. Inc.*, 2016 WL 55118, at *18-20 (E.D. Tex. Jan. 5, 2016) (“‘processor’ connotes structure” and “processor for processing”

[REDACTED]

to structural elements.” *Ex Parte Cutlip et al.*, Appeal 2011-011658, Decision on Appeal in Application No. 11/345,010 (June 2, 2014).

The same conclusion as in *VDPP* and scores of other cases follows here. The “processor” in claim 7 of the ’025 Patent refers to a class of structures consistent with its well-known and ordinary meaning, and does not invoke 112(f).

Technical dictionaries from the relevant time define “processor” to be a variety of structures that can perform particular tasks, depending on application, including to “execute instructions” for controlling a device. *Ex. D* (Wiley Electronics Engineering Dictionary (2004)) 605 (“processor”); *Ex. E* (Newton’s Telecom (2009)) 892 (“processor”). Claim 7 uses “a processor” (i.e., one or more processors) consistent with this plain meaning as being included in “the gateway device and the wireless access devices” and used for “executing the extended management function to identify the wireless access device providing the highest quality wireless connection.” ’025 Patent cl. 7. In other words, the “processor” is structure that controls the devices by executing instructions for performing the extended management function.

is not a means-plus-function term); *Finjan v. Proofpoint*, 2015 WL 7770208, at *10-11 (N.D. Cal. Dec. 3, 2015) (construing the phrase “content processor for processing ...and for invoking” and stating that “[t]he term ‘content processor’ has a sufficiently specific structure” and is not a means-plus-function term); *Odyssey Wireless v. Apple*, No. 2016 WL 3055900, at *11-12 (S.D. Cal. Mar. 30, 2016) (“The term ‘processor’ connotes structure” and is not a means-plus-function term) (internal quotations omitted); *Nomadix v. Hosp. Core Svcs.*, 2016 WL 344461, at *7 (C.D. Cal. Jan. 27, 2016) (construing “processor” to have its ordinary meaning); *Magna Elec., Inc. v. TRW Automotive Holdings Corp.*, 2015 WL 11401855, *8-9 (W.D. Mich. Apr. 28, 2015) (construing “a processor for processing images” as plain and ordinary meaning); *Techno View IP, Inc. v. Facebook Techn., LLC*, 2018 WL 6427874, at *5 (D. Del. Dec. 7, 2018) (processor “does at least describe a class of known structures, unlike terms such as ‘means,’ ‘device,’ or ‘element’”); *SEVEN Networks, LLC v. Apple Inc.*, 2020 WL 1536152, at *49 (E.D. Tex. Mar. 31, 2020) (“the term ‘processor’ refers to a well-known structure, and the claims recite that this well-known structure has a particular configuration in the claimed invention.”)

[REDACTED]

The specification further supports that conclusion. The '025 Patent explains a “processor” or “processing unit” refers to a particular type of “hardware” that can be used to implement the “functional components” of the devices. *Id.* 8:59-63. The '025 Patent explains that processors were well known, stating the skilled artisan can use “any type of processor, such as a MIPS processor.” *Id.*, 9:5-6, 14:57-64 (“processor-controlled devices”); *see VDPP*, 2022 WL 885771 at *3 (intrinsic evidence referring to “well-known” processors demonstrated the term connotes structure).

The Court should therefore find that the “processor ...” term is simply reciting known structure and does not invoke § 112(f). TP-Link provides no alternative construction if the term is found not to invoke 112(f), and therefore no construction is necessary and the term should be given its ordinary meaning. *See VDPP*, 2022 WL 885771, at *3 (when 112(f) does not apply, courts “need not address whether, at step two, the specifications adequately disclose structure for those functions.”).

4. “the communication path” (cl. 16)

Netgear’s Construction	TP-Link’s Construction
Plain and ordinary meaning, the path for communications between the gateway router and the wireless access device	Indefinite

The phrase “the communication path” appears in three asserted claims of the '025 Patent, claims 1, 7 and 16. At issue, however, is only the meaning of that term in claim 16. According to TP-Link, claim 16 departs from proper antecedent basis for “the communication path,” and therefore the claim must be invalid as indefinite. Not so. It is a “well-settled rule that claims are not necessarily invalid for a lack of antecedent basis.” *Microprocessor Enhancement Corp. v. Texas Instruments Inc.*, 520 F.3d 1367, 1376 (Fed. Cir. 2008). Instead, the inquiry “focuses on whether those skilled in the art would understand the scope of the claim when the claim is read in light of the rest of the specification.” *Energizer Holdings, Inc. v. Int’l Trade Comm’n*, 435 F.3d

[REDACTED]

1366, 1370 (Fed. Cir. 2006) (holding that lack of antecedent basis for claim term “said zinc anode” was “not an invalidating flaw”). Here, the claimed “the communication path” is used consistently across the asserted claims—in disputed claim 16 and undisputed claims 1 and 7—according to its plain and ordinary meaning, referring to the path for communications between the gateway router and the wireless access device. That consistent meaning is also carried out through the specification and prosecution history, providing implicit antecedent basis for “the communication path” in claim 16.

The plain meaning of “communication path” is reflected in technical dictionaries. A “path” in the telecommunications context is a “physical route a telecommunications signal follows from transmitter to receiver. The path includes all circuits and all intermediate devices, such as switches and routers.” Ex. E (Newton Telecom (2009)), 839 (“path”). And a “communication channel” is defined as a “two-way path” for “transmitting data signals.” *Id.*, 300. The plain meaning is reflected in the context that “communication path” is used in claim 16 of the ’025 Patent:

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.

’025 Patent, cl. 16 (annotated).

The claim language immediately preceding “the communication path” explains what it is with reasonable certainty: a path established for “wireless connection quality information” (data signals) to be transmitted “from the wireless access device to at least a gateway router.” *See InfoGation Corp. v. ZTE Corp.*, No. 16-CV-01901-H-JLB, 2017 WL 1821402, at *13 (S.D. Cal.

[REDACTED]

May 5, 2017) (finding claim term “said optimal routes” was not indefinite because claim context provided implicit basis for the term). While claim 16 alone provides reasonable certainty as to the meaning of “the communication path,” that meaning is further reinforced by a review of claim 1 and 7 that use “the communication path” in the same way. ’025 Patent, cls. 1, 7 (reciting “the communication path between the gateway [router/device] and the wireless access device”). TP-Link does not dispute that a skilled artisan would understand “the communication path” in claims 1 and 7 with reasonable certainty, and a POSA would reasonably understand the same meaning would apply to that term in claim 16. *See In re Varma*, 816 F.3d 1352, 1363-64, 118 U.S.P.Q.2d (Fed. Cir. 2016) (“[T]he principle that the same phrase in different claims of the same patent should have the same meaning is a strong one”).

The specification applies the same meaning too. The “path quality” describes a path from “the wireless access device to the gateway.” ’025 Patent, 11:20-21. And a “connection path” is one that goes “through [a] wireless access device” to the gateway. *See, e.g., id.*, 12:20-21 (“connection path between that wireless device and the gateway wireless access device”), 12:24-25 (“connection path through wireless access device 336”), 12:28-29 (“connection path through wireless access device 332”). The plain meaning of “path” in the ’025 Patent is therefore the path for communications between the gateway router and the wireless access device, as Netgear proposes.

The prosecution history confirms the meaning of “the communication path” in claim 16. That phrase was added to claim 16 by amendment. ’025 FH, 191. In describing that amendment, the applicant explained “Claim 16 has been amended to recite ‘a gateway router communicating indirectly using a network extender device to establish *the communication path* with the wireless access device” as reciting the use of “an indirect *communication path between a gateway router*

[REDACTED]

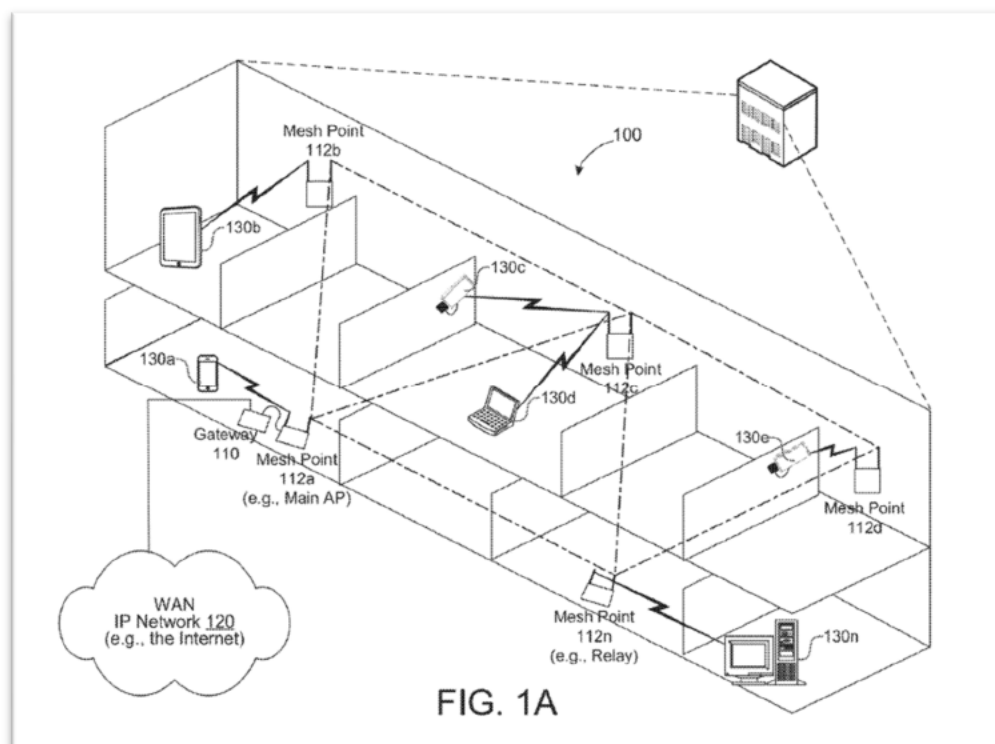
and a wireless access device (which would in turn communicate with a wireless device).” ’025 FH, 196-197.

In sum, the claims, specification, and prosecution history all lead to the same conclusion. The “communication path” in claim 16 is not indefinite. It refers to its plain and ordinary meaning—the path for communications between the gateway router and the wireless access device.

VI. THE ’179 AND ’698 PATENTS (DEDICATED BACKHAUL PATENTS)

A. Introduction

The ’179 and ’698 Patents belong to the same family and claim priority to the same provisional applications, U.S. Provisional Nos. 62/253,540 (Ex. F, “’540 Provisional”) and 62/336,503 (Ex. G, “’503 Provisional”). The patents generally relate to wireless mesh networks that provide clients, such as a smartphone or laptop, “data packet forwarding to and from the Internet” through a plurality of mesh points as depicted below in Fig. 1A of the ’179 Patent:



[REDACTED]

JMX-0003 ('179 Patent); JMX-0004 ('698 Patent), Figs. 1, 2. These mesh networks typically include a "Main AP" (112a) mesh point with a direct connection to the Internet and that provides network access to the Internet for other mesh points. '179 Patent, 5:20-29, Fig. 1A; '698 Patent, 4:23-24, 1:27-41, 2:36-47, Fig. 2. Client devices can connect to the mesh point with direct Internet access (i.e., main or base "access point," "AP") or the other mesh points for access to the Internet. '179 Patent, 3:40-46, Fig. 1A; '698 Patent, 2:43-45, 3:54-55, 4:1-2, 1:27-41, 4:23-24.

The '179 and '698 Patents teach systems and methods for improving these wireless mesh networks by implementing a communication between mesh points, also known as a backhaul communication, that is dedicated to servicing data traffic between the mesh points, also known as "back-end" traffic. '179 Patent, 14:31-35, 29:60-63; '698 Patent, 2:40-45, 3:45-65. This backhaul communication, which the patents refer to as "dedicated," is separate from the communication the mesh points establish "for servicing data traffic from and to clients," also called "front-end" traffic. '179 Patent, 27:5-21, 27:34-50, 29:47-30:18; '698 Patent, 3:51-61. The communication established between clients and the mesh points is referred to as a "front haul," "general purpose," or "client-facing" wireless communication. '179 Patent, 30:4-7; '698 Patent, 9:16-17, 11:1-3. The patents explain that forming a dedicated backhaul communication "can be utilized to provide more throughput," or an increase in the amount of data that is able to be transmitted and received during a specific time, because neither the dedicated backhaul nor client-facing wireless communication need to service both front-end and back-end traffic. '179 Patent, 27:17-21; '698 Patent, 2:36-47, 1:51-59.

The patents provide examples for establishing these separate communications by using different communication technologies, such as 2.4 GHz or 5 GHz radios, as illustrated by the two mesh points (illustrated as transparent outlined rectangles) in Figure 19 below:

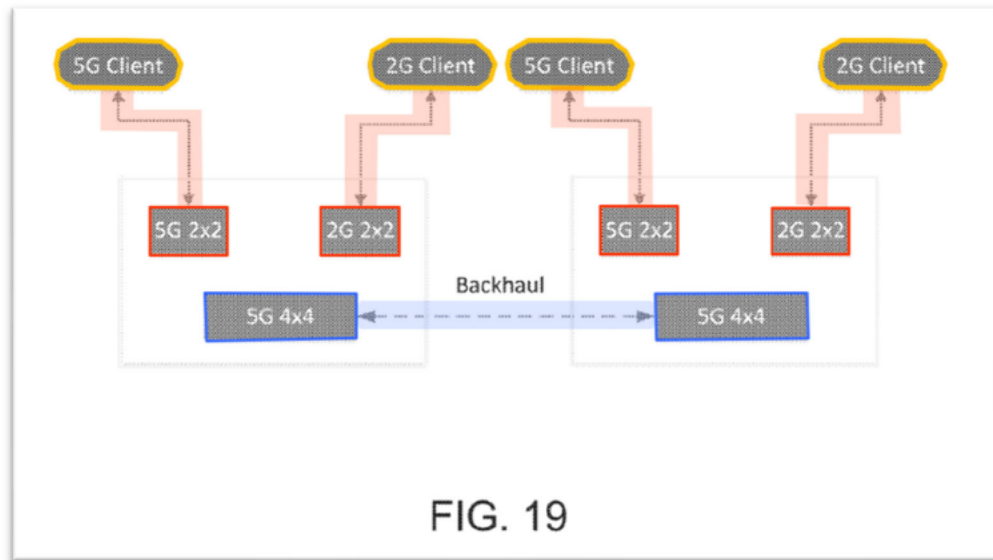
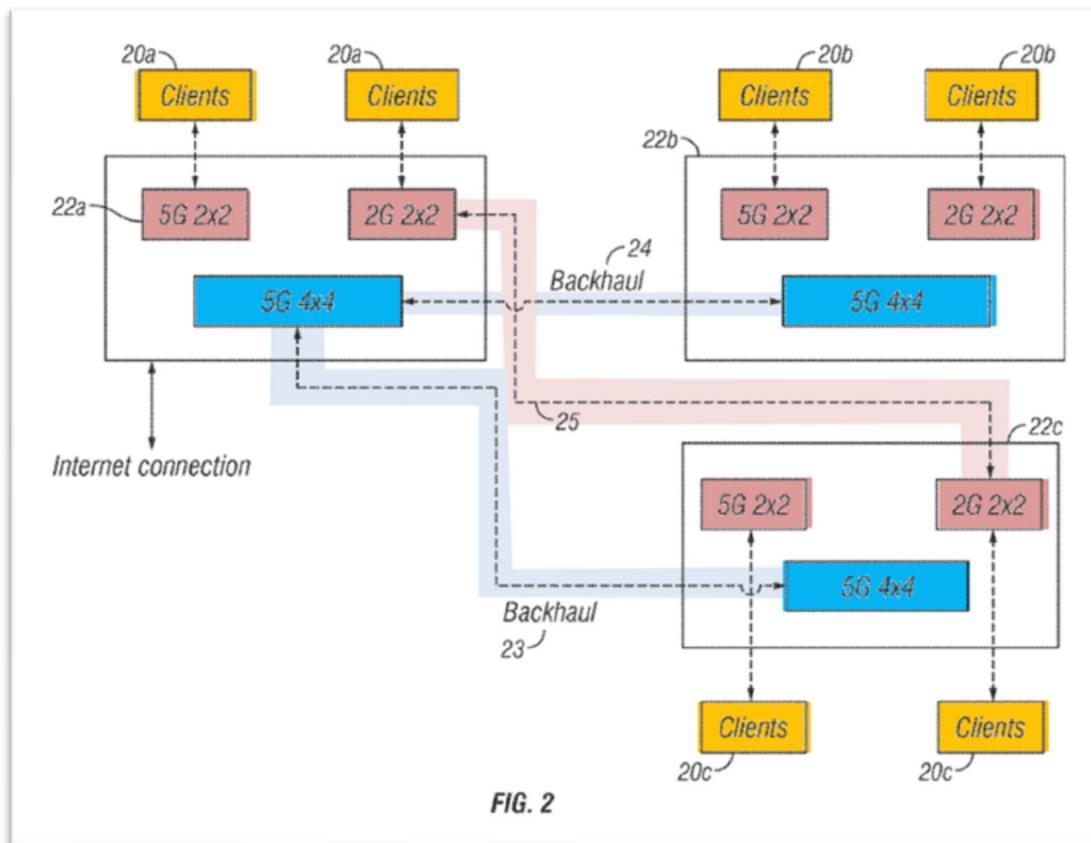


FIG. 19

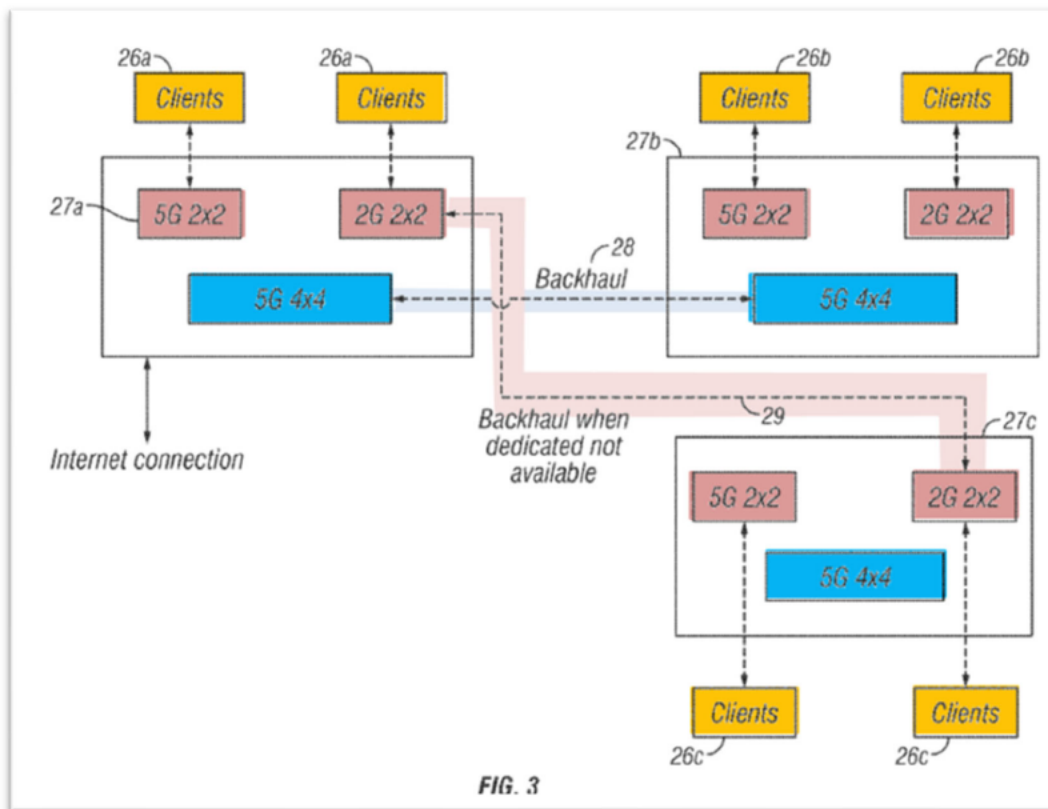
'179 Patent, Fig. 19, 27:6-7, 27:34-50, 29:47-54; '698 Patent, 3:55-59, 4:1-4. In this example, one 5 GHz radio (**blue**) is "dedicated for backhaul purposes." '179 Patent, 29:47-54; '698 Patent, 2:48-54. The mesh points also include a 2.4 GHz radio and a second 5 GHz radio (**red**) that are used to establish a separate communication with clients (**orange**). '179 Patent, 29:60-63, 30:4-10; '698 Patent, 7:19-22. Because the 5 GHz frequency band is "relatively wide," the patents explain "it is possible to place more than one radio in 5 GHz in a single device without unacceptably large interference." '179 Patent, 29:47-53; '698 Patent, 3:61-65.

The '179 and '698 Patents explain that a dedicated backhaul communication between mesh points is preferred, but an alternative backhaul communication may also be used if the dedicated backhaul communication is not functioning or has poor performance. '179 Patent, 27:17-21, 28:20-41; '698 Patent, 3:6-10. In some embodiments, mesh points establish a dedicated backhaul communication using dedicated radios and also use client-facing radios to establish a separate communication between the mesh points. '179 Patent, 27:34-39, 29:47-54; '698 Patent, 3:6-10, 3:58-65, 9:9-19, 7:48-8:6. This is illustrated in Fig. 2:



'698 Patent, Fig. 2, 3:52-65; '179 Patent, Fig. 19, 27:34-50, 29:47-30:18. Here, the mesh point with internet connection (i.e., Main AP) establishes dedicated backhaul communications (**light blue**) using a 5 GHz dedicated radio (**dark blue**) with the other two mesh points. '698 Patent, 3:56-58; '179 Patent, 27:7-14; 29:47-52. The main AP also establishes a second communication (**light red**) with the bottom mesh point using its 2.4 GHz radio (**dark red**) that also services clients (**orange**). '698 Patent, 3:58-62; '179 Patent, 5:20-29, 5:63-6:1, 29:47-30:18.

With this configuration, if the dedicated 5 GHz backhaul link becomes unavailable, the mesh points can utilize the communication established with the 2.4 GHz client-facing radio as an alternative backhaul communication between the main AP and bottom mesh point. '698 Patent, 3:52-65, 3:45-51; '179 Patent, 27:17-21, 28:20-41, 29:47-30:18. This is depicted in Figure 3:



'698 Patent, 3:58-62; '179 Patent, Fig. 19, 27:34-50, 29:47-30:18. The capability to switch backhauls between mesh points is advantageous because it “provide[s] fault tolerance to the mesh network (e.g., to provide redundancy against temporary interference, etc.).” '179 Patent, 27:17-21; '698 Patent, 2:36-47, 1:51-59.

B. '179 Patent Disputed Terms

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

Netgear's Construction	TP-Link's Construction
Not indefinite. “forward wireless communication” is a “client-facing wireless communication”, remainder of the term plain and ordinary meaning	Indefinite

The crux of the dispute is the distinction between a “forward wireless communication” and a “backhaul communication” as recited in the claims. According to TP-Link, there is no

[REDACTED]

distinction. But that position is belied by the claims, specification, and file history. The claims and specification use “backhaul communication,” consistent with its well-established plain and ordinary meaning, as a communication between mesh points. ’179 Patent, 14:29-35, 27:6-14, Fig. 9, cls. 1, 11. “Forward wireless communication” is not a term of art, but a POSA would understand the intrinsic record to implicitly define it as a wireless communication established using a radio that is available for client communications. Netgear’s proposed construction of “forward wireless communication” as a “client-facing wireless communication,” which is consistent with the claim, specification, and file history, makes explicit its distinction from the claimed “backhaul communication.” With that, no further construction is necessary as a POSA would understand a “backhaul, separate from the [client-facing] wireless communication” according to its plain and ordinary meaning.

To resolve the parties’ dispute, three questions must be answered. *First*, whether a POSA, upon reviewing the intrinsic record, could determine, with reasonable certainty, when a “backhaul communication” is “separate from the forward wireless communication.” *Second*, whether a POSA would understand “forward wireless communication” to mean a “client-facing wireless communication” in light of the intrinsic record. *Third*, whether a POSA would understand “backhaul communication, separate from” the forward wireless communication according to its plain and customary meaning in the art. The answer to all three is a resounding yes.

a. The intrinsic evidence discloses objective bounds to determine a backhaul communication, separate from the forward wireless communication

Both the claims and specification “provide reasonable certainty about” the objective boundaries that separate the claimed forward wireless and backhaul communications “by giving detailed guidance and examples of systems[, methods,] and devices that” establish a backhaul

[REDACTED]

communication, separate from other wireless communications, between two mesh points. *Nevro Corp. v. Boston Scientific Corporation*, 955 F.3d 35, 39-40 (Fed. Cir. 2020).

Importantly, the claims themselves establish an objective boundary that separates the forward wireless and backhaul communications by requiring each be established using *different* communication technology. The limitations in which the disputed terms appear recite “establishing” each communication with “[a]/[the] second mesh point.” ’179 Patent, cls. 1, 11. Two subsequent “wherein” limitations add distinct requirements as to how each communication is established with specific technologies.

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

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

Id., cl. 1. The forward wireless communication uses a 2.4 GHz or 5 GHz frequency band (**red underline**), whereas the backhaul uses a power line based communication or a sub-1GHz RF technology (**blue underline**). *Id.* The backhaul communication may also use 2.4 GHz or 5 GHz RF technology (**blue underline**), but unlike the forward wireless communication it “us[es] a dedicated radio.” *Id.* These limitations also require the communications be established with the expressly recited technologies. *See* Section VI.B.2, *infra*. Because there is no overlap between

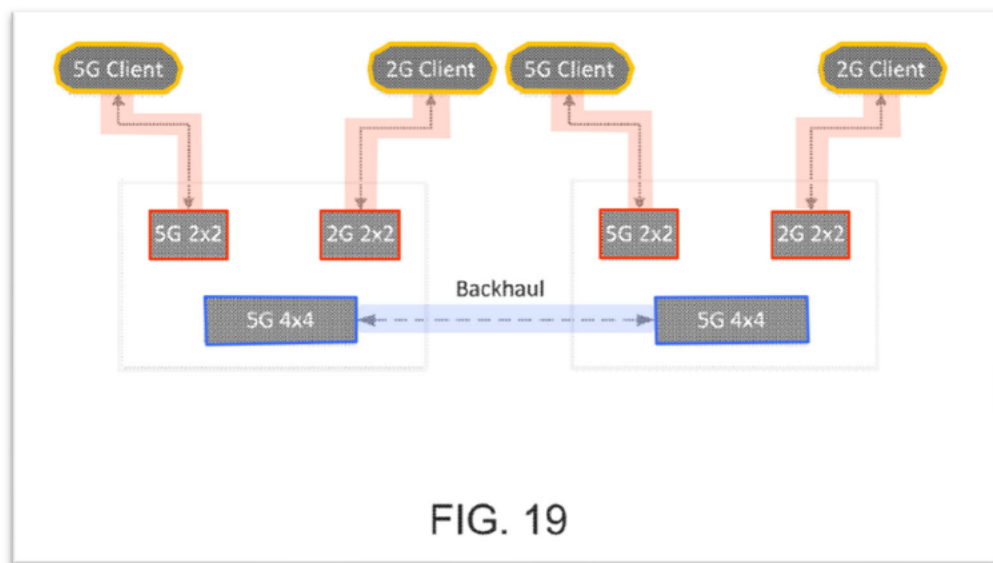
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how the communications are established, the claims provide an unmistakable partition between them.

Dependent claim 3 further affirms this separation. Claims 1 and 11 further recite “upon determining the quality of service of the [dedicated]/[established] backhaul dropped below a predetermined threshold, establishing an alternative backhaul communication with the second mesh point.” ’179 Patent, cls. 1, 11. Dependent claim 3 recites that the drop in the backhaul’s quality of service “redirect[s] backhaul traffic to the forward wireless communication.” *Id.*, cl. 3. “[R]edirecting” traffic from the underperforming backhaul communication to the forward wireless communication suggests the two operate independent from one another.

The specification also provides “a general guideline and specific examples” of establishing a backhaul communication, separate from other wireless communications between mesh points using different communication technologies that “would enable a [POSA] to determine” the scope of the claim. *Nevro*, 955 F.3d at 39-40. Like the claimed backhaul communication, “in some embodiments, the mesh points may be equipped with ... : a powerline communication circuit ..., a dedicated 5 GHz radio circuit, and/or a sub-1 GHz radio circuit, for purposes of establishing the dedicated backhaul link.” ’179 Patent, 27:34-45. The mesh points “combine” these “dedicated backhaul circuits” with “general purpose 2.4 GHz and 5 GHz WLAN radios,” like those used by the claimed forward wireless communication, to “form different parts of the mesh network.” *Id.*, 27:39-45. These “general purpose 2.4 GHz and 5 GHz WLAN radios” are “used to communicate to client[s],” but may also be used to establish a separate communication between mesh points. *Id.* That way, “when the dedicated [backhaul] link is not functioning or when the performance of [the] dedicated link is significantly below the 2.4 GHz or 5 GHz radio ..., the best communication link can be used as the backhaul link.” *Id.*, 27:45-50.

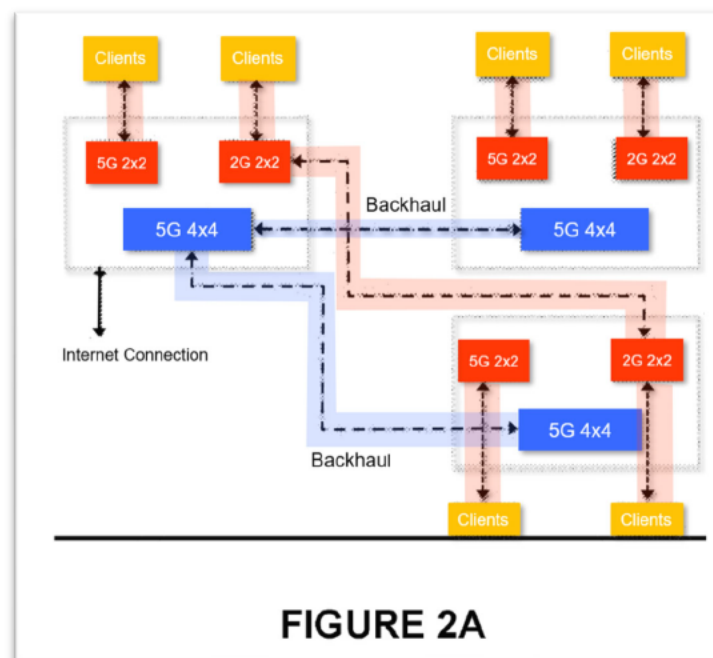
The specification teaches how to use a dedicated radio to establish a separate backhaul communication, such as the dedicated 5 GHz radio depicted in Figure 19:



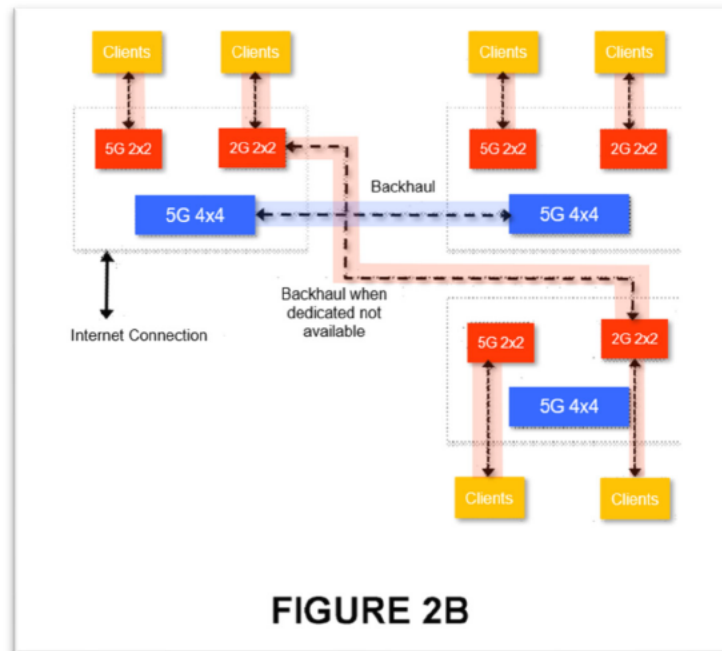
'179 Patent, Fig. 19, 27:6-7. Because “5 GHz ISM band is a relatively wide frequency band ... it is possible to place more than one radio in 5 GHz in a single device without unacceptably large interference.” *Id.*, 29:47-53. “In such cases, a part of the 5 GHz frequency band can be dedicated for backhaul purposes” using one of the 5 GHz radios (**dark blue** box outline). *Id.*, 29:47-54; *see also id.*, 29:21-33 (establishing a separate powerline backhaul), 29:34-46 (establishing a separate sub 1-GHz backhaul).

The mesh points in Figure 19 also include a 2.4 GHz radio and a second 5 GHz radio (**dark red** box outline) that “service data traffic from and to the clients” (**orange** outline). *Id.*, 29:60-63, 30:4-10. These “client facing” radios may also be used to establish a communication, separate from the dedicated backhaul, between the mesh points. *Id.*, 27:34-50, 29:59-30:15. If the dedicated backhaul communication underperforms, the mesh points can “utilize a select portion of the client facing resource as the backhaul [such that it] would be serving both front end and back end traffic.” *Id.*, 30:7-14; *see also id.* 27:45-50, 29:42-30:18, 28:54-67, Figs. 22A-22C.

The '503 Provisional, which the '179 Patent claims priority to and incorporates by reference, in its entirety ('179 patent, 1:7-15), illustrates a backhaul communication established separately from a communication using the client-facing radios. Ex. G ('503 Provisional), CMX-0006.22, CMX.0006.26-27, CMX.0006.46-47. In Figure 2A, the mesh point with the “internet connection” (main AP) establishes a dedicated 5 GHz backhaul communication (light blue) with the other two mesh points using a 5 GHz dedicated radio (dark blue boxes). *Id.*, CMX-0006.46. The main AP also establishes a communication (light red) with the bottom mesh point using a 2.4 GHz radio (dark red boxes) and that same radio is also used to establish communication to clients (orange boxes).



Id., Fig. 2A (annotated). Figure 2B illustrates that if the dedicated backhaul communication between the main AP and bottom mesh point becomes unavailable, the AP may use the client-facing 2.4 GHz communication as an alternative backhaul communication.



Ex. G, Fig. 2B (annotated), CMX.0006.26-27, CMX.0006.46-47.

The specification thus is replete with guidance and examples of establishing a backhaul communication separate from another communication, such as the client-facing communication, such that “a skilled artisan could determine the scope of the claims” with reasonable certainty. *Niazi Licensing Corporation v. St. Jude Medical S.C., Inc.*, 30 F.4th 1339, 1349–50 (Fed. Cir. 2022). TP-Link’s indefiniteness argument should be rejected.

b. Forward wireless communication is a client-facing wireless communication

The second question is whether a POSA reviewing the intrinsic evidence would understand the claimed “forward wireless communication” to be a “client-facing wireless communication” as described in the specification. They would. Although “forward wireless communication” is not a term of art nor explicitly recited in the specification, “the specification may define claim terms by implication such that the meaning may be found in or ascertained by a reading of the patent documents.” *Trustees of Columbia Univ. in City of New York v. Symantec Corp.*, 811 F.3d 1359,

[REDACTED]

1364 (Fed. Cir. 2016). Indeed, “[t]he mere observation of information not recited does not answer the question whether a person of ordinary skill in the art would need to be given such information to understand, with reasonable certainty the scope of the claim term.” *BASF Corp. v. Johnson Matthey Inc.*, 875 F.3d 1360, 1366-68 (Fed. Cir. 2017).

The claims disclose features that tie the forward wireless communication directly to the client-facing wireless communication as described in the specification. The forward wireless communication is established using a 2.4 GHz or 5 GHz frequency band, alongside a backhaul communication established using a powerline, 2.4 GHz or 5 GHz RF technology using a dedicated radio, or sub-1 GHz RF technology. ’179 Patent cls. 1 and 11. Dependent claim 3 provides that upon a drop in the backhaul’s quality of service, backhaul traffic is redirected to the forward wireless communication. *Id.* cl. 1.

These same features are shared by the wireless communication established using the “client-facing” radios in the specification’s embodiments. For example, embodiments are equipped with client-facing “2.4 GHz and 5 GHz WLAN radios” and “dedicated backhaul circuits,” such as a “powerline,” “5 GHz dedicated radio,” or “sub-1GHz radio.” ’179 Patent, 27:34-50, 27:5-14, 29:47-30:18, Fig. 19. Embodiments describe establishing communications between mesh points using these client-facing radios, in addition to the dedicated backhaul communication. *Id.*, 27:42-50, 29:42-46, 29:59-30:18. And when the dedicated backhaul is underperforming, a portion of the communication established using the client-facing radio is used as an alternative backhaul communication to service “back-end [i.e., backhaul] traffic,” in addition to “front end” traffic for clients. *Id.*, 30:4-15. The name “forward wireless communication” also reflects a functional aspect of communication established using the client-facing radios: to provide

[REDACTED]

the clients with “data packet *forwarding* to and from the gateway and the Internet.” ’179 Patent, 27:5-21; *see also id.*, 29:60-63.

Consistent with these descriptions of the invention set forth by the specification, a POSA would thus understand a “forward wireless connection” to be a “client-facing wireless communication.”

c. Backhaul, separate from the forward wireless communication takes on its plain and ordinary meaning

The final question is whether “backhaul communication, separate from the forward wireless communication” should be given its plain and ordinary meaning. It should. Setting aside “forward wireless communication” defined above, the ’179 Patent does not assign definitions to “backhaul communication” or “separate from” that otherwise stray from their well-understood and accepted meanings.

A backhaul communication is commonly understood to be a communication that connects the edge of the network, such as a mesh point, with the core of the network, such as a main AP. *See, e.g.*, Ex. H (Newton Telecom (2016)) (“backhaul”). Applying this standard definition, the claims and specification use backhaul communication, or backhaul, to describe communications between mesh points. For example, claim 1 recites “establishing a *backhaul communication* ... with the second *mesh point*” and “*backhaul* candidates ... indicative of a potential link between the *first mesh point and second mesh point*,” 179 Patent cls. 1, 11. The specification similarly discloses a “*mesh point* can select ... its dedicated *backhaul communication* mechanism between itself and the rest of the *mesh points*.” *Id.*, 14:29-35, 27:6-14.

Additionally, “separate from” carries the well-established meaning of “a distinction or boundary between.” *See, e.g.*, Ex. I (New Oxford American (2010)), (“separate”). This comports with how the claims and specification describe the forward wireless and backhaul communications

[REDACTED]

as distinct communications that use different communication technologies and are independently operable. *See* Section VI.B.1.a, *supra*; *see also* Ex. L (NETGEAR_ITC1361_00213213).

Because the patentee used “backhaul communication” and “separate from” accordingly to their customary meanings, this part of the term should be afforded its plain and ordinary meaning.

2. “wherein the [forward wireless]/[backhaul] communication is established using a [wireless] communication technology . . . selected from the group consisting of: . . .” (cls. 1, 11)

Netgear’s Construction	TP-Link’s Construction
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 dispute centers on the exact scope of the two “wherein” limitations recited in claims 1 and 11:

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

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

’179 Patent, cls. 1, 11. The parties agree that the “selected from the group consisting of” language signals the limitations are closed-formed Markush groups whereby the recited “communication technology” is selected from the expressly recited technologies (**blue underlined**). *See Multilayer Stretch Cling Film Holdings, Inc. v. Berry Plastics Corp.*, 831 F.3d 1350, 1358 (Fed. Cir. 2016)

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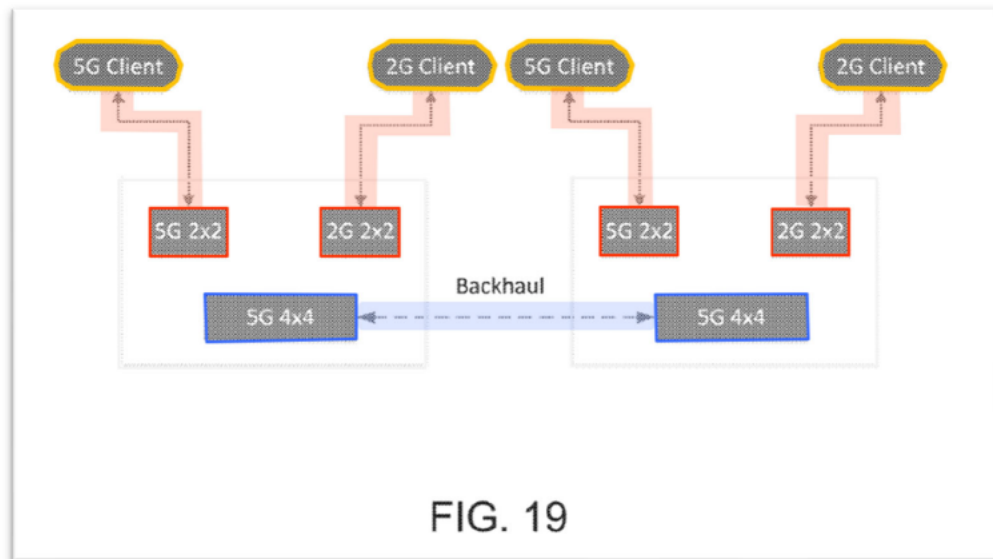
(“[I]f a patent claim recites ‘a member selected from the group consisting of A, B, and C’ the ‘member’ is presumed to be closed to alternative ingredients D, E, and F.”). TP-Link, however, seeks to unjustifiably narrow these terms by further requiring that forward wireless and backhaul communications “must *be capable* of being established *using each*” of the recited technologies. This construction contradicts the well-established law on Markush groups and the intrinsic record, both of which dictate that the claimed communications need only be established using *one* of the alternatives in the recited group.

“It is generally understood that the members of the Markush group are *alternatively* usable for the purposes of the invention.” *Multilayer*, 831 F.3d at 1357; Manual of Patent Examining Procedure (“MPEP”) § 803.02. “A Markush group lists specified alternatives in a patent claim, typically in the form: a member selected from the group consisting of A, B, and C.” *Id.* A closed Markush group limits the selection to the specified alternatives. *Id.*, 1357-58.

Here, both limitations use the typical Markush language—“selecting from a group consistent of...”—such that the recited communication technologies are “alternately useable” for establishing the communications. *Id.*, 1357-58. The first Markush group lists two—a 2.4 GHz frequency band and a 5 GHz frequency band—either of which may be used to establish the forward wireless communication. *Id.* Likewise, the second Markush group lists four—a power line based communication, a 2.4 GHz or 5 GHz radio frequency (RF) technology using a dedicated radio, and a sub-1GHz RF technology—which are alternately usable for establishing the backhaul communication. Nothing in the claims suggests that the Markush groups deviate from their typical meaning.

The specification also supports Netgear’s, not TP-Link’s, construction. It teaches that in “embodiments, the mesh points may be equipped with *one or more of*: a powerline communication

circuit ..., a dedicated 5 GHz radio circuit, and/or a sub-1 GHz radio circuit, for purposes of establishing the dedicated backhaul link.” ’179 Patent, 27:34-39; *see also id.*, 27:8-14 (“[T]he mesh points ... can utilize **one or more** telecommunication circuits to form one or more dedicated backhaul links[.]”). For example, only “one” communication technology—a “dedicated 5GHz radio”—is available to establish a dedicated backhaul as illustrated in Figure 19:



Id., Fig. 19, 29:46-54, 27:6-8. Embodiments may also establish a forward wireless communication between mesh points using only one of the claimed alternatives, e.g., “using the 2.4 GHz **or** 5 GHz WLAN radio.” *Id.*, 27:42-50; *see also id.*, 28:54-55, 28:64-66. Netgear’s construction correctly embraces these disclosed embodiments, whereas TP-Link’s construction improperly excludes them. And although the specification mentions embodiments where mesh points may be equipped with several dedicated backhaul circuits (*id.*, 27:8-24, 27:34-42) or multiple client-facing radios (*id.*, 27:39-42, Fig. 19), the specification in no way limits the invention to those embodiments. The specification thus provides no persuasive basis to construe the Markush groups contrary to their typical meaning, as proposed by TP-Link, particularly when that construction would exclude disclosed embodiments. *See Inline Plastics Corp. v. EasyPak, LLC*, 2015 WL 5058248, *2-*5

(Fed. Cir. 2015) (rejecting construction that excluded alternative embodiment). Netgear’s construction should therefore be adopted.

3. **“A computer-implemented method for implementing a dedicated backhaul ... the method being performed by a first mesh point and comprising ” / “A computing device comprising: one or more processors, that implements a mesh point ... being configured to perform a method comprising”**

Netgear’s Construction	TP-Link’s Construction
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:	Preambles are limiting. The claimed “a [first] mesh point” performs each of the limitations recited in the claim.
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:	

The parties agree that the preambles of method claim 1 and device claim 11 are limiting, but disagree as to each construction. Netgear’s construction reflects the different language used in each preamble consistent with the express claim language and the intrinsic evidence. In contrast, TP-Link proposes a single construction for the different preambles. TP-Link’s construction cannot be correct because it would exclude dependent claims and the specification’s embodiments and ignores the differences between the preambles.

Beginning with the preamble of claim 1, the parties agree a first mesh point performs the claimed method, but dispute the construction’s precise language. The preamble provides “[a] computer-implemented method ... the method being performed by a first mesh point and comprising:” ’179 Patent, cl. 1. Netgear’s construction reflects the plain claim text—a first mesh point performs the method comprising. TP-Link’s construction—“a first mesh point performs *each* of the recited limitations”—implies the mesh point must perform each recited step

[REDACTED]

exclusively, without any other entities within the mesh network. Such an interpretation is contradicted by the functions in claim 1 in view of its dependent claims.

The method of claim 1 requires selecting a communication technology used for the backhaul. '179 patent, cl. 1 (“wherein the backhaul communication is established using a communication technology *selected* from the group...”). Dependent claim 8 confirms that the “first mesh point” need not perform this step alone, as it further recites “a controlling entity” used to “facilitate a selection of a backhaul.” '179 Patent, cl. 8. TP-Link’s construction would therefore interpret claim 1 inconsistent with its dependent claim, and “must” be rejected. *Wright Med. Tech., Inc. v. Osteonics Corp.*, 122 F.3d 1440, 1445 (Fed. Cir. 1997) (“[W]e **must** not interpret an independent claim in a way that is inconsistent with a claim which depends from it”). TP-Link’s construction would also exclude expressly disclosed embodiments, wherein implementing and switching a backhaul communication may be performed by “a controlling entity” that is “centralized ... on the main mesh point,” “distributed among the mesh points,” “and/or remotely controllable ... via a remote server.” '179 Patent, 27:21-33; *see also id.*, 15:33-41, 7:53-57, Figs. 1A, 22A-22C. TP-Link’s construction of claim 1 cannot be correct.

The same conclusion follows for claim 11. In claim 11, in addition to disputing TP-Link’s use of “each” in its construction, the parties dispute whether claim 11’s preamble should be construed the same as claim 1’s as proposed by TP-Link. It should not. Claim 11’s preamble recites different language and is used within a device claim, not a method claim like claim 1. *Eli Lilly & Co. v. Teva Pharms. Int’l GmbH*, 8 F.4th 1331, 1340-41 (Fed. Cir. 2021) (finding “claim format is particularly relevant” when construing a preamble as limiting). The preamble recites “[a] computing device comprising: one or more processors, that implements a mesh point ... the computing device being configured to perform a method comprising:” '179 Patent cl. 11. Because

[REDACTED]

it identifies the physical components of the claimed device—one or more processors—that implement a mesh point and are configured to perform the method functions recited in the claim body, the preamble is limiting. *See SIMO Holdings Inc. v. Hong Kong uCloudlink Network Technology Limited*, 983 F.3d 1367, 1375–76 (Fed. Cir. 2021). Netgear’s proposed construction of “one or more processors implementing a mesh point ... being configured to perform the method comprising” captures this essential structure.

TP-Link’s proposed construction—“a mesh point performs each recited limitation”—is divorced from the claim language and improperly narrows claim scope in three ways. First, TP-Link’s reference to “a mesh point” as the structure, rather than the “one or more processors” suggests that the one or more processors must be confined within a single mesh point. But the one or more processors only “implements” a mesh point and there is no restriction as to the physical location of those processors. Second, requiring a mesh point “perform[]” the claimed limitations, rather than “being configured to perform,” improperly transforms the claim from a device claim to a method claim requiring actual performance of the method. *INVT SPE LLC v. Int’l Trade Comm’n*, 46 F.4th 1361, 1372 (Fed. Cir. 2022) (“[C]omputer and software claims typically use functional language to define the invention. [that does] not requir[e] actual performance.”). Third, as with claim 1, the use of “each” ignores a dependent claim, here dependent claim 17, and excludes embodiments disclosed in the specification wherein another entity facilitates the selection of a backhaul. *See supra*. TP-Link’s construction should thus be rejected.

C. ’698 Patent Disputed Terms

1. “default frequency band” (cls. 1, 12)

Netgear’s Construction	TP-Link’s Construction
a preferred frequency band	preset frequency band used automatically in the absence of a choice made by the user

[REDACTED]

The dispute centers on the meaning of “default” in the “default frequency band” term recited in claims 1 and 12 directed to a method and device for establishing a backhaul between mesh points. Although not expressly recited in the specification, a POSA would have understood that the claims and specification implicitly define “default frequency band” as a “preferred frequency band” as proposed by Netgear. TP-Link’s proposed construction, however, defines “default” in the abstract and erroneously divorces the term from its surrounding claim language and the specification. *See Grace Instrument Indus., LLC v. Chandler Instruments Co., LLC*, 57 F.4th 1001, 1010 (Fed. Cir. 2023) (“The only meaning that matters in claim construction is the meaning in the context of the patent.”).

The claims guide a POSA to understand “a default frequency band” as “a preferred frequency band” because they recite a operational flow for “establishing a backhaul communication between nodes in a mesh network.” ’698 Patent, cls. 1, 12; Ex. J (Declaration of Zygmunt Haas, Ph.D (“Haas”)), ¶¶26-27. To establish the backhaul communication, an attempt is made “to utilize a first channel in a default frequency band.” ’698 patent, cls. 1, 12. “Upon detecting the received signal strength of the first channel” of the default frequency band “is below a threshold,” an “attempt” is performed “to establish the backhaul with a second node” that may utilize “a different channel in default frequency band,” “a channel in a different frequency band that has a lower frequency range than the default frequency band,” or both. *Id.* Here, a preference is given to attempting to establish a backhaul communication on a default frequency band by reciting at least one, if not at least two, attempts being made, whereas a different frequency band with a lower frequency range is used as a backup “upon detecting the received signal strength of the first channel” of the default frequency band is below a threshold. Ex. J (Haas), ¶27.

[REDACTED]

The specification sets forth guidelines and specific examples for establishing a backhaul communication using a operation flow methodology similar to that recited in the claims. Ex. J (Haas), ¶¶28-33. For example, the specification explains that “[a] dedicated wireless band is the *preferred* method of wireless communication *if* the dedicated band is *available* for communication and *the quality* of the dedicated link *is better than a defined threshold*.” ’698 Patent, 4:28-31. In terms of establishing a backhaul communication between mesh points, the specification discloses numerous embodiments that use methodologies that prefer a dedicated frequency band, over an alternative frequency band, if the former band’s quality is above a defined threshold. *Id.*, 5:1-9, 1:45-53, 2:48-51, 3:45-51, 3:52-65, 4:42-50, 5:10-28, 7:47-8:6, Figs. 2, 4, 5, 11; Ex. J (Haas), ¶¶28-33.

For example, the specification teaches that “[i]n embodiments of the invention, ... [a] 5 GHz dedicated band is *preferred* if the RSSI meets predetermined thresholds.” ’698 patent, 5:1-3. The embodiments attempt to use this preferred 5 GHz dedicated band in various topology configurations, and “[i]f 5 GHz does not work ..., the system tries using 2.4G [sic] *as a last resort*.” *Id.*, 5:3-9. This disclosure is consistent with claims 1 and 12 wherein a backhaul attempt is made on a “frequency band with lower frequency range”—i.e., 2.4 GHz band—upon determining the received signal strength of the default frequency band—i.e., 5 GHz band—is below a threshold. Ex. J (Haas), ¶29.

The specification further outlines example operational flows for establishing a backhaul communication wherein an attempt is made to use a preferred frequency band before resorting to an alternative. Ex. J (Haas), ¶¶30-32. For example, in “a scan is performed on all radios” and “[i]f base radios are detected (106) they are associated to a base in a dedicated 5 GHz and 2.4 GHz band.” ’698 patent, 4:51-56. The system checks if the base radio’s RSSI is above a threshold, and

[REDACTED]

if so, a dedicated radio is used as a backhaul. *Id.*, 4:56-58. “The system then tries to associate a dedicated 5 GHz radio” and makes another RSSI threshold comparison. *Id.*, 4:58-61. If the RSSI is below the threshold, then a “2.4 GHz is used as a backhaul” if available and if the band’s RSSI is above a threshold. *Id.*, 4:61-66; *see also id.*, 5:10-28, Figs. 4-5; Ex. L (NETGEAR_ITC1361_00213247), CMX-0011.4-5. This operational flow is again similar to the method and device recited in claims 1 and 12. Ex. J (Haas), ¶30. Although the specification does not use the term expressly, a POSA would understand that the specification’s detailed descriptions of the methodology of establishing a backhaul communication and its corresponding embodiments to implicitly define “default frequency band” as a “preferred frequency band.” Ex. J (Haas), ¶33. *See Grace*, 57 F.4th at 1010 (find despite its minimal usage in the specification, specification’s detailed descriptions and embodiments implicitly defined the disputed term).

TP-Link’s proposed construction of “preset frequency band used automatically in the absence of a choice made by the user” contradicts the scope and meaning of “default frequency band” that a POSA would ascertain by reading the intrinsic record. Indeed, TP-Link failed to identify any intrinsic evidence supporting its construction on the parties’ meet and confer. Based upon Netgear’s review, no such supporting intrinsic evidence exists. For example, neither the claims nor specification reference the “absence” of a user’s involvement configuration of the backhaul communication. Ex. J (Haas), ¶34. Such a construction is also inconsistent with both claims’ use of the transitional phrase “comprising,” which allows for additional functions and actions to occur beyond those expressly recited. *Solvay S.A. v. Honeywell Intern. Inc.*, 742 F.3d 998, 1005 (Fed. Cir. 2014). Rather than intrinsic evidence, TP-Link appears to rely on extrinsic evidence. Any such reliance is misplaced as it is legal error to rely on “extrinsic evidence ... that

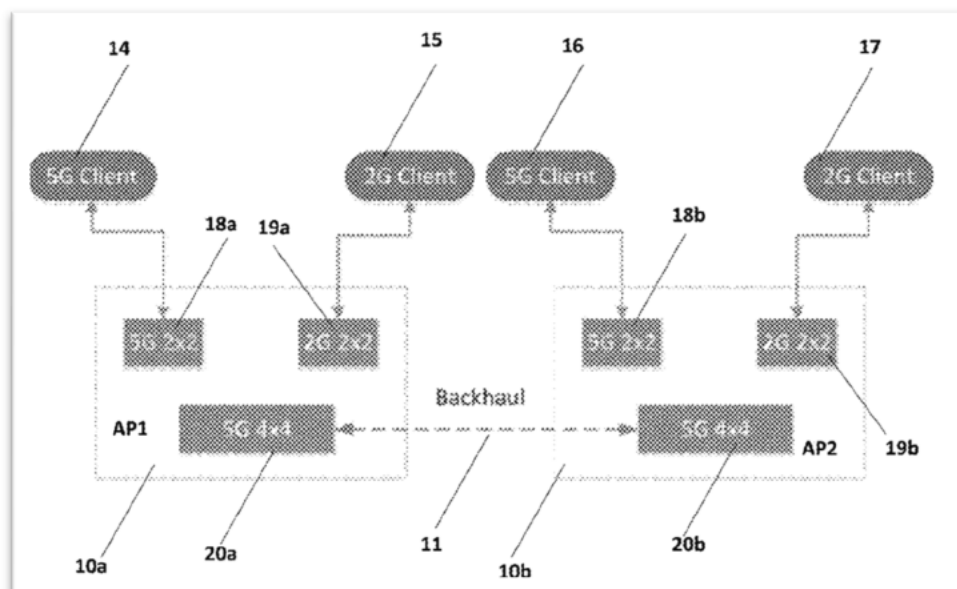
contradict[s] the scope and meaning of [“default frequency band”] as ascertained by a POSA by reading the intrinsic record.” *Grace*, 57 F.4th at 1010.

VII. '681 PATENT (AP ROAMING PATENTS)

A. Introduction

The '681 Patent and the related '242 Patent belong to the same family and share many concepts and disclosures. The '681 and '242 Patents relate to ensuring that clients are connected to the AP in a mesh Wi-Fi network providing the highest quality network connection by switching client connections when different APs provides higher quality, referred to as the clients “roaming” from one AP to another. Neither party proposed claim terms for the '242 Patent and thus the below descriptions only concern the '681 Patent.

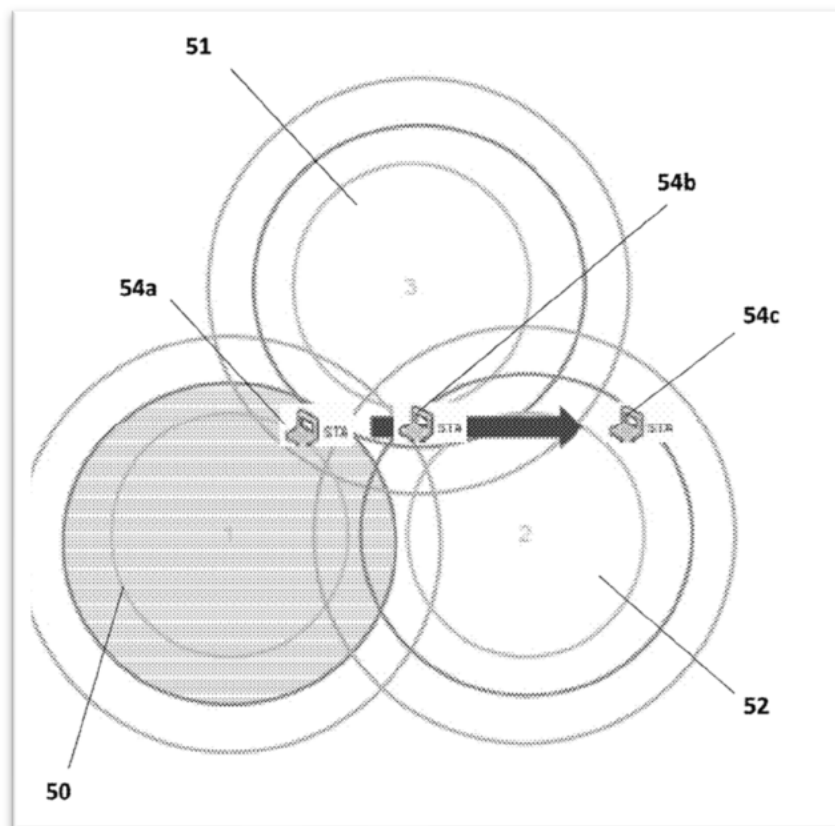
The '681 Patent is directed to systems for improving connection quality of clients in a mesh network by comparing the signal quality of various APs and making decisions regarding whether clients should roam to a different AP in the network. As seen below, the APs coordinate their operation and this roaming behavior via a backhaul link between them.



JMX-0005 ('681 Patent), Fig. 1.

[REDACTED]

Embodiments of the patent describe implementing a mesh Wi-Fi network formed by APs that monitor for client devices that do not roam effectively, referred to as “legacy” clients, and causing such clients to roam between APs by disconnecting them from their present AP and prompting them to reassociate with an AP that provides a better connection. For example, as displayed below, as a client (STA below) moves within the network, its connection quality with the AP that its currently connected to, such as AP 50, becomes weaker and its connection to other APs in the network, such as AP 52, becomes stronger.



'681 Patent, Fig. 5. At a certain point, such as 54b or 54c, the client's potential connection to other APs in the mesh network, like AP 52, provides a higher quality connection than its current AP, and the system will instruct the client to “roam” to AP 52. If the system determines the client is a “legacy device” which refuses to roam, it will attempt to enforce this roaming behavior by

[REDACTED]

disconnecting it from AP 50 and directing it to connect to AP 52 when it provides a better quality connection, for example by not allowing the client to connect to other APs.

B. Disputed Terms

1. **“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” / “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”**

Netgear’s Construction	TP-Link’s Construction
Not indefinite. Plain and ordinary meaning	Indefinite

As an initial matter, TP-Link’s proposed “term” stretches across three separate claim limitations encompassing a majority of the claim. TP-Link then argues that this cherry-picked “term” is a term of degree and is therefore indefinite. This is incorrect. Whether a wireless networking device, described as APs in the patent, offers a “better suited” connection is determined by the invention based on objective criteria and measurements, and is not a purely subjective term of degree. Indeed, the claim language and specification describe both the criteria and methods allowing a POSA to understand with reasonable certainty the claimed optimizing of connections to client devices by determining wireless network devices that are better suited to handle client devices than its present connections. *See Interval Licensing*, 766 F.3d at 1370.

For example, the omitted claim language describes how client connections are optimized and better suited wireless access devices are determined “by comparing signals received from said client devices at said wireless networking devices.” ’681 Patent, cls. 3, 10. In other claimed embodiments, this comparison is described as including, for example, using a received signal strength indicator (RSSI) measurements from clients to estimate downlink connection power and comparing these measurements for two or more APs. *Id.*, cls. 1 (“receiving from said client a

[REDACTED]

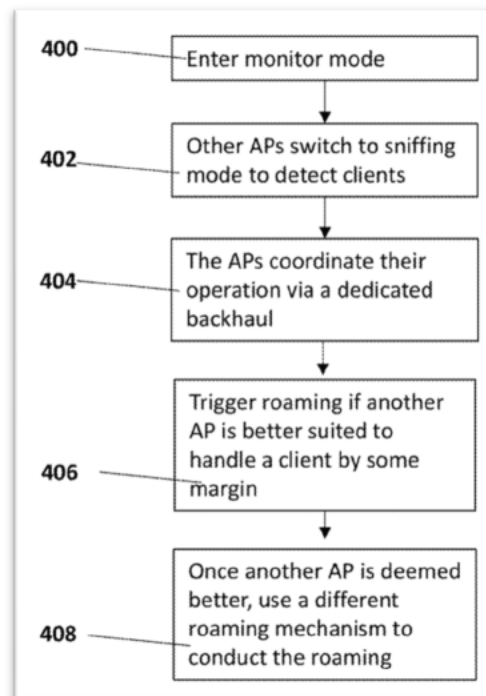
received signal strength indicator (RSSI) measurement ... compar[ing] a downlink measurement...”)

The specification further explains that whether an AP is “better suited to handle a client by a predetermined margin” is an objective determination made by objective measurements, such as downlink power or rate or RSSI. *Id.*, 5:57-61 (“Embodiments of the invention ... compare the downlink measurement on another AP with an estimated downlink power on the current AP (210). Then, a decision is made whether or not the client should be instructed to roam.”); *id.*, 5:62-67 (describing switching client to a different channel if the RSSI is “better by some margin”). Thus, whether an AP is a “better suited” connection for a client is determined based on objective criteria and measurements, and is not a purely subjective term of degree. *Sonix*, 844 F.3d at 1378.

The specification also provides specific examples that provide ample guidance to a POSA to determine how client connections are optimized and “better suited” APs are determined in the network. For example, it explains that the APs “look[s] at the signal from the client based on what the client tells it in the 802.11k packets” that the client sends the AP and “[w]hen the client indicates that the signal is getting weaker, the AP tells the client to begin looking at other channels, e.g. *find a better AP.*” ’681 Patent, 6:37-42. To identify when a AP is better suited to handle a client, the specification describes that the system can compare measurements in received signals, such as an RSSI for a client. *Id.*, 5:25-30 (describing RSSI as “a measurement of the power present in a received radio signal” and the invention conducts “RSSI measurement[s] when different APs are on different channels for roaming purposes.”).

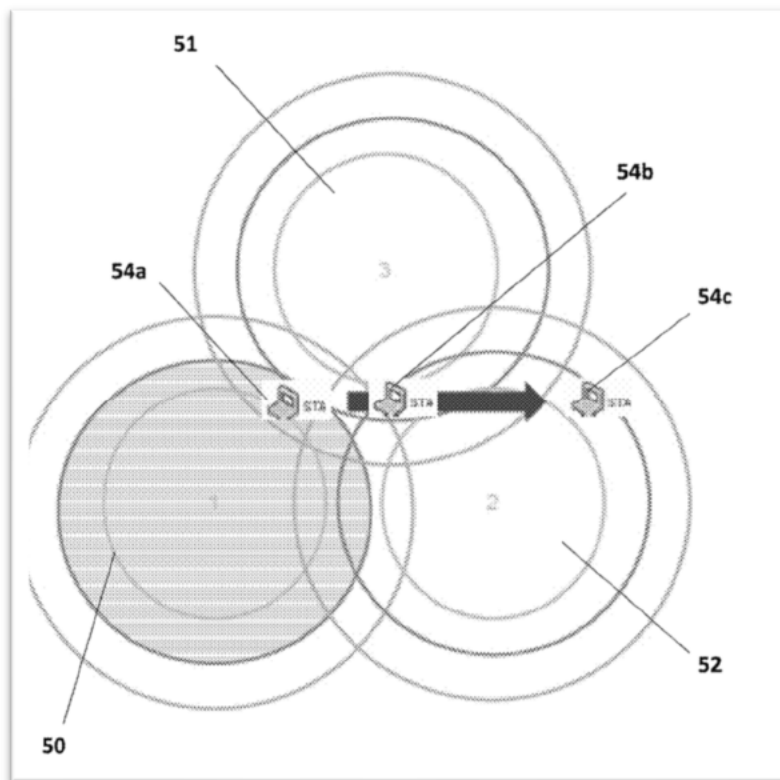
In other embodiments, for “legacy” clients that are determined not to support or respond to 802.11k requests, the AP actively monitors the signal quality of such clients. *Id.*, 7:33-35. When the system determines another AP is better suited for a client and can provide a higher quality

potential connection by a certain roaming threshold, the system will cause the client to connect to that better suited AP.



'681 Patent, Fig. 4.

As discussed above, as clients move, the quality of their potential connection with an AP will become better than their current AP over time; when that quality difference exceeds a roaming threshold, the client can be prompted to roam to the AP that provides the superior connection. *Id.*, 7:52-55 (“At position 54 ... monitor mode could be triggered to roam the client from AP 50 to another, nearer AP”). As shown below in Figure 5, a block diagram showing “monitor mode being triggered,” the signal strength for the various APs in the system increase or decrease accordingly as the client moves within the network. *See Id.*, 7:44-50.



Id., Fig. 5. Similar examples are described with regard to Figure 6. *See id.* 8:5-13.

These examples in the specification support “the conclusion that a skilled artisan would have understood the term ... with reasonable certainty.” *Sonix*, 844 F.3d at 1379. Like above for “highest quality wireless connection,” it is not required that the ’681 Patent define precisely what constitutes the AP “better suited” for a client, because that would improperly demand a level of “mathematical precision” beyond what the law requires. *Id.* at 1377.

Thus, this term is not indefinite, and its plain and ordinary meaning should govern.

2. “monitor mode” (cls. 3, 10)

Netgear’s Construction	TP-Link’s Construction
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

[REDACTED]

Netgear's construction of "monitor mode" as "a mode of a wireless networking device that monitors for legacy client devices on the same channel" corresponds with the actual claim language and is consistent with the specification. In contrast, contrary to Federal Circuit practice, TP-Link's construction adds requirements not present in the claim language or warranted by the intrinsic evidence. *Source Vagabond*, 753 F.3d at 1299. Specifically, TP-Link adds a limitation that the claimed system "monitor all traffic received from a wireless network." TP-Link's proposal also improperly adds the negative limitation "without having to associate with an access point or ad hoc network first" that is not justified by the intrinsic evidence. *See Omega* 334 F.3d at 1323 (rejecting negative limitation construction).

Netgear's construction corresponds with the actual claim language. The claim as written only requires that the claimed AP monitor for legacy clients on the same channel. '681 Patent, cls. 3, 10 ("monitor mode for legacy clients with wireless network devices on a same channel."); Ex. J (Haas), ¶43. Nowhere in the claim language is TP-Link's improper requirements that the AP "monitor all traffic" without associating with an access point or the network. *See Linear Tech. Corp. v. Int'l Trade Comm'n*, 566 F.3d 1049, 1059 (Fed. Cir. 2009) (reversing Commission construction requiring "directly monitoring" where claim language used "monitoring").

Netgear's construction is also consistent with the specification. Ex. J (Haas), ¶44-45. As the patent describes, the claimed monitor mode monitors for legacy clients on the same channel as APs. '681 Patent, 7:11-13. As similarly described by claims 3 and 10, this embodiment operates in monitor mode to disconnect the legacy client on the same channel and directs the client to the AP targeted by the system's roaming determination for that client. *Id.*, 7:22-23 ("Embodiments of the invention send a DE-authentication packet to the client and disconnect the client on the current channel. ... The system responds on the channel to which the client is to be directed."). Thus,

[REDACTED]

Netgear's construction is consistent with the monitor mode embodiments described by both the claims and the specification.

Conversely, TP-Link's construction attempts to add limitations based on the following paragraph from the patent specification:

Embodiments of the invention operate in monitor mode, or RFMON (Radio Frequency MONitor) mode, which allows a computer, i.e. and 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.

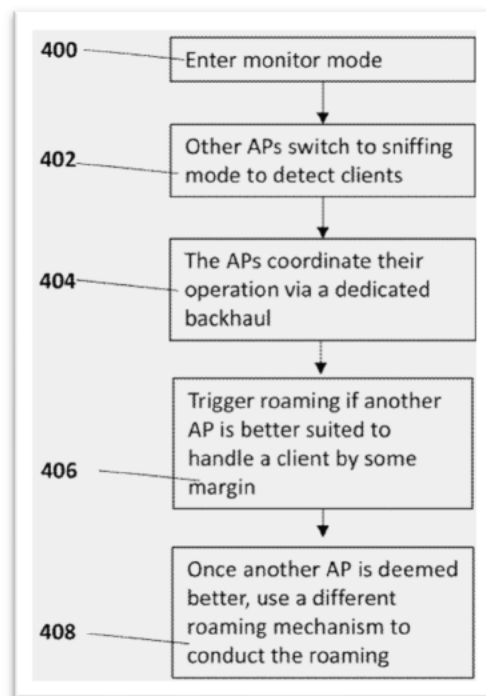
Id., 6:58-65 (annotated). This is neither an explicit definition of the claimed monitor mode or an express disclaimer of its scope. Ex. J (Haas), ¶46-47. Instead, it is a statement of capability. Thus, while monitoring in certain embodiments could *allow* APs to monitor all traffic, “monitor mode” as claimed does not *require* that the system perform that function. *Id.* TP-Link seeks to improperly impose a capability of described embodiments as a requirement of all claims include the term “monitor mode.” *Phillips* 415 F.3d at 1323 (“we have repeatedly warned against confining the claims to those embodiments.”). Additionally, TP-Link's construction adds a negative limitation that the monitoring must be performed *without* first associating with an access point first. This defines the limitation by what it does not require, rather than what the language states the claim requires. See *Omega*, 334 F.3d at 1323.

TP-Link's proposed requirements also conflict with the claim language itself. Ex. J (Haas), ¶48. Other limitations of claims 3 and 10 require that the claimed APs be associated with each other and client devices in the network, because the claims require that the APs are

[REDACTED]

“interconnected” and “receive” signals from client devices in the mesh network for quality comparisons. *Id.* TP-Link’s proposal is even internally inconsistent, as its proposal requires that the claimed AP “monitor all traffic *received* from a wireless network.” This demonstrates the AP is associated with the distributed network in order to “receive” traffic from the devices being monitored. *Id.*, ¶49.

TP-Link’s construction is contradicted by other embodiments of the claimed invention. As the patent describes, the APs are interconnected and communicate using a dedicated backhaul connection. *See* ’681 Patent, 3:43-49; Ex. J (Haas), ¶50. When APs operate in monitor mode, they coordinate their operation via the dedicated backhaul. *See* ’681 Patent, 7:9-16; Ex. J (Haas), ¶50-51. This backhaul connection between the APs is likewise present in the asserted claims. ’681 Patent, cls. 3, 10; Ex. J (Haas), ¶50. TP-Link’s negative requirement that APs operate in monitor mode “without having to associate with an access point” blatantly conflicts with these embodiments, where APs are expressly associated. Ex. J (Haas), ¶52.





'681 Patent, Fig. 4.

Thus, TP-Link's construction should be rejected and Netgear's adopted.

VIII. CONCLUSION

For the reasons above, Netgear's proposed constructions should be adopted.

Word Count Certificate

The undersigned certifies that this Claim Construction Brief complies with the word limitation set forth in the Ground Rule 1.7. The certified word count includes footnotes and excludes caption, tables of contents or authorities, words in figures, the word count certificate, signature block, and the certificate of service.

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CERTIFICATE OF SERVICE

It is hereby certified that copies of the foregoing **COMPLAINANT NETGEAR INC.'S OPENING CLAIM CONSTRUCTION BRIEF** were served on September 6, 2023 as follows:

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