

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION**

XIFI NETWORKS R&D, INC.,	§	
<i>Plaintiff,</i>	§	
	§	
v.	§	
SAMSUNG ELECTRONICS CO., LTD.,	§	CASE NO. 2:24-CV-01057-JRG
<i>and</i> SAMSUNG ELECTRONICS AMER-	§	
ICA, INC.,	§	
<i>Defendants.</i>	§	

CLAIM CONSTRUCTION ORDER

In this patent case, XiFi Networks R&D, Inc., alleges infringement by Samsung Electronics Co., Ltd., and Samsung Electronics America, Inc., (together, “Samsung”) of claims from eleven related patents about wireless networking. *See* U.S. Patent 11,818,591 at 1:25–26 (describing the patent as concerning “high-bandwidth wireless networks for distributing multi-media content”); U.S. Patent 11,849,337 at 1:31–32 (same); U.S. Patent 11,856,414 at 1:31–32 (same); U.S. Patent 11,974,143 at 1:31–32 (same); U.S. Patent 11,950,105 at 1:36–37 (same); U.S. Patent 12,003,976 at 1:41–42 (same); U.S. Patent 12,015,933 at 1:41–42 (same); U.S. Patent 12,114,177 at 1:41–42 (same); U.S. Patent 12,169,756 at 1:43–44 (same); U.S. Patent 12,190,198 at 1:50–51 (same); U.S. Patent 12,250,564 at 1:41–42 (same).

The parties have four disputes about claim scope. Three disputes concern the scope of terms or phrases that appear in each patent’s first claim. Another dispute concerns whether the preamble of each patent’s first claim is limiting. Having considered the parties’ briefing, along with arguments of counsel at a May 1, 2026, hearing, the Court resolves those disputes as follows.

I. BACKGROUND

The Background section of the patents explains:

Wireless networks may take many forms, depending on the application. Various WiFi standards exist where users within range of a “hotspot” may establish a wireless link to access a given network. A given hotspot, or wireless access point, typically has a limited range and coverage area. WiFi and cellular technologies rely on very different wireless radios and data protocols in transferring data over the network.

With the proliferation of multi-media content over wireless networks comes an insatiable demand for more bandwidth over the networks. Conventional wireless networking architectures fail to provide adequate resources to efficiently provide optimum range and coverage for wireless network users, and fail to take full advantage of the resources available to satisfy the desire for more bandwidth.

’591 Patent at 1:30–44.¹

To address this deficiency—that is, “to take full advantage of the resources available to satisfy the desire for more bandwidth”—the patents teach what is generally a two-step process. First, a covered device or method, which includes or uses multiple transceivers, “determines an overall wireless bandwidth demand or requirement from one or more of the applications associated with the application layer.” ’591 Patent at 4:4–7. Second, the device or method then “allocates the available transceiver resources to satisfy the bandwidth demands.” *Id.* at 4:12–13.

Figures 1–3 and the related text disclose how this works. As shown in Figure 1 (below), a device (100) has an application layer (102) with four data-intensive software applications: APP A, APP B, APP C, and APP D. Each application has a different peak bandwidth requirement, ranging from a low of 75 Mbps (APP B) to a high of 750 Mbps (APP D). The application layer

¹ The patents have the same disclosure. For simplicity, the Court will generally cite only the ’591 Patent.

communicates with a process layer (104), which includes a decision block (106) and a processing block (108). The decision block determines the size and type of data stream received from an application, and the type of processing necessary to format the stream for transmission. The processing block processes the data stream as determined by the decision block. The processing block is connected to an ultra-streaming block (110) that manages the processing of signal streams given the available resources (memory, processing speed, number of available radios, etc.) and packetizes the processed streams for transmission. *See generally* '591 Patent at 2:66–3:41.

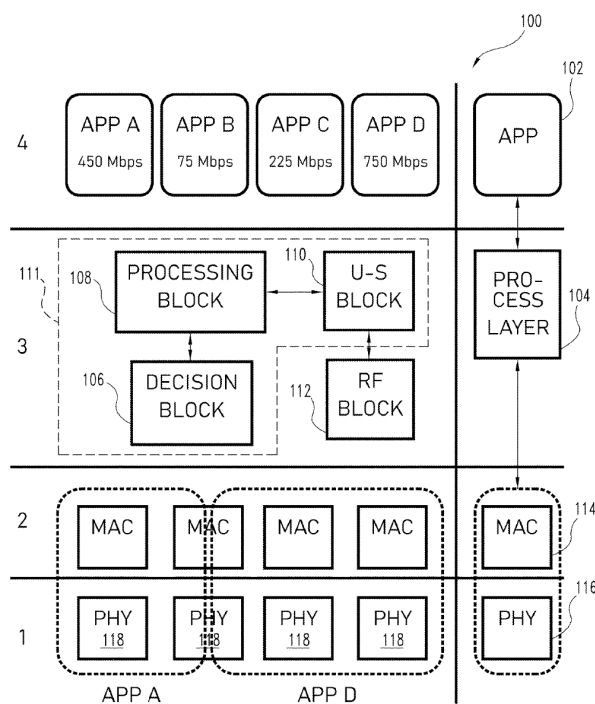


Fig. 1

The inventions concern the difference between *actual* and *virtual* physical (PHY) and media access control (MAC) layers. The system (100) includes an *actual* MAC layer (114) and an *actual* PHY layer (116), as is typical with the prior art. The *actual* MAC layer generally has software for controlling transceivers (118) at the *actual* PHY layer. The *actual* PHY layer has multiple radios, each with a certain data transfer capability, or bandwidth. '591 Patent at 3:42–51. As shown

in Figure 3 (below), however, the process layer (104) has a *virtual* MAC management layer (302) and a *virtual* PHY layer (304). These layers enable sharing transceivers to satisfy the bandwidth requirements of simultaneously running applications. The *virtual* MAC and PHY layers manage signals from the applications before sending the signals to the *actual* MAC and PHY layers. See generally '591 Patent at 4:25–44.

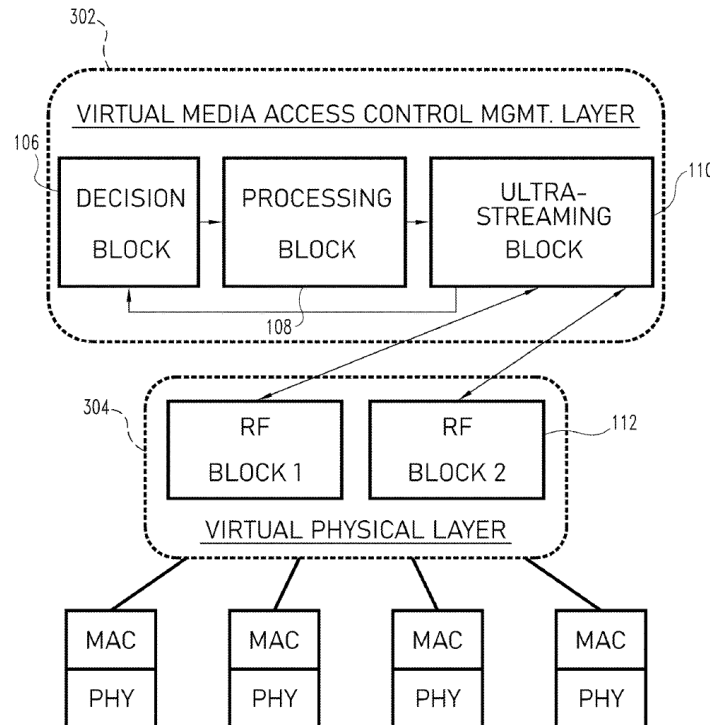


Fig. 3

Figure 2 (below) shows the method. With APP A shown in Figure 1 requiring a peak bandwidth of 450 Mbps, and APP D requiring a peak bandwidth of 740 Mbps, the process layer (104)—that is, the *virtual* MAC and PHY layers—determines available resources in the *actual* MAC and PHY layers (114, 116) and allocates the available resources to satisfy the bandwidth demands (206).

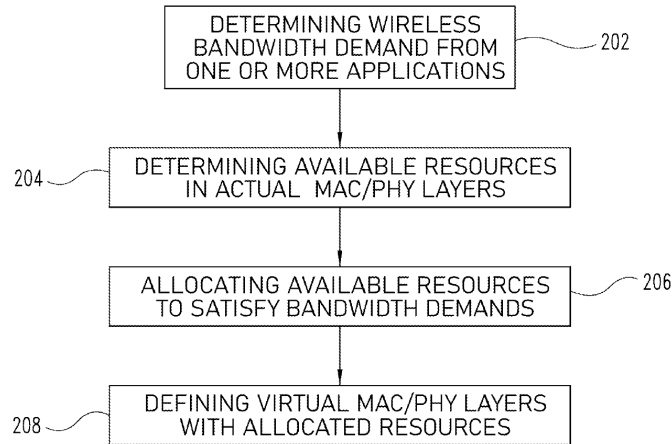


Fig. 2

The method's result may be as shown in Figure 4 (below). In this implementation, “Application A” and “Application B” are first associated with transceivers “Device 1” and “Device 2.” The *virtual* MAC (302) interfaces with the *virtual* PHY (304) to determine device availability of the transceivers. If a transceiver is unavailable—for example, if it has insufficient bandwidth—the system identifies and assigns a replacement transceiver. ’591 Patent at 4:45–59. In this way, “[a]daptively managing the actual resources provides efficient utilization of resources and power.” *Id.* at 4:62–64.

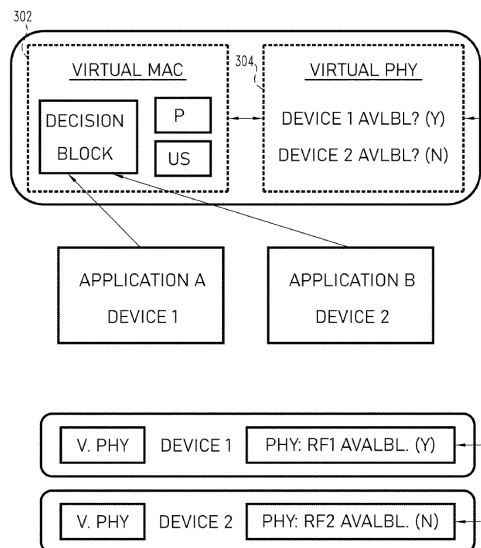


Fig. 4

The parties' disputes implicate Claim 1 of each patent. Claim 1 of the '591 Patent, which is exemplary for introducing the disputes, recites:

1. A **wireless networking device**, comprising:

an application interface connected to a processing interface, the application interface being associated with a first application, the first application providing, when the **wireless networking device** is being used, [] a first data stream and having a first wireless bandwidth requirement;

first, second, and third actual MAC interfaces connected to the processing interface;

first, second, and third actual PHY interfaces connected to the first, second, and third actual MAC interfaces;

first, second, and third wireless transceivers respectively associated with the first, second, and third actual PHY interfaces, wherein each one of the first, second, and third wireless transceivers (i) is suitable for use in a wireless local area network, (ii) has a first, second, and third bandwidth availability up to a first, second, and third actual bandwidth, and (iii) is adapted to emit radio waves in first, second, and third **different bands of frequencies**, the second, and third frequency bands both being higher in frequency than the first frequency band;

wherein the processing interface comprises (i) at least one virtual MAC interface and (ii) first, second, and third virtual PHY interfaces that, during operation of the **wireless networking device**, feed **information regarding the bandwidth availabilities of the first, second, and third wireless transceivers** back to the at least one virtual MAC interface;

wherein the processing interface is configured to, when the wireless network device is being used, in a manner transparent to any layer of the **wireless networking device** above the processing interface,

(a) request or create (i) a first association between a recipient and the first actual MAC and PHY interfaces, (ii) a second association between the recipient and the second

actual MAC and PHY interfaces and (iii) a third association between the recipient and the third actual MAC and PHY interfaces, and

- (b) (i) identify at least one portion of each one of the first, second, and third bandwidths of the first, second, and third wireless transceivers that are available for communication, and (ii) evaluate the identified bandwidth availabilities of the first, second, and third wireless transceivers with respect to the first bandwidth requirement of the first application;

wherein, if the first bandwidth requirement is at least partially satisfied by the bandwidth availabilities of a selected two transceivers of the first, second, and third wireless transceivers, preparing the first data stream for simultaneous transmission to the recipient from both the selected transceivers of the first, second, and third wireless transceivers using a specific subset of frequencies corresponding to the identified portions of their available bandwidth and causing the prepared first data to be transmitted from the selected two transceivers of the first, second, and third wireless transceivers to thereby at least partially satisfy the first wireless bandwidth requirement of the first application; and

wherein the **wireless networking device's** utilization of the available bandwidth of the first, second, and third wireless transceivers does not prevent other **wireless networking devices** from utilizing a range of frequencies corresponding to the remaining portion of the bandwidth availability of the first, second, and third wireless transceivers for data transmission purposes at the same time that processed data is being sent from the selected one of the first, second, and third wireless transceivers.

'591 Patent at 11:53–12:54 (disputed terms in bold).

The parties have four disputes about the claim language. First, each claim requires bandwidth-availability information about the transceivers being provided from the virtual PHY

interfaces to the virtual MAC interfaces. For example, Claim 1 of the '591 Patent recites a processing interface that:

comprises (i) at least one virtual MAC interface and (ii) first, second, and third virtual PHY interfaces that, during operation of the wireless networking device, feed **information regarding the bandwidth availabilities of the first, second, and third wireless transceivers** back to the at least one virtual MAC interface[.]

'591 Patent at 12:7–13 (emphasis added). According to XiFi, this language limits not just the content of the information, but from where the information can be obtained. Samsung disagrees.

Second, Samsung argues the claims are limited to devices that provide network access to other devices, like “relays” or “access points,” as opposed to devices that merely participate on a network. Samsung focuses on Figure 7, which shows “a system for wirelessly extending range of a wireless network linearly from one access point to another,” '591 Patent at 2:1–3, and Figure 11, which shows “multiple wireless management systems that cooperate to allocate transceiver resources between users,” *id.* at 2:14–16.

Third, the parties dispute whether the preambles are limiting. Samsung argues they are, whereas XiFi argues they are at most *partially* limiting.

Finally, each claim refers to different bands of frequencies. For example, Claim 1 of the '591 Patent recites “first, second, and third wireless transceivers,” each of which “is adapted to emit radio waves in first, second, and third *different bands of frequencies*, the second, and third frequency bands both being higher in frequency than the first frequency band.” '591 Patent at 11:64–12:6 (emphasis added). The parties dispute whether this limitation can be met “by arbitrarily dividing any range of frequencies into parts and then pointing to the parts as the ‘different bands.’” Dkt. No. 79 at 25.

II. LEGAL STANDARDS

“[T]he claims of a patent define the invention to which the patentee is entitled the right to exclude.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc). As such, if the parties dispute the scope of the claims, the court must determine their meaning. *See, e.g., Verizon Servs. Corp. v. Vonage Holdings Corp.*, 503 F.3d 1295, 1317 (Fed. Cir. 2007) (Gajarsa, J., concurring in part); *see also Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 390 (1996), *aff’g*, 52 F.3d 967, 976 (Fed. Cir. 1995) (en banc).

Claim construction, however, “is not an obligatory exercise in redundancy.” *U.S. Surgical Corp. v. Ethicon, Inc.*, 103 F.3d 1554, 1568 (Fed. Cir. 1997). Rather, “[c]laim construction is a matter of [resolving] disputed meanings and technical scope, to clarify and when necessary to explain what the patentee covered by the claims” *Id.* A court need not “repeat or restate every claim term in order to comply with the ruling that claim construction is for the court.” *Id.*

When construing claims, “[t]here is a heavy presumption that claim terms are to be given their ordinary and customary meaning.” *Aventis Pharm. Inc. v. Amino Chems. Ltd.*, 715 F.3d 1363, 1373 (Fed. Cir. 2013) (citing *Phillips*, 415 F.3d at 1312–13). Courts must therefore “look to the words of the claims themselves . . . to define the scope of the patented invention.” *Id.* (citations omitted). The “ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, *i.e.*, as of the effective filing date of the patent application.” *Phillips*, 415 F.3d at 1313. This “person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification.” *Id.*

Intrinsic evidence is the primary resource for claim construction. *See Power-One, Inc. v. Artesyn Techs., Inc.*, 599 F.3d 1343, 1348 (Fed. Cir. 2010) (citing *Phillips*, 415 F.3d at 1312). For certain claim terms, “the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words.” *Phillips*, 415 F.3d at 1314; *see also Medrad, Inc. v. MRI Devices Corp.*, 401 F.3d 1313, 1319 (Fed. Cir. 2005) (“We cannot look at the ordinary meaning of the term . . . in a vacuum. Rather, we must look at the ordinary meaning in the context of the written description and the prosecution history.”). But for claim terms with less-apparent meanings, courts consider “those sources available to the public that show what a person of skill in the art would have understood disputed claim language to mean . . . [including] the words of the claims themselves, the remainder of the specification, the prosecution history, and extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art.” *Phillips*, 415 F.3d at 1314.

III. THE LEVEL OF ORDINARY SKILL IN THE ART

The level of ordinary skill in the art is the skill level of a hypothetical person who is presumed to have known the relevant art at the time of the invention. *In re GPAC*, 57 F.3d 1573, 1579 (Fed. Cir. 1995). In resolving the appropriate level of ordinary skill, courts consider the types of and solutions to problems encountered in the art, the speed of innovation, the sophistication of the technology, and the education of workers active in the field. *Id.* Importantly, “[a] person of ordinary skill is also a person of ordinary creativity, not an automaton.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007).

Here, neither party addresses the level of ordinary skill in its briefing. XiFi’s expert, however, characterizes a skilled artisan as one who “would have had a bachelor’s degree in electrical

engineering, computer engineering, computer science, or similar field, and approximately two years of experience with wireless networks and communications.” Akl Decl., Dkt. No. 70-13 ¶ 36. Samsung’s expert’s description of a skilled artisan is similar, except that it does not cap the level of experience. *See* Mahon Decl., Dkt. No. 70-25 ¶ 35 (opining a skilled artisan “at the time of the invention would have had at least a Bachelor of Science in electrical engineering, computer engineering, or similar fields and *at least two years* of practical experience in the field of computer networks and wireless communication applications” (emphasis added)). The Court adopts XiFi’s characterization for its analysis, but notes neither party contends properly resolving the disputes requires resolving the differences between the proposed levels of skill in the art.

IV. THE DISPUTED TERMS

- A. **“information regarding the bandwidth availabilities of the first, second, and third wireless transceivers” (’591 Patent, Claim 1; ’143 Patent, Claim 1; ’177 Patent, Claim 1)**

“information regarding the bandwidth availabilities of the first and second wireless transceivers” (’337 Patent, Claim 1; ’414 Patent, Claim 1; ’564 Patent, Claim 1; ’105 Patent, Claim 1; ’976 Patent, Claim 1; ’933 Patent, Claim 1; ’198 Patent, Claim 1)

“information regarding the first and second bandwidth availabilities” (’756 Patent, Claim 1)

XiFi’s Construction	Samsung’s Construction
“information regarding current bandwidth availabilities of the recited wireless transceivers, that can be obtained directly from at least the recited actual PHY interface(s) and the recited actual MAC interface(s)”	“information regarding current bandwidth availabilities of each of the wireless transceivers”

These disputed phrases appear as part of the “processing interface” limitations of the claims. For example, Claim 1 of the ’591 Patent recites “an application interface connected to a

processing interface,” ’591 Patent at 11:54–55, and then requires the processing interface to have:

first, second, and third virtual PHY interfaces that, during operation of the wireless networking device, feed **information regarding the bandwidth availabilities** of the first, second, and third wireless transceivers back to the at least one virtual MAC interface,

id. at 12:8–13. *See also, e.g.,* ’337 Patent at 12:13–19 (reciting the step of “forming in the processing interface . . . first and second virtual PHY interfaces that, during operation of the wireless networking device, feed information regarding the bandwidth availabilities of the first and second wireless transceivers back to the at least one virtual MAC interface”); ’976 Patent at 12:27–32 (similar).

The parties present two disputes concerning these phrases. First, Samsung asks for clarification that the fed-back “information” relates to *each* of the recited wireless transceivers, and not just the group of transceivers as a whole. Second, XiFi argues the fed-back information must be “obtainable directly” from the recited actual MAC and PHY interfaces.

1. Whether information must be obtained from each transceiver

Disputing the notion this phrase refers to the bandwidth availability of the transceivers as a group, Samsung points to the claims, the specification, and the file history for support of this aspect of its construction. Regarding the claim language itself, Samsung stresses that “[w]hat is obtained and fed back are the ‘bandwidth availabilities’ (note, plural) of the ‘first, second, *and* third wireless transceivers’ (note, conjunctive set).” Dkt. No. 79 at 2. It emphasizes “the claim language does not recite that only some of the bandwidth availabilities of wireless transceivers are fed back. Nor does it recite that information regarding the aggregate bandwidth availability across all transceivers is fed back.” *Id.*

As for the specification, Samsung cites the patents' explanation that, "by employing a virtual MAC and virtual PHY layer, wireless transceiver resources may be allocated more efficiently to handle various data bandwidth requirements from different applications." Dkt. No. 79 at 2–3 (quoting '591 Patent at 5:54–58). From this, Samsung argues "a POSITA would recognize that obtaining and feeding back information from a mere subset of transceivers would not facilitate such efficient allocation of resources." *Id.* at 3. Samsung also points to Figure 4, which it argues shows "lines of communication between a virtual PHY interface and *each* of two wireless transceivers." *Id.*

Regarding the file history, during prosecution of the '756 Patent, XiFi wrote: "[E]ach **actual MAC and each actual PHY in a particular wireless networking device communicates directly** with the processing layer to allow it to receive **information regarding bandwidth availabilities** from the wireless transceiver associated with each MAC/PHY pair." Dkt. No. 70 at 4 (quoting '756 File History, Dkt. No. 70-22 at XIFI_0013817; brackets and emphasis by XiFi). This statement, argues Samsung, shows "the apparatus claims require an accused structure to have this capability." Dkt. No. 79 at 5.

XiFi, however, argues Samsung ignores the context of the rest of each claim. First, argues XiFi, "the surrounding claim language shows that 'each' bandwidth availability is not necessarily utilized as part of the recited operation." Dkt. No. 70 at 11 (citing '933 Patent at 12:29–36, 12:47–53). XiFi stresses that "the remainder of the claim language recites which set of information is needed, with some claims making use of the bandwidth availability of only one of the recited transceivers, and others making use of more than one transceiver's bandwidth availabilities." *Id.* Second, the file history shows less than all of the transceivers may supply their bandwidth availability information, and "explains that each actual MAC and each actual PHY merely have the

ability to ‘communicate[] directly with the processing layer to allow it to receive information regarding bandwidth availabilities from the wireless transceiver associated with each MAC/PHY pair.’” *Id.* at 12 (quoting ’756 Patent File History, Dkt. No. 70-22 at XIFI_0013816–3817; brackets and emphasis by XiFi). Finally, XiFi asserts Samsung’s position is inconsistent with the claims because it would mean the dependent claims can be satisfied by only one or two transceivers providing information to the resource-monitoring interface. *Id.* at 12–13 (citing ’591 Patent at 12:7–14).

Despite their briefing positions, the parties largely resolved the dispute at the hearing. XiFi expressed its concern that including “each” in a construction might be unnecessarily limiting by, for example, requiring some temporal or form limitation of the fed-back information, such as requiring all bandwidth-availability information to be transmitted simultaneously. Hr’g Tr., Dkt. No. 104 at 6:12–14. Samsung, however, noted it is “not intending to import a temporal limitation.” *Id.* at 12:25–13:1. As for Samsung’s concern about aggregate bandwidth availability of the transceiver group, XiFi agreed such information would not meet this limitation. *Id.* at 7:13–15 (“Like a sum total of everything, I think I would agree with you” that it would rule out feeding back a simple aggregate available bandwidth of the transceivers).

The Court reaches the same conclusion based on the plain language of the claim. If one cannot identify bandwidth-availability information of each of the recited transceivers, the limitation is not met. But nothing in the claim language limits the order, timing, or form in which the information is provided.

2. *Whether the “information regarding the bandwidth availabilities” must be “obtain[able] directly from at least the recited actual PHY interfaces and the recited actual MAC interfaces”*

The last part of XiFi’s construction appears to limit the source of the fed-back information. For that restriction, XiFi points to the prosecution history of the ’756 Patent, in which XiFi wrote, “[E]ach actual MAC and each actual PHY in a particular wireless networking device communicates directly with the processing layer to allow it to receive information regarding bandwidth availabilities from the wireless transceiver associated with each MAC/PHY pair.” Dkt. No. 70 at 4 (quoting ’756 Patent File History, Dkt. No. 70-22 at XIFI_0013817; brackets and emphasis by XiFi). XiFi argues “this statement addresses and informs the meaning of claim terms common across the patent family.” *Id.* XiFi also cites Figure 1 of the specifications, which it argues show a direct communication path between the process layer and the actual MAC and actual PHY. *Id.* at 5 (citing ’105 Patent at fig.1, 3:22–62, 4:19–24). Finally, XiFi argues a POSITA “would understand the intrinsic record compels direct communication between an actual MAC or PHY and the ‘processing interface’ based on the wireless networking ‘protocol stack’ or ‘layer stack’ models to which the XiFi claims and disclosures refer.” *Id.* at 6.

Samsung responds with four reasons why XiFi’s construction is incorrect. First, the construction would exclude the embodiment shown in Figure 1, which shows the process layer can *indirectly* obtain information from at least the actual PHY layer, because such information would pass through the intervening actual MAC layer. Dkt. No. 79 at 6. Second, none of the independent claims at issue recites a direct-feedback requirement. *Id.* at 7. Third, any such direct requirement is “irreconcilable with other claims,” which *do* recite a direct connection. *Id.* at 7–8. Finally, XiFi attempts to import this limitation from certain embodiments based on self-serving statements it made during prosecution very late in this patent family’s history. *Id.* at 9–11.

The Court agrees with Samsung, and it need not delve deep into the parties' arguments to do so. The disputed language states nothing about the *source* of the information. Rather, it limits the information's *content*. To change the plain meaning of the claim language requires lexicography or disavowal, neither of which XiFi asserts. And even to the extent a skilled artisan would understand the disclosed embodiments as communicating information directly from the transceivers to the processing layer, that is not what XiFi claimed.

For this term, based on the foregoing, the Court adopts Samsung's construction of "information regarding current bandwidth availabilities of each of the wireless transceivers."

B. "wireless networking device" ('591 Patent, Claim 1; '337 Patent, Claim 1; '414 Patent, Claim 1; '143 Patent, Claim 1; '105 Patent, Claim 1; '976 Patent, Claim 1; '933 Patent, Claim 1; '177 Patent, Claim 1; '756 Patent, Claim 1; '198 Patent, Claim 1; '564 Patent, Claim 1)

XiFi's Construction	Samsung's Construction
No construction necessary ("any type of device capable of wireless networking," Dkt. No. 70 at 14) (device that "send and receive data," Dkt. No. 81 at 8)	"a device that relays or provides network access to another device"

Samsung contends this term refers not just to any device capable of wireless networking, but to a relay, access point, or device that provides network access to another device. Samsung first emphasizes the "-ing" in "networking." Dkt. No. 79 at 15. "[T]he claims," argues Samsung, "specifically use the adjectival present participle 'networking' to reinforce that the claimed device is not merely one that participates on a wireless network, but one that provides networking capability." *Id.* Second, the claims differentiate between a "recipient" and a "wireless networking device," which means those terms have different meanings. *Id.* at 16. Last, Samsung cites Figures 7

and 11, which purportedly differentiate between “wireless access points” and “users,” thus “support[ing] the conclusion that a wireless networking device” is as limited as it proposes. *Id.* at 17.

WiFi relies on the specification and claims. First, WiFi focuses on the specification’s explanation that:

[T]he wireless networking system may be employed and/or embedded into a variety of electronic devices, including wireless access points, base stations, handhelds, tablets, computers, telephones, televisions, DVD players, BluRay players, media players, storage devices, or ***any such devices that use wireless networks to send and receive data*** including stand-alone add-on devices such as ‘dongles’ that serve as wireless interfaces between devices.

Dkt. No. 70 at 15 (quoting ’105 Patent at 4:7–14). Second, dependent claims show a “wireless networking device” must include these various types of devices. *Id.* at 15–16. As for Samsung’s distinction between “wireless networking device” and “recipient,” WiFi argues whether a device is one or the other depends on context. *Id.* at 17.

The Court agrees with WiFi. Most notably, the excerpt to which WiFi points explains that the inventive system “may be employed and/or embedded into a variety of electronic devices.” ’591 Patent at 3:63–65. Those devices include “televisions, DVD players, BluRay players, media players, [and] storage devices,” *id.* at 4:66–67, none of which a skilled artisan would typically associate with “providing network access to another device.”

Samsung’s arguments to the contrary are not persuasive. Regarding Samsung’s focus on “networking” as an “adjectival participle,” which it calls its “plain-language argument,” Samsung argues “networking” is part of the term’s functionality, which must mean the device provides networking capability to other devices. Certainly “networking” must be given *some* meaning, but Samsung construes “networking” as “providing networking capability” without any meaningful

support,² and the specification's express listing of devices not normally associated with "providing networking access" undercuts any such reading.

Nor is Samsung's distinction between "wireless networking device" and "recipient" persuasive. The thrust of that argument is that those terms have different scope, which is true. Samsung also argues that "to qualify as a wireless networking device, [the device must] satisfy more than just being a mere generic device that happens to receive data." Hr'g Tr., Dkt. No. 104 at 35:14–18. That is also true. At a minimum, the "wireless networking device" must be able to operate on a wireless network, not simply receive data. In addition, the "wireless networking device" of the claims must include all of the limitations in the body, including multiple transceivers. But nothing about the claim language, or application of the canon that different terms are presumed to have different scope, mandates Samsung's construction.

Finally, Samsung turns to the specification's purported focus on access points, relays, hotspots, and the like. The Background, for example, tees up the relevant technical problem by describing "hotspots" with limited range and coverage areas. '591 Patent at 1:31–34. Figure 11 (below) then shows "multiple wireless management systems that cooperate to allocate transceiver resources between users." *Id.* at 2:14–16. In that figure, first and second node management systems (962, 964) control transceiver resources A1–A2 and B1–B3, respectively. *Id.* at 9:63–10:1. "The management systems 962 and 964 communicate with each other to determine the optimal resource allocation to service respective local users, at 958 and 960." *Id.* at 10:1–4.

² Samsung's evidence for its plain-language argument is a single, conclusory paragraph from its expert. *See* Mahon Decl., Dkt. No. 70-25 ¶ 64 ("Samsung's proposed construction also accords with the plain language 'wireless networking device,' which a POSITA would understand to suggest a device that facilitates wireless networking services for other devices. I note that the claim does not recite a generic 'wireless device,' but rather a 'wireless networking device.'").

[T]he first local user 958[] within the coverage of the first node may need bandwidth that may be sufficiently provided by transceiver A1 alone. The second local user 960, positioned within the vicinity of both the first and second nodes, may be assigned transceiver A2 from the first node, and transceiver B2 from the second node, thereby having access to twice the bandwidth.

Id. at 10:5–12.

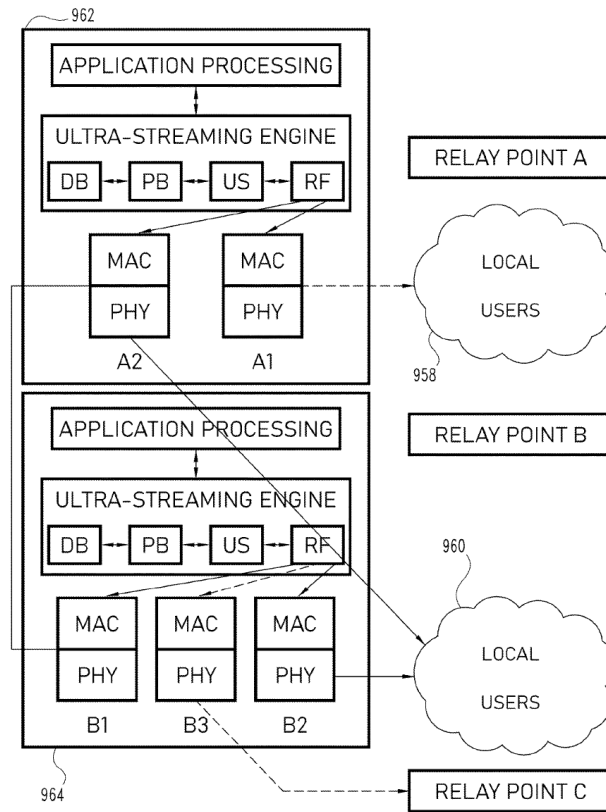


Fig. 11

But Figure 11 merely discloses an embodiment of the wireless networking systems operating in the context of nodes. That’s consistent with the specification’s explanation that “the wireless networking system may be employed and/or embedded into a variety of electronic devices, including . . . wireless access points, [and] base stations.” ’591 Patent at 4:63–65.

Samsung calls the Background “usually a very highly relevant portion of the specification.” Hr’g Tr., Dkt. No. 104 at 1:2. To be sure, the specification “is the single best guide to understanding

the meaning of a term.” *Vitronics Corp. v. Conceptronic*, 90 F.3d 1576, 1582 (Fed. Cir. 1996). Notably, however, the Background is not limited to only relays or access points; it also raises the more general objective of simply “tak[ing] full advantage of the resources available to satisfy the desire for more bandwidth.” ’591 Patent at 1:43–44. Moreover, the closest language in the written description refers to devices that a skilled artisan would not typically associate as “relay[ing] or provid[ing] network access to another device,” like BluRay players, televisions, and storage devices.³ Given that, the Court rejects Samsung’s position and construes this term as “device that sends and receives data over a wireless network.”

³ After listing a number of device types, this paragraph of the specification ends with the phrase “such as dongles that serve as wireless interfaces between devices.” The parties dispute whether “that serve as wireless interfaces between devices” modifies all the listed devices, which would strengthen Samsung’s position, or whether it only modifies “dongles.” See Hr’g Tr., Dkt. No. 104 at 45:17–19 (identifying this dispute). The latter makes more sense for two reasons. First, televisions, DVD players, BluRay players, media players, and storage devices do not typically “serve as wireless interfaces between devices.” Second, under the “rule of the last antecedent,” “qualifying words or phrases modify the words or phrases immediately preceding them and not words or phrases more remote, unless the extension is necessary from the context or the spirit of the entire writing.” Black’s Law Dictionary 1334 (7th ed. 1999). See also *Lockhart v. United States*, 577 U.S. 347, 351 (2016) (noting the rule of the last antecedent “provides that ‘a limiting clause or phrase . . . should ordinarily be read as modifying only the noun or phrase that it immediately follows.’”). Here, there is no reason for extension of the phrase “is necessary from the context or the spirit of the entire writing.”

C. The Preambles ('591 Patent, Claim 1; '337 Patent, Claim 1; '414 Patent, Claim 1; '143 Patent, Claim 1; '105 Patent, Claim 1; '976 Patent, Claim 1; '933 Patent, Claim 1; '177 Patent, Claim 1; '756 Patent, Claim 1; '198 Patent, Claim 1; '564 Patent, Claim 1)

XiFi's Construction	Samsung's Construction
No construction necessary	Preambles are limiting

This dispute concerns the following preambles:

Patent Numbers	Preamble
'591; '976; '756; '564	"A wireless networking device, comprising"
'337; '414; '105; '143	"A method of improving the performance of a wireless networking device, comprising the steps of"
'933; '177	"A method of improving the performance of circuitry, comprising the steps of"
'198	"A method for improving the operation of circuitry that is adapted to be used in a wireless networking device, the method comprising the steps of"

Dkt. No. 70 at 23. Samsung argues these preambles are limiting because they provide antecedent basis for terms in the body and "supply essential context within which the claimed methods and apparatuses operate." Dkt. No. 79 at 23. It stresses that "every independent claim includes terms introduced in the preamble but are then referenced throughout the claim body without being independently introduced." *Id.* XiFi, however, disputes that the preambles recite essential structure or steps and argues the claims' bodies recite the entirety of the invention. Dkt. No. 70 at 24–25. Focusing on the preambles of the method claims, XiFi also argues the Court need not find the entirety of the preambles limiting. *Id.*

Each party's position has some merit. Regarding Samsung's position, the Court agrees that "wireless networking device" and "circuitry" in the preambles are limiting. Each claim body refers back to the "wireless networking device" or "circuitry" of the preamble. That said, "a preamble is not limiting 'where a patentee defines a structurally complete invention in the claim body and uses

the preamble only to state a purpose or intended use for the invention.” *Catalina Mktg. Int’l v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002) (quoting *Rowe v. Dror*, 112 F.3d 473, 478 (Fed. Cir. 1997)). Here, each method claim at issue is a method of forming what is essentially the device of the apparatus claims. For example, Claim 1 of the ’337 Patent recites the steps of:

- connecting an application interface to a processing interface, the application interface [having certain characteristics];
- connecting first and second actual MAC interfaces to the processing interface;
- connecting first and second actual PHY interfaces respectively to the first and second actual MAC interfaces;
- . . . associating first and second wireless transceivers with the first and second actual PHY interfaces, wherein each of the first and second wireless transceivers [has certain characteristics]; [and]
- forming in the processing interface (i) at least one virtual MAC interface and (ii) first and second virtual PHY interfaces that [do certain things during operation].

’337 Patent at 11:62–12:19. The claim then limits how the processing interface is “configured” and “adapted.” *See id.* at 12:20–13:4 (reciting “the processing interface is configured to” do certain things “when the wireless networking device is being used” in a certain manner, and “adapted to” do other things “if the unselected wireless transceiver has more bandwidth availability than the selected transceiver”). Reading the entire method claims, it is clear that the “improvement” of performance and operation recited in the various preambles relates to the capabilities of the structure “created” by implementing the method. Thus, these phrases are not “necessary to give life, meaning, and vitality” to the claim, *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1305 (Fed. Cir. 1999) (“[I]f the claim preamble is necessary to give life, meaning, and vitality to the claim, then the claim preamble should be construed as if in the balance of the claim.” (cleaned up)), and do not recite essential steps or structure other than the “wireless networking device” or

“circuitry.” Rather, except for those two terms, the preambles only state an intended purpose. Accordingly, the Court holds the preambles are limiting as to “wireless networking device” and “circuitry,” but any remainder of each preamble is not limiting.

D. “different bands of frequencies” (’591 Patent, Claim 1; ’337 Patent, Claim 1; ’414 Patent, Claim 1; ’105 Patent, Claim 1; ’976 Patent, Claim 1; ’933 Patent, Claim 1; ’756 Patent, Claim 1; ’198 Patent, Claim 1; ’564 Patent, Claim 1)

“bands of frequencies being different” (’177 Patent, Claim 1)

“frequency bands being different from each other” (’143 Patent, Claim 1)

XiFi’s Construction	Samsung’s Construction
No construction necessary	“different ranges of frequencies that are defined or allocated by a regulatory or standards body as a band”

Claim 1 of the ’591 Patent recites:

first, second, and third wireless transceivers respectively associated with the first, second, and third actual PHY interfaces, wherein each one of the first, second, and third wireless transceivers (i) is suitable for use in a wireless local area network, (ii) has a first, second, and third bandwidth availability up to a first, second, and third actual bandwidth, and (iii) is adapted to emit radio waves in first, second, and third **different bands of frequencies**, the second, and third frequency bands both being higher in frequency than the first frequency band[.]

’591 Patent at 11:64–12:6. The other independent claims include similar language. *See, e.g.*, ’177 Patent at 12:20–30 (reciting the step of “associating first, second and third wireless transceivers with the first, second and third actual PHY interfaces, wherein each of the first, second and third wireless transceivers . . . are adapted to emit radio signals in first, second and third bands of frequencies, *at least two of the first, second and third bands of frequencies being different*” (emphasis added)); ’143 Patent at 12:6–15 (similar).

Samsung attacks XiFi's position as "allowing it to satisfy the requirement for 'different bands' by arbitrarily dividing any range of frequencies into parts and then pointing to the parts as the 'different bands.'" Dkt. No. 79 at 25. "This," argues Samsung, "would stretch the claim requirement to encompass differences between individual channels, or even sub-channels, which all operate within a *single* recognized 'band.'" *Id.* Samsung asserts the claims' structure supports this interpretation by distinguishing between bands and portions of bandwidth. *Id.* at 27.

According to XiFi, "by grafting on a standards requirement, Samsung's construction creates inconsistency with dependent claims." Dkt. No. 70 at 26. XiFi also emphasizes the many dependent claims that recite specific frequency bands. *Id.* (citing, for example, Claim 4 of the '591 Patent, which requires the frequency bands to be "specified in at least one member of the family of IEEE 802.11 standards").

The Court agrees with XiFi that importing standards is not appropriate. Reduced to its essence, each claim only requires that the "first, second, and third wireless transceivers" be "adapted to emit radio waves in first, second, and third different bands of frequencies." Thus, the "band of frequencies" refers to the entire frequency band over which each transceiver is able to operate, not some recognized standard. While it may be likely a commercial embodiment will operate in certain standardized bands, nothing about the claim language or the specification requires that.

But the Court agrees with Samsung that "arbitrarily dividing any range of frequencies [in which a radio operates] into parts and then pointing to the parts as the 'different bands,'" Dkt. No. 79 at 25, does not meet the "different bands" requirement. As XiFi explained during prosecution when providing support for what became the wireless-transceivers limitation of Claim 1 of the '591 Patent, "[e]ach radio has bandwidth availability up to an actual bandwidth. Wi-Fi radios emit

radio waves in different bands of frequencies such as, for example, 2.4 GHz, 5 GHz and 6 GHz.”

’591 Patent File History, Dkt. No. 70-16 at XIFI_0001021. This statement shows “different bands” relate to the operating range of the radio, not sub-bands within that operating range. Accordingly, the Court construes this term as “different ranges of frequencies in which the transceivers are capable of operating.”

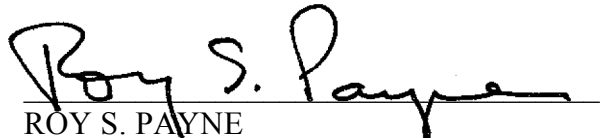
V. CONCLUSION

Disputed Term	The Court’s Construction
“information regarding the bandwidth availabilities of the first, second, and third wireless transceivers” (’591 Patent, Claim 1; ’143 Patent, Claim 1; ’177 Patent, Claim 1) “information regarding the bandwidth availabilities of the first and second wireless transceivers” (’337 Patent, Claim 1; ’414 Patent, Claim 1; ’564 Patent, Claim 1; ’105 Patent, Claim 1; ’976 Patent, Claim 1; ’933 Patent, Claim 1; ’198 Patent, Claim 1) “information regarding the first and second bandwidth availabilities” (’756 Patent, Claim 1)	“information regarding current bandwidth availabilities of each of the wireless transceivers”
“wireless networking device” (’591 Patent, Claim 1; ’337 Patent, Claim 1; ’414 Patent, Claim 1; ’143 Patent, Claim 1; ’105 Patent, Claim 1; ’976 Patent, Claim 1; ’933 Patent, Claim 1; ’177 Patent, Claim 1; ’756 Patent, Claim 1; ’198 Patent, Claim 1; ’564 Patent, Claim 1)	“device that sends and receives data over a wireless network”

Preambles (’591 Patent, Claim 1; ’337 Patent, Claim 1; ’414 Patent, Claim 1; ’143 Patent, Claim 1; ’105 Patent, Claim 1; ’976 Patent, Claim 1; ’933 Patent, Claim 1; ’177 Patent, Claim 1; ’756 Patent, Claim 1; ’198 Patent, Claim 1; ’564 Patent, Claim 1)	Limiting as to “wireless networking device” and “circuitry”; otherwise, not limiting
“different bands of frequencies” (’591 Patent, Claim 1; ’337 Patent, Claim 1; ’414 Patent, Claim 1; ’105 Patent, Claim 1; ’976 Patent, Claim 1; ’933 Patent, Claim 1; ’756 Patent, Claim 1; ’198 Patent, Claim 1; ’564 Patent, Claim 1) “bands of frequencies being different” (’177 Patent, Claim 1) “frequency bands being different from each other” (’143 Patent, Claim 1)	“different ranges of frequencies in which the transceivers are capable of operating”

The Court **ORDERS** each party not to refer, directly or indirectly, to its own or any other party’s claim-construction positions in the presence of the jury. Likewise, the Court **ORDERS** the parties to refrain from mentioning any part of this opinion, other than the actual positions adopted by the Court, in the presence of the jury. Neither party may take a position before the jury that contradicts the Court’s reasoning in this opinion. Any reference to claim construction proceedings is limited to informing the jury of the positions adopted by the Court.

SIGNED this 11th day of May, 2026.


ROY S. PAYNE
UNITED STATES MAGISTRATE JUDGE