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**UNITED STATES DISTRICT COURT
FOR THE CENTRAL DISTRICT OF CALIFORNIA**

ENTROPIC COMMUNICATIONS,
LLC,

Plaintiff,

v.

DISH NETWORK CORPORATION,
DISH NETWORK LLC,
DISH NETWORK SERVICE, LLC,
and
DISH NETWORK CALIFORNIA
SERVICE CORPORATION,

Defendants.

Case No. 2:23-cv-01043-JWH-KES
[Lead Case]

CLAIM CONSTRUCTION ORDER

ENTROPIC COMMUNICATIONS,
LLC,

Plaintiff,

v.

COX COMMUNICATIONS, INC.,
COXCOM, LLC, and
COX COMMUNICATIONS
CALIFORNIA, LLC,

Defendants.

Case No. 2:23-cv-01047-JWH-KES
[Consolidated]

ENTROPIC COMMUNICATIONS,
LLC,

Plaintiff,

v.

COMCAST CORPORATION,
COMCAST CABLE
COMMUNICATIONS, LLC, and
COMCAST CABLE
COMMUNICATIONS
MANAGEMENTS, LLC,

Defendants.

Case No. 2:23-cv-01048-JWH-KES
[Consolidated]

ENTROPIC COMMUNICATIONS,
LLC,

Plaintiff,

v.

DIRECTV, LLC, and
AT&T SERVICES, INC.,

Defendants.

Case No. 2:23-cv-05253-JWH-KES
[Consolidated]

I. SUMMARY OF DECISION

In this action, Plaintiff Entropic Communications, LLC (“Entropic”) asserts that Defendants DISH Network California Service Corporation, DISH Network Corporation, DISH Network L.L.C., and DISH Network Service L.L.C. (collectively, “DISH”); Defendants CoxCom, LLC; Cox Communications California, LLC; and Cox Communications, Inc. (collectively, “Cox”); Defendants Comcast Cable Communications, LLC; Comcast Cable Communications Management, LLC; and Comcast Corporation (collectively, “Comcast”); and Defendants AT&T Services, Inc. and DirecTV, LLC (jointly, “DirecTV”) infringe 10 patents by offering and selling products and services related to the use of coaxial cables under the Multimedia over Coax Alliance standard.¹ The parties seek the Court’s construction of certain claim limitations in nine of those patents: U.S. Patent Nos. 7,295,518 (the “’518 Patent”);² 7,594,249 (the “’249 Patent”);³ 7,889,759 (the “’759 Patent”);⁴ 8,085,802 (the “’802 Patent”);⁵ 8,363,681 (the “’681 Patent”);⁶ 8,621,539 (the “’539 Patent”);⁷ 8,631,450 (the “’450 Patent”);⁸ 9,838,213 (the “’213 Patent”);⁹ and 10,432,422 (the “’422 Patent”)¹⁰ (collectively, the “Patents at Issue”).¹¹

Specifically, presently before the Court for resolution is the parties’ dispute regarding the construction of 13 limitations from the Patents at Issue. The parties have

¹ See generally Complaint against DISH [ECF No. 1]; First Amended Complaint against DirecTV (the “DirecTV Complaint”) [ECF No. 168]; Complaint against Cox [ECF No. 1 in Case No. 2:23-cv-01047]; Corrected Second Amended and Supplemental Complaint against Comcast [ECF No. 591]. Entropic initially asserted 12 patents against DirecTV, Cox, DISH, and Comcast (collectively, “Defendants”), but the Court determined that the relevant claims of two of those patents are ineligible. See Order on DISH Defendants’ Motion to Dismiss under 35 U.S.C. § 101 [ECF No. 103]. The parties do not dispute any limitations of the claims in U.S. Patent No. 8,320,566.

² See DirecTV Complaint, Ex. A [ECF No. 168-1].

³ *Id.*, Ex. C [ECF No. 168-3].

⁴ *Id.*, Ex. E [ECF No. 168-5].

⁵ *Id.*, Ex. G [ECF No. 168-7].

⁶ *Id.*, Ex. W [ECF No. 168-23].

⁷ *Id.*, Ex. M [ECF No. 168-13].

⁸ *Id.*, Ex. I [ECF No. 168-9].

⁹ *Id.*, Ex. O [ECF No. 168-15].

¹⁰ *Id.*, Ex. Q [ECF No. 168-17].

¹¹ Joint Claim Construction and Pre-hearing Statement (the “Joint Statement”) [ECF No. 525] 3:1-12.

agreed upon the construction of another four limitations.¹² The Court carefully reviewed the parties’ respective claim construction briefs and other materials¹³ and conducted a claim construction hearing on February 25, 2025.

After considering the parties’ opening and responsive claim construction briefs, as well as the argument of counsel at the hearing, the Court construes the claim limitations at issue as follows:

Limitation	Construction
“broadband cable network”/“coaxial network”/“Broadband Coaxial Network (BCN)” (’759 Patent, Claims 1-3; ’539 Patent, Claim 1; ’450 Patent, Claims 29-33)	Plain and ordinary meaning, with the scope of “network” meaning “the system of coaxial cable wiring that stems from an initial ‘point of entry’ to its furthestmost downstream point of reach.”
“node” (’759 Patent, Claims 1-3; ’539 Patent, Claim 1)	Plain and ordinary meaning.
“equalization on the received signal that restores a flat frequency response to overcome communication channel impairments caused by the reflected signals” (’249 Patent, Claim 10)	Plain and ordinary meaning. Not indefinite.
“bit loading is selected based on the determined channel characteristics” (’518 Patent, Claim 1)	Plain and ordinary meaning. Not indefinite.
“a common bit-loading modulation scheme” (’759 Patent, Claims 1-3; ’450 Patent, Claim 29)	“the resulting set of lowest modulation values for each carrier supported by each of the channel paths, wherein the resulting set of lowest modulation values is selected from among the highest values supported by each carrier”

¹² See *infra*, Part IV.

¹³ See Entropic’s Opening Claim Construction Brief (“Entropic’s Opening Brief”) [ECF No. 559]; Defendants’ Opening Claim Construction Brief (“Defendants’ Opening Brief”) [ECF No. 558]; Entropic’s Responsive Claim Construction Brief (“Entropic’s Responsive Brief”) [ECF No. 563]; Defendants’ Responsive Claim Construction Brief (“Defendants’ Responsive Brief”) [ECF No. 562].

Limitation	Construction
“control and data packet” “data and control packet” (’802 Patent, Claims 3 & 4)	Moot in view of invalidity ruling.
“beacon packet” (’802 Patent, Claims 3 & 4)	Moot in view of invalidity ruling.
“admission window” (’802 Patent, Claims 3 & 4)	Moot in view of invalidity ruling.
“node delay spread” (’539 Patent, Claim 1)	Moot in view of indefiniteness finding.
“optimizing the preamble and cyclic prefix requirements or other parameters” (’539 Patent, Claim 1)	Indefinite.
“Network Coordinator (NC) node” (’213 Patent, all Claims; ’422 Patent, Claims 1-4 and 6)	Moot in view of invalidity ruling.
“cost” (’213 Patent, Claims 5 and 7)	Moot in view of invalidity ruling.
“schedule arrival clock time” (’681 Patent, Claim 1)	Moot in view of invalidity ruling.

II. PATENTS AT ISSUE

A. The ’518 Patent

The ’518 Patent relates to “[a] broadband local area network [that] uses coaxial cable wiring for interconnection of terminal devices.”¹⁴ Specifically, it teaches using “[o]rthogonal frequency division multiplexing (OFDM) with bit loading” to overcome problems in the prior art that prevented devices in the network from communicating with each other, as opposed to communicating with only service providers.¹⁵ The ’518 Patent discloses that “[b]it loading” can be used “individually . . . to implement a network that overcomes the problem of multipath and high attenuation in building cable wiring that

¹⁴ ’518 Patent, Abstract.

¹⁵ *Id.*

would restrict the ability of terminal devices to communicate with each other.”¹⁶ It defines “bit loading” as “a method of allocating a higher order signal constellation to carriers that have higher signal to noise ratio and a lower order constellation to carriers that have lower signal to noise ratio.”¹⁷ It also explains that prior art patents disclose a technique for bit loading.¹⁸

Claim 1 discloses a communication network as follows:

1. A data communication network comprising:

at least two network devices, each network device comprising a multi-carrier modulator for modulating data, an up converter for translating the modulated data to an RF carrier frequency, a down converter for translating an RF signal, and a multi-carrier demodulator for demodulating the translated RF signal to produce data; and

cable wiring comprising a splitter with a common port and a plurality of tap ports, and a plurality of segments of coaxial cable connecting between the splitter tap ports and the network devices;

whereby network devices communicate with each other through the cable wiring using multi-carrier signaling;

wherein network devices transmit probe messages through the cable wiring and analyze received probe message signals to determine channel characteristics and *bit loading is selected based on the determined channel characteristics*.¹⁹

B. The '249 Patent

The '249 Patent relates to coaxial cable wiring to interconnect terminal devices in a local area network (“LAN”).²⁰ In such a network, communication between nodes occurs over a shared coaxial cable.²¹ When the coaxial cable is shared for television or

¹⁶ *Id.* at 4:42-47.

¹⁷ *Id.* at 8:9-12.

¹⁸ *Id.* at 8:19-26.

¹⁹ *Id.*, Claim 1 (emphasis added to show disputed limitation).

²⁰ *See* '249 Patent, Abstract.

²¹ *See id.* at 1:20-22.

cable services, signals must be separated to avoid interference.²² That separation is typically accomplished using signal splitters.²³ Splitters pose some drawbacks, however, including isolation between output ports.²⁴ The '249 Patent discloses using “a frequency selective network interface device placed at the building point of entry (POE) to reflect upstream signals transmitted by terminal devices back into the building distribution whereby the signals may be received by other terminal devices.”²⁵ That configuration provides a path for terminal devices to transmit and receive for each other without the port-to-port isolation problem.²⁶

Claim 10 discloses:

10. A broadband local area network for transmitting modulated signals using coaxial cable building wiring containing a plurality of branches comprising:

a filter located at the point of entry of the building wiring that rejects network signals originating in the building wiring such that the rejected network signals do not pass through the filter, but rather are reflected by the filter back into all branches of the building wiring;

at least one signal splitter;

a plurality of terminal devices connected to the wiring branches, each terminal device capable of communicating with other terminal devices the reflected signal path created by the filter, wherein the terminal devices perform *equalization on the received signal that restores a flat frequency response to overcome communication channel impairments caused by the reflected signals.*²⁷

C. The '759 Patent

The '759 Patent relates to determining a common bit-loading modulation scheme to facilitate communication among nodes in a broadband cable network (“BCN”).²⁸ The

²² See *id.* at 1:22-24.

²³ See *id.* at 1:26-31.

²⁴ See *id.* at 2:9-14.

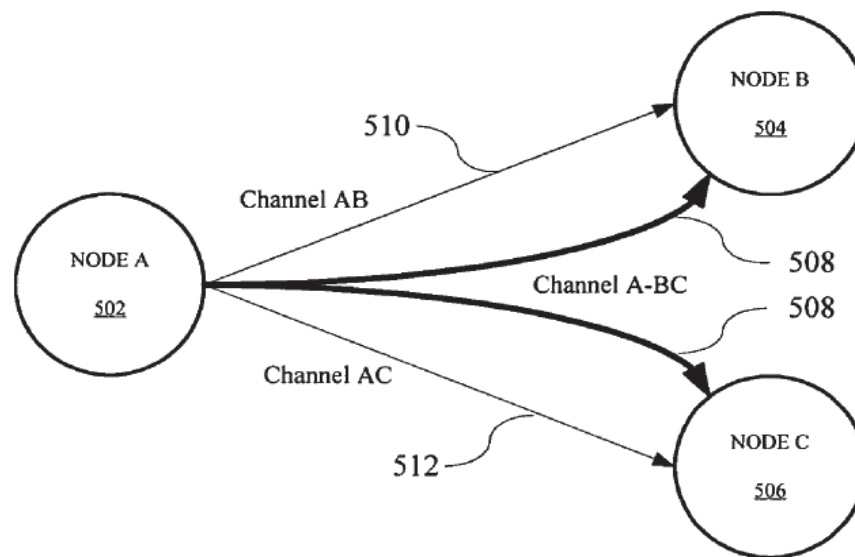
²⁵ *Id.* at 3:11-15.

²⁶ See *id.* at 3:15-20.

²⁷ *Id.*, Claim 10 (emphasis added to show disputed claim limitation).

²⁸ See '759 Patent, Abstract.

BCN includes a transmitting node configured to send probe signals to the other nodes in the BCN.²⁹ The BCN also includes a receiving node configured to transmit a response to the probe signal.³⁰ The response includes a bit-loading modulation scheme.³¹ When the transmitting node receives the response, it can determine a common bit-loading modulation scheme.³² The common scheme informs nodes about the amount of data that the system can accommodate at any given time, but in a way that different receiving nodes can both understand.³³ Thus, determining and using a common scheme saves time and resources by allowing for the simultaneous transmission of relevant information to two different nodes.³⁴ Figure 5 of the '759 Patent is a diagram that shows those different communication paths (using channel A-BC to communicate with both nodes B and C at the same time instead of the separate A-B and A-C channels):³⁵



Claim 1 discloses:

1. A method for determining *a common bit-loading modulation scheme* for communicating between a plurality of *nodes* in a *broadband cable network* ("*BCN*"), the method comprising:

²⁹ See *id.*

³⁰ See *id.*

³¹ See *id.*

³² See *id.*

³³ See *id.* at 6:55-7:18.

³⁴ See *id.*; see also *id.* at 10:56-57.

³⁵ See *id.* at 5:1-3.

transmitting a probe signal from a transmitting node within the plurality of nodes to a sub-plurality of receiving nodes within the plurality of nodes;

receiving a plurality of response signals from the sub-plurality of receiving nodes wherein each response signal includes a bit-loading modulation scheme determined by a corresponding receiving node; and

determining *the common bit-loading modulation scheme* from the received plurality of response signals;

receiving the probe signal at one receiving node of the plurality of receiving nodes through a channel path of transmission;

determining the transmission characteristics of the channel path at the one receiving node; and

transmitting a response signal from the one receiving node to the transmitting node,

wherein the transmission characteristics of the channel path are determined by measuring the signal-to-noise (“SNR”) characteristics of the received probe signal at the one receiving node and

wherein determining a common bit-loading modulation scheme includes:

comparing a plurality of bit-loading modulation schemes from the corresponding received plurality of response signals; and

determining the common bit-loading modulation scheme in response to comparing the plurality of bit loaded modulation schemes.³⁶

D. The ’539 Patent

The ’539 Patent generally relates to a physical layer transmitter for facilitating communication in a BCN.³⁷ Specifically, the transmitter transmits and receives packets including specific information.³⁸ The use of the physical layer, as well as the type of information transmitted and received, enables communication between devices on the

³⁶ *Id.*, Claim 1 (emphasis added to show disputed claim limitations).

³⁷ *See* ’539 Patent, Abstract.

³⁸ *See id.*

network, instead of merely communication between devices and their service providers.³⁹ In an embodiment, the physical layer may send an echo profile probe to measure node delay spread on the network.⁴⁰ Packet parameters may then be optimized based upon the measured delay.⁴¹

Claim 1 discloses:

1. A modem for communication to at least one *node* across at least one channel of a *coaxial network*, the modem comprising:

a transmitter; and

a MAC layer in signal communication with the transmitter, the MAC layer using at least one probe packet as an echo profile probe to measure *node delay spread* on the network and the MAC layer *optimizing the preamble and cyclic prefix requirements or other parameters* in response to the measured node delay spread on the network;

wherein the transmitter communicates the at least one probe packet.⁴²

E. The '450 Patent

The '450 Patent is directed to a BCN network that enables communication “over a typical home coaxial network.”⁴³ The '450 Patent is subject to a terminal disclaimer, and it shares the same term as the '759 Patent. It includes similar disclosure to the '759 Patent, discussed above.

Claim 29 discloses:

29. A broadcasting method within *a Broadband Coaxial Network (“BCN”)*, comprising:

³⁹ See *id.*

⁴⁰ See *id.* at 10:62-64.

⁴¹ See *id.*

⁴² *Id.*, Claim 1 (emphasis added to show disputed claim limitations). The applicant corrected the patent to disclose “probe” instead of “transmit” in the penultimate word of the claim.

⁴³ '450 Patent, Abstract.

a transmitting node transmitting a probe signal to a plurality of receiving nodes;

the transmitting node receiving a plurality of response signals comprising a plurality of bit-loading modulation schemes from the plurality of receiving nodes, wherein each of the plurality of receiving nodes receives the probe signal through a corresponding channel path,

determines transmission characteristics of the corresponding channel path,

determines a bit-loading modulation scheme for the corresponding channel path based on the transmission characteristics, and

transmits a response signal to the transmitting node informing the transmitting node of the bit-loading modulation scheme for the corresponding channel path;

the transmitting node comparing the plurality of bit-loading modulation schemes to determine *a common bit loading modulation scheme*; and

the transmitting node transmitting a broadcast signal relaying *the common bit-loading modulation scheme* to the plurality of receiving nodes.⁴⁴

III. LEGAL STANDARD

The task of claim construction involves determining the meaning of a word or a group of words—which is known as a “limitation”—in a patent claim. Claim construction “‘is simply a way of elaborating the normally terse claim language in order to understand and explain, but not to change, the scope of the claims.’” *Gart v. Logitech, Inc.*, 254 F.3d 1334, 1339 (Fed. Cir. 2001) (quoting *Embrex, Inc. v. Serv. Eng’g Corp.*, 216 F.3d 1343, 1347 (Fed. Cir. 2000)). Construing the meaning of patent claims is an issue for the court to decide as a matter of law. *See Markman v. Westview Instr., Inc.*, 517 U.S. 370, 387-91 (1996). “When the parties present a fundamental dispute regarding the scope of a claim term, it is the court’s duty to resolve it.” *O2 Micro Intern. Ltd. v. Beyond Innovation Tech. Co., Ltd.*, 521 F.3d 1351, 1362 (Fed. Cir. 2008).

⁴⁴ *Id.*, Claim 29 (emphasis added to show disputed claim limitations).

“It is a ‘bedrock principle’ of patent law that ‘the claims of a patent define the invention to which the patentee is entitled the right to exclude.’” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (*en banc*) (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). The task of claim construction always begins with the claim language. *See Innova*, 381 F.3d at 1116. Indeed, “the proper construction of any claim language must, among other things, ‘stay[] true to the claim language.’” *Straight Path IP Group v. Sipnet EU S.R.O.*, 806 F.3d 1356, 1361 (Fed. Cir. 2015) (quoting *Renishaw PLC v. Marposs Societa’ per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998)). Claim terms “are generally given their ordinary and customary meaning,” *Phillips*, 415 F.3d at 1312 (quoting *Vitronics Corp. v. Conception, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)), which is “the meaning that the term would have to a person of ordinary skill in the art,” *id.* at 1313. The terms must be read in the context of the entire patent, however. *See id.* at 1314. In interpreting a limitation, the court must focus primarily on the intrinsic evidence of record, including the claims themselves, the specification, and, if in evidence, the prosecution history. *See id.* at 1312-20; *see also Medrad, Inc. v. MRI Devices Corp.*, 401 F.3d 1313, 1319 (Fed. Cir. 2005).

Among the intrinsic evidence, the “specification is always highly relevant to the claim construction analysis. Usually it is dispositive; it is the single best guide to the meaning of a disputed term.” *Vitronics*, 90 F.3d at 1582. “The specification is, thus, the primary basis for construing the claims.” *Standard Oil Co. v. Am. Cyanamid Co.*, 774 F.2d 448, 452 (Fed. Cir. 1985). It is “entirely appropriate for a court, when conducting claim construction, to rely heavily on the written description for guidance as to the meaning of the claims.” *Phillips*, 415 F.3d at 1317. The Federal Circuit has recognized that an inventor may invoke a particular definition of a term in her specification, or otherwise use a term in the specification in a manner that differs from the term’s ordinary usage. *See id.* at 1316. “In such cases, the inventor’s lexicography governs.” *Id.*

In addition to the specification, the court should also consider the prosecution history (if it is in evidence), consisting of “the complete record” of the patent. *Id.* If, within the prosecution history, a patentee clearly and unmistakably disavowed a claim construction, then the patentee disclaimed that construction. *See SanDisk Corp. v. Memorex Prods., Inc.*, 415 F.3d 1278, 1287 (Fed. Cir. 2005); *Omega Eng’g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1324 (Fed. Cir. 2003). Because the prosecution history often lacks the clarity of the specification, however, it is less useful for claim interpretation purposes. *See Phillips*, 415 F.3d at 1317.

Although the court may also consider extrinsic evidence, including expert testimony, dictionaries, and learned treatises, such evidence is generally viewed as less reliable than intrinsic evidence. *See id.* at 1317-18. Therefore, the court must use its discretion in admitting and weighing extrinsic evidence, keeping in mind the inherent flaws in that type of evidence. *See id.* at 1319.

IV. AGREED UPON CLAIM LIMITATIONS

The parties have agreed upon the following constructions:⁴⁵

Limitation	Agreed Construction
“response signal” (’759 Patent, Claims 1-3; ’450 Patent, Claim 29)	“signal transmitted in response to the probe signal”
“MAC layer” (’539 Patent, Claims 1, 4, & 7)	Plain and ordinary meaning.
“each terminal device capable of communicating with other terminal devices the reflected signal path created by the filter” (’249 Patent, Claim 10)	“each terminal device capable of communication with other terminal devices using the reflected signal path created by the filter”
Preamble (’249 Patent, Claim 10; ’759 Patent, Claims 1-3; ’539 Patent, Claim 1; ’450 Patent, Claim 29)	Limiting.

The Court adopts the parties’ agreed upon constructions. *See MyMail, Ltd. v. Am. Online, Inc.*, 476 F.3d 1372, 1377–78 (Fed. Cir. 2007) (rejecting appellate challenge to claim construction agreed to by party in district court).

V. DISPUTED CLAIM LIMITATIONS

A. Meaning of “Broadband Cable Network”/“Coaxial Network”/“Broadband Coaxial Network”

The first disputed limitation appears in numerous claims across the ’759, ’802, ’539, and ’450 Patents. The parties agree that the various network terms can be construed contemporaneously. Claims 3 and 4 of the ’802 Patent are invalid under 35 U.S.C. § 101 for the reasons stated in the Court’s ruling concerning DirecTV’s motion to

⁴⁵ See Joint Statement 3:15-4:8; Entropic’s Opening Brief 8:4-14; Defendants’ Opening Brief 9:2-22. The Court does not include here the parties’ agreed upon constructions for the limitations “channel number field” or “next beacon index field” from Claims 3 and 4 of the ’802 Patent because those claims are invalid under 35 U.S.C. § 101 for the reasons stated in the Court’s ruling concerning DirecTV’s motion to dismiss. *See* Order Granting in Part and Denying in Part DirecTV’s Motion to Dismiss Under 35 U.S.C. § 101 (the “DirecTV Order”) [ECF No. 575] 27-30.

dismiss.⁴⁶ Accordingly, the Court construes this limitation with regard to the '759, '539, and '450 Patents.

To put this limitation in context, all four patents use the same language when describing Figure 1 in the Background of the Invention section of the specification:

An example of a known *broadband cable network (also known as a “cable system” and/or “cable wiring”* is shown within a building (also known as customer premises) such as a typical home or office building.⁴⁷

Figure 1, described above, is common across all four of the patents, and it will aid in understanding this limitation:

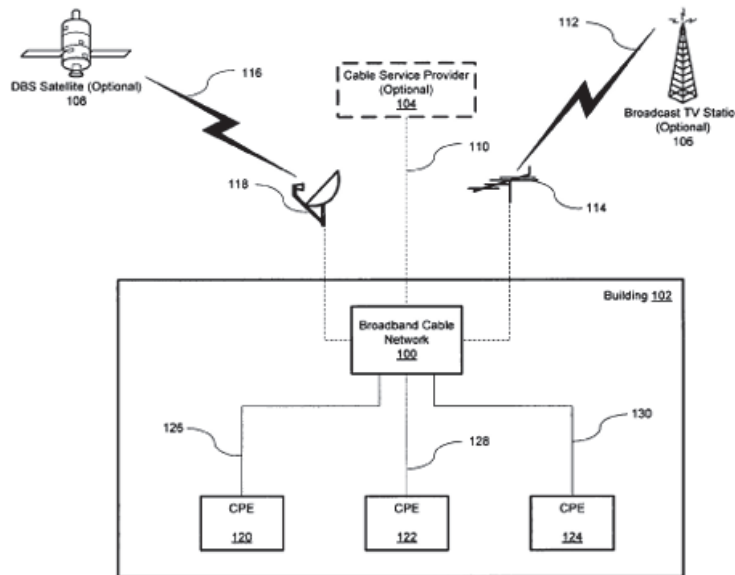


FIG. 1 (Prior Art)

Figure 1 is a diagram of “an example implementation of a known broadband cable system within a building.”⁴⁸ The diagram shows a broadband cable network—existing within a box labeled as “building 102”—as optionally being in signal communication with cable service providers, DBS satellites, or broadcast tv stations.⁴⁹

⁴⁶ See DirecTV Order 27-30.

⁴⁷ '450 Patent 1:65-67 & 2:1; '759 Patent 2:11-14; '539 Patent 2:4-7 (emphasis added).

⁴⁸ '450 Patent 4:58-59.

⁴⁹ See *id.* at 2:14-17.

Figure 3, from the '450 Patent, further aids in understanding this limitation:

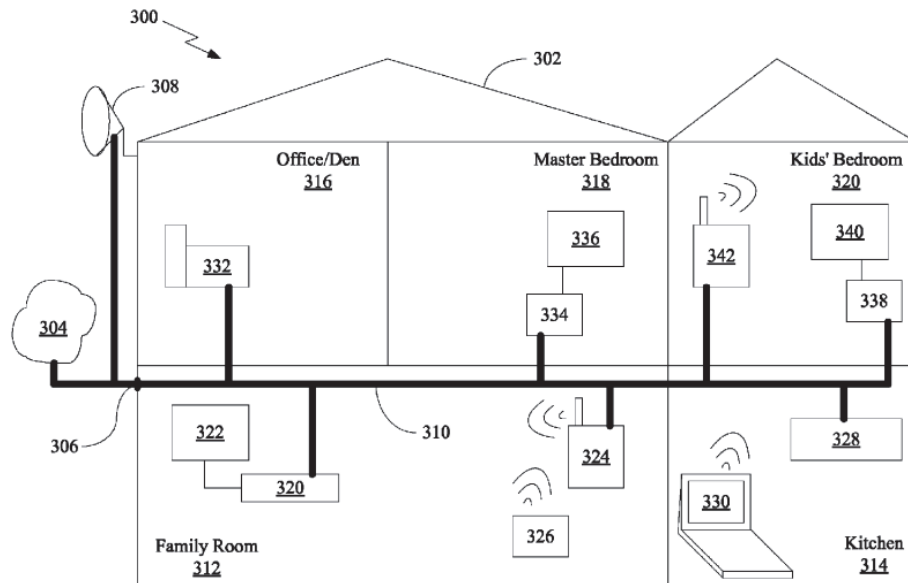


FIG. 3

Figure 3 also shows an example of a broadband cable network “within a home or building.”⁵⁰ Here, a depiction of a home is shown, with terrestrial cable and a satellite signal shown entering the home at a point of entry (“POE”).⁵¹ The description of Figure 3 states that “[a] BCN network 310 within the home 302 connects with the satellite dish 308 and cable/terrestrial network 304 at POE 306.”⁵²

Of course, the patent claims themselves—and not the figures displayed in the specifications—define the invention. *See Phillips*, 415 F.3d at 1312. The parties agree that the plain meaning of “broadband cable network” should control. The core issue with respect to this disputed limitation is the extent of the “network.”

The parties’ respective proposed constructions are as follows:

⁵⁰ *Id.* at 4:53-54.

⁵¹ *See id.* at 5:51-53.

⁵² *Id.* at 5:44-46.

Limitation at Issue:	
“broadband cable network”/“coaxial network”/“Broadband Coaxial Network (BCN)” (’759 Patent, Claims 1-3; ’539 Patent, Claim 1; ’450 Patent, Claims 29-33)	
Entropic’s Proposed Construction	Defendants’ Proposed Construction
Plain meaning, wherein the network is a local network.	Plain and ordinary meaning.

Entropic argues that the term “network” refers to a local network, as in one that is “among devices in a premises”⁵³ or “a network in a home or building.”⁵⁴ Defendants assert that the “patents were drafted to cover any type of network, including a wide area network.”⁵⁵ For the reasons set forth below, the Court construes a “network” to encompass the system of coaxial cable wiring downstream from a “point of entry.”

“When the scope of the invention is clearly stated in the specification, and is described as the advantage and distinction of the invention, it is not necessary to disavow explicitly a different scope.” *On Demand Mach. Corp. v. Ingram Indus. Inc.*, 442 F.3d 1331, 1340 (Fed. Cir. 2006). Here, the Patents describe, and show in figures, a clear distinction between a broadband cable network and outside signal providers (including terrestrial cable service providers) to which a broadband cable network connects. Defendants’ argument that the plain and ordinary meaning includes wide area networks is too broad to comport with the specifications of the ’759, ’539, and ’450 Patents.⁵⁶

Entropic’s proposed scope, on the other hand, is too narrow. Although the examples provided in the figures show single dwellings or buildings, they are just that—examples. *See IGT v. Bally Gaming Intern., Inc.*, 659 F.3d 1109 (Fed. Cir. 2011) (finding that examples were not sufficient to redefine the limitation at issue to have “anything other than its plain and ordinary meaning”). While the non-limiting examples in the specifications should not be interpreted as confining a broadband cable network to a certain “premises,” home, or building, all descriptions commonly show that broadband cable networks are the coaxial cable wiring systems that stem from a POE.

Accordingly, the Court settles on the construction that construes a “network” to encompass the system of coaxial cable wiring downstream from a “point of entry.”

⁵³ Entropic’s Opening Brief 9:2-4.

⁵⁴ Entropic’s Responsive Brief 12:8-9.

⁵⁵ Defendants’ Responsive Brief 7:11-13.

⁵⁶ *Id.* at 7:12-13.

B. Meaning of “Node”

The second disputed limitation concerns the meaning of “node,” as used in claims across the ’759, ’802, and ’539 Patents. Claims 3 and 4 of the ’802 Patent are invalid under 35 U.S.C. § 101 for the reasons stated in the Court’s ruling concerning DirecTV’s motion to dismiss.⁵⁷ Accordingly, the Court construes this limitation in light of the ’759 and ’539 Patents. To place this limitation in context, the ’759 and ’539 Patent specifications each include similar language stating that:

Generally, these broadband cable splitters . . . distribute downstream signals from the POE to various *terminals (also known as nodes)* . . .⁵⁸

This limitation is closely tied to the dispute over the meaning of “broadband cable network.” Defendants argue that Entropic is seeking to use “node” to confine the claims to a single home or building, similar to how Entropic proposed to construe a broadband cable network.⁵⁹ Entropic points out that the ’759 Patent claims refer to “nodes in a broadband cable network,” and not to nodes generally.⁶⁰ Claim 1 of the ’539 Patent refers to a “node across at least one channel of a coaxial network.”⁶¹

The parties’ respective proposed constructions are as follows:

Limitation at Issue:	
“node” (’759 Patent, Claims 1-3; ’539 Patent, Claim 1)	
Entropic’s Proposed Construction	Defendants’ Proposed Construction
“terminal downstream of the point of entry”	Plain and ordinary meaning.

Within the specifications themselves, the term “node” is accompanied by the location, or description, of the node being discussed. The standard construction rule requires the Court to define a term “only in a way that comports with the instrument as a whole.” *Markman* 517 U.S. 370 at 389. Entropic cannot have it both ways. Because “node” is qualified within the patent specifications themselves with location or other descriptive language, Entropic’s proposed construction would unnecessarily include an

⁵⁷ See DirecTV Order 27-30.

⁵⁸ ’759 Patent 1:56-57; *see also* ’539 Patent 1:31-39 (similar).

⁵⁹ See Defendants’ Opening Brief 12:21-24.

⁶⁰ Entropic’s Opening Brief 12:27-28.

⁶¹ ’539 Patent, Claim 1.

additional level of location or description. Here, the Court agrees with Defendants and adopts the plain and ordinary meaning of “node.”

C. Meaning of “Equalization”

The third disputed limitation appears in Claim 10 of the '249 Patent. To place this limitation in context, the entire claim is as follows:

10. A broadband local area network for transmitting modulated signals using coaxial cable building wiring containing a plurality of branches comprising:

a filter located at the point of entry of the building wiring that rejects network signals originating in the building wiring such that the rejected network signals do not pass through the filter, but rather are reflected by the filter back into all branches of the building wiring;

at least one signal splitter;

a plurality of terminal devices connected to the wiring branches, each terminal device capable of communicating with other terminal devices the reflected signal path created by the filter, wherein the terminal devices perform *equalization on the received signal that restores a flat frequency response to overcome communication channel impairments caused by the reflected signals*.⁶²

The quoted language describes and claims a function of the plurality of terminal devices. The core issue with respect to the construction of this disputed limitation is whether equalization performed by the terminal devices on the received signal “overcomes” or “eliminates” interference caused by reflected signals, in order to restore a flat frequency response. The parties’ respective proposed constructions are as follows:

⁶² '249 Patent, Claim 10 (emphasis added to show disputed claim limitation).

Limitation at Issue:	
“equalization on the received signal that restores a flat frequency response to overcome communication channel impairments caused by the reflected signals” (’249 Patent, Claim 10)	
Entropic’s Proposed Construction	Defendants’ Proposed Construction
Plain meaning, not indefinite.	equalization on the received signal that eliminates from the received signal all intersymbol interference (ISI) caused by the reflected signals

Defendants argue that Claim 10 is indefinite because it would leave the term “open-ended” and it provides “the jury no guidance on the scope of this term.”⁶³ Defendants urge the Court to replace the language “restores a flat frequency response to overcome communication channel impairments” with “eliminates from the received signal all intersymbol interference (ISI) caused by the reflected signals.”⁶⁴

At the hearing, Defendants argued that when looking at what “flat” means in the context of received signals, “equalization on the received signal” in Claim 10 requires a *perfectly* flat signal. The Court is not persuaded, and it declines to adopt a construction that requires the equalization process to result in a “perfectly flat” signal that eliminates all ISI. Further, the Court does not find the limitation to be open-ended, and it agrees with Entropic that the claim language would be understood by a person of ordinary skill in the art.⁶⁵ For those reasons, Claim 10 is not indefinite, and plain meaning applies.

D. Meaning of “Bit Loading”

Limitation at Issue:	
“bit loading is selected based on the determined channel characteristics” (’518 Patent, Claim 1)	
Entropic’s Proposed Construction	Defendants’ Proposed Construction
Plain meaning, not indefinite.	Indefinite.

⁶³ Defendants’ Responsive Brief 12:15-18.

⁶⁴ *Id.* at 12:6-13.

⁶⁵ *See* Entropic’s Responsive Brief 18:5-8.

Defendants argue that the scope of Claim 1 is indefinite because the claim does not specify who or what selects bit loading.⁶⁶ Entropic contends that the limitation is not indefinite because selecting bit loading is a network device functionality as opposed to a method step.⁶⁷

The key issue here is whether the wording of the claim leads to confusion about when that claim is infringed. *See In re Katz Interactive Call Processing Pat. Litig.*, 639 F.3d 1303, 1318 (Fed. Cir. 2011); *MasterMine Software, Inc. v. Microsoft Corp.*, 874 F.3d 1307, 1315 (Fed. Cir. 2017). A claim that “recites both a system and the method for using that system . . . does not apprise a person of ordinary skill in the art of its scope, and [] is invalid.” *H-W Tech., L.C. v. Overstock.com, Inc.*, 758 F.3d 1329, 1336 (Fed. Cir. 2014) (quoting *IPXL Holdings, L.L.C. v. Amazon.com, Inc.*, 430 F.3d 1377, 1384 (Fed. Cir. 2005)). Claims directed to “user actions” mixed with apparatus claims are typically indefinite for that reason. *See Katz*, 639 F.3d at 1318. However, claims requiring that a system merely possess the recited structure capable of performing the recited functions are not indefinite. *See MasterMine Software*, 874 F.3d at 1315–16; *see also UltimatePointer, L.L.C. v. Nintendo Co.*, 816 F.3d 816, 827 (Fed. Cir. 2016) (“Unlike *IPXL* and similar cases, the claims at issue here make clear that the ‘generating data’ limitation reflects the capability of that structure rather than the activities of the user.”). Further, the use of “active verbs” may still indicate capabilities. *MasterMine Software*, 874 F.3d at 1315.

Claim 1 is an apparatus claim directed to a “data communication network.”⁶⁸ It discloses hardware components for the network, including “at least two network devices” having various components and “cable wiring comprising a splitter.”⁶⁹ It further recites that the network devices communicate through the cable wiring and that they transmit probe messages through the cable wiring.⁷⁰ In its final wherein clause, Claim 1 discloses that “bit loading is selected based on the determined channel characteristics.”⁷¹ The claim does not expressly disclose what component or components perform the selection, but it does disclose that network devices send and receive probe messages using the cable wiring.⁷² It further discloses that the network devices analyze

⁶⁶ See Defendants’ Opening Brief 20:2-5.

⁶⁷ See Entropic’s Opening Brief 18:12-18.

⁶⁸ ’518 Patent, Claim 1.

⁶⁹ *Id.*

⁷⁰ *See id.*

⁷¹ *Id.*

⁷² *See id.*

the probe messages to determine channel characteristics and that bit loading is selected based upon the channel characteristics determined by the network devices.⁷³

The problem here is that Claim 1 does not clarify whether the network devices select the bit loading profile or whether some other component performs that operation. Within the same wherein clause, the claim discloses that the network devices transmit and analyze probe messages. The claim switches to the passive voice only when disclosing that “bit loading is selected.” Given the relationship between the channel characteristics, which the network devices determine, and the bit loading selection, Claim 1 suggests that the network devices perform the bit loading selection. Thus, despite the apparent poor drafting of this claim, the Court cannot find this limitation indefinite by clear and convincing evidence.

The specification confirms that the same network devices that transmit and receive probe messages in Claim 1 also select bit loading. “Bit loading is a method of allocating a higher order signal constellation to carriers that have higher signal to noise ratio and a lower order constellation to carriers that have lower signal to noise ratio.”⁷⁴ The specification discloses that “[i]n a symmetric channel the receiving device can determine bit loading for transmitted it [*sic*] own messages based on channel characteristics measured from a received probe message. . . . In a non-symmetric channel, the receiving device must communicate the results of the analysis, either as raw data or as a bit loading profile, back to the sending device for the sending device to modify the transmission parameters.”⁷⁵ Accordingly, the specification clarifies that the network devices that receive the probe messages select the bit loading.

For the foregoing reasons, Claim 1 is not indefinite, and plain and ordinary meaning applies.

⁷³ See *id.*

⁷⁴ *Id.* at 8:9-12; see also *id.* at 4:59-62 (“[B]it loading is applied to increase the modulation order at carriers with high signal to noise ratio.”).

⁷⁵ *Id.* at 9:50-58.

E. Meaning of “Common Bit-Loading Modulation Scheme”

Limitation at Issue:	
“a common bit-loading modulation scheme” (’759 Patent, Claims 1-3; ’450 Patent, Claim 29)	
Entropic’s Proposed Construction	Defendants’ Proposed Construction
a bit-loading modulation scheme used for simultaneous transmission to multiple nodes so that each can receive the transmission	the lowest modulation values supported by the [corresponding] channel paths

The parties agree in principle on the meaning of “common bit-loading modulation scheme,” and they point to the same portions of the specification in discussing that term. They agree that “the transmitting node receiv[es] a plurality of response signals comprising a plurality of bit-loading modulation schemes from the plurality of receiving nodes.”⁷⁶ Those schemes include only the highest modulation values supported on each carrier for each channel path.⁷⁷ Then, of those highest reported modulation values, the transmitting node determines the lowest shared value for each carrier.⁷⁸ That lowest shared value, selected from the schemes including the reported modulation values, is the common bit-loading modulation scheme.⁷⁹ In fact, Entropic summarizes, “[i]n the end, the parties appear to agree on what a common bit-loading modulation scheme is, but they disagree on the language used to describe it.”⁸⁰

Because the parties largely agree on the meaning of “common bit-loading modulation scheme,” the Court indicated in its tentative ruling that it would prefer to adopt an accurate construction that captures the parties’ shared understanding. After the hearing, the parties met and conferred, and they now agree that “common bit-loading modulation scheme” means “the resulting set of lowest modulation values for each

⁷⁶ ’450 Patent, Claim 29.

⁷⁷ See Defendants’ Responsive Brief 20:17-18; Entropic’s Responsive Brief 22:18-20.

⁷⁸ See Defendants’ Responsive Brief 20:18-22; Entropic’s Responsive Brief 22:21-28 (citing Decl. of Dr. Bertrand Hochwald Regarding Claim Construction [ECF No. 559-18] ¶ 49).

⁷⁹ See Defendants’ Responsive Brief 19:21-23 (“The resulting set of lowest modulation values for each carrier supported by both channel paths is the common bit-loading modulation scheme.”); Entropic’s Opening Brief 23:19-23 (“To ensure that both nodes can receive the same transmission, the common scheme [] uses 128 QAM for both carrier numbers 1 and 2 because that is the highest modulation value that allows a transmission to be received across both channels AB and AC.”).

⁸⁰ Entropic’s Responsive Brief 23:9-10.

carrier supported by each of the channel paths, wherein the resulting set of lowest modulation values is selected from among the highest values supported by each carrier.”⁸¹

The parties also indicate that they continue to dispute whether the “simultaneous transmission” language proposed by Entropic is appropriate.⁸² The Court declines to add the simultaneity language to its construction. In its summary of the ’759 Patent, the Court acknowledged that using a common scheme can lead to efficiency gains because it allows for the simultaneous transmission of relevant information to two different nodes.⁸³ Thus, simultaneous transmission is a desired possibility, which the common scheme enables. However, using a common scheme does not mean that all transmissions must be simultaneous.⁸⁴ The scheme merely provides information that enables that possibility.

For the foregoing reasons, “common bit-loading modulation scheme” means “the resulting set of lowest modulation values for each carrier supported by each of the channel paths, wherein the resulting set of lowest modulation values is selected from among the highest values supported by each carrier.”

F. Meaning of “Control And Data Packet”

Limitation at Issue:	
“control and data packet” “data and control packet” (’802 Patent, Claims 3 & 4)	
Entropic’s Proposed Construction	Defendants’ Proposed Construction
a packet that may contain either a control payload or a data payload	Plain and ordinary meaning.

⁸¹ Joint Status Report [ECF No. 592] 7:8-21.

⁸² See *id.* at 6-7.

⁸³ See *supra*, Part II.C.

⁸⁴ See ’759 Patent 6:45-51 (explaining that a node sending the same message to different other nodes will need to send the message twice, via two difference channels, without a common scheme); *id.* 10:53-57 (referencing common scheme information and explaining that “[t]hese signals *would be able to* transmit information from node A to node B and node C simultaneously”) (emphasis added).

Claims 3 and 4 of the '802 Patent are invalid under 35 U.S.C. § 101 for the reasons stated in the Court's ruling concerning DirecTV's motion to dismiss.⁸⁵ Accordingly, the claim construction dispute is **MOOT**.

G. Meaning of “Beacon Packet”

Limitation at Issue:	
“beacon packet” ('802 Patent, Claims 3 & 4)	
Entropic's Proposed Construction	Defendants' Proposed Construction
a type of robust packet used to provide basic timing and control information	Plain and ordinary meaning.

This issue is also **MOOT**.⁸⁶

H. Meaning of “Admission Window”

Limitation at Issue:	
“admission window” ('802 Patent, Claims 3 & 4)	
Entropic's Proposed Construction	Defendants' Proposed Construction
admission window field	Indefinite.

Once again, this issue is **MOOT**.⁸⁷

⁸⁵ See DirecTV Order 27-30.

⁸⁶ See *id.*

⁸⁷ See *id.*

I. Meaning of “Node Delay Spread”

Limitation at Issue:	
“node delay spread” (’539 Patent, Claim 1)	
Entropic’s Proposed Construction	Defendants’ Proposed Construction
Plain meaning, not indefinite.	the difference in the amount of delay encountered by different components of the same signal due to the various frequencies that make up the signal used to communication the echo probe

For the reasons stated below concerning the “optimizing” limitation, the Court finds Claim 1 of the ’539 Patent indefinite. The claim construction issue is thus **MOOT**.

J. Meaning of “Optimizing”

Limitation at Issue:	
“optimizing the preamble and cyclic prefix requirements or other parameters” (’539 Patent, Claim 1)	
Entropic’s Proposed Construction	Defendants’ Proposed Construction
See “other parameters”; otherwise, plain meaning, not indefinite	Indefinite.

Defendants argue that this limitation is indefinite for three reasons: (1) “optimizing” is a subjective term of degree lacking any objective bounds; (2) “other parameters” lacks any bounds; and (3) the claim does not clearly disclose which parameters must be optimized.⁸⁸

“[A] patent’s claims, viewed in light of the specification and prosecution history, [must] inform those skilled in the art about the scope of the invention with reasonable certainty.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 910 (2014). Terms of degree, such as “optimizing,” are not *per se* indefinite. See *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1370 (Fed. Cir. 2014). Such terms can be definite when they provide a person having ordinary skill in the art with sufficient certainty regarding the scope of the claimed invention. See *Intellectual Ventures I, LLC v T-Mobile USA, Inc.*, 902 F.3d 1372, 1381 (Fed. Cir. 2018). “[P]urely subjective” terms of degree, which leave the

⁸⁸ See Defendants’ Opening Brief 36:20-42:7.

scope of the claim entirely up to user discretion, are indefinite. *Id.* (citing *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1350-51 (Fed. Cir. 2005)).

Claim 1 discloses a modem having “a MAC layer in signal communication with [a] transmitter.”⁸⁹ It further discloses that the MAC layer “us[es] at least one probe packet as an echo profile probe to measure node delay spread on the network” and that the MAC layer “optimiz[es] the preamble and cyclic prefix requirements or other parameters in response to the measured node delay spread.”⁹⁰ For the reasons explained below, the Court concludes that Claim 1 is indefinite.

First, the specification provides insufficient guidance regarding the meaning of “optimizing.” Claim 1 discloses that (1) the MAC layer performs the optimizing; (2) the preamble and cyclic prefix or other requirements are optimized; and (3) the MAC layer optimizes those parameters in response to measured node delay spread. Although the claim discloses context for the optimization, it does not explain in any way what kind of parameter adjustment or selection would be optimal. The written description provides no additional guidance. For instance, it suggests that the length of the cyclic prefix is adjustable, but it does not explain what type of adjustment would be optimal.⁹¹ Similarly, Figure 22 shows an example implementation of a communication system with “important example parameters,” but it does not indicate that those example parameters are optimal in the way that Claim 1 requires.⁹² Further, it would be improper to limit optimal parameters to the parameters and corresponding values disclosed in that example. Accordingly, because the specification does not provide any guidance regarding what is “optimal,” this limitation is indefinite.

At the hearing, Entropic argued that a person having skill in the art would understand what is optimal in this context and that the specification need not expressly explain which adjustments are optimal. That argument does not suffice. Although a person having skill in the art may have some idea about how to adjust parameters to achieve particular results, there may be tradeoffs depending on the parameters selected and the types of adjustments made. Thus, without guidance from the specification, the scope of “optimizing” remains uncertain.

Second, the specification offers limited guidance concerning the “other parameters.” The specification discloses “Channel Estimation (‘CE’) construction.”⁹³

⁸⁹ ’539 Patent, Claim 1.

⁹⁰ *Id.*

⁹¹ *See id.* at 14:13-15; *see also id.* at 16:5-7.

⁹² *Id.*, Fig. 22 & 16:19-23.

⁹³ *Id.* at 16:4-5.

It further discloses that the “Channel Estimate section consists of a variable length (0-256 samples) cyclic prefix.”⁹⁴ However, given that the CE “consists of” the cyclic prefix, it is unclear how that disclosure indicates the scope of “other parameters” beyond the preamble and cyclic prefix. Rather, it appears that that disclosure is merely a specialized type of cyclic prefix. The claim already separately lists the cyclic prefix as a parameter to be optimized. As discussed below, the grammatical structure of the claim suggests that the cyclic prefix is not included among the “other parameters.” Accordingly, no meaningful example of “other parameters” appears in the specification. The parameters would be limited to those affected by node delay spread at the MAC layer; however, the universe of parameters fitting those requirements is still unbounded. In fact, Defendants’ expert speculated that there may be “an infinite number” of parameters meeting those requirements.⁹⁵ Thus, because the meaning of “other parameters” is unclear and unbounded, the Court finds this claim limitation indefinite.

That said, the Court does not regard the grammatical structure of the claim so ambiguous that the scope of the claim is indefinite. Claim 1 discloses “optimizing the preamble and cyclic prefix requirements or other parameters.”⁹⁶ Entropic argues that that means optimizing either the preamble and cyclic prefix requirements or optimizing other parameters.⁹⁷ Defendants contend that that claim language leaves “optimizing” open to several possible combinations of the preamble, the cyclic prefix, or other parameters.⁹⁸ The structure of the claim language supports Entropic’s interpretation. The claim discloses optimizing the preamble and cyclic prefix requirements—plural. Thus, the preamble and cyclic prefix requirements must both be optimized. It then separately discloses “or other parameters.” That disclosure suggests that optimizing the other parameters is an alternative to optimizing the preamble and cyclic prefix. The plural “requirements” suggests that the preamble and cyclic prefix must both be optimized. If they could be optimized separately, then the singular form “requirement” would have been used. Accordingly, the Court does not find the grammatical argument persuasive. However, for the other two reasons discussed above, Claim 1 is invalid as indefinite.

⁹⁴ *Id.* at 16:6-7.

⁹⁵ *See* Defendant’s Opening Brief, Ex. 18 (Decl. of Dr. Krista S. Jacobsen Regarding Claim Construction) [ECF No. 558-19] ¶ 162.

⁹⁶ ’539 Patent, Claim 1.

⁹⁷ *See* Entropic’s Responsive Brief 39:3-5.

⁹⁸ *See* Defendants’ Responsive Brief 36:14-23.

K. Meaning of “Network Coordinator (NC) Node”

Limitation at Issue:	
“Network Coordinator (NC) node” (’213 Patent, all Claims; ’422 Patent, Claims 1-4 and 6)	
Entropic’s Proposed Construction	Defendants’ Proposed Construction
a node dynamically assigned to coordinate communication on a network	Plain and ordinary meaning.

The ’213 and ’422 Patents are invalid under 35 U.S.C. § 101 for the reasons stated in the Court’s ruling concerning Cox’s motion for judgment on the pleadings.⁹⁹

L. Meaning of “Cost”

Limitation at Issue:	
“cost” (’213 Patent, Claims 5 and 7)	
Entropic’s Proposed Construction	Defendants’ Proposed Construction
a measure of the specific bandwidth required to support a given PQoS flow	Plain and ordinary meaning.

This issue is **MOOT**.¹⁰⁰

M. Meaning of “Arrival Time”

Limitation at Issue:	
“schedule arrival clock time” (’681 Patent, Claim 1)	
Entropic’s Proposed Construction	Defendants’ Proposed Construction
Scheduled time at which the second node is to transmit the second packet to the first node	Plain and ordinary meaning.

⁹⁹ See generally Order Granting Cox’s Rule 12(c) Motion for Invalidity Under 35 U.S.C. § 101 [ECF No. 574].

¹⁰⁰ See generally *id.*

Claim 1 of the '681 Patent is invalid under 35 U.S.C. § 101 for the reasons stated in the Court's ruling concerning DirecTV's motion to dismiss.¹⁰¹

VI. DISPOSITION

For the foregoing reasons, the Court hereby **ORDERS** as follows:

1. The disputed limitations are **CONSTRUED** as follows:

Limitation	Construction
"broadband cable network"/"coaxial network"/"Broadband Coaxial Network (BCN)" ('759 Patent, Claims 1-3; '539 Patent, Claim 1; '450 Patent, Claims 29-33)	Plain and ordinary meaning, with the scope of "network" meaning "the system of coaxial cable wiring that stems from an initial 'point of entry' to its furthestmost downstream point of reach."
"node" ('759 Patent, Claims 1-3; '539 Patent, Claim 1)	Plain and ordinary meaning.
"equalization on the received signal that restores a flat frequency response to overcome communication channel impairments caused by the reflected signals" ('249 Patent, Claim 10)	Plain and ordinary meaning. Not indefinite.
"bit loading is selected based on the determined channel characteristics" ('518 Patent, Claim 1)	Plain and ordinary meaning. Not indefinite.
"a common bit-loading modulation scheme" ('759 Patent, Claims 1-3; '450 Patent, Claim 29)	"the resulting set of lowest modulation values for each carrier supported by each of the channel paths, wherein the resulting set of lowest modulation values is selected from among the highest values supported by each carrier"

¹⁰¹ See DirecTV Order 14-20.

Limitation	Construction
“control and data packet” “data and control packet” (’802 Patent, Claims 3 & 4)	Moot in view of invalidity ruling.
“beacon packet” (’802 Patent, Claims 3 & 4)	Moot in view of invalidity ruling.
“admission window” (’802 Patent, Claims 3 & 4)	Moot in view of invalidity ruling.
“node delay spread” (’539 Patent, Claim 1)	Moot in view of indefiniteness finding.
“optimizing the preamble and cyclic prefix requirements or other parameters” (’539 Patent, Claim 1)	Indefinite.
“Network Coordinator (NC) node” (’213 Patent, all Claims; ’422 Patent, Claims 1-4 and 6)	Moot in view of invalidity ruling.
“cost” (’213 Patent, Claims 5 and 7)	Moot in view of invalidity ruling.
“schedule arrival clock time” (’681 Patent, Claim 1)	Moot in view of invalidity ruling.

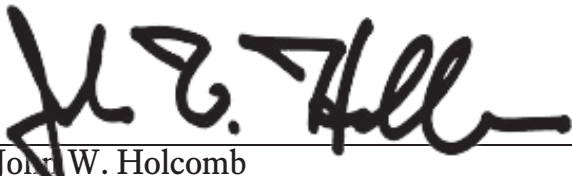
2. The parties’ agreed upon constructions are **ADOPTED** as follows:

Limitation	Agreed Construction
“response signal” (’759 Patent, Claims 1-3; ’450 Patent, Claim 29)	“signal transmitted in response to the probe signal”
“MAC layer” (’539 Patent, Claims 1, 4, & 7)	Plain and ordinary meaning.
“each terminal device capable of communicating with other terminal devices the reflected signal path created by the filter” (’249 Patent, Claim 10)	“each terminal device capable of communication with other terminal devices using the reflected signal path created by the filter”

Limitation	Agreed Construction
Preamble ('249 Patent, Claim 10; '759 Patent, Claims 1-3; '539 Patent, Claim 1; '450 Patent, Claim 29)	Limiting.

IT IS SO ORDERED.

Dated: April 17, 2025



John W. Holcomb
UNITED STATES DISTRICT JUDGE