

The '759 patent is directed to a method for providing asymmetric modulation in wireless communications systems. The '323 patent is directed towards a method for conserving power in communications systems.

The **abstract of the '759 patent** states:

One embodiment of the system and method provides asymmetric adaptive modulation which allows uplink and downlink subframes of data to be transmitted between a base station and a CPE with different modulation schemes, thus increasing the efficiency of downlink transmissions while maintaining the stability of uplink transmissions. In systems with multiple CPEs, each CPE and base station pair can independently select their uplink and downlink modulation techniques. The system and method are also adaptive in that they adjust the modulation schemes based on, for example, signal to noise ratio measurements or bit error rate measurements.

Claim 1 of the '759 patent is reproduced below:

A wireless communication system for determining a plurality of uplink modulation schemes and a plurality of downlink modulation schemes for use in a wireless communication system including a base station and a plurality of customer premises equipment (CPE), where each of the plurality of uplink and downlink modulation schemes used by each of the plurality of CPE can be asymmetric, such that the uplink modulation scheme may be different than the downlink modulation scheme, the system comprising:

a plurality of CPE, each including a first modem configured to measure a first link quality based on received downlink data;

a base station having a second modem configured to measure a second link quality for each of the plurality of CPE based on received uplink data;

a first processor configured to receive the first link quality and determine a downlink modulation scheme for each of the plurality of CPE; and

a second processor configured to receive the second link quality and determine an uplink modulation scheme for each of the plurality of CPE.

The **abstract of the '323 patent** states:

Methods and apparatus for conserving power in terminal units that transmit and receive modulated data over a communications loop that is shared with voiceband

telephone equipment are disclosed. The methods include monitoring the loop to detect a shut-down condition and reducing power consumption of certain of the electronic circuits in the terminal unit upon detection of a shut-down condition. The methods also include monitoring the loop with a monitoring circuit to detect a resume signal outside the voiceband frequency range on the loop and restoring power to the electronic circuits when the resume signal is detected. The apparatuses include a modulated data transmitting and receiving unit having a connector for coupling the unit to a communications loop, circuitry to transmit and receive a modulated data signal in a frequency range above voiceband, and circuitry to detect a resume signal in the frequency range above voiceband and then to initiate a power up sequence for the transmit and receive circuitry.

Claim 1 of the '323 patent is reproduced below:

A method of conserving power in a terminal unit having a transmitter and receiver for modulated data communication over a communications loop, comprising:

monitoring the loop to detect a shut-down condition;

reducing power consumption of demodulation circuitry in the terminal unit upon detection of a shut-down condition;

monitoring the loop with a monitoring circuit to detect a resume signal that is not a modulated data signal and that is outside the voiceband frequency range on the loop; and

activating demodulation circuitry when the resume signal is detected.

III. GENERAL PRINCIPLES GOVERNING CLAIM CONSTRUCTION

“A claim in a patent provides the metes and bounds of the right which the patent confers on the patentee to exclude others from making, using or selling the protected invention.” *Burke, Inc. v. Bruno Indep. Living Aids, Inc.*, 183 F.3d 1334, 1340 (Fed. Cir. 1999). Claim construction is an issue of law for the court to decide. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 970-71 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370 (1996).

To ascertain the meaning of claims, the Court looks to three primary sources: the claims, the specification, and the prosecution history. *Markman*, 52 F.3d at 979. The specification must

contain a written description of the invention that enables one of ordinary skill in the art to make and use the invention. *Id.* A patent's claims must be read in view of the specification, of which they are a part. *Id.* For claim construction purposes, the description may act as a sort of dictionary, which explains the invention and may define terms used in the claims. *Id.* "One purpose for examining the specification is to determine if the patentee has limited the scope of the claims." *Watts v. XL Sys., Inc.*, 232 F.3d 877, 882 (Fed. Cir. 2000).

Nonetheless, it is the function of the claims, not the specification, to set forth the limits of the patentee's invention. Otherwise, there would be no need for claims. *SRI Int'l v. Matsushita Elec. Corp.*, 775 F.2d 1107, 1121 (Fed. Cir. 1985) (en banc). The patentee is free to be his own lexicographer, but any special definition given to a word must be clearly set forth in the specification. *Intellicall, Inc. v. Phonometrics, Inc.*, 952 F.2d 1384, 1388 (Fed. Cir. 1992). Although the specification may indicate that certain embodiments are preferred, particular embodiments appearing in the specification will not be read into the claims when the claim language is broader than the embodiments. *Electro Med. Sys., S.A. v. Cooper Life Sciences, Inc.*, 34 F.3d 1048, 1054 (Fed. Cir. 1994).

This Court's claim construction decision must be informed by the Federal Circuit's decision in *Phillips v. AWH Corporation*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). In *Phillips*, the court set forth several guideposts that courts should follow when construing claims. In particular, the court reiterated that "the *claims* of a patent define the invention to which the patentee is entitled the right to exclude." 415 F.3d at 1312 (emphasis added) (*quoting Innova/Pure Water, Inc. v. Safari Water Filtration Systems, Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). To that end, the words used in a claim are generally given their ordinary and customary

meaning. *Id.* 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.” *Id.* at 1313. This principle of patent law flows naturally from the recognition that inventors are usually persons who are skilled in the field of the invention and that patents are addressed to and intended to be read by others skilled in the particular art. *Id.*

The primacy of claim terms notwithstanding, *Phillips* made clear that “the 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.* Although the claims themselves may provide guidance as to the meaning of particular terms, those terms are part of “a fully integrated written instrument.” *Id.* at 1315, quoting *Markman*, 52 F.3d at 978. Thus, the *Phillips* court emphasized the specification as being the primary basis for construing the claims. *Id.* at 1314-17. As the Supreme Court stated long ago, “in case of doubt or ambiguity it is proper in all cases to refer back to the descriptive portions of the specification to aid in solving the doubt or in ascertaining the true intent and meaning of the language employed in the claims.” *Bates v. Coe*, 98 U.S. 31, 38 (1878). In addressing the role of the specification, the *Phillips* court quoted with approval its earlier observations from *Renishaw PLC v. Marposs Societa’ per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998):

Ultimately, the interpretation to be given a term can only be determined and confirmed with a full understanding of what the inventors actually invented and intended to envelop with the claim. The construction that stays true to the claim language and most naturally aligns with the patent’s description of the invention will be, in the end, the correct construction.

Phillips, 415 F.3d at 1316. Consequently, *Phillips* emphasized the important role the specification plays in the claim construction process.

The prosecution history also continues to play an important role in claim interpretation. Like the specification, the prosecution history helps to demonstrate how the inventor and the PTO understood the patent. *Id.* at 1317. Because the file history, however, “represents an ongoing negotiation between the PTO and the applicant,” it may lack the clarity of the specification and thus be less useful in claim construction proceedings. *Id.* Nevertheless, the prosecution history is intrinsic evidence that is relevant to the determination of how the inventor understood the invention and whether the inventor limited the invention during prosecution by narrowing the scope of the claims. *Id.*

Phillips rejected any claim construction approach that sacrificed the intrinsic record in favor of extrinsic evidence, such as dictionary definitions or expert testimony. The *en banc* court condemned the suggestion made by *Texas Digital Systems, Inc. v. Telegenix, Inc.*, 308 F.3d 1193 (Fed. Cir. 2002), that a court should discern the ordinary meaning of the claim terms (through dictionaries or otherwise) before resorting to the specification for certain limited purposes. *Phillips*, 415 F.3d at 1319-24. The approach suggested by *Texas Digital*—the assignment of a limited role to the specification—was rejected as inconsistent with decisions holding the specification to be the best guide to the meaning of a disputed term. *Id.* at 1320-21. According to *Phillips*, reliance on dictionary definitions at the expense of the specification had the effect of “focus[ing] the inquiry on the abstract meaning of words rather than on the meaning of claim terms within the context of the patent.” *Id.* at 1321. *Phillips* emphasized that the patent system is based on the proposition that the claims cover only the invented subject matter. *Id.* What is

described in the claims flows from the statutory requirement imposed on the patentee to describe and particularly claim what he or she has invented. *Id.* The definitions found in dictionaries, however, often flow from the editors' objective of assembling all of the possible definitions for a word. *Id.* at 1321-22.

Phillips does not preclude all uses of dictionaries in claim construction proceedings. Instead, the court assigned dictionaries a role subordinate to the intrinsic record. In doing so, the court emphasized that claim construction issues are not resolved by any magic formula. The court did not impose any particular sequence of steps for a court to follow when it considers disputed claim language. *Id.* at 1323-25. Rather, *Phillips* held that a court must attach the appropriate weight to the intrinsic sources offered in support of a proposed claim construction, bearing in mind the general rule that the claims measure the scope of the patent grant.

IV. AGREED CONSTRUCTIONS

Based upon the joint submission of claim construction charts and subsequent arguments in briefing and at the hearing, the following terms of the patent have been agreed to by the parties and are therefore adopted by the Court:

Claim Terms in '759 Patent	Agreed Construction
"downlink modulation scheme"	"a modulation scheme for use in a downlink"
"uplink modulation scheme"	"a modulation scheme for use in an uplink"
"downlink"	"a communication link from a base station to a CPE"
"uplink"	"a communication link from a CPE to a base station"

Claim Terms in '323 Patent	Agreed Construction
"communications loop" / "loop"	"wire that exists between units"
"not a modulated data signal"	"not a signal conveying data through variation of amplitude, frequency, and/or phase"

V. TERMS IN DISPUTE OF THE '759 PATENT

1. "base station"

Claim Term/Claim Language	Plaintiff's Proposed Construction	Defendants' Proposed Construction
<p>"<i>base station</i>"</p> <p>[claims 1, 3-4, 10-12, 15-16, 19, 24-26]</p> <p>"1. A wireless communication system . . . comprising:</p> <p>. . .</p> <p>a <i>base station</i> having a second modem configured to measure a second link quality for each of the plurality of CPE based on received uplink data"</p>	<p>"equipment in a wireless communication system that transmits data to a CPE"</p> <p>Plaintiff also offered a revised construction at the hearing which reads: "a station in a wireless communication system that facilitates communication between a fixed network infrastructure and at least one CPE"</p>	<p>"fixed station in a wireless communication system that relays data between a fixed network infrastructure and at least one CPE"</p>

The Court construes "base station" as "equipment in a wireless communication system that transmits data to and/or receives data from a CPE."

A. Parties' Construction Arguments

Plaintiff's original proposed construction seeks "base station" to be construed as "equipment in a wireless communication system that transmits data to a CPE." Plaintiff argues there is language in the specification that supports the "transmits" language. *See* '759 patent, 2:46-47. At the hearing Plaintiff also proposed a revised construction that reads "a station in a wireless communication system that facilitates communication between a fixed network infrastructure and at least one CPE." Plaintiff provided no briefing on the revised construction, but Plaintiff argued at the hearing that Plaintiff's revised construction is an attempt to bring Plaintiff's construction closer to Defendants' proposed construction in order to focus the Court on the real disputes between the parties.

Defendants seek a construction of “base station” as a “fixed station in a wireless communication system that relays data between a fixed network infrastructure and at least one CPE.” Defendants ask the Court to require that the base station be “fixed.” For support, Defendants cite to technical dictionaries to show one of ordinary skill in the art would have known that base stations were fixed stations at the time of the filing of the ‘759 patent. Defendants also point out that the ‘759 patent incorporates U.S. Patent No. 6,016,311 (filed Nov. 19, 1997) (the ‘311 patent) by reference, and the ‘311 patent shows base stations in fixed locations. *See, e.g.*, ‘311 patent, Figure 4. Defendants’ construction additionally requires the fixed station to “relay” data between a fixed network infrastructure and at least one CPE. Defendants’ argument relies on the figures and the specification of the ‘311 patent that show the base station communicating with both the CPEs on one end and network infrastructure on the other end. *Id.*

B. Analysis

The Court construes the term “base station” as “equipment in a wireless communication system that transmits data to and/or receives data from a CPE.” While the Court mostly agrees with Plaintiff’s original construction that reads “equipment in a wireless communication system that transmits data to a CPE,” the Court believes it is incomplete because it only requires that the base station transmit data to a CPE. Plaintiff supports its construction with the ‘759 patent specification that describes a method for use in a wireless communication system involving “data transmitted by the base station and subsequently received by the CPE.” ‘759 patent, 2:46-47. But the base station does not only transmit data to the CPEs, it also receives data from the CPEs. *See, e.g.*, ‘759 patent, 2:19-22 (“a base station having a second modem configured to measure a

second link quality for each of the plurality of CPE based on received uplink data”); ‘759 patent, 2:38-39 (“data transmitted by a CPE and received by a base station”). Therefore, the Court adds the “receives” language to Plaintiff’s construction. The Court’s construction is strongly grounded in the intrinsic record. *See, e.g.*, ‘759 patent, 2:52-55 (“receiving a request for the second downlink modulation scheme at the base station, transmitting a third frame of data by the base station to the CPE”); ‘759 patent, 3:38-40 (“a system where three CPEs . . . are receiving and transmitting data with the base station”); ‘759 patent, 7:27-29 (“The downlink subframe 302 is used by the base station 102 to transmit information to the plurality of CPEs.”). The Court adds the qualification “and/or” to reflect the fact that the specification does not require the base station to both transmit and receive at all times, as in some instances, for example, the specification only discusses the base station transmitting data to the CPEs. *See* ‘759 patent, 7:27-29 (“The downlink subframe 302 is used by the base station 102 to transmit information to the plurality of CPEs.”).

Defendants’ construction is problematic because it imposes an additional limitation that the base station be fixed. “[U]nless required by the specification, limitations that do not otherwise appear in the claims should not be imported into the claims.” *N. Am. Container, Inc. v. Plastipak Packaging, Inc.*, 415 F.3d 1335, 1348 (Fed. Cir. 2005). The Court concludes that the ‘759 patent never limits the base station to a fixed base station, and to the extent Defendants are arguing that base stations are fixed under the ordinary and customary meaning of that term, the Court disagrees. Nowhere in the ‘759 patent does the inventor limit the base station to a fixed base station. Defendants point out the ‘311 patent that is incorporated by reference in the ‘759 patent, but the ‘759 patent states that the ‘311 patent is merely “[o]ne exemplary broadband

wireless communications system.” ‘759 patent, 3:29-34. So the ‘311 patent illustrates a preferred embodiment at best, and it is incorrect for the Court to read in a limitation from a preferred embodiment. *Phillips*, 415 F.3d at 1323 (“although the specification often describes very specific embodiments of the invention, we have repeatedly warned against confining the claims to those embodiments”). In addition, while the ‘311 patent clearly shows base stations that are fixed, the ‘311 patent never explicitly limits or defines base stations as being fixed. Finally, as Plaintiff points out, one of ordinary skill in the art would have known at the time the ‘759 patent was filed that having mobile base stations was possible. *See, e.g.*, European Patent 0936829A2 (filed Aug. 31, 1998) (describing “mobile base stations”); Patent Cooperation Treaty (PCT) WO 00/36858 (filed Nov. 30, 1999) (describing “mobile base stations”). Thus, contrary to Defendants’ argument, the ordinary and customary meaning of base station at the time of the filing of the ‘759 patent did not require the base stations be fixed.

The Court also disagrees with Defendants’ construction as it requires the base station to “relay[] data between a fixed network infrastructure and at least one CPE.” The “relay” language does not appear anywhere in the ‘759 patent, and it is unclear what exactly it means to “relay.” In any event, the relationship between the base station and the fixed network infrastructure is not the focus of this invention. The Court “cannot look at the ordinary meaning of a term . . . in a vacuum . . . [r]ather, we must look at the ordinary meaning in the context of the written description and the prosecution history.” *Medrad, Inc. v. MRI Devices Corp.*, 401 F.3d 1319 (Fed. Cir. 2005) (internal quotations omitted). The patent’s written description only briefly mentions the fixed network infrastructure—merely to note its existence—when describing the prior art. *See* ‘759 patent, 1:13-23 (“A wireless communication system facilitates two-way

communication between a plurality of subscriber radio stations or subscriber units (fixed and portable) and a fixed network infrastructure The key objective of these wireless communication systems is to provide communication channels on demand between a plurality of subscriber units and their respective base stations in order to connect a subscriber unit user with the fixed network infrastructure.”). The patentee’s invention, as described in the patent, clearly pertains to the relationship between the base station and the CPEs and not any relationship with fixed network infrastructure. *See, e.g.*, ‘759 patent, FIG. 1 (showing the exemplary wireless communication system that only includes the base station and the CPEs); ‘759 patent, FIGs. 6a and 6b (describing the invention and focusing only on the relationship between the base station and the CPE). Therefore, it is not necessary to include the relationship between the base station and the fixed network infrastructure because it is not a key part of the invention and consequently it will not be helpful to the jury.

Finally, Plaintiff offered a revised construction at the hearing, but Plaintiff’s revised construction suffers the same flaws as Defendants’ proposed construction. Plaintiff’s revised construction uses the language “facilitates,” yet there is not sufficient grounding in the specification for that language as there is for the “transmits and receives” language. The “facilitate” language is only used when describing the prior art in the beginning of the specification. *See* ‘759 patent, 1:45-47 (“These broadband networks facilitate two-way communication between a base station and a plurality of fixed subscriber units.”). But as noted above, the “transmits and receives” language is located throughout the specification and the claims, so that language is better grounded in the intrinsic record. In addition, as mentioned when discussing Defendants’ proposed construction, the Court does not find it necessary to

mention the relationship with the fixed network infrastructure because the present invention concerns the relationship between the base station and the CPEs. Therefore, as noted above, the Court construes the term “base station” as “equipment in a wireless communication system that transmits data to and/or receives data from a CPE.”

2. “CPE” (customer premises equipment)

Claim Term/Claim Language	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p>“CPE” [claims 1-3, 10-11, 15-16, 19, 24-27] “1. A wireless communication system . . . comprising: . . . a base station having a second modem configured to measure a second link quality for each of the plurality of CPE based on received uplink data . . .”</p>	<p>“equipment in a wireless communication system that transmits data to a base station” Plaintiff also offered a revised construction at the hearing which reads: “equipment in a wireless communication system that facilitates communication between a base station and at least one end user”</p>	<p>“equipment installed at a customer premises that relays data between a base station and end users”</p>

The Court construes “CPE” (or customer premises equipment) as “customer side equipment in a wireless communication system that transmits data to and/or receives data from a base station.” This construction is similar to the construction of base station, as the base station and the CPE are related.

A. Parties’ Construction Arguments

Plaintiff’s original proposed construction reads “equipment in a wireless communication system that transmits data to a base station.” Plaintiff’s rationale for its original construction of “CPE” is essentially the same as its rationale for its construction of “base station.” Plaintiff’s

revised proposed construction reads “equipment in a wireless communication system that facilitates communication between a base station and at least one end user.” Plaintiff’s revised construction is similar to Plaintiff’s revised construction of “base station” as well, and Plaintiff provides essentially the same support for the construction of “CPE” as Plaintiff did for “base station.”

Defendants seek a construction that reads “equipment installed at a customer premises that relays data between a base station and end users.” Defendants first argue that “CPE” (or customer premises equipment) must be installed at a customer premises. For support, Defendants first provide technical dictionary definitions that show one of ordinary skill in the art at the time of filing would have known the CPE must be installed at a customer premises. As with Defendants’ argument for “base station,” Defendants also argue the ‘311 patent (incorporated by reference in the patent-in-suit) explicitly shows the CPE being installed at the customer premises. *See* ‘311 patent, Figure 7. Defendants also ask the Court to construe CPE as requiring the CPE to “relay[] data between a base station and end users.” Defendants’ argument here cites to the specification where it states that the CPE is coupled to end users in addition to the base station. *See, e.g.*, ‘759 patent, 4:13-14 (“Each CPE is further coupled to a plurality of end users . . .”).

B. Analysis

The Court construes “CPE” as “customer side equipment in a wireless communication system that transmits data to and/or receives data from a base station.” As with “base station,” the Court primarily agrees with Plaintiff’s original construction, but the Court has made changes. For the same reasons as the Court’s construction of “base station,” the Court adds the “receives”

language. Furthermore, the Court adds the language “customer side” to the beginning of Plaintiff’s original construction. The Court concludes that merely stating “equipment” is not sufficient because it would fail to give effect to the “customer premises” language in the actual claim term.

However, the Court disagrees with Defendants that the equipment must be installed at a customer premises. While the term does plainly read customer “premises” equipment, the specification shows that the equipment need not be installed at the customer premises. The specification never limits the CPEs to being installed at the customer’s premises. Indeed, the specification mentions “fixed and portable” subscriber units and the specification also discusses “mobile cellular telephone systems,” which would clearly not be installed at the customer premises. *See* ‘759 patent, 1:15-20. While the 311’ patent (incorporated by reference) may show the CPEs installed at the customer premises, the 311’ patent is merely “[o]ne exemplary broadband wireless communication system” and thus only a preferred embodiment. *See* ‘759 patent, 3:28-34. *See also Phillips*, 415 F.3d at 1323 (“although the specification often describes very specific embodiments of the invention, we have repeatedly warned against confining the claims to those embodiments”). The Court additionally disagrees with the Defendants’ proposed construction language that requires the “CPE” to “relay[] data between a base station and end users.” As with the Court’s construction of “base station,” the Court believes that while there is a relationship with the CPE and end users that is briefly mentioned in the specification, the invention here refers to the relationship with the base station and the CPE. Hence, the relationship with end users is not necessary to include in the construction of “CPE.”

Finally, the Court disagrees again with Plaintiff’s revised construction for the same

reasons the Court disagreed with Plaintiff's revised construction of "base station." The "facilitates" language is not grounded in the specification as the "transmits and receives" language. Further, the Court concludes it is not necessary to include the relationship between the end users and the CPE. Therefore, the Court construes "CPE" as "customer side equipment in a wireless communication system that transmits data to and/or receives data from a base station."

3. “receive/determine” elements

Claim Term/Claim Language	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p><i>“receive the first link quality and determine a downlink modulation scheme”</i></p> <p>[claims 1, 10]</p>	<p>No construction necessary for the entire phrase. Construction is only necessary for the underlying terms in dispute (i.e., “first link quality,” “downlink modulation scheme,” and “modulation scheme”). The disputed individual terms are discussed below.</p>	<p>“determine a downlink modulation scheme using the first link quality measured by the first modem and received by the first processor”</p>
<p><i>“receive the second link quality and determine the uplink modulation scheme”</i></p> <p>[claims 1, 10]</p>	<p>No construction necessary for the entire phrase. Construction is only necessary for the underlying terms in dispute (i.e., “second link quality,” “uplink modulation scheme,” and “modulation scheme”). The disputed individual terms are discussed below.</p>	<p>“determine an uplink modulation scheme using the second link quality measured by the second modem and received by the second processor”</p>
<p><i>“receive each quality value from the plurality of CPEs and determine a modulation scheme”</i></p> <p>[claim 11]</p>	<p>No construction necessary for the entire phrase. Construction is only necessary for the underlying terms in dispute (i.e., “quality value,” “modulation scheme”). The disputed individual terms are discussed below.</p>	<p>“determine a modulation scheme using each quality value measured by the first modem and received from the plurality of CPEs”</p>
<p><i>“receive the first downlink quality from the plurality of CPEs and determine a downlink modulation scheme”</i></p> <p>[claim 16]</p>	<p>No construction necessary for the entire phrase. Construction is only necessary for the underlying terms in dispute (i.e., “first link quality,” “downlink modulation scheme,” and “modulation scheme”). The disputed individual terms are discussed below.</p>	<p>“determine a downlink modulation scheme using the first downlink quality measured by the first modem and received from the plurality of CPEs”</p>

The Court agrees with Plaintiff that the entire “receive/determine” phase does not need construction. The specific terms (e.g., “first link quality,” “modulation scheme”) that require construction are discussed individually in later portions of this order.

A. Parties' Construction Arguments

Plaintiff argues the phrases above do not require construction because most of the terms comport with the widely accepted meaning of commonly understood words. Defendants argue the phrases need construction. Defendants, for example, would have the Court construe “receive the first link quality and determine a downlink modulation scheme” as “determine a downlink modulation scheme using the first link quality measured by the first modem and received by the first processor.” Hence, Defendants’ construction mainly seeks to rearrange the order of the “receive” and “determine” language and add the “using” limitation in the construction. Defendants argue the “fundamental principle” of the alleged invention in the ‘759 patent is that modulation schemes are determined “using” the link quality measurements. (Dkt. No. 600, at 15.) While Defendants provide nearly two pages of citations to the specification to support Defendants’ construction, (Dkt. No. 600, at 16-18), the specification language cited by Defendants does not clearly support the language used by Defendants. The specification language closest to supporting Defendants is when it states the modulation scheme is adjusted “based on” the quality measurements. *See* ‘759 patent, 11:18-23.

B. Analysis

The Court agrees with Plaintiff that the entire “receive/determine” phrases do not require construction—the specific terms within these phrases that need construction are construed below in this claim construction order. Defendants’ proposed construction is flawed for three reasons. First, Defendants cannot identify sufficient support in the intrinsic record for the “using” limitation and there is no evidence the patentee intended the scope to be so limited. The closest evidence in the record is the “based on” language noted above, (‘759 patent, 11:18-23), but being

“based on” the quality measurements is not the same as “using” the quality measurements. So at best, Defendants are trying to import a preferred embodiment into the claim language, but nonetheless, Defendants have not pointed to a single embodiment that has the “using” limitation. Second, Defendants are improperly repeating limitations found elsewhere in the claim—Defendants repeat the limitation that the “first link quality” be “measured by the first modem,” which is specifically addressed as an earlier claim element, for example, in claim 1. ‘759 patent, 14:56-15:9. Third, Defendants are reversing the order of the “receive” and “determine” clauses and changing the verb “receive” to “received” in order to impose a temporal limitation in the claim. Defendants cannot find support in the specification for this temporal limitation. Therefore, the Court agrees with Plaintiff that the entire phrase that recites the “receive” and “determine” elements does not need construction. The specific terms in those phrases that need construction are construed below in this claim construction order, so the entire phrases themselves will be understandable to a jury whenever the individual disputed terms are construed by the Court.

4. “modulation scheme”

Claim Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p>“<i>modulation scheme</i>”</p> <p>[claims 1, 10-12, 15-16, 19, 24-25]</p> <p>For example, in claim 1: “a first processor configured to receive the first link quality and determine a downlink <i>modulation scheme</i> for each of the plurality of CPE”</p>	<p>“a technique by which a modulator converts digital data into a modulated analog signal and a demodulator converts the modulated analog signal back to digital data”</p>	<p>“a method of converting digital data to an analog signal and converting it back to its original form”</p>

The Court construes “modulation scheme” as “a technique by which digital data is converted into modulated analog signal and the modulated analog signal is converted back to demodulated digital data.” This construction is primarily in agreement with Plaintiff’s proposed construction; however, the Court has altered Plaintiff’s proposed construction because the “modulator” and “demodulator” language in Plaintiff’s construction is not grounded in the specification.

A. Parties’ Construction Arguments

Plaintiff’s proposed construction construes “modulation scheme” as “a technique by which a modulator converts digital data into a modulated analog signal and a demodulator converts the modulated analog signal back to digital data.” In support of Plaintiff’s proposed construction, Plaintiff argues first that the specification uses the words “scheme” and “technique” interchangeably, so this supports Plaintiff’s construction of “modulation scheme” as “a technique.” *See, e.g.*, ‘757 patent, Abstract; 2:65-66. Plaintiff also argues the inclusion of “modulator” and “demodulator” in the construction identifies structures that implement the “modulation scheme” and therefore provide context to the construction. Plaintiff argues the specification provides support for the “modulator” and “demodulator” language in the discussion of Figure 2 which shows a “modem . . . used to modulate/demodulate data in the wireless communications systems . . . described above. Modems . . . are used by the base station . . . and CPEs . . . to modulate and demodulate data.” ‘759 patent, 6:27-31 & Fig. 2.

Defendants’ proposed construction construes “modulation scheme” as “a method of converting digital data to an analog signal and converting it back to its original form.” Defendants point out that the parties basically agree that the modulation scheme is used to

convert digital data into modulated analog signal; however, Defendants argue Plaintiff is improperly adding additional structural requirements (i.e., “modulator” and “demodulator”) that are unnecessary and do not appear in the ‘759 patent. Defendants argue Plaintiff’s additional language is flawed because if any structure is used to convert the data then it must be a “transmitter module” or a “receiver module” according to the specification. ‘759 patent, 6:37-43; 6:43-45. Therefore, Plaintiff’s references to “modulator” and “demodulator” are inaccurate according to the specification.

B. Analysis

The parties basically agree that the modulation scheme is used to convert digital data into modulated analog signal and vice versa. But the parties disagree whether to include the “modulator” and “demodulator” language or define the phrase more broadly as Defendants’ construction. The Court agrees with Defendants that Plaintiff is improperly adding the additional structural requirements of “modulator” and “demodulator.” The specification never mentions any structures specifically called a “modulator” or “demodulator.” The Court agrees with Defendants that even if the Court were to add structures to define the “modulation scheme,” Plaintiff uses the incorrect structures. The specification specifically discloses a “transmitter module” and a “receiver module” to convert the digital and analog data. ‘759 patent, 6:37-43 (“the transmitter module 204 converts digital data to an appropriately modulated analog signal”); 6:43-45 (“[t]he receiver module . . . converts it back to its original digital form”). Nonetheless, the Court agrees that it is not necessary to define “modulation scheme” in the context of structures that perform the modulation.

The Court also disagrees with Defendants’ proposed construction because it is overbroad.

Defendants' proposed construction does not clarify that the "modulation scheme" actually involves some form of modulation; instead, Defendants' proposed construction would cover any "method of converting" the digital data. The term "modulation scheme," under its ordinary and customary meaning, implies that there is some form of modulation occurring. Further, the specification clarifies that the method of converting the data is modulation. *See, e.g.*, 1:9-11 ("The present invention relates to wireless communication systems and to a system and method for implementing asymmetric modulation in such systems."). Therefore, to alleviate this issue in Defendants' proposed construction while not including unnecessary structures as in Plaintiff's proposed construction, the Court uses the language "modulated analog signal" and "demodulated digital data." The "modulated" and "demodulated" language has foundation in the specification. *See, e.g.*, 6:37-39 ("the transmitter module 204 converts digital data to an appropriately modulated analog signal"). Finally, the Court agrees with Plaintiff in calling the scheme a "technique" instead of Defendants calling it a "method" because there is support in the specification. *See, e.g.*, 7:57-58 ("[t]he downlink data 310 is transmitted in a pre-defined modulation or a sequence of modulation techniques"). So the Court construes the phrase "modulation scheme" as "a technique by which digital data is converted into modulated analog signal and the modulated analog signal is converted back to demodulated digital data."

5. “quality value,” “first link quality,” “second link quality”

Claim Term/Claim Language	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p>“<i>quality value</i>”</p> <p>[claims 11, 13, 14]</p> <p>For example, in claim 11: “a base station including a second modem configured to receive each <i>quality value</i> from the plurality of CPEs”</p>	<p>“a value that indicates the quality of a wireless communications link”</p>	<p>“value of a link quality”</p>
<p>“<i>first link quality</i>”</p> <p>[claims 1, 3, 6, 8, 9, 10]</p> <p>For example, in claim 1: “a plurality of CPE, each including a first modem configured to measure a <i>first link quality</i> based on received downlink data”</p>	<p>“a value that indicates the quality of a downlink”</p>	<p>“first link quality”</p> <p>(no construction)</p>
<p>“<i>second link quality</i>”</p> <p>[claims 1, 10]</p> <p>For example, in claim 1: “a base station having a second modem configured to measure a <i>second link quality</i> for each of the plurality of CPE based on received uplink data”</p>	<p>“a value that indicates the quality of an uplink”</p>	<p>“second link quality”</p> <p>(no construction)</p>

The Court agrees with Plaintiff and thus adopts Plaintiff’s construction of these disputed terms. The phrase “quality value” is construed as “a value that indicates the value of a wireless communications link.” The phrase “first link quality” is construed as “a value that indicates the quality of a downlink.” The phrase “second link quality” is construed as “a value that indicates the quality of an uplink.”

A. Parties' Construction Arguments

Plaintiff argues its constructions are supported by the teachings of the '759 patent, will assist jury, and make the meaning of the terms clearer. Defendants argue "quality value" should be construed as the "value of a link quality," and Defendants argue the terms "first link quality" and "second link quality" do not need construction. At the hearing, Defendants agreed that if the Court wished to construe "first link quality" and "second link quality" that they agreed with Plaintiff insofar as the "first link" represented the downlink and the "second link" represented the uplink. However, Defendants argue Plaintiff conflates the construction of "link quality" with "link quality value" by construing both phrases as "a value." Additionally, Defendants argue the quality value is a value of the quality of the link, rather than something that "indicates" the quality of the link. Finally, Defendants argue that Plaintiff incorrectly inserts a requirement that the link be "wireless" without support.

B. Analysis

The Court agrees with Plaintiff's proposed constructions. "Claim construction is a matter of resolution of disputed meanings and technical scope, to clarify and when necessary to explain what the patentee covered by the claims, for use in the determination of infringement." *U.S. Surgical Corp. v. Ethicon, Inc.*, 103 F.3d 1554, 1568 (Fed. Cir. 1997). Defendants' proposed constructions are not helpful because they do not add any meaning to these phrases that need clarity. The Court will first consider "first link quality" and "second link quality." The specification does not explicitly define the terms in question, but taking an in-depth look at the specification supports Plaintiff's construction. The specification specifically states that "FIG. 4 illustrates . . . six modulation thresholds (L1-L6, where L1 *indicates* the lowest *link quality* and

L6 indicates the highest link quality).” ‘759 patent, 9:5-10 (emphasis added). This supports Plaintiff’s “indicates” language. Further, Figure 4 is an illustration that includes variables representing the values of link quality (e.g., L1-L6), but Figure 5 actually includes example values, such as values of signal to noise ratio, instead of just variables. See ‘759 patent, 9:66-10:17. So when reading Figure 5 in conjunction with Figure 4, it becomes clear that the variables L1-L6 are actually values that indicate the link quality. These variables, L1-L6, are also called the modulation threshold values in the specification, which are the values used select the modulation scheme. See ‘759 patent, 2:48-52 (describing the process of “comparing the determined first downlink quality to a second plurality of modulation threshold values”). Since the modulation scheme requires comparing the “downlink quality” to the “values,” *see id.*, it necessitates that the “downlink quality” or “first link quality”¹ is a value. Otherwise, if “first link quality” referred to a qualitative measurement as Defendants suggested at the hearing (as opposed to “value” which is a quantitative measurement), then the comparison with the modulation threshold values that the specification discusses would not be possible. Consequently, while Defendants argue “first link quality” cannot be a value or the terms “quality value” and “first link quality” would be conflated, the specification itself conflates those terms by making the “first link quality” a value, so Plaintiff’s construction of “first link quality” and “second link quality” is accurate.

Plaintiff’s construction of “quality value” is also accurate. The specification does not mention “quality value.” The phrase only appears in the claim language of claims 11, 13, and

¹ Note that the patent uses “first downlink quality” and “first link quality” interchangeably. See generally ‘759 patent, 2:8-57. This is why Defendants at the hearing agreed that “first link quality” refers to the downlink.

14. But Plaintiff's construction of "quality value" is supported by reading the context of the claim language. "A claim term used in multiple claims should be construed consistently." *Inverness Med. Switzerland GmbH v. Princeton Biomeditech Corp.*, 309 F.3d 1365, 1371 (Fed. Cir. 2002). Reading the language in claim 13 and claim 14 is instructive. Claim 13 includes "a signal to noise ratio configured to measure the quality value" and claim 14 includes "a bit error rate module configured to measure the quality value." So in claim 13 the quality value is the signal to noise ratio value because presumably the signal to noise ratio module measures signal to noise ratio values. Likewise, in claim 14 the quality value is the bit error rate value. Therefore, referring back to Figure 4 again, the specification states that "L1 indicates the lowest link quality," '759 patent, 9:9-10, and the specification in Figure 5 shows that L1 may be a signal to noise ratio value. Compare '759 patent, FIG. 4; '759 patent, FIG. 5. So in claim 13 the quality value refers to the signal to noise ratio value that indicates the quality of the wireless communications link. '759 patent, 9:5-10 ("L1 indicates the lowest link quality") (emphasis added) More generically, therefore, "quality value" is "a value that indicates the quality of a wireless communications link." Defendants' final argument that Plaintiff's construction erroneously includes the word "wireless" is groundless—the entire patent relates to wireless communications links—it is even titled "Assymmetric Adaptive Modulation in a *Wireless* Communication System." '759 patent, Title (emphasis added).

Hence, the Court agrees with Plaintiff and thus adopts Plaintiff's construction of these disputed terms. The phrase "quality value" is construed as "a value that indicates the value of a wireless communications link." The phrase "first link quality" is construed as "a value that indicates the quality of a downlink." The phrase "second link quality" is construed as "a value

that indicates the quality of an uplink.”

VI. TERMS IN DISPUTE OF THE ‘323 PATENT

1. “low-power state”

Claim Term/Claim Language	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p>“<i>low-power state</i>”</p> <p>[claims 7, 16]</p> <p>“memory circuitry operatively coupled to the first circuitry to store loop characteristic parameters in a <i>low-power state</i> and to transfer loop characteristic parameters to the first circuitry during a power up sequence”</p>	<p>“state where power is reduced or unnecessary sections of circuitry are inactive”</p>	<p>“state where [first, demodulation, or demodulator] circuitry is no longer operational after shutting off or reducing power supplied to that circuitry”</p> <p>Defendants have also offered an alternative construction: “state where unnecessary [first, demodulation, or demodulator] circuitry is inactive when shutting off or reducing power supplied to that circuitry”</p>

The Court construes “low-power state” as the “state of operation brought about by shutting off or reducing power to the unnecessary sections of circuitry.”

A. Parties’ Construction Arguments

Plaintiff seeks the Court to construe “low-power state” as a “state where power is reduced or unnecessary sections of the circuitry are inactive.” The most disputed portion of Plaintiff’s construction is the inclusion of the word “or,” which has the obvious consequence of making “lower-power state” either a state where “power is reduced” or a state where “unnecessary sections of the circuitry are inactive.” For support, Plaintiff cites to the specification. *See, e.g.*, ‘323 patent, 5:6-8 (“To reduce power requirements, the ADSL units 232 and 242 may enter low power mode when user data transmission is complete.”); 7:23-26 (“Upon detecting a shut-down signal, the COT unit may save loop characteristics (step 310) and enter low power mode by

reducing power to now unnecessary circuitry (step 311).”).

Defendants’ primary construction is that “low-power state” means a “state where [first, demodulation, or demodulator] circuitry is no longer operational after shutting off or reducing power supplied to that circuitry.” The disputed language here is “no longer operational.” Defendants imply the “no longer operational” language from specification language that states, at least in some embodiments, that the wire loop or circuitry be “inactive.” ‘323 patent, 3:3-5.

However, in their briefing, Defendants proposed a new and alternative construction that is closer to Plaintiff’s construction that reads a “state where unnecessary [first, demodulation, or demodulator] circuitry is inactive when shutting off or reducing power supplied to that circuitry.” Defendants argue that the “low-power state” involves deactivating unnecessary circuitry to conserve power. Additionally, Defendants argue the unnecessary circuitry is deactivated when power to that circuitry is shut off or reduced. Defendants cite to the specification for support. *See, e.g.*, ‘323 patent, 5:25-27 (“Each unit . . . may . . . enter low-power mode by shutting off the now unnecessary sections of signal processing [], transmitting [], and receiving [], circuitry.”).

B. Analysis

The Court believes that both Plaintiff’s and Defendants’ proposed constructions are flawed. The most obvious flaw in Plaintiff’s construction, which reads a “state where power is reduced or unnecessary sections of the circuitry are inactive,” is that Plaintiff’s construction includes the disjunctive word “or.” By using the word “or” in Plaintiff’s proposed construction, there could be a low-power state if either there is a state where “power is reduced” or a state where “unnecessary sections of the circuitry are inactive.” So in some situations there could be a low-power state when only unnecessary sections of the circuitry are inactive. In this case, there

would not even be a requirement that any power be reduced to be in a low-power state. That is problematic for two reasons. First, the ordinary meaning of the words “low-power state” implies that the power is reduced or lowered. Second, the patentee’s entire invention relates to power conservation, which means power is reduced or lowered in some aspect of the invention. *See* ‘323 patent, 1:4-5 (“The present invention is directed to a power conservation system”); ‘323 patent, 2:10-11 (“the invention features a method of conserving power”). As a result, the Court refuses to adopt Plaintiff’s proposed construction.

The Court also refuses to adopt Defendants’ proposed constructions. For Defendants’ original construction that reads a “state where [first, demodulation, or demodulator] circuitry is no longer operational after shutting off or reducing power supplied to that circuitry,” the Court concludes that the “no longer operational” limitation is flawed. Defendants are improperly importing a limitation into the claims with the “no longer operational” limitation. Except in situations where the specification requires it, it is improper for the Court to import limitations from the specification that do not appear in the claims. *N. Am. Container, Inc.*, 415 F.3d at 1348. The specification never states that certain circuitry must be non-operational during the low-power state. Further, at one point, the specification states that “the receiving ADSL unit returns the signal processing 111, transmitting 112, and receiving 113 circuitry to full power mode.” Presumably, that is when the circuits are exiting the low-power state. But the specification uses the language of returning to “full” power mode, which implies there could be a state of operation in a lower power mode.

The Court finds instructive that the inventor describes the “low-power state” in the specification. Column 5 of the patent describes the method of the invention “[t]o reduce power

requirements.” *See generally* ‘323 patent, 5:6-47. In that section where the specification is describing how to enter low power mode, it specifically states “[e]ach unit 232 and 242 may then enter low-power mode by shutting off the now unnecessary sections of signal processing 111, transmitting 112, and receiving 113 circuitry.” ‘323 patent, 5:25-28. While the specification says “low-power mode” instead of “low-power state,” the Court concludes that “low-power state” is merely a state of operation in low-power mode. *See* ‘323 patent, 5:28-30 (describing “low-power mode” as “low power *operation*”) (emphasis added). Further, in addition to “shutting off” the unnecessary circuitry, the specification also describes that the unit may enter low power mode by “reducing power” to the unnecessary circuitry. ‘323 patent, 7:23-25 (“Upon detecting a shut-down signal, the COT unit may save loop characteristics (step 310) and enter low power mode by reducing power to now unnecessary circuitry (step 311).”). Therefore, the Court’s construction of a “state of operation brought about by shutting off or reducing power to the unnecessary sections of circuitry” is supported by the specification. While Defendants’ alternative construction of a “state where unnecessary [first, demodulation, or demodulator] circuitry is inactive when shutting off or reducing power supplied to that circuitry” is close to the Court’s adopted construction, the Court concludes that the proposed construction adds language that is redundant and not necessary given the inventor’s specific description of the “low-power mode” above. *See, e.g.*, ‘323 patent, 5:25-28 (“Each unit 232 and 242 may then enter low-power mode by shutting off the now unnecessary sections of signal processing 111, transmitting 112, and receiving 113 circuitry.”).

2. “reducing the power consumption of demodulation circuitry” / “setting the demodulation circuitry in a reduced power state”

Claim Term/Claim Language	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p><i>“reducing power consumption of demodulation circuitry”</i></p> <p>[claim 1]</p>	<p>“placing demodulation circuitry in a state where power is reduced or unnecessary sections of the circuitry are inactive”</p>	<p>“placing demodulation circuitry in a low-power state”</p>
<p><i>“setting the demodulator circuitry in a reduced power state”</i></p> <p>[claim 24]</p>	<p>“setting the demodulator circuitry in a state where power is reduced or unnecessary sections of the circuitry are inactive”</p>	<p>“setting the demodulator circuitry in a low-power state”</p>

The parties’ dispute here is a minor one. The parties agree that the construction of these phrases should turn on how the Court construes “low-power state.” The only difference between the parties’ constructions is that Plaintiff incorporates its construction of “low-power state” and Defendants include the term “low-power state” in the construction.

The Court agrees with Defendants that the construction of “low-power state” should not be incorporated in these constructions. The Court believes that by adding the “low-power state” construction into the construction of other claim terms, the Court would be making the constructions unnecessarily complex for the jury. The jury will have the Court’s construction of “low-power state,” and the jury can use that construction to help understand the construction of other terms that include the “low-power state” language. Therefore, the Court construes “reducing power consumption of demodulation circuitry” as “placing demodulation circuitry in a low-power state.” The Court construes “setting the demodulation circuitry in a reduced power state” as “setting the demodulation circuitry in a low-power state.”

3. “shut-down condition”

Claim Term/Claim Language	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p>“<i>shut-down condition</i>” [claims 1-3, 5, 24] For example, in claim 1: “reducing power consumption of demodulation circuitry in the terminal unit upon detection of a <i>shut-down condition</i>”</p>	<p>“an express signal used for the purposes of entering a state where power is reduced or unnecessary sections of circuitry are inactive, or a loss of framing”</p>	<p>“condition that causes a unit to put circuitry in a low-power state”</p>

The Court construes “shut-down condition” as “an express signal used for the purposes of entering a low-power state or a loss of framing.” The Court’s construction is essentially Plaintiff’s proposed construction except the Court substitutes “low-power state” for Plaintiff’s language of “a state where power is reduced or unnecessary sections of circuitry are inactive,” which is Plaintiff’s construction of “low-power state.”

A. Parties’ Construction Arguments

Plaintiff seeks a construction of “shut-down condition” that would read “an express signal used for the purposes of entering a state where power is reduced or unnecessary sections of circuitry are inactive, or a loss of framing.” Plaintiff’s construction essentially states that there are two “conditions” that cause the circuitry to “shut-down”: (1) an express signal; or (2) a loss of framing. Hence, Plaintiff’s construction construes “shut-down condition” as being either the express signal or the loss of framing. In support for the express signal, Plaintiff cites to the specification. *See, e.g.*, ‘323 patent, 7:16-18 (“[T]he shut down signal may be expressly sent . . .”). In support for the loss of framing, Plaintiff also cites to the specification. *See, e.g.*, ‘323 patent, 2:23-24 (“[A] shut-down condition may be indicated by a loss of framing information.”).

Defendants seek a construction of “shut-down condition” as a “condition that causes a unit to put circuitry in a low-power state.” Defendants argue that the plain meaning of the claim language includes within its scope any type of express signal or other condition that causes a unit to put circuitry in a low-power state. Defendants argue for a broad construction and argue that Plaintiff’s construction is too limiting because it seeks to limit the “conditions” to particular examples recited in the specification. Defendants also note that their construction could be changed to replace the word “condition” with “express or inferred condition” or “express signal or an inferred condition.” Defendants argue this would be well supported with the intrinsic evidence. Hence, Defendants’ construction could read “express signal or an inferred condition that causes a unit to put circuitry in a low-power state.”

B. Analysis

The Court primarily agrees with Plaintiff’s construction. The specification explains what a shut-down condition is and the specification states “[t]he shut-down signal may be an expressly transmitted signal or may be inferred . . . from the loss of transmitted framing information.” ‘323 patent, 7:14-21. So there are two ways to get a shut-down signal: (1) an express signal; or (2) a loss of framing. These are the only two possible ways discussed in the patent. Defendants, however, argue that Plaintiff’s construction improperly imports limitations from the specification and that these two particular examples are only preferred embodiments. The Court agrees that it is improper to import preferred embodiments from the specification, but it is a fine line between using the specification to interpret the meaning of a claim and importing limitations from the specification. *Phillips*, 415 F.3d 1323. Here, however, the express signal and loss of framing embodiments are the only embodiments contemplated by the patent. Defendants argue

Plaintiff's interpretation ignores the "inferred signal" example because the patent states "[t]he shut-down signal may be an expressly transmitted signal or may be inferred." '323 patent, 7:14-15. But instead, Defendants ignore the fact that two sentences later the specification explains that "a shut-down signal may be inferred from the loss of transmitted framing information." '323 patent, 7:19-20. Thus, the inferred signal is the loss of framing.

Defendants' proposed construction of a "condition that causes a unit to put circuitry in a low-power state" is overbroad because any condition may suffice under that construction. The phrase "shut-down signal" is not a customary term in the field—it is a term created and explained by the inventor in the context of this patent. The patent specification clearly and only explains two possible conditions: (1) an express signal; and (2) a loss of framing. *See* '323 patent, 2:22-28 ("The modulated data may be a bit stream including framing information, and a shut-down condition may be indicated by a loss of framing information. The modulated data may include a signaling channel and a shut down condition may be indicated by bits transmitted in the signaling channel."); '323 patent, 5:11-15 ("This shut-down signal may be conveyed in the ADSL low bit rate signaling channel; alternatively, an out-of-band signal on the loop may be used, for example, a 16 kHz AC signal. Still another alternative is for the CPE unit to stop sending ADSL framing information . . ."); '323 patent, 7:14-21 ("The shut-down signal may be an expressly transmitted signal or may be inferred . . . from the loss of transmitted framing information."). Therefore, the Court construes "shut-down condition" as "an express signal used for the purposes of entering a low-power state or a loss of framing."

4. “resume signal”

Claim Term/Claim Language	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p>“<i>resume signal</i>”</p> <p>[claims 1, 4, 7, 12-14, 16, 24]</p> <p>For example, in claim 1: “ . . . monitoring the loop with a monitoring circuit to detect a <i>resume signal</i> that is not a modulated data signal and that is outside the voiceband frequency range on the loop . . . ”</p>	<p>“signal used for the purpose of exiting a state where power is reduced or unnecessary sections of circuitry are inactive”</p>	<p>“signal that starts the process of restoring circuitry to an operational state”</p>

The Court construes “resume signal” as a “signal used for the purpose of exiting a low-power state.” Here again, the Court’s construction is essentially Plaintiff’s proposed construction except it substitutes the words “low-power state” where Plaintiff incorporates its construction of low-power state.

A. Parties’ Construction Arguments

Plaintiff seeks a construction of “resume signal” as a “signal used for the purpose of exiting a [low-power state].” Plaintiff cites to the specification for support here. *See* ‘323 patent, 5:47-48 (“To return a unit that is in low power mode to full power operation, a resume signal is sent to the unit.”); 5:60-62 (“Upon receipt of the resume signal, the receiving ADSL unit returns to the signal processing 111, transmitting 112, and receiving 113 circuitry to full power mode.”). But Defendants argue in return that Plaintiff’s construction is improper because it may allow a signal sent after the power up sequence has began to qualify as a resume signal. Therefore, Plaintiff’s construction might be read improperly to cover any signal transferred between units during the power up sequence rather than the first signal sent over the loop that

initiates the power up sequence.

Defendants seek a construction that reads a “signal that starts the process of restoring circuitry to an operational state.” Defendants argue that the resume signal must “start[] the process” of activating the return to full power mode. As noted above, Defendants argue this is different than Plaintiff’s construction which would allow a signal sent after the power up sequence begins to also qualify as a resume signal. Defendants also state its construction is supported by the specification. *See* ‘323 patent, claims 7 & 16 (“detect a resume signal . . . *and then* initiate the power up sequence for the first circuitry” and “detect a resume signal . . . *and then* to initiate the power up sequence for the first circuitry”) (emphasis added).

B. Analysis

The Court disagrees with Defendants that the resume signal “starts the process” of restoring the circuitry to an operational state. The specification makes clear that in fact the “start-up signal” starts the process and not the “resume signal.” *See* ‘323 patent, 6:19-22 (“To return the loop 220 to an active state, a start-up signal is sent to the CPE (step 301) The CPE ADSL unit *then* transmits a 16 kHz resume signal”) (emphasis added); ‘323 patent, Figure 3 (illustrating that the “start-up signal” comes before the “resume signal” on the flow chart showing how full power mode is resumed). Further, the Court disagrees with Defendants’ construction where it uses the language “operational state” because it implies there is a non-operational state for the circuitry. As the Court stated above when construing “low-power state,” the specification never requires or mentions the circuitry being in a non-operational state. To the contrary, the specification inserts the qualifying word “fully” when discussing “reaching a fully operational state,” which implies there may be some middle ground between operational and

non-operational. ‘323 patent, 6:1-2.

The Court primarily agrees with Plaintiff’s proposed construction of “resume signal.” The Court is unconvinced of Defendants’ argument that this construction is improper because it may allow a signal sent after the power up sequence has begun to qualify as a resume signal. In fact, as discussed above, since the power up sequence begins with the start-up signal, the resume signal by definition may be a signal sent after the power up sequence has begun. The specification supports the Court’s construction. *See* ‘323 patent, 6:30-33 (“If the COT unit is in a low power state, it will return to full power operation upon detection of the resume signal from the CPE unit . . .”). Therefore, the Court construes “resume signal” as a “signal used for the purpose of exiting a low-power state.”

5. “activating demodulation circuitry” / “power up sequence for the first circuitry” / “demodulator circuitry power up sequence”

Claim Term/Claim Language	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p><i>“activating demodulation circuitry”</i> [claim 1, 5]</p>	<p>“re-energizing demodulation circuitry”</p>	<p>“restoring demodulation circuitry to its operational state by restoring power to it”</p>
<p><i>“power up sequence for the first circuitry”</i> [claim 7]</p>	<p>“re-energizing of the first circuitry”</p>	<p>“process for activating first circuitry”</p>
<p><i>“demodulator circuitry power up sequence”</i> [claim 24]</p>	<p>“re-energizing of the demodulator circuitry”</p>	<p>“process for activating demodulator circuitry”</p>

The parties agree that these terms have essentially the same meaning. However, the language of these phrases is slightly different. The Court construes “activating demodulation circuitry” as “restoring demodulation circuitry to full power mode.” The Court construes “power up sequence for the first circuitry” as “process for restoring first circuitry to full power mode.” The Court construes “demodulator circuitry power up sequence” as “process for restoring demodulator circuitry to full power mode.”

A. Parties’ Construction Arguments

Plaintiff’s proposed constructions use the “re-energizing” language. For example, Plaintiff proposes construing “activating demodulation circuitry” as “re-energizing demodulation circuitry.” Plaintiff argues for using the language “re-energizing” in the three constructions above because the “re-energizing” language is grounded in the specification. *See* ‘323 patent, 3:2-5 (“Modulated data signal processing, transmitting, and receiving circuitry can be placed in a low power state when inactive, and then re-energized to resume full power operation as needed.”).

Defendants again use the “operational state” language in their construction, and Defendants rest on their arguments they used for the “low-power state” construction. For the “restoring power” language in Defendants’ proposed construction, Defendants find support in the specification. *See* ‘323 patent, 2:14-20 (“restoring power to the electronic circuits when the resume signal is detected”). Defendants argue “restoring power” is used synonymously with “re-energizing” in the specification and that “restoring power” is clearer and therefore more helpful to a jury than “re-energizing.”

B. Analysis

The Court agrees with Defendants that even though “restoring power” and “re-energizing” seem to be used synonymously in the specification, “restoring power” is clearer and may be more helpful to the jury than “re-energizing.” The “activating demodulation circuitry” claim phrase must be read in the context of the claim. Claim 1 reads “activating demodulation circuitry when the resume signal is detected.” ‘323 patent, 7:63-64. So the “activating demodulation circuitry” occurs in connection with the resume signal. Therefore, Defendants’ construction that refers to “restoring power” is also more accurate because the specification specifically discusses “restoring power” in connection with the resume signal. *See* ‘323 patent, 2:14-20 (“restoring power to the electronic circuits when the resume signal is detected”).

However, while the Court agrees with Defendants’ restoring power language, the Court disagrees with Defendants’ construction where it uses the “operational state” language. As discussed above with the construction of “resume signal,” the language “operational state” implies there is a non-operational state for the circuitry. As the Court stated above when construing “low-power state,” the specification never requires or mentions the circuitry being in a non-operational state.

Therefore, the Court will modify Defendants’ constructions by considering language in the specification. The Court construes “activating demodulation circuitry” as “restoring demodulation circuitry to full power mode.” The Court construes “power up sequence for the first circuitry” as “process for restoring first circuitry to full power mode.” The Court construes “demodulator circuitry power up sequence” as “process for restoring demodulator circuitry to full power mode.” Such constructions are supported by the specification. As discussed above, the “restoring” language is supported when the specification discusses “*restoring power* to the

electronic circuits when the resume signal is detected.” ‘323 patent, 2:18-20 (emphasis added). Further, specification states that the circuitry is restored to full power mode. *See* ‘323 patent, 5:60-62 (“Upon receipt of the resume signal, the receiving ADSL unit returns the signal processing 111, transmitting 112, and receiving 113 circuitry to *full power mode*.”) (emphasis added).

6. “terminal unit” / “modulated data transmitting and receiving unit”

Claim Term/Claim Language	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p>“<i>terminal unit</i>”</p> <p>[claim 1]</p> <p>“ . . . reducing power consumption of demodulation circuitry in the <i>terminal unit</i> upon detection of a shut-down condition . . . ”</p>	<p>“digital subscriber line unit”</p>	<p>No construction necessary</p> <p>Or</p> <p>“communication device”</p>
<p>“<i>modulated data transmitting and receiving unit</i>”</p> <p>[claims 7-14, 16-22, 24]</p> <p>For example, claim 7: “<i>A modulated data transmitting and receiving unit</i>, comprising: . . . ”</p>	<p>“digital subscriber line unit”</p>	<p>No construction necessary</p> <p>Or</p> <p>“communications transceiver device”</p>

The Court construes “terminal unit” as a “unit wherein voice band services share a loop with modulated data transmission.” The Court agrees with Defendants that no construction is necessary for “modulated data transmitting and receiving unit.”

A. Parties’ Construction Arguments

Plaintiff argues the phrases “terminal unit” and “modulated data transmitting and receiving unit” should be construed as “digital subscriber line unit.” Plaintiff points out that the

patent uses the term “ADSL Unit” (or “Assymmetric Digital Subscriber Line Unit”) repeatedly in the specification to refer to the terminal units located at either end of the communications loop. *See, e.g.*, ‘323 patent, 3:15-19.

Defendants argue no construction is necessary. Alternatively, Defendants argue “terminal unit” should be construed as “communications device” and “modulated data transmitting and receiving unit” should be construed as “communications transceiver device.” Defendants argue no construction is necessary because the terms here are descriptive of the broad range of communications covered by their plain meaning. Alternatively, Defendants argue if the Court wishes to construe the terms, then “communications device” would be broad enough to cover the full range of communications devices covered by the claim (both the wired and wireless devices).

B. Analysis

The Court disagrees with Defendants that “terminal unit” does not require a construction. The term “terminal unit” appears in both the preamble and the body as a limitation in claim 1. Further, the term “terminal unit” is not a term of ordinary use that would be clear to the jury. The Court also disagrees with Defendants’ alternative construction of “communications device” because it is overbroad and not grounded in the specification. But the Court disagrees with Plaintiff that “terminal unit” and “modulated data transmitting and receiving unit” should be construed as “digital subscriber line unit.” The patent specification never limits either of these phrases to a digital subscriber line (DSL) unit. In fact, the invention states that “while the invention has been described in the context of ADSL units providing an asymmetric data channel, the *invention may be applied to other terminal units wherein voice band services share*

a loop with modulated data transmission, such as Symmetric Digital Subscriber Line (SDSL) and Rate Adaptive Digital Subscriber Line (RADSL) terminal units. ‘323 patent, 7:34-40 (emphasis added). So according to the specification, the terminal unit could hypothetically be a non-DSL unit where voice band services share a loop with modulated data transmission. The Court concludes, though, that the specification quotation above effectively defines what a “terminal unit” is in the context of this patent. The specification specifically describes a terminal unit as a unit “wherein voice band services share a loop with modulated data transmission.” ‘323 patent, 37-38. Therefore, the Court construes “terminal unit” as a “unit wherein voice band services share a loop with modulated data transmission.”

The Court agrees with Defendants that the phrase “modulated data transmitting and receiving unit” requires no construction. The phrase “modulated data transmitting and receiving unit” is only found in the preamble of independent claims 7, 16, and 24, and also in the dependent claims that specifically refer back to the “modulated data transmitting and receiving unit” in the preamble of the independent claims. “Claim construction . . . is not an obligatory exercise in redundancy.” *U.S. Surgical Corp. v. Ethicon, Inc.*, 103 F.3d 1554, 1568 (Fed. Cir. 1997). “[D]istrict courts are not (and should not be) required to construe *every* limitation present in a patent’s asserted claims.” *O2 Micro Int’l Ltd. v. Beyond Innovation Tech. Co., Ltd.*, 521 F.3d 1351, 1362 (Fed. Cir. 2008). The phrase “modulated data transmitting and receiving unit” is not defined in the specification, and in the few times the phrase is mentioned in the specification it cannot be determined a clear meaning of the phrase. *See, e.g.*, ‘323 patent, 2:63-67 (“The control signal interface may be used for the exchange of both the start-up signal and of data between the modulated data transmitting and receiving unit and customer premises

equipment.”).

Instead, the claims themselves define the details of a “modulated data transmitting and receiving unit.” For example, in claim 7, the preamble introduces the modulated data transmitting and receiving unit and then the body describes the details. *See* ‘323 patent, 8:15-18 (“7. A modulated data transmitting and receiving unit, comprising a connector operatively coupling the unit”). *See also IMS Tech., Inc. v. Haas Automation, Inc.*, 206 F.3d 1422, 1434 (Fed. Cir. 2000) (“The phrase ‘control apparatus’ in the preamble merely gives a descriptive name to the set of limitations in the body of the claim that completely set forth the invention.”). So because the claims are instructive of the phrase “modulated data transmitting and receiving unit,” no construction is necessary. The Court could alternatively partake an “exercise in redundancy”² and merely rearrange the language as to construe “modulated data transmitting and receiving unit” as a “unit that transmits and receives modulated data.” But the Court believes that such an exercise is unnecessary and not helpful to the jury. Further, the Court disagrees with Defendants’ alternative construction of “communications transceiver device” because it removes the “modulated data” requirement and would be overly broad. Therefore, the Court concludes that the phrase “modulated data transmitting and receiving unit” requires no construction.

² *U.S. Surgical Corp.*, 103 F.3d at 1568.

7. “circuitry”

Claim Term/Claim Language	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p>“<i>circuitry</i>”</p> <p>[claims 1, 5, 7, 10, 14-16, 23-27]</p> <p>For example, claim 1: “. . . reducing power consumption of demodulation <i>circuitry</i> in the terminal unit upon detection of a shut-down condition . . .”</p>	<p>“digital circuitry, analog circuitry, software, firmware, or a combination of these elements”</p>	<p>“power-consuming electronic components that may include digital circuitry, analog circuitry, software, firmware, or a combination of these elements”</p>

The Court construes “circuitry” as “electronic components that may include digital circuitry, analog circuitry, software, firmware, or a combination of these elements.”

A. Parties’ Construction Arguments

Plaintiff seeks a construction of “circuitry” as “digital circuitry, analog circuitry, software, firmware, or a combination of these elements.” Plaintiff’s argument is that the patentee has been his own lexicographer. The specification states “[t]erminal unit circuitry may include digital circuitry, analog circuitry, software, firmware, or a combination of these elements.” ‘323 patent, 7:44-46. Plaintiff argues that the specification defines “circuitry” here.

Defendants’ construction adds the limitation that “circuitry” is also “power-consuming electronic components” in addition to Plaintiff’s construction. Defendants argue that the fundamental value of circuitry for the purposes of the ‘323 patent is that the circuitry consumes power. Defendants cite to the specification for support. *See, e.g.*, ‘323 patent, 2:1-4 (“[s]ignal processing, transmitting and receiving circuitry . . . requires a substantial amount[] of power. For a large central office . . . this power usage is substantial”); *see also* Claims 1, 7, 16, 24. Additionally, Defendants’ construction adds the “may include” language from the specification

that Plaintiff's construction leaves out.

B. Analysis

The Court agrees with Plaintiff that the patentee has been his own lexicographer. “[The Court] will adopt a definition that is different from the ordinary meaning when the patentee acted as his own lexicographer and clearly set forth a definition of the disputed claim term in either the specification or the prosecution history.”) *Edwards Lifesciences LLC v. Cook, Inc.*, 582 F.3d 1322, 1329 (Fed. Cir. 2009) (internal quotes omitted). However, Plaintiff's proposed construction does not give the full definition expounded in the specification because it takes out the “may include” language. See ‘323 patent, 7:44-48 (“Terminal unit circuitry may include digital circuitry, analog circuitry, software, firmware, or a combination of these elements”). The “may include” language is important because its presence changes the definition. With the “may include” language, the list of components in the definition is not an exclusive list of components that make up the circuitry. Without the “may include” language, the list is exclusive. The Court believes that the “may include” language should be included in the construction of “circuitry” since it is included in the specification and it makes a meaningful difference. Thus, the Court construes “circuitry” as “electronic components that may include digital circuitry, analog circuitry, software, firmware, or a combination of these elements.”

The Court's adopted construction is similar to Defendants' proposed construction except that it removes the “power-consuming” language. The “power-consuming” language introduces ambiguity to the phrase because the circuitry, if interpreted as Defendants' construction, might be required to be “power-consuming” at all times. While it may be fundamentally true that circuitry must have the ability to be “power-consuming,” the circuitry in the ‘323 patent is not

required to be power-consuming at all times. *See, e.g.*, ‘323 patent, 5:25-27 (“Each unit . . . may . . . enter low-power mode by shutting off the now unnecessary sections of signal processing [], transmitting [], and receiving [], circuitry.”). Therefore, the Court refuses to read in Defendants’ “power-consuming” limitation because it adds ambiguity and is not necessary.

8. “demodulation circuitry” / “demodulator circuitry”

Claim Term/Claim Language	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p>“<i>demodulation circuitry</i>” or “<i>demodulator circuitry</i>”</p> <p>[claims 1, 24, 26]</p> <p>For example, in claim 1: “ . . . activating <i>demodulation circuitry</i> when the resume signal is detected.”</p>	<p>“circuitry used to reconvert modulated data into its original, pre-modulated form”</p>	<p>“circuitry that extracts data from a modulated signal”</p>

The Court construes “demodulation circuitry” and “demodulator circuitry” as “circuitry used to reconvert a modulated data signal back into its original form by extracting the data from the modulated data signal on the loop.”

A. Parties’ Construction Arguments

The terms “demodulation” and “demodulator” do not appear in the specification of the ‘323 patent, and the term “demodulate” does not appear in the patent at all. Nevertheless, Plaintiff claims the intrinsic evidence clearly supports Plaintiff’s construction of “demodulation circuitry” as “circuitry used to reconvert modulated data into its original, pre-modulated form.” The most relevant intrinsic evidence is Claim 24 which provides that “demodulator circuitry” receives a “modulated data signal on the loop.” Plaintiff also argues that the extrinsic evidence supports Plaintiff’s construction, but Plaintiff’s citations to extrinsic evidence, such as an IEEE

Standard dictionary definition, support Defendants' construction nearly as much as Plaintiff's construction. *The IEEE Standard Dictionary of Electrical and Electronics Terms* 270 (6th ed. 1996) ("demodulation – (4) The reconversion of a modulated signal into its original form by extracting the data from the modulated carrier").

Defendants argue that when considering Claim 24 states that "demodulator circuitry" receives a "modulated data signal on the loop" and that the parties have agreed that "not a modulated data signal" means "not a signal conveying data through variation of amplitude, frequency, and/or phase," this broad construction and language supports Defendants' construction of "circuitry that extracts data from a modulated signal." Defendants then cite a number of dictionary definitions for support, including the definition Plaintiff cites, that define "demodulate," for example, as "to extract (information) from a modulated carrier wave" or "to extract the information from (a modulated signal)." *See American Heritage Dictionary of the English Language* 483 (4th ed. 2000); *Merriam-Webster's Collegiate Dictionary* 332 (11th ed. 2003).

B. Analysis

The Court believes that both of the parties' constructions constitute the partial definition of the "demodulation circuitry" or "demodulator circuitry." There is little intrinsic record aside from Claim 24, which states that "demodulator circuitry is coupled to the connector to receive a modulated data signal on the loop," '323 patent, 10:5-6. So the intrinsic record only makes clear that the demodulator circuitry does something with respect to a "modulated data signal on the loop." Thus, since the intrinsic record is not clear by itself regarding the "demodulator circuitry," the Court also considers the extrinsic evidence. Both parties cite, and presumably

agree with, the definition from the IEEE Standard Dictionary that states “demodulation – (4) The reconversion of a modulated signal back into its original form by extracting the data from the modulated carrier.” *The IEEE Standard Dictionary of Electrical and Electronics Terms* 270 (6th ed. 1996). There are two parts of this definition that are separated by the word “by.” Plaintiff’s construction focuses on the first part and Defendants’ construction focuses on the second part. As indicated from the word “by,” the first part of the definition explains what demodulation is and the second part explains how the process of demodulation is performed. Hence, Plaintiff seeks a construction that explains what is occurring in the demodulation circuitry and Defendants seek a construction that explains how it occurs.

The Court believes that the construction should explain both what demodulation circuitry is and how it occurs in order to be most helpful to the jury. Therefore, the Court’s construction uses parts of both Defendants’ and Plaintiff’s constructions, which are partially derived from the IEEE Standard Dictionary, and then supplements them with the information in the intrinsic record from Claim 24. So the Court construes “demodulation circuitry” as “circuitry used to reconvert a modulated data signal back into its original form by extracting the data from the modulated data signal on the loop.”

9. “voiceband”

Claim Term/Claim Language	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p>“voiceband”</p> <p>[claims 1, 7, 16, 24, 27]</p> <p>For example, in claim 1: “ . . . monitoring the loop with a monitoring circuit to detect a resume signal that is not a modulated data signal and that is outside the <i>voiceband</i> frequency range on the loop . . . ”</p>	<p>“frequencies in the range of 0 to 4 kHz reserved for POTS services (e.g., analog voice phone services)”</p>	<p>“frequencies in the range of 0 to 4 kHz”</p>

The Court agrees with Defendants’ construction and thus construes “voiceband” as “frequencies in the range of 0 to 4 kHz.” Plaintiff tries to support its construction that reads “frequencies in the range of 0 to 4 kHz reserved for POTS services (e.g., analog voice phone services)” by citations to the specification. However, none of the specifications cited by Plaintiff clearly associate “voiceband” with being limited to those frequencies “reserved for POTS services (e.g., analog voice phone services).” Since Defendants agree with the first part of Plaintiff’s construction, Defendants’ arguments are limited to disputing the additional language in Plaintiff’s construction that reads “reserved for POTS services (e.g., analog voice phone services).” First, Defendants argue adding the POTS service acronym would be confusing to the jury because it is technical and not understood by lay persons. Second, Defendants argue Plaintiff’s proposal contradicts the express language of the claims that require only certain signals in the claims to be above “voiceband” (the “resume signal” in claims 1, 7, and 24; the “modulated data signal” in claims 7 and 16). Because the 0 to 4 kHz frequency range is “reserved” for only POTS under Plaintiff’s proposal, Defendants argue that signals having no

express above-voiceband limitation (the “resume signal” in claim 16; the modulated data signals in claims 1 and 24) could nonetheless be required to be above voiceband.

The Court agrees with Defendants’ construction. Plaintiff’s construction adds language that is unnecessary and there is no strong foundation in the intrinsic record for adding such limitations. Rather, the intrinsic record actually supports “voiceband” as referring solely to a range of frequencies, which, in that case, is best construed as “frequencies in the range of 0 to 4 kHz.” See ‘323 patent, 7:60, Claim 1 (“outside the voiceband *frequency range*”) (emphasis added); 4:46-48 (“filtered to remove frequencies above voice band”); 2:31-37 (“*frequency range* above voiceband”) (emphasis added). Therefore, the Court construes “voiceband” as “frequencies in the range of 0 to 4 kHz.”

10. “loop characteristic parameters”

Claim Term/Claim Language	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p>“<i>loop characteristic parameters</i>” [claims 5-7, 15, 16, 23, 25]</p> <p>For example, in claim 5: “ . . . storing <i>loop characteristic parameters</i> in a memory circuit upon detection of the shut-down condition . . . ”</p>	<p>“values that are a function of the electronic characteristics of the particular wire loop”</p>	<p>“values representing the electronic characteristics of the particular wire loop”</p>

The Court adopts Defendants’ construction of “loop characteristic parameters” as “values representing the electronic characteristics of the particular wire loop.” The only dispute here is that Plaintiff’s argue for the language “a function of” instead of “representing,” so Plaintiff’s proposed construction reads “values that are a function of the electronic characteristics of the particular wire loop. Plaintiff supports its construction with a citation to the specification. See

'323 patent, 4:64-5:4 (“Prior to initiating transport of modulated data over the loop 220, signals are exchanged over the loop 220 between the COT unit 232 and the CPE unit 242 to adapt the ADSL units to *the electronic characteristics of the particular wire loop 220*. For example, loop loss characteristics, which *are a function of* loop length, wire gauge, wire composition, and other factors, are exchanged. This exchange of information is often referred to as handshaking.”) (emphasis added). But Plaintiff is mischaracterizing this language in the specification. The portion of the specification upon which Plaintiff relies explains that the electronic characteristics themselves are a “function” of the physical properties of the wire, such as “loop length, wire gauge, [and] wire composition”; it does not state, as Plaintiff argues, that “loop characteristic parameters” are a “function of” the electronic characteristics.

Therefore, since Plaintiff’s reliance on the intrinsic record is misplaced, there is no clear support for either “a function of” or “representing” in the intrinsic record. However, Defendants use of “representing” is consistent with the plain meaning of a “parameter” according to various dictionary definitions. *See Merriam-Webster’s Collegiate Dictionary* 898 (11th ed. 2006) (defining “parameter” as “something *represented* by a parameter: a characteristic element”) (emphasis added); *Webster’s Third New International Dictionary* 1638 (Merriam-Webster Inc., 1993) (defining “parameter” as “an arbitrary constant characterizing by each of its values some member of a system (as of expressions, curves, surfaces, functions) <we now develop an equation which, for suitable choice of a \sim , will *represent* either a parabola, an ellipse, or a hyperbola—*School Mathematics Study Group*>”) (emphasis added). So the Court concludes that “loop characteristic parameters” should be construed as “values representing the electronic characteristics of the particular wire loop.”

11. “monitoring circuit” / “monitor circuitry” / “second circuitry . . . to detect a resume signal”

Claim Term/Claim Language	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p>“<i>monitoring circuit</i>” / “<i>monitoring circuitry</i>”</p> <p>[claims 1, 24]</p> <p>For example, in claim 1: “ . . . monitoring the loop with a <i>monitoring circuit</i> to detect a resume signal that is not a modulated data signal and that is outside the voiceband frequency range on the loop . . . ”</p>	<p>“circuitry that monitors”</p>	<p>“circuitry that remains operative to monitor the loop”</p>
<p>“<i>second circuitry . . . to detect a resume signal</i>”</p> <p>[claim 7]</p> <p>“ . . . <i>second circuitry</i> coupled to the connector <i>to detect a resume signal</i> in the frequency range above voiceband and then to initiate the power up sequence for the first circuitry . . . ”</p>	<p>No construction necessary</p>	<p>“circuitry that remains operative to detect a resume signal”</p>

The Court construes “monitoring circuit” and “monitoring circuitry” as “circuitry that is capable of signal detection.” The Court construes “second circuitry . . . to detect a resume signal” as “circuitry that is capable of signal detection during low power operation.”

Plaintiff seeks no construction of the phrase “second circuitry . . . to detect a resume signal.” For the “monitoring circuit” phrase, Plaintiff seeks a construction of “circuitry that monitors.” Defendants seek to add the limitation that it “remains operative” by construing “monitoring circuitry” as “circuitry that remains operative to monitor the loop” and “second

circuitry . . . to detect a resume signal” as “circuitry that remains operative to detect a resume signal.” Defendants argue the specification supports the “remains operative” limitation when it states “[c]ircuitry to detect the resume signal must remain capable of signal detection during low power operation.” ‘323 patent, 5:28-30. However, Plaintiff responds by arguing that this would be importing a limitation that is not supported by the specification. Plaintiff argues this construction would require the “monitoring circuit” to remain operative to monitor the loop at all times, whereas the specification language Defendants cite only requires it remain operable “during low power operation.” *Id.*

For the claim phrases “monitoring circuit” and “monitoring circuitry,” Plaintiff’s construction of “circuitry that monitors” merely rephrases the claim language and adds no meaning, so the Court refuses this construction because it would not be helpful to the jury. The Court also disagrees with Defendants’ construction that adds the “remains operative” limitation. There is some support for this limitation in the specification where it states that “[t]his detector 115 remains operative when the unit 232 is in low-power mode.” ‘323 patent, 5:55-56. But this specification quotation is only referring to the monitoring circuit that detects the resume signal. *See* ‘323 patent, 5:47-59 (making clear that the “detector 115” detects the resume signal). The “monitoring circuitry” in claim 24 is also “configured [to] detect a shut-down condition on the loop,” and according to this Court’s construction of shut-down condition, the shut-down condition may also be a signal. There is no requirement in the specification that the “monitoring circuitry” configured to detect the shut-down condition remain operative to monitor the loop. The only characteristic of the “monitoring circuitry” that is repeatedly mentioned in the specification is that it is capable of signal detection. *See, e.g.*, ‘323 patent, 5:28-30. (“Circuitry

115 to detect the resume signal must remain capable of signal detection during low power operation.”); ‘323 patent, 2:16-18 (“monitoring the loop with a monitoring circuit to detect a resume signal outside the voiceband frequency range on the loop”); ‘323 patent, 6:28-30 (“The resume signal is subsequently detected by loop monitoring circuitry in the COT unit (step 304).”); ‘323 patent: 7:21-23 (“The shut-down signal is subsequently detected by monitoring circuitry in the COT ADSL unit (step 309).”). Therefore, the Court construes “monitoring circuit” and “monitoring circuitry” as “circuitry that is capable of signal detection.”

For the phrase “second circuitry . . . to detect a resume signal,” the Court agrees with Plaintiff that Defendants’ “remain[] operative” limitation is incorrect because this construction would require the circuitry to remain operative to monitor the loop for a resume signal at all times. The specification only requires “[t]his detector 115 remain[] operative when the unit 232 is in low-power mode.” ‘323 parent, 5:55-56. As discussed above, the Court’s construction reflects the specification’s characterization of this circuitry being capable of signal detection. Further, in this instance, since the “second circuitry” in claim 7 specifically refers to the circuitry capable of detecting a resume signal, the Court’s construction clarifies that the circuitry be capable of signal detection specifically during low power operation. *See* ‘323 patent, 5:28-30 (“Circuitry 115 to detect the resume signal must remain capable of signal detection during low power operation.”). Thus, the Court construes “second circuitry . . . to detect a resume signal” as “circuitry that is capable of signal detection during low power operation.”

VII. CONCLUSION

The Court adopts the constructions set forth in this opinion for the disputed terms of the ‘759 and ‘323 patents. The parties are ordered that they may not refer, directly or indirectly, to

each other's claim construction positions in the presence of the jury. Likewise, the parties are ordered to refrain from mentioning any portion of this opinion, other than the actual definitions adopted by the Court, in the presence of the jury. Any reference to claim construction proceedings is limited to informing the jury of the definitions adopted by the Court.

It is so ORDERED.