

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

TQ DELTA, LLC,

Plaintiff,

v.

2WIRE, INC.,

Defendant.

Civil Action No. 13-cv-01835-RGA

TQ DELTA, LLC,

Plaintiff,

v.

ZYXEL COMMUNICATIONS, INC
and
ZYXEL COMMUNICATIONS
CORPORATION,

Defendants.

Civil Action No. 13-cv-02013-RGA

TQ DELTA, LLC,

Plaintiff,

v.

ADTRAN, INC.,

Defendant.

Civil Action No. 14-cv-00954-RGA

ADTRAN, INC.,

Plaintiff,

v.

TQ DELTA, LLC,

Defendant.

Civil Action No. 15-cv-00121-RGA

MEMORANDUM OPINION

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February 7, 2018



ANDREWS, U.S. DISTRICT JUDGE:

Presently before the Court is the issue of claim construction of multiple terms in U.S. Patent Nos. 7,453,881 (“the ’881 patent”); 7,809,028 (“the ’028 patent”); 7,978,706 (“the ’706 patent”); and 8,422,511 (“the ’511 patent”). The Court has considered the Parties’ Joint Claim Construction Brief. (Civ. Act. No. 13-01835-RGA, D.I. 346; Civ. Act. No. 13-02013-RGA, D.I. 332; Civ. Act. No. 14-00954-RGA, D.I. 185; Civ. Act. No. 15-00121-RGA; D.I. 187).¹ The Court heard oral argument on November 2, 2017. (D.I. 399).

I. BACKGROUND

The patents-in-suit represent “Family 2” of the patents that Plaintiff has asserted against Defendants, and they all share a common specification. (D.I. 346 at 7 n.1). The Family 2 patents relate to reducing latency, or end-to-end delay of data transmission, in asynchronous transfer mode (“ATM”) communications systems. The patents claim both methods and systems for distributing a data stream across multiple digital subscriber lines (“DSL”) PHY’s² at a transmitter, and recombining the multiple data streams at a receiver, thereby generating a high data rate connection in ATM communications systems.

II. LEGAL STANDARD

“It is a bedrock principle of patent law that the claims of a patent define the invention to which the patentee is entitled the right to exclude.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (citation omitted). “[T]here is no magic formula or catechism for conducting claim construction.’ Instead, the court is free to attach the appropriate weight to appropriate sources ‘in light of the statutes and policies that inform patent law.’” *SoftView LLC v.*

¹ Unless otherwise specifically noted, all references to the docket refer to Civil Action No. 13-1835-RGA.

² According to Plaintiff’s expert, the Family 2 specification “equates a DSL PHY with a twisted wire pair, which is a transmission medium or physical link.” (D.I. 346 at 21).

Apple Inc., 2013 WL 4758195, at *1 (D. Del. Sept. 4, 2013) (quoting *Phillips*, 415 F.3d at 1324) (alteration in original). When construing patent claims, a court considers the literal language of the claim, the patent specification, and the prosecution history. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979-80 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370 (1996). Of these sources, “the specification is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.” *Phillips*, 415 F.3d at 1315.

“[T]he words of a claim are generally given their ordinary and customary meaning. . . . [This 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 1312-13. “[T]he ordinary meaning of a claim term is its meaning to [an] ordinary artisan after reading the entire patent.” *Id.* at 1321. “In some cases, the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words.” *Id.* at 1314.

When a court relies solely upon the intrinsic evidence—the patent claims, the specification, and the prosecution history—the court’s construction is a determination of law. *See Teva Pharms. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 841 (2015). The court may also make factual findings based upon consideration of extrinsic evidence, which “consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises.” *Phillips*, 415 F.3d at 1317-19. Extrinsic evidence may assist the court in understanding the underlying technology, the meaning of terms to one skilled in the art, and how the invention

works. *Id.* Extrinsic evidence, however, is less reliable and less useful in claim construction than the patent and its prosecution history. *Id.*

“A claim construction is persuasive, not because it follows a certain rule, but because it defines terms in the context of the whole patent.” *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998). It follows that “a claim interpretation that would exclude the inventor’s device is rarely the correct interpretation.” *Osram GMBH v. Int’l Trade Comm’n*, 505 F.3d 1351, 1358 (Fed. Cir. 2007) (citation omitted).

III. CONSTRUCTION OF DISPUTED TERMS

The asserted patents contain method and apparatus claims covering the reliable exchange of diagnostic and test information over a multicarrier communications system. Plaintiff asserts claims 17 and 18 of the ’881 patent, claims 1 and 2 of the ’706 patent, claims 2 and 6 of the ’511 patent, and claims 1 and 2 of the ’028 patent. (D.I. 346 at 27).

Claim 17 of the ’881 patent reads as follows:

17. A plurality of bonded transceivers, each bonded transceiver utilizing at least one transmission parameter value to reduce a difference in latency between the bonded transceivers, wherein a data rate for a first of the bonded transceivers is different than a data rate for a second of the bonded transceivers.

(’881 patent, claim 17) (disputed terms italicized). Claim 18 depends from claim 17.

The additional limitations of claim 18 do not contain disputed terms.

Claim 1 of the ’706 patent reads as follows:

1. A method to combine multiple DSL transceivers to generate a single high data rate connection between a service provider and a DSL subscriber over a plurality of twisted pair communications channels comprising:

utilizing at least one transmission parameter value, for each of the multiple DSL transceivers, to reduce a difference in latency between the multiple DSL transceivers; and

transmitting a plurality of packets or cells from the service provider to the DSL subscriber, wherein a data rate for a first DSL transceiver of the

multiple DSL transceivers is different than a data rate for a second DSL transceiver of the multiple DSL transceivers, wherein the at least one transmission parameter value is a Reed Solomon coding parameter value or an interleaving parameter value, and wherein the *combined multiple DSL transceivers* generate the single high data rate connection between the service provider and the DSL subscriber over the plurality of twisted pair communications channels.

('706 patent at claim 1) (disputed terms italicized). Claim 2 depends from claim 1. The additional limitations of claim 2 do not contain disputed terms.

Claim 2 of the '511 patent depends from claim 1. Claims 1 and 2 of the '511 patent read as follows:

1. A method to *combine multiple DSL transceivers* to generate a single high data rate connection between a service provider and a DSL subscriber over a plurality of twisted pair communications channels comprising

determining at least one transmission parameter value, for each of the multiple DSL transceivers, to reduce a difference in latency between the multiple DSL transceivers; and

transmitting a plurality of packets or cells from the service provider to the DSL subscriber utilizing the at least one transmission parameter value, wherein a data rate for a first DSL transceiver of the multiple DSL transceivers is different than a data rate for a second DSL transceiver of the multiple DSL transceivers and wherein the *combined multiple DSL transceivers* generate the single high data rate connection between the service provider and the DSL subscriber over the plurality of twisted pair communications channels.

2. The method of claim 1, further comprising receiving, at the DSL subscriber, the plurality of cells or packets using multiple DSL transceivers.

('511 patent at claims 1, 2) (disputed terms italicized). Claim 6 of the '511 patent reads as follows:

6. A system, capable of combining multiple DSL transceivers to generate a single high data rate connection between a service provider and a DSL subscriber over a plurality of twisted pair communications channels, comprising:

multiple DSL transceivers, each of the multiple DSL transceivers capable of *utilizing at least one transmission parameter value to reduce a difference in latency between the multiple DSL transceivers; and*

a plurality of transmitter portions capable of transmitting a plurality of packets or cells from the service provider to the DSL subscriber, wherein a data rate for a first DSL transceiver of the multiple DSL transceivers is different than a data rate for a second DSL transceiver of the multiple DSL transceivers and wherein the *combined multiple DSL transceivers* generate the single high data rate connection between the service provider and the DSL subscriber over the plurality of twisted pair communications channels.

(’511 patent at claim 6) (disputed terms italicized).

Claim 1 of the ’028 patent reads as follows:

1. A method comprising:

utilizing at least one transmission parameter value, for each transceiver in a plurality of bonded transceivers that distribute information from a single ATM cell stream on multiple ATM cell substreams over multiple twisted wire pairs using a multi-pair multiplexer or receive information on multiple ATM cell sub streams to form a single ATM cell stream using a multi-pair demultiplexer, to reduce a difference in latency between the bonded transceivers, wherein a data rate for a first of the plurality of bonded transceivers is different than a data rate for a second of the plurality of bonded transceivers; and

transmitting or receiving a plurality of cells or packets using the plurality of bonded transceivers, wherein an order of the cells is determined by a counter and wherein the plurality of cells are ATM cells and wherein the counter is a cell counter embedded in a header of an ATM cell.

(’028 patent at claim 1) (disputed terms italicized). Claim 2 depends from claim 1. The additional limitations of claim 2 do not contain disputed terms.

1. **“transceiver” (all asserted claims)**

- a. *Plaintiff’s proposed construction:* “communications device capable of transmitting and receiving data wherein the transmitter portion and receiver portion share at least some common circuitry”
- b. *Defendants’ proposed construction:* “communications device capable of transmitting and receiving data”
- c. *Court’s construction:* “communications device capable of transmitting and receiving data wherein the transmitter portion and receiver portion share at least some common circuitry”

The parties agreed during oral argument that the construction for “transceiver” in the Family 2 patents should be the same as the construction for “transceiver” in the Family 1 patents. (D.I. 399 at 7:3-25). Therefore, I construe “transceiver” to mean “communications device capable of transmitting and receiving data wherein the transmitter portion and receiver portion share at least some common circuitry.” (D.I. 477 at 4).

**2. “plurality of bonded transceivers”
(’881 patent, claims 17 & 18; ’028 patent, claims 1 & 2)**

- a. *Plaintiff’s proposed construction:* “two or more transceivers configurable to be located on the same side of two or more physical links where each transceiver is configurable to transmit or receive a different portion of the same bit stream via a different one of the physical links”
- b. *Defendants’ proposed construction:* “two or more transceivers, each corresponding to a physical link, coordinated to transmit or receive a different portion of the same bit stream via a different one of the physical links”
- c. *Court’s construction:* “two or more transceivers located on the same side of two or more physical links where each transceiver is configurable to transmit or receive a different portion of the same bit stream via a different one of the physical links, wherein ‘configurable to’ precludes rebuilding, recoding, or redesigning any of the components in a ‘plurality of bonded transceivers’”

The parties’ proposed constructions present two disputes with respect to this term, both dealing with the proper scope of the term.³ First, the parties’ proposed constructions differ regarding whether the transceivers that comprise a “plurality of bonded transceivers” are restricted to being located on the same side of two or more physical links. Second, the parties dispute whether the transceivers comprising a “plurality of bonded transceivers” must be “configured

³ Both parties cite portions of the specification discussing “ADSL PHYs ‘bonded’ together” to support their proposed constructions of the disputed “transceiver” terms. (*See, e.g.*, D.I. 346 at 50, 54). Though these portions of the specification do not recite a “transceiver,” neither party disputes their relevance to the construction of the disputed terms, perhaps because the specification mentions “transceiver” only three times. I therefore consider this evidence relevant to the construction of the disputed “transceiver” terms.

to/coordinated to”⁴ or merely “configurable to” transmit or receive a different portion of the bit stream via a different one of the physical links.

In its briefing, Plaintiff asserts that “[t]he phrase ‘located on the same side of two or more physical links’” is one of the “key concepts” of bonding. (D.I. 346 at 40). Plaintiff further argues that Defendants’ proposed construction is improper because it “allow[s] for the possibility of two transceivers on opposite sides of a system being the transceivers that are ‘bonded.’” (*Id.*). During oral argument, however, Plaintiff seemed to retreat from this position, arguing that requiring two or more transceivers to be located on the same side of two or more physical links “would add some additional requirements to” the “in the box[] capabilities” of a “plurality of bonded transceivers.” (D.I. 399 at 20:7-21). Defendants contend that Plaintiff’s proposed construction represents a “transparent attempt to broaden the meaning of the claims” by allowing transceivers “‘configurable’ to be located on the same side of two or more physical links and ‘configurable’ to transmit or receive a different portion of the same bit stream.” (D.I. 346 at 44 (emphasis omitted)). According to Defendants, Plaintiff’s proposed construction should be rejected because it would “eliminate the clear requirement of the claim language that the transceivers actually be bonded with one another” and eliminate the requirement for a physical link when the specification clearly describes one. (*Id.*). As support, Defendants offer their expert’s statement that, “Nearly any transceiver can be configurable, or configured to be on a transmit or receive side.” (D.I. 347 at A556).

⁴ Though Defendants’ proposed construction on the papers was “coordinated to,” Defendants represented during oral argument that they would also accept a “configured to” construction. (D.I. 399 at 29:1-16).

On this point I agree with Defendants. Plaintiff does not dispute that “nearly any transceiver can be configurable, or configured to be on a transmit or receive side.”⁵ The specification distinguishes “bonded” ADSL PHYs from “unbonded, i.e. traditional” ADSL PHYs based on whether they are actually connected to the multi-pair multiplexer, not whether they are “configurable” to be in some sort of physical relationship with one another. (’881 patent at 4:34-45 (“In addition to the two ADSL PHYs 160 and 170 that are bonded together, it should further be appreciated that in some instances in the same access node 100, other ADSL PHYs may be operating in the traditional way. Obviously, the ADSL PHYs operating the traditional way do not need to be connected to the multi-pair multiplexer.”)). This suggests that to be “bonded,” the physical arrangement of a plurality of transceivers must meet certain physical configuration requirements. The specification is also consistent with Plaintiff’s position in the briefing that “if a plurality of bonded transceivers were to transmit or receive a portion of the same bit stream they would necessarily have to be on the same side of the line.” (D.I. 346 at 48). Thus, I find that a “plurality of bonded transceivers” requires that each transceiver is “located on the same side of two or more physical links.”

The parties also dispute whether each transceiver in a “plurality of bonded transceivers” must be “configurable to” or “configured to” transmit or receive a different portion of the same bit stream via a different one of the physical links. Since the claim language unambiguously requires “bonded transceivers” independent of their claimed functions, Defendants assert that Plaintiff’s construction is improper because it broadens “the claim to cover any transceiver that is merely configurable to be bonded with another transceiver.” (*Id.* at 54). Plaintiff counters that

⁵ Instead, Plaintiff seems to argue that the Court should ignore this concern because Plaintiff’s proposed construction contains additional limitations that would preclude “nearly any transceiver” from qualifying as a “bonded” transceiver. (D.I. 346 at 49-50). This ignores the distinction drawn in the specification.

Defendants' proposed construction "attempt[s] to add the requirement that such 'bonded transceivers' be actively bonding" when neither the specification nor the claims impose any such requirement. (*Id.* at 48-51 (citing '881 patent at 11:31-34 ("The ATM over DSL system can also be implemented by physically incorporating the system and method into a software and/or hardware system, such as the hardware and software systems of a communications transceiver."))).

Plaintiff interprets Defendants' proposed "configured to" construction to require that a "plurality of bonded transceivers" be actively engaged in bonding. (*Id.* at 50). Defendants argue in their briefing that their "proposed construction does not necessarily require that the device be in operation, only . . . bonded and coordinated to" perform "the other limitations of the claim." (*Id.* at 54). During oral argument, however, Defendants asserted that bonded transceivers "have to actually be configured, put into operation, configured to be bonded and operate, you know, to, as you said, divide the data stream and send it across different lines." (D.I. 399 at 31:3-15). Given the discrepancies between Defendants' statements, I find Defendants' position on the meaning of "configured to" unclear.

Defendants appear to interpret Plaintiff's proposed "configurable to" construction to encompass all capabilities of the claimed apparatus, including those enabled by any hardware or software modifications that a person of ordinary skill in the art ("POSA") could implement. (D.I. 346 at 44, 54 ("[Plaintiff's] proposed construction, on the other hand, transparently tries to broaden the claim to cover any transceiver that is merely configurable to be bonded with another transceiver.")). During oral argument, however, Plaintiff clarified its understanding of "configurable to" to be more restrictive than "capable of" in the context of performing a function. (D.I. 399 at 19:6-19). According to Plaintiff, "capable of" connotes that "the idea that you're capable of redesigning and rebuilding it could come into play whereas configurable does not have

that connotation to it.” (*Id.*). In other words, “configurable means it is already designed to do this.” (*Id.*; *see also id.* at 16:3-6 (“[T]he two [bonded transceivers] have to be in the same device, and the device natively includes the bonding hardware and software that bonds the transceivers together.”)).

Having decided that a “plurality of bonded transceivers” requires that each transceiver is “located on the same side of two or more physical links,” I will adopt Plaintiff’s understanding of “configurable to,” and construe a “plurality of bonded transceivers” to mean “two or more transceivers located on the same side of two or more physical links where each transceiver is configurable to transmit or receive a different portion of the same bit stream via a different one of the physical links.”

This construction mitigates Defendants’ primary concern that Plaintiff’s proposed construction broadens the claim scope to include any transceiver that a POSA could modify to create a “bonded transceiver.” Under my construction, a transceiver cannot be a “bonded transceiver” unless it contains the hardware (in the required physical arrangement) and the software necessary for bonding, in such a form that a POSA would not have to rebuild or recode the hardware or software for the transceiver to perform the bonding function. (*See id.* at 16:3-6, 19:6-19). A transceiver may be a “bonded transceiver” if the hardware and software components are present in such a way that a POSA would have to activate them (e.g., by turning the transceiver on) to accomplish the bonding function, but if a POSA would have to modify source code in a transceiver, for example, the transceiver would not qualify as a “bonded transceiver.”

This construction is also consistent with the specification’s disclosure that, “The ATM over DSL system can also be implemented by physically incorporating the system and method into a software and/or hardware system, such as the hardware and software systems of a communications

transceiver.” (’881 patent at 11:31-34). The specification’s disclosure that system of the invention can be implemented by “physically incorporating” the elements of the claims “into a software and/or hardware system” does not suggest that actual operation of the system would be required to practice the system claims of the invention. In turn, the recited “plurality of bonded transceivers” need not be actively bonding.

Defendants maintain that I should adopt their proposed construction because “the claim language [in claims 17 and 18] does not use language of mere ‘capability’ or ‘configurability,’” whereas claims 19 and 20 use such language, suggesting that the patentee expressly chose not to use that language in claims 17 and 18, and in turn that claims 17 and 18 must impart something more than capability. (D.I. 346 at 54). Though claims 19 and 20 claim the bonded transceivers of claim 17 in terms of their capability to accomplish different functions (’881 patent at claims 19-20), none of the claims recite an apparatus in terms of “configurability.” Any argument by Defendants that “capability” and “configurability” are equivalent is mooted by my finding that “configurability,” in the context of the asserted claims, has a narrower meaning than “capability.” I therefore find Defendants’ argument unpersuasive.

Finally, Defendants submit that Plaintiff should not be able to broaden the claims to encompass scope that Plaintiff previously disclaimed during prosecution. (D.I. 346 at 55). As originally recited, claim 29 (which became asserted claim 17) referred to “[a] transceiver capable of utilizing at least one transmission parameter value” (D.I. 347 at A483). After the Examiner rejected this language for lack of enablement, Plaintiff amended the language to recite “[a] plurality of bonded transceivers, each bonded transceiver utilizing at least one transmission parameter value” (*Id.* at A447). This, according to Defendants, represents a disclaimer of claim scope that Plaintiff “should not be allowed to recapture through claim construction.” (D.I.

346 at 56). First, the Examiner's rejection of the "capable of" claim language occurred in the context of enablement, an issue which the parties do not argue here. (D.I. 347 at A471-72). Second, the rejected "capable of" language modified a "transceiver," not a "bonded transceiver." (*Id.* at A471-72, A483). Contrary to Defendants' assertions, I thus conclude that Defendants' prosecution history evidence fails to amount to a clear disclaimer.

Accordingly, I construe "plurality of bonded transceivers" to mean "two or more transceivers located on the same side of two or more physical links where each transceiver is configurable to transmit or receive a different portion of the same bit stream via a different one of the physical links, wherein 'configurable to' precludes rebuilding, recoding, or redesigning any of the components in a 'plurality of bonded transceivers.'"

3. **“combine multiple DSL transceivers”/ “combined multiple DSL transceivers”**
(’706 patent, claims 1 and 2;’511 patent, claims 2 and 6)

a. *Plaintiff’s proposed construction:*

“combine multiple DSL transceivers”: “locate two or more DSL transceivers on the same side of two or more physical links where each transceiver is configured to transmit or receive a different portion of the same bit stream via a different one of the physical links”

“combined multiple DSL transceivers”: “two or more DSL transceivers configurable to be located on the same side of two or more physical links where each transceiver is configurable to transmit or receive a different portion of the same bit stream via a different one of the physical links”

b. *Defendants’ proposed construction:* The preamble is limiting, and

“combine multiple DSL transceivers”: “locate at least two DSL transceivers, each corresponding to a physical link, on the same communications node so that they are coordinated to transmit or receive a different portion of the same bit stream via a different one of the physical links”

“combined multiple DSL transceivers”: “at least two DSL transceivers, each corresponding to a physical link, located on the same communications node and coordinated to transmit or receive a different portion of the same bit stream via a different one of the physical links”

c. *Court’s construction:* The preamble is limiting

“combine multiple DSL transceivers”: “locate two or more DSL transceivers on the same side of two or more physical links where each transceiver is configured to transmit or receive a different portion of the same bit stream via a different one of the physical links”

“combined multiple DSL transceivers”: “two or more DSL transceivers located on the same side of two or more physical links where each transceiver is configured to transmit or receive a different portion of the same bit stream via a different one of the physical links”

Claims 1 and 2 of the ’706 patent and claim 2 of the ’511 patent are method claims, whereas claim 6 of the ’511 patent is a system claim. As these claims are drafted, “combine multiple DSL transceivers” (’706 patent at claim 1; ’511 patent at claim 1) and “combining multiple DSL

transceivers” (’511 patent at claim 6) provide implicit antecedent basis for the term “combined multiple DSL transceivers.”

Defendants argue that the preambles of claims 1 and 2 of the ’706 patent and claims 2 and 6 of the ’511 patent are limiting, noting that they “recite necessary structure and steps, and provide antecedent basis for subsequent terms.” (D.I. 346 at 63). Plaintiff does not dispute this contention. I agree that the preambles of the asserted claims are limiting, in part because they provide the necessary antecedent bases for the “combined multiple DSL transceivers” term recited later in the claims.

The parties dispute whether a proper construction for each of these terms should include the limitation that bonded transceivers are always located on the same communications node. Defendants maintain that a proper construction includes this limitation, citing an embodiment in the specification that discloses “ADSL PHYs [that] may be operating in the traditional way” “in the same access node” as two bonded ADSL PHYs. (*Id.* at 64 (citing ’881 patent at 4:34-38)). Plaintiff counters that the node is recited in only one embodiment of the claims, and that the claim language should not be limited to this embodiment because the asserted claims do not include any “node” limitation. (*Id.* at 66). Plaintiff also notes that the specification discloses the location of the components of the ATM over DSL system (which include transceivers) on the same communications node as a permissive limitation. (*Id.*). The specification expressly characterizes the location of the components of the ATM over DSL system as a feature of the “exemplary embodiments illustrated herein.” (’881 patent at 3:25-34 (“Thus, it should be appreciated that the components of the communication system can be combined into one or more devices or collocated on a particular node of a distributed network, such as a telecommunications network.”)). The specification further states that “the components of the communication system can be arranged at

any location within a distributed network without affecting the operation of the system.” (*Id.* at 3:35-39). Accordingly, I decline to limit these terms to being located on the same side of a communications node. *See Karlin Tech., Inc. v. Surgical Dynamics, Inc.*, 177 F.3d 968, 973 (Fed. Cir. 1999) (“The general rule, of course, is that the claims of a patent are not limited to the preferred embodiment, unless by their own language.”).

During oral argument, the parties agreed to the Court’s proposed construction of “combine multiple DSL transceivers.” (D.I. 399 at 40:23-41:4, 46:9-15). Accordingly, I construe “combine multiple DSL transceivers” to mean “locate two or more DSL transceivers on the same side of two or more physical links where each transceiver is configured to transmit or receive a different portion of the same bit stream via a different one of the physical links.”

The parties acknowledge that their disputes and proposed constructions for the “combined multiple DSL transceivers” terms are “similar” to those for the “plurality of bonded transceivers” term because these terms “referenc[e] the combining of multiple DSL transceivers in the sense that the transceivers are bonded.” (D.I. 346 at 59, 62; D.I. 399 at 40:16-22, 45:16-18). This does not compel the conclusion, however, that “combined multiple DSL transceivers” should receive the same construction as “plurality of bonded transceivers” for purposes of the asserted patents.

The term “plurality of bonded transceivers” is claimed as an apparatus in claims 17 and 25 of the ’881 patent and their dependent claims. Method claims in the ’881 and ’028 patents also recite “a plurality of bonded transceivers” as a physical component used to carry out the claimed methods. (*See, e.g.*, ’881 patent at claims 1, 9; ’028 patent at claims 1, 9). By contrast, “combined multiple DSL transceivers” is a term used to describe a result of the operation of a claimed system or the execution of a claimed method. (*See, e.g.*, ’706 patent at claims 1, 6). Unlike the term “plurality of bonded transceivers,” the term “combined multiple DSL transceivers” depends on the

operation of a claimed system or the execution of a claimed method. Since “combined multiple DSL transceivers” as claimed represent a result of the claimed methods or the operation of the claimed systems, I conclude that “combine multiple DSL transceivers” and “combined multiple DSL transceivers” should be construed in parallel. Accordingly, I construe the term “combined multiple DSL transceivers” to mean “two or more DSL transceivers located on the same side of two or more physical links where each transceiver is configured to transmit or receive a different portion of the same bit stream via a different one of the physical links.”

4. “utilizing at least one transmission parameter value to reduce a difference in latency between the bonded transceivers” (’881 patent, claims 17 & 18; ’028 patent, claims 1 & 2)

- a. *Plaintiff’s proposed construction:* “to set a value of at least one parameter used for transmission to reduce the difference between the latencies of the respective bonded transceivers”
- b. *Defendants’ proposed construction:* “configuring at least one transmission parameter value to minimize the difference in the configuration latencies between the bonded transceivers”
- c. *Court’s construction:* “utilizing at least one transmission parameter value to reduce a difference in configuration latency between the bonded transceivers”

In claims 1 and 2 of the ’028 patent, this term is bisected by an additional lengthy phrase. (’028 patent at claims 1, 2). This difference is immaterial to the parties’ disputes regarding the construction of this term. During oral argument, the parties agreed to the Court’s proposed construction of this term,⁶ except as to how the decrease in configuration latency should be construed. (D.I. 399 at 51:21-52:12; 53:1-15, 61:21-24). Defendants maintained their position, however, that this term requires minimization of the differences in latencies between bonded transceivers. (*Id.* at 57:8-15).

⁶ Plaintiff agreed to the Court’s construction for the issues particular to this term, maintaining its earlier-recited positions on the proper constructions for “plurality of bonded transceivers,” “combine multiple DSL transceivers,” and “combined multiple DSL transceivers.” (D.I. 399 at 61:13-18).

Though the claims discuss reducing overall latency between the transceivers, Defendants maintain that, “The specification teaches one—and only one—way to reduce the difference in latency: by minimizing the configuration latency.” (D.I. 346 at 77). Therefore, Defendants argue, their use of “minimize” is proper and their proposed “construction accurately captures the alleged invention,” because “the difference in configuration latency is minimized, but other factors still contribute to the overall difference in latency.” (*Id.* at 77). Since minimizing configuration latency may only reduce overall latency, Defendants contend their construction is accurate. Plaintiff asserts that “reduce” and “minimize” are not synonymous—to minimize is “to reduc[e] to the smallest possible value.” (*Id.* at 74). In this context, Plaintiff argues, the use of one or the other “lead[s] to different results” in the context of the asserted claims. (*Id.*) Additionally, Plaintiff notes that the formulas disclosed by the specification to determine and reduce configuration latencies are examples, rather than requirements. (’881 patent at 6:66-7:36). Therefore, Plaintiff contends that since the claim language uses the term “reduce,” there is no reason to limit the claim to a preferred embodiment by importing Defendants’ proposed unduly narrow limitation to minimize the differences in latency. (*Id.* at 73-74).

On this point, I agree with Plaintiff. *Phillips*, 415 F.3d at 1323 (“[W]e have expressly rejected the contention that if a patent describes only a single embodiment, the claims of the patent must be construed as being limited to that embodiment.”). I find no reason here to change the claim language the patentee drafted.

Accordingly, I construe “utilizing at least one transmission parameter value to reduce a difference in latency between the bonded transceivers” to mean “utilizing at least one transmission parameter value to reduce a difference in configuration latency between the bonded transceivers.”

**5. “utilizing at least one transmission parameter value . . . to reduce a difference in latency between the multiple DSL transceivers”
(’706 patent, claims 1 &2, ’511 patent, claim 6)**

- a. *Plaintiff’s proposed construction:* “to set a value of at least one parameter used for transmission to reduce the difference between the latencies of the respective multiple DSL transceivers”
- b. *Defendants’ proposed construction:* “configuring at least one transmission parameter value to minimize the difference in configuration latencies between the multiple DSL transceivers”
- c. *Court’s construction:* “utilizing at least one transmission parameter value . . . to reduce a difference in configuration latency between multiple DSL transceivers”

In claim 6 of the ’511 patent, this term does not contain an intervening phrase. (’511 patent at claim 6). This difference is immaterial to the parties’ disputes regarding the construction of this term. The language in this term is identical to the fourth disputed term except that it recites “multiple DSL transceivers” instead of “bonded transceivers.” The parties agree that this term should be construed in parallel with the fourth disputed term.⁷ (D.I. 346 at 78-79). Therefore, I will construe this term to mean “utilizing at least one transmission parameter value . . . to reduce a difference in configuration latency between the multiple DSL transceivers.”

6. “determining at least one transmission parameter value . . . to reduce a difference in latency between the multiple DSL transceivers” (’511 patent, claim 2)

- a. *Plaintiff’s proposed construction:* “to determine a value of at least one parameter used for transmission to reduce the difference between the latencies of the multiple DSL transceivers”
- b. *Defendants’ proposed construction:* “computing at least one transmission parameter value to minimize the difference between the configuration latencies of the multiple DSL transceivers”
- c. *Court’s construction:* “determining a value of at least one parameter used for transmission . . . to reduce the difference between the configuration latencies of the multiple DSL transceivers”

⁷ The parties maintain their earlier-recited positions with respect to “multiple DSL transceivers” and “bonded transceivers.”

This term is identical to the fifth disputed term except that the claim language requires “determining” rather than “utilizing” at least one transmission parameter value. The parties agree that aside from this substitution, this term should be construed in parallel with the fourth disputed term.⁸ (D.I. 346 at 80-81; D.I. 399 at 73:16-74:11).

Defendants maintain that their interpretation “reflects the specification’s only teaching for how to reduce the difference in latency between multiple bonded DSL transceivers.” (D.I. 346 at 83). According to Defendants, this term necessarily involves computing, because the transmission parameter is determined through using the disclosed equation and setting as equal two or more configuration latencies, which results in computed interleaver depth and codeword length. (*Id.*). In Defendants’ view, Plaintiff’s proposed construction over-broadens the scope of the term. (*Id.*).

Plaintiff asserts that there is no reason to re-write the claim language from “determining” to “computing,” and that determining may encompass, but is not necessarily limited to, computing. (*Id.* at 80). Plaintiff argues that coding methods are based on several different parameters, such as those recited in the ’811 patent specification, and consequently, coding methods are determined, not computed—computing unduly narrows the claims. (*Id.* at 82 (citing ’811 patent at 6:12-16)).

I agree with Plaintiff. “Determining” represents a broader concept than “computing.” The specification’s sole disclosure of an embodiment in which the transmission parameter value is “computed” does not justify importing the preferred embodiment into the claim. *Phillips*, 415 F.3d at 1323. Therefore, I will construe this term to mean “determining at least one transmission parameter value . . . to reduce a difference in configuration latency between multiple DSL transceivers.”

⁸ The parties maintain their earlier-recited positions with respect to “multiple DSL transceivers.”

IV. CONCLUSION

Within five days the parties shall submit a proposed order consistent with this Memorandum Opinion suitable for submission to the jury.