

IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF DELAWARE

TQ DELTA, LLC,

Plaintiff,

v.

2WIRE, INC.

Defendant.

Civil Action No. 1:13-cv-1835-RGA

TQ DELTA, LLC,

Plaintiff,

v.

ZYXEL COMMUNICATIONS, INC  
and  
ZYXEL COMMUNICATIONS  
CORPORATION,

Defendants.

Civil Action No. 1:13-cv-02013-RGA

TQ DELTA, LLC,

Plaintiff,

v.

ADTRAN, INC.,

Defendant.

Civil Action No. 1:14-cv-00954-RGA

ADTRAN, INC.,

Plaintiff,

v.

TQ DELTA, LLC,

Defendant.

Civil Action No. 1:15-cv-00121-RGA

MEMORANDUM OPINION

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July, 3, 2018

  
ANDREWS, U.S. DISTRICT JUDGE:

Presently before the Court is the issue of claim construction of multiple terms in U.S. Patent Nos. 8,462,835 (“the ‘835 patent”) and 8,594,162 (“the ‘162 patent”). The Court has considered the Parties’ Joint Claim Construction Brief (Civ. Act. No. 13-01835-RGA, D.I. 459; Civ. Act. No. 13-02013-RGA, D.I. 443; Civ. Act. No. 14-00954-RGA, D.I. 298; Civ. Act. No. 15-00121-RGA; D.I. 299).<sup>1</sup> The Court heard oral argument on June 21, 2018.<sup>2</sup>

## I. BACKGROUND

The patents-in-suit represent “Family 6” of the patents that Plaintiff has asserted against Defendants. (D.I. 459 at 1). The parties divide the contested patents into ten patent families. (*e.g.* D.I. 269). The Family 6 patents provide a “solution for impulse noise protection adaptation,” namely, “features that improve a communication system’s ability to deliver a sufficiently low error rate in the presence of impulse noise without (a) compromising high data rate and low latency performance more than necessary, or (b) requiring repeated and lengthy re-initialization procedures that interrupt steady-state data transmission.” (D.I. 459 at 17, 20).

## 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) (internal quotation marks 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. Apple Inc.*, 2013 WL 4758195, at \*1 (D. Del. Sept. 4, 2013) (quoting *Phillips*,

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<sup>1</sup> Hereinafter, all citations to the docket refer to Civil Action No. 13-1835-RGA.

<sup>2</sup> As of July 3, 2018, a transcript has not been completed. Any representations or quotations attributed to the parties are from memory.

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, 977–80 (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 (internal quotation marks omitted).

“[T]he words of a claim are generally given their ordinary and customary meaning. . . . [Which 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 (citations and internal quotation marks omitted). “[T]he ordinary meaning of a claim term is its meaning to [an] ordinary artisan after reading the entire patent.” *Id.* at 1321 (internal quotation marks omitted). “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 Pharm. 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. TERMS FOR CONSTRUCTION

The asserted ‘835 patent claims<sup>3</sup> read as follows:

8. An apparatus configurable to adapt forward error correction and interleaver parameter (FIP) settings during steady-state communication or initialization comprising:
  - a transceiver, including a processor, configurable to:
    - transmit a signal using a first *FIP setting*,
    - transmit a *flag signal*, and
    - switch to using for transmission, a second *FIP setting* following transmission of the *flag signal*,
  - wherein: the first *FIP setting* comprises at least one first FIP value,
  - the second *FIP setting* comprises at least one second FIP value, different than the first FIP value, and
  - the switching occurs on a pre-defined forward error correction codeword boundary following the flag signal.*
10. The apparatus of claim 8, wherein a first *interleaver parameter value* of the first *FIP setting* is different than a second *interleaver parameter value* of the second *FIP setting*.

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<sup>3</sup> (D.I. 459 at 23-24).

(‘835 patent, claims 8, 10) (disputed terms italicized). The asserted ’162 patent claims<sup>4</sup> read as follows:

8. A device comprising:
  - an interleaver configured to interleave a plurality of bits; and
  - a transmitter portion coupled to the interleaver and configured to:
    - transmit using a first *interleaver parameter value*;
    - transmit a *flag signal*; and
    - change to transmitting using a second *interleaver parameter value* that is different than the first *interleaver parameter value*,

*wherein the second interleaver parameter value is used for transmission on a pre-defined forward error correction codeword boundary following transmission of the flag signal.*
9. The device of claim 8, wherein the *flag signal* is an inverted sync symbol.

(‘162 patent, claims 8, 9).

The parties represented at oral argument that they agree to be bound by the Court’s construction of “transceiver” in Family 1.

**A. “flag signal” (‘835 patent, claims 8 and 10)**

1. *Plaintiff’s proposed construction*: “inverted sync symbol or sync flag used to synchronize the switch to using an updated FIP setting”
2. *Plaintiff’s compromise construction*: “a signal used to indicate, and synchronize when, an updated FIP setting is to be used (the signal does not include the FEC codeword counter upon which the updated FIP setting is to be used)”
3. *Defendants’ proposed construction*: “signal indicating when updated FIP settings are to be used”
4. *Defendants’ compromise construction*: “signal used to indicate when an updated FIP setting is to be used (the signal does not include the FEC codeword counter value upon which the updated FIP setting is to be used)”

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<sup>4</sup> (D.I. 459 at 23-24).

5. *Court's construction*: “signal used to indicate when an updated FIP setting is to be used (the signal does not include the FEC codeword counter value upon which the updated FIP setting is to be used)”

The parties submitted compromise constructions on June 25, 2018. (D.I. 534-1). The parties agree that a “flag signal” is a “signal used to indicate when an updated FIP setting is to be used,” and that “the signal does not include the FEC codeword counter value upon which the updated FIP setting is to be used.” (*Id.*). Their sole point of disagreement is whether the “signal” is also “used to . . . synchronize when” an updated FIP setting is to be used. (*Id.*).

The specification provides, “[T]he receiver and transmitter can synchronize the modification of the FEC and interleaving parameters such that the both the transmitter and receiver start using the parameters at the same instant in time. This synchronization can be based on, for example, a synchronization using FEC codeword counters or a flag signal.” (‘835 patent, 11:4-9). The parties stated at oral argument that they agree that the specification provides two embodiments, and that the claims read only on the “flag signal” embodiment, and not the “message” or “FEC codeword counter” embodiment. The “flag signal” embodiment provides that “a flag or a marker signal” is used to “synchronize the change in FIP settings.” (‘835 patent, 11:66-12:5). The specification also provides that Figure “6 illustrates an exemplary method of synchronization using a flag signal according to this invention,” where “the transmitter forwards to the receiver a flag signal indicating when the new FIP settings are to be used.” (‘835 patent, 19:15-30).

Plaintiff argues that its proposed construction “provides an explanation of what a flag signal actually is in the context of the invention.” (D.I. 459 at 47).

Defendants, on the other hand, argue, “Plaintiff attempts to import into the claims transmitter and receiver synchronization that is simply not required.” (D.I. 459 at 39). “The

asserted claims,” argue Defendants, “are directed only to actions of the transmitter portion of the transceiver that transmits the flag signal to the receiver portion of an (unclaimed) transceiver,” and “the asserted claims do not refer to, discuss, or require any action at all by the transceiver that receives the flag signal, much less synchronization between the transmitter and the receiver.” (*Id.* at 39-40). Defendants urge that “Plaintiff attempts to blur what is discussed in the specification (‘a transceiver, upon receipt of the flag signal would determine when to begin using an updated FIP setting’[])” with “what is required by the asserted claims (‘the switching occurs on a pre-defined forward error correction codeword boundary following the flag signal’).” (D.I. 459 at 40 (citing ‘835 patent, 12:4-11, 12:25-31, claim 8)) (emphasis omitted).

I agree with Defendants. Although an “exemplary embodiment” provides that “a flag or a marker signal” is used to “synchronize the change in FIP settings,” ‘835 patent, 12:3-5, that embodiment does not limit a flag signal’s application to synchronization and only synchronization. “Absent disclaimer or lexicography, the plain meaning of the claim controls.” *See Toshiba Corp. v. Imation Corp.*, 681 F.3d 1358, 1369 (Fed. Cir. 2012). Here, the patent does not provide lexicography for “flag signal.” Plaintiff does not argue that a disclaimer supports its construction. (*See generally*, D.I. 459). Therefore, I must respect the patentee’s choice to limit the claims to “the actions of the transmitter portion of the transceiver that transmits the flag signal.”

I adopt Defendants’ compromise construction.

**B. “flag signal” (‘162 patent, claims 8 and 9)**

1. *Plaintiff’s proposed construction*: “inverted sync symbol or sync flag used to synchronize the change to using an updated interleaver parameter value”
2. *Plaintiff’s compromise construction*: “a signal used to indicate, and synchronize when, an updated interleaver parameter value is to be used (the signal does not include the FEC codeword counter upon which the updated interleaver parameter value is to be used)”



3. *Defendants' proposed construction*:<sup>5</sup> “signal indicating when an updated interleaver parameter is to be used”
4. *Defendants' compromise construction*: “signal used to indicate when an updated interleaver parameter value is to be used (the signal does not include the FEC codeword counter value upon which the updated interleaver parameter value is to be used)”
5. *Court's construction*: “signal used to indicate when an updated interleaver parameter value is to be used (the signal does not include the FEC codeword counter value upon which the updated interleaver parameter value is to be used)”

The parties agree that the issues for “flag signal” in the ‘162 patent are the same as the issues for “flag signal” in the ‘835 patent. (D.I. 459 at 58-61). Accordingly, I adopt “signal used to indicate when an updated interleaver parameter value is to be used (the signal does not include the FEC codeword counter value upon which the updated interleaver parameter value is to be used)” as my construction.

**C. “interleaver parameter value” (‘835 patent, claims 8 and 10; ‘162 patent, claims 8 and 9)**

1. *Plaintiff's proposed construction*: “numerical value of an interleaver depth parameter”
2. *Defendants' proposed construction*: “the numerical value of the interleaver depth in number of codewords”
3. *Court's construction*: “numerical value of the interleaver depth”

The parties agree that an “interleaver parameter value” is the “numerical value of the interleaver depth.” (D.I. 459 at 61). They dispute whether the word “parameter” should be included in the construction. Defendants also seek to add a requirement that the recited “value” be specifically “in number of codewords.” (*Id.*).

As to the parties' first dispute, Plaintiff indicated at oral argument that it has “no problem” dropping its proposed “parameter” language. The parties agree that the claimed

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<sup>5</sup> The parties represented at oral argument that the ‘162 patent is asserted only against ADTRAN.

“interleaver parameter” is “depth,” so “interleaver depth parameter” is redundant. Accordingly, I will not include “parameter” in my construction.

As to the parties’ second dispute, Defendants point to the ‘835 patent specification as support for a requirement that the recited “value” be specifically “in number of codewords.” (D.I. 459 at 62). The specification provides that the “G.992.3 [standard] defines the following variables,” including “INP.”<sup>6</sup> (‘835 patent, 2:2-5). The formula for “INP” includes “D,” and the specification says, “D is the interleaver depth in number of codewords.” (‘835 patent, 2:5-14). Defendants argue that this provision is “close to lexicography,” and “defines the interleaver depth parameter in this context of the Family 6 patents.” (D.I. 459 at 62).<sup>7</sup>

However, Defendants stated at oral argument that they agree that a “codeword” can be measured in bytes. (*See also* D.I. 460-2 at A200; ‘835 patent, 2:12-14). Because the specification provides that “interleaver depth” can be measured in “number of codewords,” it follows that “interleaver depth” can also be measured in bytes. Additionally, Defendants’ expert measures “interleaver depth” using both “number of codewords” and “bytes.” (D.I. 459 at 66 (citing D.I. 460-2 at A397-98, ¶¶ 66-67)). Accordingly, Plaintiff argues that “Defendants’ proposed construction improperly imports an example from the specification into the claims.” (D.I. 459 at 65). I agree with Plaintiff. Because “interleaver depth” can be measured using a unit other than “number of codewords,” the specification’s reference to measuring “interleaver depth” “in number of codewords” must be a mere embodiment. A specific equation in the specification uses “number of codewords,” rather than “bytes,” to define interleaver depth. It is

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<sup>6</sup> “INP” standards for “Impulse Noise Protection.” (‘835 patent, 1:11).

<sup>7</sup> Defendants also noted at oral argument that every embodiment in the specification refers to “interleaver depth” using “number of codewords.” Therefore, argue Defendants, I must limit the claim term to those embodiments. (*Id.*). However, the Federal Circuit has “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.” *Phillips*, 415 F.3d at 1323. Accordingly, Plaintiff’s argument falls short.

not lexicography. “Absent disclaimer or lexicography, the plain meaning of the claim controls.” See *Toshiba*, 681 F.3d at 1369. Accordingly, the plain meaning of the claim controls. The plain language of the claim does not specify measurement “in number of codewords.”

Plaintiff also argues, “the G.993.1 VDSL standard [is] incorporated by reference into the Family 6 patents.” (D.I. 459 at 61). In the G.993.1 standard, “interleaver input block length is not equal to the length of a FEC codeword,” and an “interleaver parameter value” is simply a “numerical value of an interleaver depth parameter.” (*Id.* (citing D.I. 460-2 at A359-60, ¶ 53)). As a result, argues Plaintiff, “it would be incorrect to require that the interleaver parameter value be expressed in terms of a number of codewords.” (D.I. 459 at 61).

Defendants do not dispute the substance of the G.993.1 VDSL standard. However, Defendants dispute that the standard is properly incorporated by reference into the ‘835 patent. (D.I. 459 at 63). The June 2004 version of the G.991.1 Recommendation was approved in June 2004, but it was not published until October 24, 2005. (D.I. 460-2 at A373-74, ¶ 19). The parent application to the ‘835 patent was filed on March 3, 2005. (D.I. 460-1 at A1; D.I. 459 at 15). The ‘835 patent issued in 2013. (D.I. 460-1 at A1). Because the G.993.1 standard was published after the priority date of the ‘835 patent, Defendants argue that it is not properly incorporated by reference. (D.I. 459 at 63).<sup>8</sup>

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<sup>8</sup> Defendants also argue that the patent does not “identify with detailed particularity what specific material it incorporates and clearly indicate where that material is found in the various documents.” (D.I. 459 at 93-94 (citing *Zenon Envtl., Inc. v. U.S. Filter Corp.*, 506 F.3d 1370, 1378 (Fed. Cir. 2007))). The specification explicitly incorporates “the VDSL series of ITU G.993.x standards” by reference. (‘835 patent, 1:53-54, 2:22-23). Defendants agree that “[a] person of ordinary skill in the art would have understood the ‘x’ in . . . ‘G.993.x’ to capture all values of ‘x.’” (D.I. 459 at 94). The G.993.1 standard is therefore captured by the specification’s reference. However, Defendants argue that the “quantity and identities of documents included in” the G.992.x standards “shift with time.” (*Id.*). Defendants note that there was a “universe of 67 documents totaling 4,192 pages . . . purportedly incorporated by reference in either of the Family 6 patents.” (*Id.*). By stating that the G.993.x standards “are incorporated herein by reference in their entirety” at the March 3, 2005 filing date, the patent explicitly and with particularity incorporated the June 2004 G.993.1 standard by reference. (See, e.g., D.I. 460-1 at A121). Accordingly, Defendants’ argument falls short.

“Incorporation by reference has never been permissible under 35 U.S.C. § 112 of material necessary for an adequate disclosure which is unavailable to the public.” *Quaker City Gear Works, Inc. v. Skil Corp.*, 747 F.2d 1446, 1455 (Fed. Cir. 1984). To satisfy the requirements of § 112, public disclosure must be performed “upon issuance of a patent.” *Feldman v. Aunstrup*, 517 F.2d 1351, 1355 (C.C.P.A. 1975); *accord*, *Application of Hawkins*, 486 F.2d 569, 574 (C.C.P.A. 1973). Therefore, because “the function of section 112 in ensuring complete public disclosure is only violated if the disclosure is not complete at the time it is made public,” whether an incorporated reference is publicly available in line with the requirements of § 112 should be measured with reference to “the issue date.” *Hawkins*, 486 F.2d at 574; *accord*, *Nomadix, Inc. v. Second Rule LLC*, 2009 WL 10668158, at \*20-21 (C.D. Cal. Jan. 16, 2009).<sup>9</sup>

Because the ‘835 patent issued after the G.993.1 standard was published, the patent properly incorporates the standard by reference.<sup>10</sup> This result supports Plaintiff’s contention that “it would be incorrect to require that the interleaver parameter value be expressed in terms of a number of codewords.” (D.I. 459 at 61).

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<sup>9</sup> This line of cases pertains to § 112, ¶ 1. Indefiniteness stems from § 112, ¶ 2. However, Defendants present no argument suggesting that the outcome should be any different here. Rather, Defendants generically recite the proposition, “[I]ncorporation by reference has a home in patent cases provided that any reference made is to that which is available to the public.” (D.I. 459 at 63 (citing *General Elec. Co. v. Brenner*, 407 F.2d 1258, 1262 (D.C. Cir. 1968))).

<sup>10</sup> The U.S. Patent and Trademark Office’s Manual of Patent Examining Procedure (“MPEP”) defines “essential material” as “that which is necessary to [] describe the claimed invention [or] provide an enabling disclosure of the claimed invention.” (D.I. 460-1, A166-67). The MPEP further states, “In any application which is to issue to a U.S. patent, essential material may not be incorporated by reference to . . . non-patent publications,” like the G.993.1 standard. (*Id.*). As a result, Defendants argue that the G.993.1 standard cannot be used for claim construction. (D.I. 459 at 95-96). However, the MPEP rule defines “essential material” as material necessary for written description or enablement. Whether the G.993.1 standard is necessary for written description or enablement is unclear. Defendants have not yet presented an argument that the Family 6 patent specification does not provide at least one enabling embodiment. Defendants may argue that the standard is “essential” at summary judgment. Furthermore, the MPEP is not binding on this Court, and Defendants cite no case law dictating that I must follow its standard. *See Molins PLC v. Textron, Inc.*, 48 F.3d 1172, 1180 n. 10 (Fed. Cir. 1995) (“The MPEP [is] commonly relied upon as a guide to patent attorneys and patent examiners on procedural matters.’ While the MPEP does not have the force of law, it is entitled to judicial notice as an official interpretation of statutes or regulations as long as it is not in conflict therewith.”); *see also Enzo Biochem, Inc. v. Gen-Probe Inc.*, 323 F.3d 956, 964 (Fed. Cir. 2002) (“The Guidelines, like the Manual of Patent Examining Procedure (‘MPEP’), are not binding on this court, but may be given judicial notice to the extent they do not conflict with the statute.”).

Accordingly, I will not read Defendants' proposal into the claims. Instead, I adopt the agreed-upon "numerical value of an interleaver depth parameter" as my construction.

**D. "FIP setting" ('835 patent, claims 8 and 10)**

1. *Plaintiff's proposed construction*: "set including at least one forward error correction parameter value and at least one interleaver parameter value"
2. *Defendants' proposed construction*: "forward error correction and interleaver parameters characterized by the set of parameters for codeword size in bytes, number of information bytes in a codeword, number of parity or redundancy bytes in a codeword, and interleaver depth in number of codewords"
3. *Court's construction*: "set including at least one forward error correction parameter value and at least one interleaver parameter value"

"FIP" stands for "Forward error correction and Interleaving Parameters." ('835 patent, 1:36, 2:23-24). Therefore, the parties agree that "FIP setting" includes both a "forward error correction parameter" and an "interleaver parameter." (D.I. 459 at 74). The parties further agree that forward error correction and interleaving were well-known concepts at the time of the invention of the Family 6 patents. (D.I. 459 at 12, 79, 83).

However, Defendants argue that "FIP setting" is limited to four specific parameters with specific units: codeword size in bytes, number of parity or redundancy bytes in a codeword, interleaver depth in number of codewords, and number of information bytes in a codeword. (D.I. 459 at 74). Defendants draw their construction from the specification, which provides, "G.992.3 defines the following variables," including INP, where "N is the codeword size in bytes, R is the number of parity (or redundancy) bytes in a codeword, D is the interleaver depth in number of codewords[,], L is the number of bits in a DMT symbol[, and] K is the number of information bytes in a codeword." ('835 patent, 2:3-16). The specification then states that "FIP" is "characterized by the set of parameters (N, K, R, D)." ('835 patent, 2:24-25). Because "FIP setting" as an abbreviation is "not a term of art outside the context of the Family 6 patents,"

Defendants argue that looking to the specification to understand the term is proper. (D.I. 459 at 77).

Plaintiff counters, “Defendants’ proposed construction improperly limits the claim term to require all of a set of examples disclosed in the specification.” (D.I. 459 at 74). As evidence, Plaintiff points to the G.993.1 standard, incorporated by reference into the Family 6 patents. *Supra* Section III.C; (D.I. 459 at 75). The G.993.1 standard references other interleaving “parameters,” including block length (I). (D.I. 460-1 at A130).

The Federal Circuit has “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.” *Phillips*, 415 F.3d at 1323. Rather, “[a]bsent disclaimer or lexicography, the plain meaning of the claim controls.” *See Toshiba Corp.*, 681 F.3d at 1369. Here, Defendants improperly limit “FIP setting” to exactly four parameters, and only those parameters. Although the specification states that “FIP” is “characterized by the set of parameters (N, K, R, D),” the G.993.1 standard, which is part of the intrinsic record, confirms that this statement is a mere embodiment. An “FIP setting” may include other parameters. For that reason, I decline to adopt Defendants’ proposed construction.<sup>11</sup>

Separately, I will use the word “value” in the construction. By failing to use the word “value” in their construction, Defendants’ construction effectively drops the word “setting” from the term “FIP setting.” (D.I. 459 at 81).

Accordingly, I adopt Plaintiff’s proposed construction.

#### **E. “FIP value” (‘835 patent, claims 8 and 10)**

1. *Plaintiff’s proposed construction*: “numerical value of a forward error correction parameter or numerical value of an interleaver parameter”

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<sup>11</sup> Defendants’ proposed construction also recites units for each parameter. For the reasons provided in Section III.C, those units are embodiments. I decline to read the units into the claims from the specification.

2. *Defendants' proposed construction*: “numerical value of codeword size in bytes, number of information bytes in a codeword, number of parity or redundancy bytes in a codeword, or interleaver depth in number of codewords”
3. *Court's construction*: “numerical value of a forward error correction parameter or numerical value of an interleaver parameter”

The parties agree that the issues for “FIP value” are the same as the issues for “FIP setting.” (D.I. 459 at 85-88). Accordingly, I adopt “numerical value of a forward error correction parameter or numerical value of an interleaver parameter” as my construction for “FIP value.”

**F. “the switching occurs on a pre-defined forward error correction codeword boundary” (‘835 patent, claims 8 and 10)**

1. *Plaintiff's proposed construction*: “the switching to an updated FIP setting is effective on the boundary of a forward error correction codeword where the position of the boundary of each codeword is known prior to the switching”
2. *Defendants' proposed construction*: Indefinite
3. *Court's construction*: “the switching to an updated FIP setting is effective on the boundary of a forward error correction codeword where the position of the boundary of each codeword is known prior to the switching”

“[A] patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2124 (2014).

The parties agree that “pre-defined” modifies “boundary.” (D.I. 459 at 90, 100).

Defendants argue that the term is indefinite because the Family 6 patents do not disclose what a “pre-defined” boundary is, or how to determine it. (D.I. 459 at 90).

Plaintiff responds by arguing, “[T]he term ‘predefined’ has a well-known definition,” and “that it is generally understood to mean ‘defined in advance.’” (D.I. 459 at 100 (citing *IGT v.*



*Balley Gaming Int'l, Inc.*, 659 F.3d 1109, 1119 (Fed. Cir. 2011)). Plaintiff argues that the term's infringement boundaries are clear, as the claimed boundary can be any "forward error correction codeword boundary," so long as it is defined in advance. (D.I. 459 at 100-01). Defendants do not dispute that a skilled artisan would know what an FEC codeword boundary is, or that all FEC codeword boundaries can be known in advance of the switch. (*See generally* D.I. 459 at 90-97, 103-106). Rather, Defendants argue, "Just knowing where the FEC codeword boundaries are is no more helpful to enable one [of] ordinary skill to identify the 'pre-defined forward error correction boundary' than knowing where the lines are painted in a parking lot is to enable a person [to] find his car in that parking lot." (D.I. 459 at 90-91).

The breadth of this particular claim limitation does not render the entirety of the claims indefinite. *BASF Corp. v. Johnson Matthey Inc.*, 875 F.3d 1360, 1366 (Fed. Cir. 2017) ("[B]readth is not indefiniteness."). The claim does not require switching to occur at a certain pre-defined boundary. Rather, the claim only requires that some boundary be pre-selected for switching.

Accordingly, I adopt Plaintiff's proposed construction, "the switching to an updated FIP setting is effective on the boundary of a forward error correction codeword where the position of the boundary of each codeword is known prior to the switching." Because the limitation is amenable to construction, I find that Defendants have not proven indefiniteness.<sup>12</sup> Defendants can make other invalidity arguments at summary judgment.

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<sup>12</sup> Defendants argue that Plaintiff switching its position during briefing, indicating indefiniteness. (D.I. 459 at 103). In its opening brief, Plaintiff argued that the transmitting transceiver and receiving transmitter "independently know how to calculate an exact FEC codeword boundary transition point relative to the occurrence of the sync flag." (*Id.* at 89, 91). Plaintiff later argued that switching need only occur on "any one" of the many pre-defined FEC codeword boundaries. (*Id.* at 99). These positions are consistent. Plaintiff argues that the claim requires some boundary to be pre-selected, but does not specify which boundary must be pre-selected. Accordingly, Defendants' argument falls short.



**G. “the second interleaver parameter value is used for transmission on a pre-defined forward error correction codeword boundary” (‘162 patent, claims 8 and 9)**

1. *Plaintiff’s proposed construction*: “the second interleaver parameter value is used for transmission starting on a boundary of a forward error correction codeword where the position of the boundary of each codeword is known prior to use of the second interleaver parameter value”
2. *Defendants’ proposed construction*: Indefinite
3. *Court’s construction*: “the second interleaver parameter value is used for transmission starting on a boundary of a forward error correction codeword where the position of the boundary of each codeword is known prior to use of the second interleaver parameter value”

The parties agree that the issues for this term are the same as the issues for Term 6. (D.I. 459 at 106-108). Accordingly, I find that Defendants have not proven indefiniteness, and adopt Plaintiff’s proposed construction.

**IV. CONCLUSION**

Within five days the parties shall submit a proposed order consistent with this Memorandum Opinion.