IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
TYLER DIVISION

CELLULAR COMMUNICATIONS EQUIPMENT LLC,	§ § § §	
Plaintiff,	§ §	**CASE NO. 6:14-CV-982**
v.	§ §	**Consolidated Lead Case**
LG ELECTRONICS, INC., et al.,	§ § §	
Defendants.	§ § §	

<u>MEMORANDUM OPINION AND ORDER</u>

This Memorandum Opinion construes the disputed claim terms in United States Patent Nos. 8,385,966 ("the '966 Patent"), 8,848,556 ("the '556 Patent"), and 8,868,060 ("the '060 Patent"), asserted in this suit by Plaintiff Cellular Communications Equipment LLC. Also before the Court is Defendants' Motion for Summary Judgment of Indefiniteness (Doc. No. 147).

On December 17, 2015, the parties presented oral arguments on the disputed claim terms and on the Motion for Summary Judgment at a Markman hearing. For the reasons stated herein, the court **ADOPTS** the constructions set forth below and **DENIES** Defendants' Motion for Summary Judgment.

<u>BACKGROUND</u>

Plaintiff, Cellular Communications Equipment LLC ("CCE") alleges Defendants infringe the three asserted patents. The patents-in-suit were acquired from Nokia Siemens Networks and generally relate to mobile communications. Doc. No. 139 at 1.

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APPLICABLE LAW

Claim Construction

"It is a 'bedrock principle' of patent law that 'the claims of a patent define the invention to which the patentee is entitled the right to exclude.'" Phillips v. AWH Corp., 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (quoting Innova/Pure Water Inc. v. Safari Water Filtration Sys., Inc., 381 F.3d 1111, 1115 (Fed. Cir. 2004)). The Court examines a patent's intrinsic evidence to define the patented invention's scope. Id. at 1313–1314; Bell Atl. Network Servs., Inc. v. Covad *Commc'ns Group, Inc.*, 262 F.3d 1258, 1267 (Fed. Cir. 2001). Intrinsic evidence includes the claims, the rest of the specification and the prosecution history. Phillips, 415 F.3d at 1312–13; Bell Atl. Network Servs., 262 F.3d at 1267. The Court gives claim terms their ordinary and customary meaning as understood by one of ordinary skill in the art at the time of the invention. Phillips, 415 F.3d at 1312–13; *Alloc, Inc. v. Int'l Trade Comm'n*, 342 F.3d 1361, 1368 (Fed. Cir. 2003).

Claim language guides the Court's construction of claim terms. Phillips, 415 F.3d at 1314. "[T]he context in which a term is used in the asserted claim can be highly instructive." Id. Other claims, asserted and un-asserted, can provide additional instruction because "terms are normally used consistently throughout the patent." Id. Differences among claims, such as additional limitations in dependent claims, can provide further guidance. Id.

"[C]laims 'must be read in view of the specification, of which they are a part.'" Id. (quoting Markman v. Westview Instruments, Inc., 52 F.3d 967, 979 (Fed. Cir. 1995), aff'd, 517 U.S. 370, 116 S.Ct. 1384, 134 Led.2d 577 (1996)). "[T]he 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.'" Id. (quoting Vitronics Corp. v. Conceptronic, Inc., 90 F.3d

1576, 1582 (Fed. Cir. 1996)); see also Teleflex, Inc. v. Ficosa N. Am. Corp., 299 F.3d 1313, 1325 (Fed. Cir. 2002). In the specification a patentee may define his own terms, give a claim term a different meaning than the term would otherwise possess, or disclaim or disavow the claim scope. Phillips, 415 F.3d at 1316. Although the Court generally presumes terms possess their ordinary meaning, this presumption can be overcome by statements of clear disclaimer. See SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys., Inc., 242 F.3d 1337, 1343-44 (Fed. Cir. 2001). This presumption does not arise when the patentee acts as his own lexicographer. See Irdeto Access, Inc. v. EchoStar Satellite Corp., 383 F.3d 1295, 1301 (Fed. Cir. 2004).

The specification may also resolve ambiguous claim terms "where the ordinary and accustomed meaning of the words used in the claims lack sufficient clarity to permit the scope of the claim to be ascertained from the words alone." Teleflex, Inc., 299 F.3d at 1325. For example, "[a] claim interpretation that excludes a preferred embodiment from the scope of the claim 'is rarely, if ever, correct." Globetrotter Software, Inc. v. Elam Computer Group Inc., 362 F.3d 1367, 1381 (Fed. Cir. 2004) (quoting Vitronics Corp., 90 F.3d at 1583). But, "[a]lthough the specification may aid the court in interpreting the meaning of disputed language in the claims, particular embodiments and examples appearing in the specification will not generally be read into the claims." Constant v. Advanced Micro-Devices, Inc., 848 F.2d 1560, 1571 (Fed. Cir. 1988); see also Phillips, 415 F.3d at 1323.

The prosecution history is another tool to supply the proper context for claim construction because a patentee may define a term during prosecution of the patent. Home Diagnostics Inc. v. LifeScan, Inc., 381 F.3d 1352, 1356 (Fed. Cir. 2004) ("As in the case of the specification, a patent applicant may define a term in prosecuting a patent"). The well-established doctrine of prosecution disclaimer "preclud[es] patentees from recapturing through

claim interpretation specific meanings disclaimed during prosecution." *Omega Eng'g Inc. v. Raytek Corp.*, 334 F.3d 1314, 1323 (Fed. Cir. 2003). The prosecution history must show that the patentee clearly and unambiguously disclaimed or disavowed the proposed interpretation during prosecution to obtain claim allowance. Middleton Inc. v. 3M Co., 311 F.3d 1384, 1388 (Fed. Cir. 2002); see also Springs Window Fashions LP v. Novo Indus., L.P., 323 F.3d 989, 994 (Fed. Cir. 2003) ("The disclaimer . . . must be effected with 'reasonable clarity and deliberateness.'") (citations omitted). "Indeed, by distinguishing the claimed invention over the prior art, an applicant is indicating what the claims do not cover." *Spectrum Int'l v. Sterilite Corp.*, 164 F.3d 1372, 1378–79 (Fed. Cir. 1988) (quotation omitted). "As a basic principle of claim interpretation, prosecution disclaimer promotes the public notice function of the intrinsic evidence and protects the public's reliance on definitive statements made during prosecution." *Omega Eng'g, Inc.*, 334 F.3d at 1324.

Although "less significant than the intrinsic record in determining the legally operative meaning of claim language," the Court may rely on extrinsic evidence to "shed useful light on the relevant art." Phillips, 415 F.3d at 1317 (quotation omitted). Technical dictionaries and treatises may help a court understand the underlying technology and the manner in which one skilled in the art might use claim terms, but such sources may also provide overly broad definitions or may not be indicative of how the term is used in the patent. Id. at 1318. Similarly, expert testimony may aid the Court in determining the particular meaning of a term in the pertinent field, but "conclusory, unsupported assertions by experts as to the definition of a claim term are not useful." Id. Generally, extrinsic evidence is "less reliable than the patent and its prosecution history in determining how to read claim terms." Id.

Summary Judgment

"Summary judgment is appropriate in a patent case, as in other cases, when there is no genuine issue as to any material fact and the moving party is entitled to judgment as a matter of law." Nike, Inc. v. Wolverine World Wide, Inc., 43 F.3d 644, 646 (Fed. Cir. 1994); FED. R. CIV. P. 56(c). The moving party bears the initial burden of "informing the district court of the basis for its motion" and identifying the matter that "it believes demonstrate[s] the absence of a genuine issue of material fact." Celotex Corp. v. Catrett, 477 U.S. 317, 323 (1986). If the moving party meets this burden, the nonmoving party must then set forth "specific facts showing that there is a genuine issue for trial." FED. R. CIV. P. 56(c); see also T.W. Elec. Serv., Inc. v. Pac. *Elec. Contractors Ass'n*, 809 F.2d 626, 630 (9th Cir. 1987).

A party seeking to invalidate a patent must overcome a presumption that the patent is valid. See 35 U.S.C. § 282; *Microsoft Corp. v. i4i Ltd. P'ship*, 564 U.S. 91, 131 S. Ct. 2238, 2243 (2011); *U.S. Gypsum Co. v. Nat'l Gypsum Co.*, 74 F.3d 1209, 1212 (Fed. Cir. 1996). This presumption places the burden on the challenging party to prove the patent is invalid by clear and convincing evidence. Microsoft, 131 S. Ct. at 2243; U.S. Gypsum Co., 74 F.3d at 1212.

A claim is invalid for indefiniteness under 35 U.S.C. § 112 ¶ 2 if it fails to particularly point out and distinctly claim the subject matter that the applicant regards as the invention. The party seeking to invalidate a claim as indefinite must show by clear and convincing evidence that the claim, viewed in light of the specification and prosecution history, "fail[s] 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).

ANALYSIS

I.   Disputed Terms in the '966 Patent[1]

The '966 Patent, titled "Method, Apparatus and Computer Program for Power Control Related to Random Access Procedures," issued on February 26, 2013, and bears an earliest priority date of May 5, 2008. The Abstract states:

> A first power control adjustment state g(i) and a second power control adjustment state f(i) are initialized for i=0 to each reflect an open loop power control error. An initial transmit power for a shared uplink channel is computed using full pathloss compensation. The computed initial transmit power depends on a preamble power of a first message sent on an access channel, and the initial transmit power is initialized with the second power control adjustment state f(0). A third message is sent from a transmitter on an uplink shared channel at the initial transmit power. In various implementations, the power for i=0 on the uplink control channel is also initialized similar to the initial transmit power for the third message and using full pathloss compensation, and after the third message (and retransmissions of it), subsequent messages sent on the uplink shared channel are sent at a power that is computed using fractional pathloss compensation.

a.   "wherein the second [accumulation] power control adjustment state f(i) for i=0 is initialized as: $P_{0\_UE\_PUSCH} + f(0) = \Delta P_{PC} + \Delta P_{rampup}$" (Claims 1, 9, and 10) / "wherein the first power control adjustment state g(i) for i=0 is initialized as: $P_{0\_UE\_PUCCH} + g(0) = \Delta P_{PC} + \Delta P_{rampup}$" (Claims 3 and 12)

Term	Plaintiff's Proposed Construction	Defendants' Proposed Construction
wherein the second [accumulation] power control adjustment state f(i) for i=0 is initialized as: $P_{0\_UE\_PUSCH} + f(0) = \Delta P_{PC} + \Delta P_{rampup}$	No construction necessary. Alternatively, "wherein the second [accumulation] power control adjustment state f(i) for i=0 is set such that $P_{0\_UE\_PUSCH} + f(0) = \Delta P_{PC} + \Delta P_{rampup}$	"wherein f(0) is calculated from the values of $P_{0\_UE\_PUSCH}$, ΔP_{PC}, and ΔP_{rampup} by calculating a sum of f(0) and $P_{0\_UE\_PUSCH}$ and a sum of ΔP_{PC} and ΔP_{rampup} and equating the two calculated sums"
wherein the first power	No construction necessary.	"wherein g(0) is calculated

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[1] The parties originally submitted the terms "preamble power" and "wherein the initial transmit power depends on a preamble power of a first message sent on an access channel and the second power control adjustment state f(0)" for construction. Prior to the Markman hearing, the parties agreed that no construction is necessary for both terms. See Doc. No. 190 ("Hearing Transcript") at 38:14-17.

control adjustment state $g(i)$ for $i=0$ is initialized as: $P_{0\_UE\_PUCCH} + g(0) = \Delta P_{PC} + \Delta P_{rampup}$	Alternatively, "wherein the first power control adjustment state $g(i)$ for $i=0$ is set such that $P_{O\_UE\_PUCCH} + g(0) = \Delta P_{PC} + \Delta P_{rampup}$"	from the values of $P_{O\_UE\_PUCCH}$, ΔP_{PC}, and ΔP_{rampup} by calculating a sum of $g(0)$ and $P_{O\_UE\_PUCCH}$ and a sum of ΔP_{PC} and ΔP_{rampup} and equating the two calculated sums"

The underlying dispute is whether the terms require the use of the equation to determine $f(0)$. Doc. No. 139 at 16; Doc. No. 147 at 5. CCE states that "initialize" has a well-understood ordinary meaning: "to set to a starting position or value." Doc. No. 139 at 16. Because of this, CCE argues that Defendants disregard the plain meaning of "initialize" by seeking to substitute "calculation" in its place. Id. CCE argues that the claims do not require a calculation because "initializing" is a broader term that "encompasses 'setting' at a starting value." Id. CCE characterizes the '966 Patent as disclosing "a technique for initializing (i.e. setting) a power control adjustment state taking into account other power control variables (e.g., $P_{0\_UE\_PUSCH}$, ΔP_{PC}, ΔP_{rampup})" and thus the "disclosed invention is not focused on how mathematical operations should be performed to initialize a power control adjustment state." Doc. No. 160 at 6. Additionally, CCE argues that Defendants' proposed construction excludes the very claim scope that Defendants advanced in recently-filed Inter Partes Review ("IPR") petitions. Id. at 8.

Defendants respond that the ordinary meaning of "initialize" in this context requires a calculation. Doc. No. 147 at 5; See id., Ex. 1, Nov. 9, 2015 Declaration of Andrew Singer ("Singer Decl.") at ¶¶ 23, 24 ("The claims require an 'initialization' and provide an equation for the initialization. A person of ordinary skill in the art would understand that initialization of a sequence assigns a value to the initial occurrence in the sequence. When initializing a term with a provided equation, rather than a specific value, the initialization must make use of the equation

to determine the value to assign. When the equation calls for mathematical operations representing a calculation, such as summations, then a calculation is to be performed."). Defendants argue that CCE's proposed construction "merely requires a retroactive determination of whether $P_{O\_UE\_PUSCH}$ + f(0) happens to equal $\Delta P_{PC} + \Delta P_{rampup}$, regardless of whether a method or product uses the claimed equation." Doc. No. 147 at 5; see id. at 9. Defendants conclude that CCE's proposed construction should be rejected because it "effectively read[s] the equation out of the claims." Id. at 5.

Additionally, Defendants argue that the prosecution history "highlights that the claimed equation was critical to issuance." Id. at 10. Defendants state that "[t]he Examiner rejected the original independent claims, while providing that the dependent claims, including the disputed equation, would be allowable if rewritten in independent form." Id. at 10. Defendants argue that the inventors responded by rewriting the independent claims to include the equation and thus overcome prior art. Id.

Claim 1 of the '966 Patent, for example, recites

1. A method comprising:
    using a processor to initialize for i=0 a first power control adjustment state g(i) for an uplink control channel and a second power control adjustment state f(i) for an uplink shared channel to each reflect an open loop power control error;
    using the processor to compute an initial transmit power for the uplink shared channel using full path loss compensation, wherein the initial transmit power depends on a preamble power of a first message sent on an access channel and the second power control adjustment state f(0); and
    sending from a transmitter a third message on the uplink shared channel at the initial transmit power;
    wherein the second power control adjustment state f(i) for i=0 is initialized as:
    $P_{0\_UE\_PUSCH} + f(0) = \Delta P_{PC} + \Delta P_{rampup}$;
in which:
    $P_{0\_UE\_PUSCH}$ is a power control constant for the uplink shared channel that is specific for a user equipment executing the method;
    ΔP_{rampup} is a ramp-up power for preamble transmissions; and
    ΔP_{PC} is a power control command indicated in a second message that is

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received in response to sending the first message.

As a threshold matter, Defendants have discussed prosecution history in which the patentee amended the independent claims so as to include the phrase "wherein the second power control adjustment state f(i) for i=0 is initialized as" and the material that follows it. See Doc. No. 147, Ex. 3, Aug. 17, 2012 Amendment at 2. Because the examiner had indicated allowable subject matter, and the patentee merely rewrote the independent claims so as to include the limitations of allowable dependent claims, this prosecution history does not shed any light on the present dispute. See id. at 10. At most, this prosecution history merely reinforces the principle that "[a] claim construction that gives meaning to all the terms of the claim is preferred over one that does not do so." Merck & Co., Inc. v. Teva Pharms. USA, Inc., 395 F.3d 1364, 1372 (Fed. Cir. 2005).

As to the claims, Claim 4 depends from Claim 3 which in turn depends from Claim 1. Claim 4 recites (emphasis added): "The method according to claim 3, wherein $P_{0\_UE\_PUSCH}=P_{O\_UE\_PUCCH}=0$ when computing initial values at i=0 of power control states for the respective shared and control channels." Claim 13 is similar and depends from Claim 12 which in turn depends from Claim 10.

Implicit in these dependent claims is that "initializ[ing]" requires "computing initial values." See Phillips, 415 F.3d at 1314 ("Other claims of the patent in question, both asserted and unasserted, can also be valuable sources of enlightenment as to the meaning of a claim term."); see also 35 U.S.C. § 112 ¶ 4 ("[A] claim in dependent form shall contain a reference to a claim previously set forth and then specify a further limitation of the subject matter claimed. A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers."); Lexion Med. v. Northgate Techs., 641 F.3d 1352, 1356 (Fed. Cir. 2011) ("The customary meaning of a claim term is not determined in a vacuum and should be

harmonized, to the extent possible, with the intrinsic record, as understood within the…field of the invention."). Thus, there is a computation requirement within the disputed terms. However, Defendants' proposal of "equating the two calculated sums" is unnecessary. A person of ordinary skill in the art would understand that if A = B + C, then A is equivalent to B + C. Similarly, if $P_{0\_UE\_PUSCH} + f(0) = \Delta P_{PC} + \Delta P_{rampup}$, then a person of ordinary skill in the art would understand that $P_{0\_UE\_PUSCH} + f(0)$ is equivalent to $\Delta P_{PC} + \Delta P_{rampup}$.

CCE proposes using the language "is set such that." However, this proposed language would appear to encompass not only computation, but also incidental satisfaction of the recited equations without performing any calculation. In fact, CCE's expert, Mr. Claude Royer, opines that there may be more than one possible algorithm for satisfying the claimed condition. Doc. No. 160, Ex. Q, Nov. 18, 2015 Declaration of Claude Royer ("Royer Decl.") at ¶ 56. Similarly, Defendants' expert, Andrew Singer, has opined that multiple algorithms may produce the same results under certain circumstances. Singer Decl. at ¶¶ 34-44. Thus, the language "is set such that" is inconsistent with the implicit requirement that "initializ[ing]" requires "computing initial values."

Such a reading is also consistent with the extrinsic technical dictionary submitted by CCE, which defines "initialize" as meaning: "1. To set counters, switches, and addresses to zero or other starting values at the beginning of, or at prescribed points in, a computer routine. 2. To begin an operation, and more specifically, to adjust the environment to the required starting configuration." Doc. No. 60, Ex. P, Mc-Graw Hill Dictionary of Scientific and Technical Terms 1078 (6th ed. 2003). These definitions do not contemplate incidentally satisfying a required equation, which CCE's proposal would encompass. Finally, as to the Inter Partes Review petitions cited by CCE, no statements therein warrant finding that "initialize" should be

construed to mean merely "set such that." See Doc. No. 160 at Exs. J-M. Therefore, the Court

rejects CCE's proposed constructions.

The Court construes the disputed terms as follows:

"wherein the second [accumulation] power control adjustment state f(i) for i=0 is

initialized as: $P_{0\_UE\_PUSCH} + f(0) = \Delta P_{PC} + \Delta P_{rampup}$" means "wherein the second

[accumulation] power control adjustment state f(i) for i=0 is calculated such that

$P_{0\_UE\_PUSCH} + f(0) = \Delta P_{PC} + \Delta P_{rampup}$."

"wherein the first power control adjustment state g(i) for i=0 is initialized as:

$P_{0\_UE\_PUCCH} + g(0) = \Delta P_{PC} + \Delta P_{rampup}$" means "wherein the first power control adjustment

state g(i) for i=0 is calculated such that $P_{0\_UE\_PUCCH} + g(0) = \Delta P_{PC} + \Delta P_{rampup}$."

b. "ΔP_{PC}" (Claims 1, 9 and 10)

Plaintiff's Proposed Construction	Defendants' Proposed Construction
No construction necessary.	"the difference between a target preamble power and a power actually observed at a base station"

CCE argues that Claims 1, 9, and 10 each expressly define ΔP_{PC}. Doc. No. 139 at 11.

CCE argues that Defendants' construction ignores the express definition in the claims and "is an

improper attempt to read limitations from a preferred embodiment into the claims" while also

"conflict[ing] with other disclosed embodiments." Id.

Defendants submit that their proposed construction is taken "directly from the inventors'

own lexicography." Doc. No. 147 at 15. Defendants further argue that the supposed definition in

the claims that CCE points to "merely describes the vehicle to deliver the ΔP_{PC} value to the

terminal—i.e., via a power control command" rather than an express definition. Id. Defendants

conclude that CCE's interpretation would "lead to the nonsensical result requiring the claimed

formula to include a power control **command** instead of ΔP_{PC}'s numerical value." Id.

Claim 1 of the '966 Patent, for example, recites (emphasis added):

1. A method comprising:
   using a processor to initialize for i=0 a first power control adjustment state g(i) for an uplink control channel and a second power control adjustment state f(i) for an uplink shared channel to each reflect an open loop power control error…
   wherein the second power control adjustment state f(i) for i=0 is initialized as:
   $P_{0\_UE\_PUSCH}+f(0)=\Delta P_{PC}+\Delta P_{rampup}$;
in which:
   $P_{0\_UE\_PUSCH}$ is a power control constant for the uplink shared channel that is specific for a user equipment executing the method;
   ΔP_{rampup} is a ramp-up power for preamble transmissions; and
   ΔP_{PC} is a power control command indicated in a second message that is received in response to sending the first message.

The claim recites that ΔP_{PC} is a power control command. However, Defendants correctly argue that ΔP_{PC} is a numerical value. The recited equation, $P_{0\_UE\_PUSCH}+f(0)=\Delta P_{PC}+\Delta P_{rampup}$, demonstrates that ΔP_{PC} has a numerical value (or signifies a numerical value). The specification likewise discloses:

According to an embodiment of the invention, the UE receives a power control command (e.g., ΔP_{PC}) in the preamble response from the eNB, which is Message 2. The UE then initiates the PC formula for PUSCH and PUCCH, or compensates open loop error, according to the following equations:

$$P_{0\_UE\_PUSCH}+f(0)=\Delta P_{PC}+\Delta P_{rampup} \qquad [4a]$$

$$P_{0\_UE\_PUCCH}+g(0)=\Delta P_{PC}+\Delta P_{rampup} \qquad [4b]$$

These equations say that the sum of the UE specific power control constants ($P_{O\_UE\_PUSCH}$ or $P_{O\_UE\_PUCCH}$) and the power control initial states (f(0) or g(0)) is equal to the open loop power control error, taking into account the preamble power ramp-up. *ΔP_{PC}* is here assumed to be the difference between the target preamble power and the power that eNB actually observes. The actual value of ΔP_{PC} may be signalled directly by the eNB as the power control command, or to save on signalling overhead the eNB may explicitly signal a bit sequence (one, two or more bits) as the power control command which the receiving UE uses as an index to look up the true value ΔP_{PC} that is associated in a locally stored table with that index.

'966 Patent at 6:58-7:13 (emphasis added).

This disclosure of a "bit sequence (one, two or more bits) as the power control command which the receiving UE uses as an index" (id. at 7:9-13) appears to weigh against Defendants' proposal of requiring "a power actually observed at a base station" (which might be interpreted as requiring a level of precision not attainable by a short "bit sequence"). Yet, Defendants argue that this bit sequence is not ΔP_{PC}, but rather represents ΔP_{PC}. Doc. No. 147 at 15. Thus, Defendants conclude this merely explains "how the value of ΔP_{PC} can be signaled." Id. Even though the claims recite that "ΔP_{PC} is a power control command," the above-quoted disclosure explains that if a bit sequence is used to represent ΔP_{PC}, then "the receiving UE…look[s] up the *true value ΔP_{PC}*." See id. (emphasis added).

Nonetheless, the above-quoted disclosure of ΔP_{PC} as "the difference between the target preamble power and the power that eNB actually observes" pertains to an embodiment of the invention. Defendants' construction would limit the Claims to an embodiment, which is not proper here. See Constant, 848 F.2d at 1571 ("Although the specification may aid the court in interpreting the meaning of disputed language in the claims, particular embodiments and examples appearing in the specification will not generally be read into the claims."); see also Phillips, 415 F.3d at 1323; Hill-Rom Servs., Inc. v. Stryker Corp., 755 F.3d 1367, 1371 (Fed. Cir. 2014) ("While we read claims in view of the specification, of which they are a part, we do not read limitations from the embodiments in the specification into the claims.").

The Court construes the term **"ΔP_{PC}"** to mean **"a power control command."**

c. Motion for Summary Judgment of Indefiniteness: Claims 5-7 and 14-17

Plaintiff's Proposed Construction	Defendants' Proposed Construction
No construction necessary. Not indefinite.	Indefinite.

Defendants argue that Claims 5 and 14 of the '966 patent and their asserted dependent

claims are invalid as indefinite because "dependent claims 5 and 14 specify an equation (to calculate the 'initial transmit power' of a third message) that does not adhere to the requirements specified by the independent claims, upon which they rely." Doc. No. 147 at 32. Specifically, Defendants contend that the independent claim "requires the 'initial transmit power' to '**depend[] on**…the second power control adjustment state f(0).'" Id. However, the equations in claims 5 and 14 "do not refer to f(0)" and thus Defendants argue that they are inconsistent with the independent claims. Id. Defendants point to an objection lodged by the European Patent Office (EPO) regarding this same alleged ambiguity. Additionally, Defendants argue that even though the equation is capable of being rewritten with algebraic substitution, the patent does not indicate that such substitution must be performed. Id. at 33. Thus, Defendants conclude, a person skilled in the art would not have known that a substitution would be required or what that substitution should be. Id. at 34. Defendants reason that CCE's argument that the claims are definite if a substitution is performed is analogous to the argument that "a claim is definite if it is amenable to construction." Id. Defendants argue that the U.S. Supreme Court expressly rejected such an approach in Nautilus. Id. Finally, Defendants argue that the substitution urged by CCE is impermissible because P_{Msg3} must depend on both f(0) and $P_{preamble}$, yet CCE cannot point to any variation of the equation in which both f(0) and $P_{preamble}$ appear together. Doc. No. 165 at 4.

CCE acknowledges that the term f(0) does not appear in the equation, as written. Doc. No. 160 at 12. However, CCE responds that the equation still depends on f(0) because f(0) is embodied within other parameters of the claim and can appear in the equation with algebraic substitution. Id. at 12-13. CCE concludes that "[o]ne skilled in the art would have spent years studying mathematical relationships, and would fully grasp the interplay among the described equations revealed by virtue of substitution and more advanced concepts as well." Id. at 13.

Furthermore, CCE argues that Kyocera and LG used this same substitution approach in petitions for inter partes review.

As a threshold matter, CCE's arguments regarding representations made during IPR are not applicable here because a petitioner may not challenge claims on the basis of indefiniteness during IPR. See 35 U.S.C. § 311(b). Defendants' reliance on the EPO's objection is similarly misplaced. There is no evidence that the EPO used the same legal standards applicable here. Even setting aside any potential issues of differences in foreign patent laws, Defendants have not identified any statements by the patentee that would give rise to any potential disclaimer. See Doc. No. 147, Ex. 12 at 4; see also id. at Exs. 13-14. Indefiniteness is not proven simply because a patentee withdraws a claim following an EPO objection.

By example, Claims 1 and 5 of the '966 Patent recite (emphasis added)

1. A method comprising:
    using a processor to initialize for i=0 a first power control adjustment state g(i) for an uplink control channel and a second power control adjustment state f(i) for an uplink shared channel to each reflect an open loop power control error;
    using the processor to compute an initial transmit power for the uplink shared channel using full path loss compensation, wherein the initial transmit power depends on a preamble power of a first message sent on an access channel and the second power control adjustment state f(0); and
    sending from a transmitter a third message on the uplink shared channel at the initial transmit power;
    wherein the second power control adjustment state f(i) for i=0 is initialized as:
    $P_{0\_UE\_PUSCH}+f(0)=\Delta P_{PC}+\Delta P_{rampup}$;
in which:
    $P_{0\_UE\_PUSCH}$ is a power control constant for the uplink shared channel that is specific for a user equipment executing the method;
    ΔP_{rampup} is a ramp-up power for preamble transmissions; and
    ΔP_{PC} is a power control command indicated in a second message that is received in response to sending the first message.

* * *

5. The method according to claim 1,
    wherein the initial transmit power P_{Msg3} of the third message for i=0 is

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equal to:

$$P_{Msg3}=\min\{P_{max}, P_{preamble}+\Delta_{0,preamble\_Msg3}+\Delta_{PC\_Msg3}+$$
$$10\log_{10}(M_{PUSCH}(i))+\Delta_{TF}(TF(i))\};$$

in which:

P_{MAX} is a maximum allowed transmission power;

$P_{preamble}$ is the preamble power of the first message;

$M_{PUSCH}(i)$ is determined from an uplink resource allocation of a second message received in response to sending the first message;

$\Delta_{TF}(TF(i))$ is calculated from received signaling;

Δ_{PC_Msg3} is indicated by a power control command received at the receiver;

and

$\Delta_{0,preamble\_Msg3}$ is an offset from the preamble power.

The Summary section of the specification refers to "a second power control adjustment state f(i) for an uplink shared channel," and "f(0)" refers to an initial state of f(i). '966 Patent at 3:17-18; see id. at 7:2-3.

CCE's expert opines that the equations set forth in Claims 5 and 14 relate to the relevant variables, namely $P_{preamble}$ and f(0). See Royer Decl. at ¶¶ 53-62. The mathematical substitution is relatively straightforward. Equation 3 recites that $P_{preamble} = P_{target} + PL + \Delta P_{rampup}$. '966 Patent at 6:18-26. This expression of $P_{preamble}$ can thus be substituted into the equation in claim 5 resulting in $P_{Msg3} = \min\{P_{max}, P_{target}+PL+\Delta P_{rampup}+ \Delta_{0,preamble\_Msg3}+ \Delta_{PC\_Msg3} + 10 \log_{10}(M_{PUSCH}(i)) + \Delta_{TF}(TF(i))\}$. Equation 4a recites that $P_{0\_UE\_PUSCH} + f(0) = \Delta P_{PC} + \Delta P_{rampup}$. Id. at 6:65. The specification further discloses that $P_{0\_UE\_PUSCH}$ "could be initialized to zero…then equations 4a and 4b would read $f(0)=g(0)= \Delta P_{PC} + \Delta P_{rampup}$." Id. at 7:16-21. Because $f(0) = \Delta P_{rampup} + \Delta_{PC\_Msg3}$ (i.e. ΔP_{PC}, see id. at 8:32-42), the claimed formula can depend on f(0). Defendants' argument that the term must be indefinite because both $P_{preamble}$ and f(0) do not appear in the equation simultaneously does not rise to the level of clear and convincing evidence. Claim 1 uses the term "depends on," rather than a term such as "calculated using," and thus the equation in claim 5 is not required to be expressed in terms of both $P_{preamble}$ and f(0) simultaneously.

Therefore, the Court construes claims 5-7 and 14-17 such that the phrase **"wherein the initial transmit power P_{Msg3} of the third message for i=0 is equal to: $P_{Msg3}=min\{P_{max},P_{preamble}+\Delta_{0,preamble\_Msg3}+\Delta_{PC\_Msg3}+10\ log_{10}(M_{PUSCH}(i))+\Delta_{TF}(TF(i))\}$"** has its **plain meaning**. No further construction is necessary. Accordingly, Defendants' indefiniteness argument is rejected.

II.   Disputed Terms in the '556 Patent

The '556 Patent, titled "Carrier Aggregation with Power Headroom Report," issued on September 30, 2014, and bears an earliest priority date of June 21, 2010. The Abstract states:

> Methods, apparatuses, and software can be used for providing power headroom reporting in a telecommunication system. A method can include configuring a user equipment to send a power headroom report control element in uplink, wherein the power headroom report control element includes a bitmap indicating which power headroom reports are being reported. The method can further include receiving the power headroom report control element from the user equipment. The method additionally can include processing the received power headroom report control element based on the configuration of the user equipment.

a.   "bitmap" (Claims 13, 14, 21 and 22) / "a bitmap indicating which power headroom reports are being reported" (Claims 13 and 21)

Term	Plaintiff's Proposed Construction	Defendants' Proposed Construction
bitmap	"a data structure that represents information in the form of a collection of individual bits"	"a collection of bits"
a bitmap indicating which power headroom reports are being reported	No construction necessary. See "bitmap" above.	"a collection of bits indicating which power headroom reports are being reported"

All parties seem to agree that the term "bitmap" means "a collection of bits." Doc. No. 147 at 24; Hearing Transcript at 98:3-4. The dispute centers on CCE's additional proposed

language, "a data structure that represents information." CCE contends that "the phrase 'bitmap' has a well-understood ordinary meaning to one skilled in the art." Doc. No. 139 at 18. Furthermore, CCE argues that the "phrase 'bitmap' inherently denotes structure and organization" and thus Defendants' proposal would strip away this essential organizational element. Doc. No. 160 at 8.

Defendants counter that CCE's proposed construction includes the "extraneous phrase, 'a data structure that represents information'" which does not clarify the term "bitmap" but rather adds confusion. See Doc. No. 147 at 24 ("For example, the phrase 'data structure' is itself ambiguous; it carries no plain meaning and is nowhere even mentioned in the intrinsic record of the '556 patent. It is further unclear what 'information' is being represented in such a data structure."). Additionally, Defendants argue that Plaintiff's phrasing does not appear in the claims or the specification, but was taken from the extrinsic evidence. Hearing Transcript at 98:9-12. Although Defendants acknowledge CCE's contention that the term "bitmap" does denote organizational structure, Defendants maintain that the surrounding claim language provides the necessary structure and organization. Thus, Defendants conclude that incorporating organizational structure into the construction of the term itself would be needlessly duplicative. Id. at 99:2-6; Doc. No. 147 at 24.

Claim 13 of the '556 Patent recites (emphasis added):

13. A non-transitory computer readable medium encoded with a computer program that, when executed in hardware, causes the hardware to perform a process, the process comprising:
    preparing a power headroom report control element… the preparing of the power headroom report control element includes incorporating a bitmap indicating which power headroom reports are being reported…

The claim language sufficiently sets forth how the recited "bitmap" is used. There is an organizational requirement within the claim language describing what form and information the

claimed bitmaps represent: "a bitmap indicating which power headroom reports are being reported." '556 Patent at Claims 13 and 21. CCE's proposed construction injects unnecessarily duplicative language.

Therefore, the Court construes the term **"bitmap"** to mean **"a collection of bits."**

Simply applying this construction of "bitmap" to the disputed term "a bitmap indicating which power headroom reports are being reported," however, might allow a party to rely upon any assortment of bits as purportedly satisfying this limitation. Instead, when the term "bitmap" is used in this context, the term connotes some degree of explicit organization. See, e.g., '556 Patent at 3:64-4:2, 5:6-10, 5:24-35 & Fig. 5. Thus, construction of the larger term should include additional clarification that the collection of bits must be "arranged to indicate" which power headroom reports are being reported.

Therefore, the Court construes the term **"a bitmap indicating which power headroom reports are being reported"** to mean **"a collection of bits arranged to indicate which power headroom reports are being reported."**

b. "bits for power headroom reports for a plurality of [the] secondary cells" (Claims 13 and 21)

Plaintiff's Proposed Construction	Defendants' Proposed Construction
No construction necessary.	"bits for power headroom reports for a plurality of secondary cells in a configuration such that a single bit in the bitmap does not correspond to a single secondary cell"

CCE argues that "[a] bitmap is comprised of bits, and the claim simply requires that a plurality of such bits are for a plurality of secondary cells." Doc. No. 139 at 21. CCE urges that Defendants' proposal is an "onerous restriction" and "a baseless construct that finds no root in the intrinsic evidence." Id. Furthermore, CCE argues that Defendants' proposal is not only

inconsistent with the disclosed embodiments, but that it would actually exclude the disclosed embodiments. Id. at 21-22.

Defendants respond that their construction would prevent CCE from "recapturing subject matter that the inventors surrendered during prosecution." Doc. No. 147 at 25. Defendants argue that during prosecution, the inventors overcame an anticipation rejection by amending claim 1 and in the process disclaimed claim scope concerning "bits for power headroom reports for a plurality of [the] secondary cells." Id. at 25.

During prosecution, in relation to a rejection based on the "Zhang" reference (Doc. No. 147, Ex. 8, United States Patent Application Publication No. 2011/0243016), the patentees amended independent claims so as to include the disputed term, which originally appeared in dependent claims. See Doc. No. 147, Ex. 10, July 15, 2014 Amendment at 4-5, 7, 10. However, as CCE points out, the asserted claims (claims 13 and 21) were never rejected under Zhang, nor were they amended to distinguish—much less disclaim—that reference. Doc. No. 160 at 9 (citing Ex. R at 4; Ex. S at 12-13). The patentees did not discuss the meaning of the disputed term and did not refer to any requirement that a single bit in the bitmap does not correspond to a single secondary cell, as Defendants have proposed here. Rather, the patentees appear to have simply amended independent claims so as to include language from dependent claims that the examiner had indicated would be allowable if rewritten in independent form. See Doc. No. 147, Ex. 10, July 15, 2014 Amendment at 10.

Defendants argue that "the inventors unmistakably disclaimed any interpretation of 'bits for power headroom reports for a plurality of secondary cells' that covers the particular arrangement that Zhang used to indicate power headroom reports for each of a plurality of secondary cells." Doc. No. 147 at 27. However, this "unmistakable disclaimer" is not supported

by the evidence. In particular, Defendants have not identified any instance in which the patentees characterized the arrangement used in Zhang and then distinguished it. See Omega Eng'g, 334 F.3d at 1325-26 ("[F]or prosecution disclaimer to attach, our precedent requires that the alleged disavowing actions or statements made during prosecution be both clear and unmistakable.") (emphasis added); 3M Innovative Props. Co. v. Avery Dennison Corp., 350 F.3d 1365, 1373 (Fed. Cir. 2003) ("Prosecution history…cannot be used to limit the scope of a claim unless the applicant took a position before the PTO.") (citation omitted). Instead, Defendants appear to be relying upon their own analysis of Zhang rather than upon any statements by the patentees.

Further, the specification discloses that "[e]ach bit of the bitmap can be linked to a particular power headroom report." '556 Patent at 3:64-65; see id. at 5:6-8 (same); see also id. at 5:24-33, 6:42-52 & 7:14-15 (similar). As CCE argues, not only would Defendants' proposal be inconsistent with the disclosed embodiments, it would apparently exclude all of the disclosed embodiments. Doc. No. 139 at 21-22. "A construction that excludes all disclosed embodiments…is especially disfavored." Kaneka v. Xiamen Kingdomway Group, 790 F.3d 1298, 1304 (Fed. Cir. 2015).

The Court therefore rejects Defendants' proposed construction. No further construction is necessary. See U.S. Surgical Corp. v. Ethicon, Inc., 103 F.3d 1554, 1568 (Fed. Cir. 1997) ("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. It is not an obligatory exercise in redundancy."); see also O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co., 521 F.3d 1351, 1362 (Fed. Cir. 2008) ("[D]istrict courts are not (and should not be) required to construe every limitation present in a patent's asserted claims."); Finjan, Inc. v. Secure Computing Corp., 626 F.3d 1197, 1207 (Fed.

Cir. 2010) ("Unlike O2 Micro, where the court failed to resolve the parties' quarrel, the district court rejected Defendants' construction."); ActiveVideo Networks, Inc. v. Verizon Commc'ns, Inc., 694 F.3d 1312, 1326 (Fed. Cir. 2012).

Therefore, the Court construes **"bits for power headroom reports for a plurality of [the] secondary cells"** to have its **plain meaning**.

c. "secondary cells" (Claims 13 and 21)

Plaintiff's Proposed Construction	Defendants' Proposed Construction
No construction necessary, other than to clarify that a primary cell is different than a secondary cell.	"serving cells/component carriers configured for a UE that are different from the primary serving cell"

CCE argues that nothing in the intrinsic evidence limits "secondary cells" beyond requiring that secondary cells differ from primary cells and thus no construction is necessary. Doc. No. 139 at 19-20. CCE further argues that Defendants' proposed construction is improper because "the meaning of 'serving cells/component carriers' is indistinct, at best" and it is unclear why it is necessary to "equate 'serving cells' with 'component carriers'" since "the claim does not expressly refer to 'component carriers.'" Id. at 20.

Defendants respond that their proposal is consistent with the claims, specification, and CCE's own characterizations. Doc. No. 147 at 28. Defendants argue that CCE itself refers to "secondary cells" as "component carriers" or "secondary serving cells" and that CCE cited to a portion of the specification describing "secondary cells" using "the same terms as in Defendants' construction." Id. at 29.

Both sides cite to the following disclosure in the specification:

This cell that provides the security input and the NAS mobility information is referred to as the primary serving cell (PCell). In the downlink, the carrier corresponding to the PCell is the downlink (DL) primary component carrier (DL PCC) while in the uplink it is the uplink (UL) primary component carrier (UL

PCC).

> Depending on user equipment capabilities, secondary serving cells (SCells) can be configured to form, together with the PCell, a set of serving cells. In the downlink, the carrier corresponding to an SCell is a downlink secondary component carrier (DL SCC) while in the uplink it is an uplink secondary component carrier (UL SCC).

> In view of the above, the configured set of serving cells for a user equipment may always include one PCell and one or more SCells.

'556 Patent at 4:32-46 (emphasis added).

On balance, Defendants' proposed construction would tend to confuse rather than clarify the scope of the claims. All parties agree that a primary cell is different from a secondary cell. Other than this clarification, no further construction is necessary. See U.S. Surgical, 103 F.3d at 1568 ("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. It is not an obligatory exercise in redundancy."); see also O2 Micro, 521 F.3d at 1362; Finjan, 626 F.3d at 1207; ActiveVideo, 694 F.3d at 1326.

Therefore, the Court construes **"secondary cells"** to have its **plain meaning**.

d. Motion for Summary Judgment of Indefiniteness: Claims 15 and 23

Term	Plaintiff's Proposed Construction	Defendants' Proposed Construction
type 1 power headroom report	Not indefinite. No construction necessary, other than to clarify that a Type 1 power headroom report is different than a Type 2 power headroom report.	Indefinite. If not indefinite: "type[]1 power headroom report" should be construed as "a power headroom report computed as: P_cmax,c minus PUSCH power"
type 2 power headroom report	Not indefinite.	Indefinite.

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	No construction necessary, other than to clarify that a Type 1 power headroom report is different than a Type 2 power headroom report.	If not indefinite: "type 2 power headroom report" should be construed as "a power headroom report computed as: P_cmax,c minus PUCCH power minus PUSCH power"

Defendants argue that Claims 15 and 23 are indefinite because a person skilled in the art would not understand how independent claims 15 and 23 are broader than dependent claims 16 and 24. Doc. No. 147 at 38.

Claims 15, 16, 23, and 24 recite (emphasis added):

15. The non-transitory computer readable medium of claim 13, wherein the power headroom report control element includes at least one of: a type 1 power headroom report for a primary serving cell and a type 2 power headroom report for the primary serving cell.

16. The non-transitory computer readable medium of claim 15, wherein the type 1 power headroom report is computed as P_cmax,c minus physical uplink shared channel (PUSCH) power, and the type 2 power headroom report is computed as P_cmax,c minus physical uplink control channel (PUCCH) power minus PUSCH power.

* * *

23. The apparatus of claim 21, wherein the at least one memory and the computer program code are configured to, with the at least one processor, cause the apparatus at least to prepare the power headroom report control element by including at least one of: a type 1 power headroom report for a primary serving cell or a type 2 power headroom report for the primary serving cell.

24. The apparatus of claim 23, wherein the type 1 power headroom report is computed as P_cmax,c minus physical uplink shared channel (PUSCH) power, and the type 2 power headroom report is computed as P_cmax,c minus physical uplink control channel (PUCCH) power minus PUSCH power.

Defendants submit that "'type 1' and 'type 2' power headroom reports were not terms of art at the relevant time," thus one skilled in the art instead would have needed to rely solely on

the '556 specification to understand the meaning of these terms. Defendants argue that the only relevant guidance is a passage (5:36-41) which recites the exact equations that appear in dependent claims 16 and 24. Id. at 38.

Plaintiff responds that "'type 1' and 'type 2' are not 'superfluous,' as Defendants allege, but are terms of distinction" because "[i]t is undisputed that those types are different, i.e., type 1 reports are different than type 2 reports." Doc. No. 160 at 16. Plaintiff argues that Defendants' interpretation "defies the doctrine of claim differentiation" and improperly seeks to limit the claims to disclosed embodiments. Id. However, Defendants counter that both terms are used as proper nouns throughout the specification. Doc. No. 165 at 7. Thus, Defendants conclude that "[t]he specific meanings of these phrases must be the 'definitions' assigned to them at Column 5, lines 36-41, since it is undisputed that the phrases meant nothing to a POSA outside the context of the '556 patent." Id.

On one hand, the specification does capitalize "Type 1" and "Type 2" in several instances. See, e.g., '556 Patent at 5:30-31, 5:36, 5:45-46, 6:60-61 & 7:21-22. This capitalization suggests that "Type 1" and "Type 2" have special meanings. Also, the specification discloses:

> Type 1 and Type 2 power headroom reports may employ the following definition. Their presence can be indicated to the eNB. Type 1 power headroom report can be computed as: P_cmax,c minus PUSCH power. Type 2 power headroom report can be computed as: P_cmax,c minus PUCCH power minus PUSCH power.

Id. at 5:36-41.

On the other hand, the claims do not capitalize "type 1" and "type 2." The specification also uses the uncapitalized form in several instances. See, e.g., id. at 6:48-50, 6:57, 7:12-13 & 7:18. The specification does not suggest that "type 1" and "type 2" are terms of art, and the above-quoted passage refers to what the power headroom reports "may be" or "can be." See id. at 5:36-41. No lexicography is apparent. See Hill-Rom, 755 F.3d at 1371 ("To act as its own

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lexicographer, a patentee must clearly set forth a definition of the disputed claim term other than its plain and ordinary meaning and must clearly express an intent to redefine the term.") (citation and internal quotation marks omitted); see also CCS Fitness, Inc. v. Brunswick Corp., 288 F.3d 1359, 1366 (Fed. Cir. 2002).

Further, the doctrine of claim differentiation weighs against limiting "type 1" and "type 2" in the manner set forth in dependent Claims 16 and 24. See Phillips, 415 F.3d at 1315 ("the presence of a dependent claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim").

On balance, Claims 15 and 23 use "type 1" and "type 2" as a shorthand for first type and second type and thus require merely that "type 1" and "type 2" be different from one another. Because this limitation is evident from the claim language itself, no explicit construction is necessary.

Therefore, the Court construes claims 15 and 23 such that the phrases **"type 1 power headroom report"** and **"type 2 power headroom report"** have their **plain meaning**. No further construction is necessary. Accordingly, Defendants' indefiniteness argument is rejected.

III. Disputed Terms in the '060 Patent[2]

The '060 Patent, titled "Method, Network and Device for Information Provision by Using Paging and Cell Broadcast Services," issued on October 21, 2014, and bears an earliest priority date of April 2, 2007. The Abstract states:

> Informing a number of users about an emergency or other situation of public interest is accomplished using a broadcast service. A specific identifier is used in a paging message for activating broadcast service in terminals. A terminal checks a received paging message with regard to the presence of the specific identifier and when detecting the specific identifier, switches to a broadcast mode for

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[2] The parties originally proposed construing the term "at least two specific identifiers…being for different types of emergencies." However, the parties subsequently agreed that no construction is necessary. See Doc. No. 147 at 17 n. 10.

receiving broadcast content. The received broadcast emergency content is notified and/or displayed to the users of the terminals.

a. "storing, at the terminal of the cellular wireless communications system, a group of specific identifiers"/ "store a group of specific identifiers" (Claims 1, 7, and 15)

Plaintiff's Proposed Construction	Defendants' Proposed Construction
No construction necessary.	"store [/storing], at the terminal, a plurality of specific identifiers prior to receipt of the paging message"

The '060 Patent recites three steps: storing a group of specific identifiers, receiving the paging message, and checking whether a paging message received from the base station includes at least one specific identifier. '060 Patent 6:20-34. All parties agree that "checking" happens after both "storing" and "receiving." Doc No. 139 at 5; Doc. No. 147 at 17-18. The dispute here is whether or not the claims require the "storing" and "receiving" steps to be performed in a specific order. Defendants argue that the plain language of the claims requires a sequential construction whereby the steps are performed in the order written: first "storing" and then "checking." Doc. No. 147 at 18. CCE argues that Defendants' proposed construction seeks to inject an unwarranted sequential limitation to the claims: that the "group of specific identifiers" must be stored before the paging message is received. Id. at 4.

CCE urges that claims 7 and 15 recite an apparatus, and not a method, and thus "Defendants' attempt to impose an order of steps on a device is, on its face, incongruous." Id. Finally, CCE argues that substituting the word "plurality" for "group" is "unnecessary, unhelpful, and risks unintended and unforeseen consequences." Id. at 5. CCE contends that in this instance "it eviscerates antecedent basis for a later claim element, which refers back to the 'group' of identifiers recited here." Id.

Defendants argue that the logic of claim 1 requires that the steps be performed in the

order written. Id. Defendants contend that the claim first specifies "storing…a group of specific identifiers" and then "checking…whether a paging message received…" Id. Defendants also argue that "[c]ollapsing the 'storing' and 'checking'…would render the separate 'storing' step redundant and the relevant claim language superfluous." Id. at 19. Finally, Defendants propose defining a "group" of specific identifiers as a "plurality," meaning two or more, to "emphasize that a single identifier cannot constitute a 'group' of identifiers." Id. at 18 n. 11.

"As a general rule, '[u]nless the steps of a method [claim] actually recite an order, the steps are not ordinarily construed to require one.'" Mformation Techs., Inc. v. Research in Motion Ltd., 764 F.3d 1392, 1398 (Fed. Cir. 2014) (quoting Interactive Gift Express, Inc. v. Compuserve, Inc., 256 F.3d 1323, 1342 (Fed. Cir. 2001)). Courts apply a two-part test to determine whether a particular order of steps in a method claim is required: First, "look to the claim language to determine if, as a matter of logic or grammar, they must be performed in the order written" and "[i]f not, we next look to the rest of the specification to determine whether it directly or implicitly requires such a narrow construction." Altiris, Inc. v. Symantec Corp., 318 F.3d 1363, 1369-70 (Fed. Cir. 2003) (citation omitted).

Here, Claim 1 of the '060 Patent recites (emphasis added):

1. A method of communicating with a terminal in a cellular wireless communication system, the method comprising:
    storing, at the terminal of the cellular wireless communication system, a group of specific identifiers common to a plurality of terminals supporting an emergency warning, at least two specific identifiers in the group of the specific identifiers being for different types of emergencies, the cellular wireless communication system being a bi-directional cellular wireless communication system between a base station and the plurality of terminals;
    checking, by the terminal, whether a paging message received from the base station includes at least one specific identifier of the group of the specific identifiers;...

Likewise, Claim 7 of the '060 Patent recites as follows (emphasis added), and Claim 15

is similar:

> 7. A terminal operating in a cellular wireless communication system having a plurality of terminals, the terminal comprising:
>> a memory unit configured to:
>>> store a group of specific identifiers…; and
>> a control unit configured to:
>>> check whether a paging message received from the base station includes at least one specific identifier of the group of the specific identifiers;

Applying the first part of the Interactive Gift test, the Court must look to the claim language. Looking at the language of claim 1, the "checking" limitation refers to "the group of specific identifiers" which refers back to "a group of specific identifiers" in the storing limitation. Therefore, as a "matter of logic and grammar," the "storing" must occur before the "checking." Altiris, 318 F.3d at 1369; see Mformation, 764 F.3d at 1400 ("As a matter of logic, a mailbox must be established before the contents of said mailbox can be transmitted."). However, there is no comparable claim language commanding that the "storing" step occur before any "receiving" step, as Defendants propose.

Applying the second part of the Interactive Gift test, the Court must look to the rest of the specification to determine if Defendants' construction is required. Although the specification appears to disclose such an embodiment (see '060 Patent at 3:35-41), no such requirement is apparent from the claim language, and Defendants have not identified any disclaimer in the intrinsic evidence.

Finally, CCE does not argue that a "group of specific identifiers" could be only one identifier. At the hearing, CCE stated that it is in the claim that at least two specific identifiers are needed. Hearing Transcript at 52:3-11. Thus Defendants' proposal of defining "group" as "plurality" is unnecessary.

Therefore, the Court construes "**storing, at the terminal of the cellular wireless**

communications system, a group of specific identifiers" and **"store a group of specific**

identifiers" to have their **plain meaning**.

b. **"establishing at least one of a physical channel and a logical channel" /
"establish at least one of a physical channel and a logical channel"
(Claims 1, 7 and 15)**

Plaintiff's Proposed Construction	Defendants' Proposed Construction
No construction necessary. Alternatively, "[establish / establishing] a physical channel, a logical channel, or both"	"establishing at least one communication channel between the terminal and the base station"

CCE argues that the claim language is clear: "it requires establishing a physical channel,

a logical channel, or both." Doc. No. 139 at 8. CCE argues that Defendants' proposed

construction "collapses 'physical or logical channel' into a 'communication channel'" and is not

supported by the intrinsic record. Id.; Doc. No. 160 at 2. Furthermore, CCE contends that

Defendants' proposal adds the unsupported restriction that "the channel is 'between the terminal

and the base station.'" Doc. No. 139 at 9.

Defendants respond that "translating the term 'at least one of a physical and logical

channel' to 'at least one communication channel' will assist the jury" without altering the claim

scope. Doc. No. 147 at 20. Defendants contend that their proposal is consistent with the claim

language, specification, and CCE's own characterization of the term. Id.

The concept of "communication" is inherent within the word "channel" as used in the

relevant context. Defendants' proposal of replacing the terms "physical" and "logical" with the

term "communication" would read out the physical or logical requirements in the claim; this

would tend to confuse rather than clarify the scope of the claims. Therefore, the Court rejects

Defendants' proposed construction. On the other hand, CCE's alternative construction clarifies

the requirement of establishing either a physical channel, or a logical channel, or both. CCE's alternative construction will assist the jury in understanding the claims. See TQP Dev., LLC v. Merrill Lynch & Co., Inc., No. 2:08-CV-471, 2012 WL 1940849, at *2 (E.D. Tex. May 29, 2012) (Bryson, J.) ("some construction of the disputed claim language will assist the jury to understand the claims").

Therefore, the Court construes the disputed terms as follows:

"establishing at least one of a physical channel and a logical channel" means **"establishing a physical channel, a logical channel, or both."**

"establish at least one of a physical channel and a logical channel" means **"establish a physical channel, a logical channel, or both."**

c. "paging message" (Claims 1, 7 and 15)

Plaintiff's Proposed Construction	Defendants' Proposed Construction
No construction necessary.	"a message sent by a base station on a shared channel and carrying information corresponding to unique identifiers"

CCE argues that the term "paging message" is "routinely employed in 3GPP technical documents" and has an understood meaning to those skilled in the art. Doc. No. 139 at 7. CCE argues that the term is used in accordance with its ordinary and customary meaning in the claims. Id. Thus, because "the inventors have not disclaimed or employed a lexicography to redefine the phrase," CCE concludes that the claim language should receive the full scope of its ordinary meaning and no construction is necessary. Id. CCE further contends that Defendants' proposal also improperly inserts the word "unique," which has no support in the intrinsic record. Id. at 8; Doc. No. 160 at 1-2.

First, Defendants argue that CCE has no response to a portion of Defendants'

construction: "a message sent by a base station on a shared channel." Doc. No. 147 at 21.

Second, Defendants argue that the '060 patent repeatedly refers to a paging message as "a message sent from the base station that carries information that corresponds to unique identifiers stored at the terminal, whether uniquely identifying the terminal itself or uniquely identifying types of emergencies in order to notify the terminal to switch to the broadcast channel to receive emergency content." Id. Finally, Defendants argue that the patent also teaches that the TMSI (temporary mobile subscriber identity) in the paging message can be "the typical unique TMSI allocated to the terminal by the network or, alternatively, can be another unique 'specific identifier' for indicating an emergency." Id. at 22.

There are two types of paging messages: one that includes a terminal-specific identifier (an identifier of the particular phone being called) and one that includes an identifier for a particular type of emergency. '060 Patent 3:33-41; Hearing Transcript 62:15-25. In this context, specific is not necessarily unique. An identifier can be specific to a particular type of emergency, yet not necessarily be unique because that same specific identifier is included in the paging message received by every mobile device during an emergency broadcast. Hearing Transcript 60:16-18.

The claims, as well as the specification, refer to "specific" identifiers, not "unique" identifiers. Defendants cite to multiple portions of the specification in support of their "unique" identifier requirement. However, every portion of the specification that Defendants cite to actually uses the term "specific" identifiers. See e.g., '060 Patent at 2:45-48 ("one or more paging messages which include a specific identifier such as an E-TMSI which is accepted by all terminals 1 receiving the paging message"); id. at 2:64-66 (similar); id. at 3:35-41 (similar); id. at 3:60-62 ("The paging message may include a specific identifier such as a specific temporary

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mobile subscriber identity, TMSI."). On balance, Defendants' proposal of "unique" would improperly import a feature of particular disclosed embodiments. See Constant, 848 F.2d at 1571; see also Phillips, 415 F.3d at 1323; Hill-Rom, 755 F.3d at 1371.

In the context of the claim language, Defendants' proposal of "sent by a base station" is redundant. Surrounding claim language refers to "a paging message received from the base station." See '060 Patent at 6:29, 7:2-3, 8:30-31. The Court, therefore, rejects Defendants' proposed construction. No further construction is necessary. See U.S. Surgical, 103 F.3d at 1568; see also O2 Micro, 521 F.3d at 1362; Finjan, 626 F.3d at 1207; ActiveVideo, 694 F.3d at 1326.

Therefore, the Court construes "**paging message**" to have its **plain meaning**.

d. "temporary mobile subscriber identity" (Claims 1, 7 and 15)

Plaintiff's Proposed Construction	Defendants' Proposed Construction
No construction necessary.	"a temporary identifier allocated to the terminal to uniquely identify the mobile subscriber"

CCE argues that the claim language is clear, there is no applicable lexicography, and one skilled in the art would understand that the claimed "temporary mobile subscriber identity" is a temporary identity of a mobile subscriber. Doc. No. 139 at 9. CCE again argues that Defendants' proposal of the word "'unique' imposes a restriction unsupported by the claim language." Id. CCE contends that the disputed claim language "makes clear that the identity at issue is temporary" and thus "'[i]dentities' need not be unique." Doc. No. 160 at 2.

Defendants respond that a person of ordinary skill in the art would "understand that a TMSI for a terminal must be unique and different from other TMSIs because it is exclusively allocated to the terminal." Doc. No. 147 at 22. Additionally, Defendants argue that there is applicable lexicography because the '060 patent incorporates "the 3GPP standard" which

"requires each mobile subscriber to have a unique identifier that is then used to allocate the TMSI." Id. at 22-23.

The specification discloses:

3GPP TS 23.003 V7.1.0 (2006 September), chapter 2 defines actually valid subscriber identities such as IMSI, TMSI or P-TMSI. In accordance with one, more or all of the embodiments, an additional specific identifier such as E(mergency)-TMSI can be used, and may additionally be defined in this chapter. Instead of E(mergency)-TMSI any other name may be used for this specific identifier, provided that the format and content is such that the terminals can recognize the specific identifier as an indication to switch to the [sic] listening to the cell broadcast service.

'060 Patent at 4:25-34.

This disclosure does not state that "temporary mobile subscriber identity" is defined as in 3GPP TS 23.003 V7.1.0 (2006 September), but rather uses this document as an example of TMSIs used. On balance, this disclosure does not rise to the level of a lexicography that "temporary mobile subscriber identity" must be interpreted in accordance with chapter 2 of 3GPP TS 23.003 V7.1.0 (2006 September). See Hill-Rom, 755 F.3d at 1371 ("To act as its own lexicographer, a patentee must clearly set forth a definition of the disputed claim term other than its plain and ordinary meaning and must clearly express an intent to redefine the term.") (citation and internal quotation marks omitted); see also CCS Fitness, 288 F.3d at 1366 ("[T]he claim term will not receive its ordinary meaning if the patentee acted as his own lexicographer and clearly set forth a definition of the disputed claim term in either the specification or prosecution history.") (emphasis added). Thus, for substantially the same reasons set forth as to the term "paging message," above, Defendants' proposal of "uniquely identify" would improperly import a feature of particular disclosed embodiments. See Constant, 848 F.2d at 1571; see also Phillips, 415 F.3d at 1323; Hill-Rom, 755 F.3d at 1371. Therefore, the Court rejects Defendants' proposed construction. No further construction is necessary. See U.S. Surgical, 103 F.3d at 1568; see also

O2 Micro, 521 F.3d at 1362; Finjan, 626 F.3d at 1207; ActiveVideo, 694 F.3d at 1326.

The Court construes **"temporary mobile subscriber identity"** to have its **plain meaning**.

e. Motion for Summary Judgment of Indefiniteness: Claim 15

Plaintiff's Proposed Construction	Defendants' Proposed Construction
No construction necessary. Not indefinite.	Indefinite.

Defendants argue that Claim 15 is indefinite because there are no objective boundaries allowing a person of ordinary skill in the art to determine what constitutes accurate receipt. Doc. No. 147 at 35.

Claim 15 of the '060 Patent recites (emphasis added):

15. A terminal operating in a cellular wireless communication system having a plurality of terminals, the terminal comprising:
    a memory unit…; and
    at least one programmed processor configured to:
        check whether a paging message received from the base station includes at least one specific identifier of the group of the specific identifiers;
        switch to a broadcast mode for receiving broadcast content on a broadcast channel only if the paging message received from the base station includes the at least one specific identifier of the group of the specific identifiers, without waiting to confirm accurate receipt of an emergency warning message; and
        establish at least one of a physical channel and a logical channel only if the received paging message includes a temporary mobile subscriber identity allocated to the terminal.

Defendants emphasize that the term "accurate receipt" does not appear in the '060 patent except in claim 15 itself and the file history does not address its meaning. Id. First, Defendants argue that "accurate receipt" is a term of degree, yet the patent never discloses the degree of accuracy required. Id. at 36-37. Second, Defendants argue that accuracy of receipt can be measured against at least two frames of reference: (1) "an error can be introduced when the

message is in transit from the base station to the terminal" or (2) "an error could be introduced by the processing of the message as it is received by the terminal." Id. at 37. Defendants conclude that a person of ordinary skill in the art would not know which frame of reference is appropriate given the lack of intrinsic evidence. Id.

CCE argues that the term "accurate" has a well-known ordinary meaning: "correct." Id. CCE urges that a person of ordinary skill in the art would understand that "accurate receipt" of messages means that "the terminals and base stations correctly apprehend the information exchanged between them with a degree of confidence established by applicable (and well-known) cellular network protocols and mechanisms that utilize…techniques to verify that information is exchanged sufficiently." Royer Decl. at ¶ 41. Thus, CCE concludes, a person of ordinary skill in the art "would not wonder about the required 'degree of accuracy.'" Doc. No. 160 at 15; Royer Decl. at ¶¶ 41-43. Finally, CCE argues that relevant communications, in the '060 patent, "occur between a base station and a terminal, not between subcomponents within a terminal." Doc. No. 160 at 15. Thus, CCE contends that a skilled artisan would know that "'accurate receipt,' as the phrase appears in Claim 15, refers to accurate (i.e., correct) receipt by the claimed terminal, of an emergency warning message transmitted by a base station." Id.

"The claims, when read in light of the specification and the prosecution history, must provide objective boundaries for those of skill in the art," and "a term of degree fails to provide sufficient notice of its scope if it depends on the unpredictable vagaries of any one person's opinion." Interval Licensing LLC v. AOL, Inc., 766 F.3d 1364, 1371 (Fed. Cir. 2014) (citation and internal quotation marks omitted); see Halliburton Energy Servs., Inc. v. M-I LLC, 514 F.3d 1244, 1256 (Fed. Cir. 2008) ("fragile gel" found indefinite because patent was "ambiguous as to the requisite degree of the fragileness of the gel").

The surrounding claim language recites "switch[ing] to a broadcast mode…without waiting to confirm accurate receipt of an emergency warning message." '060 Patent at 8:33-38. Because the surrounding claim language specifically does not require confirmation of accurate receipt, any purported ambiguity as to the proper frame of reference or required level of accuracy does not give rise to any significant uncertainty as to claim scope. "Some modicum of uncertainty…is the price of ensuring the appropriate incentives for innovation." Nautilus, 134 S. Ct. at 2128 (citation and internal quotation marks omitted); see id. at 2128 n.5 (citing Eibel Process Co. v. Minn. & Ontario Paper Co., 261 U.S. 45, 58, 65-66 (1923) (Taft, J.), as "upholding as definite a patent for an improvement to a paper-making machine, which provided that a wire be placed at a 'high' or 'substantial elevation,' where 'readers…skilled in the art of paper making and versed in the use of the…machine' would have 'no difficulty…in determining … the substantial [elevation] needed' for the machine to operate as specified") (square brackets, text therein, and ellipses the Court's); see also id. at 2129 ("The definiteness requirement…mandates clarity, while recognizing that absolute precision is unattainable."). Moreover, extrinsic evidence confirms that the word "accurate" has a reasonably clear meaning. See Doc. No. 147, Ex. 16, Merriam-*Webster*'s Collegiate Dictionary 8 (10th ed. 1999) ("free from error"; "conforming exactly to truth or to a standard"); see also Royer Decl. at ¶¶ 36, 41.

Therefore, the Court construes claim 15 such that the phrase **"accurate receipt"** has its **plain meaning**. No further construction is necessary. Accordingly, Defendants' indefiniteness argument is rejected.

CONCLUSION

For the foregoing reasons, the Court hereby **ADOPTS** the above claim constructions for the patents-in-suit. For ease of reference, the Court's claim interpretations are set forth in a table

in Appendix A. Defendants' Motion for Summary Judgment of Indefiniteness (Doc. No. 147) is

DENIED.

So ORDERED and SIGNED this 13th day of May, 2016.

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K. NICOLE MITCHELL
UNITED STATES MAGISTRATE JUDGE

Terms, Phrases, or Clauses	Court's Construction
'966 "wherein the second [accumulation] power control adjustment state f(i) for i=0 is initialized as: $P_{O\_UE\_PUSCH} + f(0) = \Delta P_{PC} + \Delta P_{rampup}$"	"wherein the second [accumulation] power control adjustment state f(i) for i=0 is calculated such that $P_{0\_UE\_PUSCH} + f(0) = \Delta P_{PC} + \Delta P_{rampup}$"
'966 "wherein the first power control adjustment state g(i) for i=0 is initialized as: $P_{O\_UE\_PUCCH} + g(0) = \Delta P_{PC} + \Delta P_{rampup}$"	"wherein the first power control adjustment state g(i) for i=0 is calculated such that $P_{0\_UE\_PUCCH} + g(0) = \Delta P_{PC} + \Delta P_{rampup}$"
'966 "ΔP_{PC}"	"a power control command"
'966 Claims 5-7 and 14-17	The phrase "wherein the initial transmit power P_{Msg3} of the third message for i=0 is equal to: $P_{Msg3} = \min\{P_{max}, P_{preamble} + \Delta_{0,preamble\_Msg3} + \Delta_{PC\_Msg3} + 10\log_{10}(M_{PUSCH}(i)) + \Delta_{TF}(TF(i))\}$" has its plain meaning Not indefinite
'556 "bitmap"	"a collection of bits"
'556 "a bitmap indicating which power headroom reports are being reported"	"a collection of bits arranged to indicate which power headroom reports are being reported"
'556 "bits for power headroom reports for a plurality of [the] secondary cells"	Plain meaning
'556 "secondary cells"	Plain meaning
'556 Claims 15 and 23	The phrases "type 1 power headroom report" and "type 2 power headroom report" have their plain meaning Not indefinite
'060 "storing, at the terminal of the cellular wireless communications system, a group of specific identifiers" "store a group of specific identifiers"	Plain meaning
'060 "establishing at least one of a physical channel and a logical channel"	"establishing a physical channel, a logical channel, or both"

'060 "establish at least one of a physical channel and a logical channel"	"establish a physical channel, a logical channel, or both"
'060 "paging message"	Plain meaning
'060 "temporary mobile subscriber identity"	Plain meaning
'060 Claim 15	The phrase "accurate receipt" has its plain meaning Not indefinite