UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

NOKIA SOLUTIONS AND NETWORKS §
US LLC and NOKIA SOLUTIONS AND §
NETWORKS OY, §
§
§
Plaintiffs, §
§
v. § Case No. 2:16-cv-0756-JRG-RSP
§
HUAWEI TECHNOLOGIES CO. LTD. and §
HUAWEI DEVICE USA, INC. §
§
Defendants. §
§

CLAIM CONSTRUCTION
MEMORANDUM AND ORDER

On May 3, 2017, the Court held an oral hearing to determine the proper construction of the

disputed claim terms in U.S. Patent Nos. 8,121,082 (the "'082 Patent") and 8,165,035 (the "'035

Patent") (collectively the "Asserted Patents"). The Court has considered the parties' claim

construction briefing (Dkt. Nos. 68, 71, and 72) and arguments. Based on the intrinsic and extrinsic

evidence, the Court construes the disputed terms in this Memorandum Opinion and Order. *See*

Phillips v. AWH Corp., 415 F.3d 1303 (Fed. Cir. 2005); *Teva Pharm. USA, Inc. v. Sandoz, Inc.*,

135 S. Ct. 831 (2015).

BACKGROUND

Plaintiffs Nokia Solutions and Networks US LLC and Nokia Solutions and Networks OY

(collectively "Nokia") assert the Asserted Patents against Defendants Huawei Technologies Co.

LTD. and Huawei Device USA, Inc., (collectively "Huawei").

The '082 Patent relates to communications in a cellular network. The Abstract of the '082

Patent recites:

> A method for signaling between a mobile apparatus (10) and a network node (12)
> is described. The method includes generating a message that includes a scheduling
> request. Determining whether a second indication (e.g., an acknowledgment) is to
> be transmitted in a sub-frame with the first indication is also included. The method
> includes, in response to a determination that the second indication is not to be
> included, the message is configured in a first configuration and, in response to a
> determination that the second indication is to be included, the message also includes
> the second indication and the message is configured in a second configuration. The
> first configuration is distinct from the second configuration. The method also
> includes sending the message, via a wireless transmitter, in the sub-frame.
> Apparatus and computer-readable media are also described.

'082 Patent Abstract. Scheduling requests are provided so that user equipment may request

resources from a base station. More particularly, the '082 Patent describes a process for

transmitting scheduling requests (SR), acknowledgements (ACK), and negative

acknowledgements (NACK). Specifically, the '082 Patent references a desire in the 3GPP cellular

standard to provide the simultaneous transmission of SR, ACK and NACK signals. *Id*. at 2:55-57.

The technique disclosed relates to techniques for including in a message just SR information,

combining SR and ACK information in sub-frame or combining SR and NACK information in

sub-frame. *Id*. at 4:10-42. Constellation point techniques may be used to map the information that

is sent. *Id*. at 7:22-35, Figures 2-6, 8.

The '035 Patent relates to communications in a cellular network. The Abstract of the '035

Patent recites:

> In a first aspect of the invention there is a method, apparatus, and executable
> software product for receiving scheduling information, determining that at least one
> downlink allocation of the scheduling information was not received, sending a reply
> to the received scheduling that comprises an indication of discontinuous
> transmission in response to the determining. In another aspect of the invention there
> is a method an apparatus to send scheduling information, and receive a reply to the
> scheduling information comprising an indication of discontinuous transmission that

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at least one downlink allocation of the scheduling information was not received.

'035 Patent Abstract. The '035 Patent relates to transmissions of ACK, NACK and discontinuous transmission (DTX) signals. More particularly, the '035 Patent describes using DTX detection. A node in the system may receive scheduling information and determine that at least one downlink allocation of the scheduling information was not received. A reply is sent to the received scheduling information indicating a discontinuous transmission situation. *Id*. at 3:60-4:8.

LEGAL PRINCIPLES

"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)). To determine the meaning of the claims, courts start by considering the intrinsic evidence. *Id.* at 1313; *C.R. Bard, Inc. v. U.S. Surgical Corp.*, 388 F.3d 858, 861 (Fed. Cir. 2004); *Bell Atl. Network Servs., Inc. v. Covad Commc'ns Group, Inc.*, 262 F.3d 1258, 1267 (Fed. Cir. 2001). The intrinsic evidence includes the claims themselves, the specification, and the prosecution history. *Phillips*, 415 F.3d at 1314; *C.R. Bard, Inc.*, 388 F.3d at 861. The general rule—subject to certain specific exceptions discussed *infra*—is that each claim term is construed according to its ordinary and accustomed meaning as understood by one of ordinary skill in the art at the time of the invention in the context of the patent. *Phillips*, 415 F.3d at 1312–13; *Alloc, Inc. v. Int'l Trade Comm'n*, 342 F.3d 1361, 1368 (Fed. Cir. 2003); *Azure Networks, LLC v. CSR PLC*, 771 F.3d 1336, 1347 (Fed. Cir. 2014) ("There is a heavy presumption that claim terms carry their accustomed meaning in the relevant community at the relevant time.") (vacated on other grounds).

"The claim construction inquiry. . . begins and ends in all cases with the actual words of the claim." *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1248 (Fed. Cir. 1998). "[I]n all aspects of claim construction, 'the name of the game is the claim.'" *Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1298 (Fed. Cir. 2014) (quoting *In re Hiniker Co.*, 150 F.3d 1362, 1369 (Fed. Cir. 1998)). A term's context in the asserted claim can be instructive. *Phillips*, 415 F.3d at 1314. Other asserted or unasserted claims can also aid in determining the claim's meaning, because claim terms are typically used consistently throughout the patent. *Id.* Differences among the claim terms can also assist in understanding a term's meaning. *Id.* For example, when a dependent claim adds a limitation to an independent claim, it is presumed that the independent claim does not include the limitation. *Id.* at 1314–15.

"[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) (en banc)). "[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)); *Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1325 (Fed. Cir. 2002). But, "'[a]lthough the specification may aid the court in interpreting the meaning of disputed claim language, particular embodiments and examples appearing in the specification will not generally be read into the claims.'" *Comark Commc'ns, Inc. v. Harris Corp.*, 156 F.3d 1182, 1187 (Fed. Cir. 1998) (quoting *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1560, 1571 (Fed. Cir. 1988)); *see also Phillips*, 415 F.3d at 1323. "[I]t is improper to read limitations from a preferred embodiment described in the specification—even if it is the only embodiment—into the claims absent a clear indication in the intrinsic record that the

patentee intended the claims to be so limited." *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 913 (Fed. Cir. 2004).

The prosecution history is another tool to supply the proper context for claim construction because, like the specification, the prosecution history provides evidence of how the U.S. Patent and Trademark Office ("PTO") and the inventor understood the patent. *Phillips*, 415 F.3d at 1317. However, "because the prosecution history represents an ongoing negotiation between the PTO and the applicant, rather than the final product of that negotiation, it often lacks the clarity of the specification and thus is less useful for claim construction purposes." *Id.* at 1318; *see also Athletic Alternatives, Inc. v. Prince Mfg.*, 73 F.3d 1573, 1580 (Fed. Cir. 1996) (ambiguous prosecution history may be "unhelpful as an interpretive resource").

Although extrinsic evidence can also be useful, it is "'less significant than the intrinsic record in determining the legally operative meaning of claim language.'" *Phillips*, 415 F.3d at 1317 (quoting *C.R. Bard, Inc.*, 388 F.3d at 862). 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 technical dictionaries and treatises may provide definitions that are too broad or may not be indicative of how the term is used in the patent. *Id.* at 1318. Similarly, expert testimony may aid a court in understanding the underlying technology and determining the particular meaning of a term in the pertinent field, but an expert's conclusory, unsupported assertions as to a term's definition are entirely unhelpful to a court. *Id.* Generally, extrinsic evidence is "less reliable than the patent and its prosecution history in determining how to read claim terms." *Id.* The Supreme Court recently explained the role of extrinsic evidence in claim construction:

In some cases, however, the district court will need to look beyond the patent's intrinsic evidence and to consult extrinsic evidence in order to understand, for example, the background science or the meaning of a term in the relevant art during the relevant time period. *See, e.g., Seymour v. Osborne*, 11 Wall. 516, 546 (1871) (a patent may be "so interspersed with technical terms and terms of art that the testimony of scientific witnesses is indispensable to a correct understanding of its meaning"). In cases where those subsidiary facts are in dispute, courts will need to make subsidiary factual findings about that extrinsic evidence. These are the "evidentiary underpinnings" of claim construction that we discussed in *Markman*, and this subsidiary fact finding must be reviewed for clear error on appeal.

Teva Pharm. USA, Inc. v. Sandoz, Inc., 135 S. Ct. 831, 841 (2015).

A. Departing from the Ordinary Meaning of a Claim Term

There are "only two exceptions to [the] general rule" that claim terms are construed according to their plain and ordinary meaning: "1) when a patentee sets out a definition and acts as his own lexicographer, or 2) when the patentee disavows the full scope of the claim term either in the specification or during prosecution."[1] *Golden Bridge Tech., Inc. v. Apple Inc.*, 758 F.3d 1362, 1365 (Fed. Cir. 2014) (quoting *Thorner v. Sony Computer Entm't Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012)); *see also GE Lighting Solutions, LLC v. AgiLight, Inc.*, 750 F.3d 1304, 1309 (Fed. Cir. 2014) ("[T]he specification and prosecution history only compel departure from the plain meaning in two instances: lexicography and disavowal."). The standards for finding lexicography or disavowal are "exacting." *GE Lighting Solutions*, 750 F.3d at 1309.

To act as his own lexicographer, the patentee must "clearly set forth a definition of the disputed claim term," and "clearly express an intent to define the term." *Id.* (quoting *Thorner*, 669 F.3d at 1365); *see also Renishaw*, 158 F.3d at 1249. The patentee's lexicography must appear "with reasonable clarity, deliberateness, and precision." *Renishaw*, 158 F.3d at 1249.

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[1] Some cases have characterized other principles of claim construction as "exceptions" to the general rule, such as the statutory requirement that a means-plus-function term is construed to cover the corresponding structure disclosed in the specification. *See, e.g., CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1367 (Fed. Cir. 2002).

To disavow or disclaim the full scope of a claim term, the patentee's statements in the specification or prosecution history must amount to a "clear and unmistakable" surrender. *Cordis Corp. v. Boston Sci. Corp.*, 561 F.3d 1319, 1329 (Fed. Cir. 2009); *see also Thorner*, 669 F.3d at 1366 ("The patentee may demonstrate intent to deviate from the ordinary and accustomed meaning of a claim term by including in the specification expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope."). "Where an applicant's statements are amenable to multiple reasonable interpretations, they cannot be deemed clear and unmistakable." *3M Innovative Props. Co. v. Tredegar Corp.*, 725 F.3d 1315, 1326 (Fed. Cir. 2013).

B. Functional Claiming and 35 U.S.C. § 112, ¶ 6 (pre-AIA) / § 112(f) (AIA)[2]

A patent claim may be expressed using functional language. *See* 35 U.S.C. § 112, ¶ 6; *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1347–49 & n.3 (Fed. Cir. 2015) (en banc in relevant portion). Section 112, Paragraph 6, provides that a structure may be claimed as a "means . . . for performing a specified function" and that an act may be claimed as a "step for performing a specified function." *Masco Corp. v. United States*, 303 F.3d 1316, 1326 (Fed. Cir. 2002).

But § 112, ¶ 6 does not apply to all functional claim language. There is a rebuttable presumption that § 112, ¶ 6 applies when the claim language includes "means" or "step for" terms, and that it does not apply in the absence of those terms. *Masco Corp.*, 303 F.3d at 1326; *Williamson*, 792 F.3d at 1348. The presumption stands or falls according to whether one of ordinary skill in the art would understand the claim with the functional language, in the context of the entire specification, to denote sufficiently definite structure or acts for performing the function. *See Media Rights Techs., Inc. v. Capital One Fin. Corp.*, 800 F.3d 1366, 1372 (Fed. Cir. 2015) (§

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[2] Because the applications resulting in the Asserted Patents were filed before September 16, 2012, the effective date of the AIA, the Court refers to the pre-AIA version of § 112.

112, ¶ 6 does not apply when "the claim language, read in light of the specification, recites sufficiently definite structure" (quotation marks omitted) (citing *Williamson*, 792 F.3d at 1349; Robert Bosch, LLC v. Snap-On Inc., 769 F.3d 1094, 1099 (Fed. Cir. 2014))); *Williamson*, 792 F.3d at 1349 (§ 112, ¶ 6 does not apply when "the words of the claim are understood by persons of ordinary skill in the art to have sufficiently definite meaning as the name for structure"); *Masco Corp.*, 303 F.3d at 1326 (§ 112, ¶ 6 does not apply when the claim includes an "act" corresponding to "how the function is performed"); *Personalized Media Communications, L.L.C. v. International Trade Commission*, 161 F.3d 696, 704 (Fed. Cir. 1998) (§ 112, ¶ 6 does not apply when the claim includes "sufficient structure, material, or acts within the claim itself to perform entirely the recited function . . . even if the claim uses the term 'means.'" (quotation marks and citation omitted)).

When it applies, § 112, ¶ 6 limits the scope of the functional term "to only the structure, materials, or acts described in the specification as corresponding to the claimed function and equivalents thereof." *Williamson*, 792 F.3d at 1347. Construing a means-plus-function limitation involves multiple steps. "The first step . . . is a determination of the function of the means-plus-function limitation." *Medtronic, Inc. v. Advanced Cardiovascular Sys., Inc.*, 248 F.3d 1303, 1311 (Fed. Cir. 2001). "[T]he next step is to determine the corresponding structure disclosed in the specification and equivalents thereof." *Id*. A "structure disclosed in the specification is 'corresponding' structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim." *Id*. The focus of the "corresponding structure" inquiry is not merely whether a structure is capable of performing the recited function, but rather whether the corresponding structure is "clearly linked or associated with the [recited] function." *Id*. The corresponding structure "must include all structure that actually performs the recited function." *Default Proof Credit Card Sys. v. Home Depot U.S.A., Inc.*, 412 F.3d 1291, 1298 (Fed.

Cir. 2005). However, § 112 does not permit "incorporation of structure from the written description beyond that necessary to perform the claimed function." *Micro Chem., Inc. v. Great Plains Chem. Co.*, 194 F.3d 1250, 1258 (Fed. Cir. 1999).

For § 112, ¶ 6 limitations implemented by a programmed general purpose computer or microprocessor, the corresponding structure described in the patent specification must include an algorithm for performing the function. *WMS Gaming Inc. v. Int'l Game Tech.*, 184 F.3d 1339, 1349 (Fed. Cir. 1999). The corresponding structure is not a general purpose computer but rather the special purpose computer programmed to perform the disclosed algorithm. *Aristocrat Techs. Austl. Pty Ltd. v. Int'l Game Tech.*, 521 F.3d 1328, 1333 (Fed. Cir. 2008).

C. Definiteness Under 35 U.S.C. § 112, ¶ 2 (pre-AIA) / § 112(b) (AIA)[3]

Patent claims must particularly point out and distinctly claim the subject matter regarded as the invention. 35 U.S.C. § 112, ¶ 2. A claim, when viewed in light of the intrinsic evidence, must "inform those skilled in the art about the scope of the invention with reasonable certainty." *Nautilus Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2129 (2014). If it does not, the claim fails § 112, ¶ 2 and is therefore invalid as indefinite. *Id.* at 2124. Whether a claim is indefinite is determined from the perspective of one of ordinary skill in the art as of the time the application for the patent was filed. *Id.* at 2130. As it is a challenge to the validity of a patent, the failure of any claim in suit to comply with § 112 must be shown by clear and convincing evidence. *Id.* at 2130 n.10. "[I]ndefiniteness is a question of law and in effect part of claim construction." *ePlus, Inc. v. Lawson Software, Inc.*, 700 F.3d 509, 517 (Fed. Cir. 2012).

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[3] Because the application resulting in the patent was filed before September 16, 2012, the effective date of the AIA, the Court refers to the pre-AIA version of § 112.

When a term of degree is used in a claim, "the court must determine whether the patent provides some standard for measuring that degree." *Biosig Instruments, Inc. v. Nautilus, Inc.*, 783 F.3d 1374, 1378 (Fed. Cir. 2015) (quotation marks omitted). Likewise, when a subjective term is used in a claim, "the court must determine whether the patent's specification supplies some standard for measuring the scope of the [term]." *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1351 (Fed. Cir. 2005); *accord Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014) (citing *Datamize*, 417 F.3d at 1351).

In the context of a claim governed by 35 U.S.C. § 112, ¶ 6, the claim is invalid as indefinite if the claim fails to disclose adequate corresponding structure to perform the claimed functions. *Williamson*, 792 F.3d at 1351–52. The disclosure is inadequate when one of ordinary skill in the art "would be unable to recognize the structure in the specification and associate it with the corresponding function in the claim." *Id.* at 1352.

AGREED TERMS

The parties agreed to the following terms:

Term	Agreed Construction
"An indication of discontinuous transmission" ('035 Patent Claims 1, 12, 22, and 23)	"an explicit or implicit indication of discontinuous transmission"
"means for receiving scheduling information" ('035 Patent Claim 23)	<u>Function</u>: receiving scheduling information <u>Structure</u>: receiver, transceiver, or other equivalents thereof

(Dkt. No. 76-1 at 17, 26)

DISPUTED TERMS

1. **"message generation means for generating a message comprising a scheduling request,"**

   "message generation means is further for: configuring the message in a first configuration in response to a determination that the acknowledgement is not to be included, and configuring the message in a second configuration comprising the acknowledgement in response to a determination that the acknowledgement is to be included, where the first configuration is distinct from the second configuration,"

   "the message generation means is further for configuring the message in a third configuration comprising the negative-acknowledgement in response to a determination that the negative-acknowledgement is to be included"
   ('082 Patent Claim 10)

Nokia's Proposed Construction	Huawei's Proposed Construction
Function: (Agreed) generating a message comprising a scheduling request and configuring the message in a first configuration in response to a determination that the acknowledgement is not to be included and configuring the message in a second configuration comprising the acknowledgement in response to a determination that the acknowledgement is to be included, where the first configuration is distinct from the second configuration and configuring the message in a third configuration comprising the negative-acknowledgement in response to a determination that the negative-acknowledgement is to be included	**Function:** (Agreed) generating a message comprising a scheduling request and configuring the message in a first configuration in response to a determination that the acknowledgement is not to be included and configuring the message in a second configuration comprising the acknowledgement in response to a determination that the acknowledgement is to be included, where the first configuration is distinct from the second configuration and configuring the message in a third configuration comprising the negative-acknowledgement in response to a determination that the negative-acknowledgement is to be included

Structure:	Structure:
message generation means (10F) such as processor, memory, and/or associated software for mapping the constellation points shown in Figs. 3, 4, 5, 6, or 12, or the constellation points described in the corresponding text, e.g., 7:39- 8:59, 9:52-61, and equivalents thereof	The specification fails to set forth any algorithm for the function claimed in this software limitation. Claim is indefinite.

Huawei contends that, at most, the patent discloses an algorithm for only a portion of the function, not the full function.

Positions of the Parties

Nokia contends that the "message generation means" generates a message comprising a scheduling request (SR) and then configures the message in (i) a first configuration (when there is only SR) (ii) a second configuration (when there is SR with ACK), and (iii) a third configuration (when there is SR with NACK). Nokia points to Figures 3, 4, 5, 6, and 12 as providing a mapping of constellations to configure the message in one of these three configurations. (Dkt. No. 68 at 5-6.) Nokia contends that as for the first function, for which Huawei alleges an algorithm is absent, each of the three configurations discussed above and their disclosed constellation points are messages comprising an SR. (Dkt. No. 72 at 2.) Nokia contends that the constellation figures and the flow chart of Figure 8 provide an algorithm.

Nokia contends that the specification shows how these constellation points are used. Specifically, Nokia states that in order to generate and configure a message with SR, the specification provides that "the UE transmits the ACK/NACK information using a SR resource with the modulation constellation shown in either Figure 3 or 5 for mapping a 1-bit ACK/NACK indication, or the modulation shown in either Figure 4 or Figure 6 or Figure 12 for mapping a 2-bit ACK/NACK indication." '082 Patent Figure 8, Block 8B. Nokia contends that Figure 8 and the

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constellation mappings shown in Figures 3-6, along with the corresponding text, provide the algorithm for generating and configuring the message. Nokia points to Figure 3 which shows a "constellation mapping of 1-bit ACK/NACK." (Dkt. No. 68 at 6 (citing '082 Patent 5:19-20, Figure 3.)

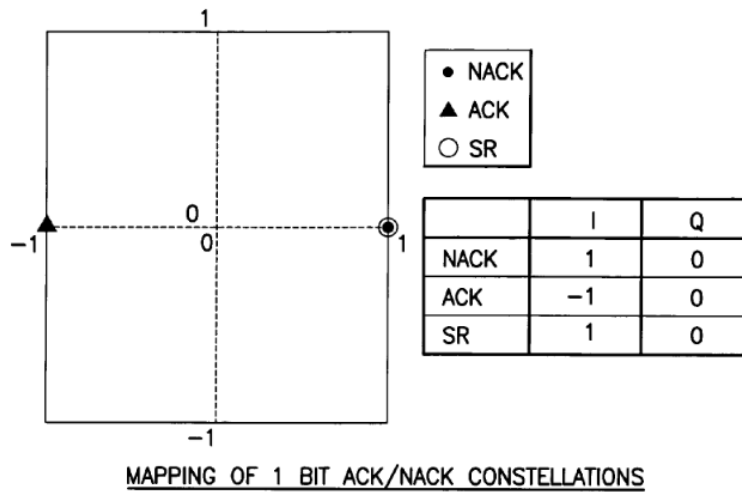MAPPING OF 1 BIT ACK/NACK CONSTELLATIONS

FIG.3

Nokia contends that in this one-bit mapping, several of the claimed functions are disclosed. First, with regard to "generating a message comprising a scheduling request and configuring the message in a first configuration in response to a determination that the acknowledgement is not to be included," Nokia contends the circle in Figure 3 represents SR without ACK/NACK (Dkt. No. 68 at 7 (citing '082 Patent 7:54-56).) Second, with regard to "configuring the message in a second configuration comprising the acknowledgement in response to a determination that the acknowledgement is to be included, where the first configuration is distinct from the second configuration," Nokia contends that the triangle in Figure 3 shows the configuration for sending SR and ACK (*Id*. (citing '082 Patent 9:54-61).) Third, with regard to "a third configuration comprising the negative-acknowledgement in response to a determination that the negative-acknowledgement is to be included," Nokia contends the filled-in circle shows transmitting SR

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and NACK. (*Id.* (citing '082 Patent 9:54-61).) Nokia contends Figures 4, 5, 6, and 12 similarly provide alternative constellation mappings.

Nokia also contends that the flowchart in Figure 8 describes transmitting information "using the SR resource" when SR=1 '082 Patent Figure 8, Block 8B. Nokia contends that a person of skill in the art would know that (1) SR=1 refers to a "positive SR" transmission where the UE desires to generate and transmit an SR (*id.* at 7:41-42) and (2) SR=0 refers to a "negative SR" which indicates that the UE does not desire to transmit a SR (*id.*). (Dkt. No. 72 at 2.) Nokia contends that when SR=1, e.g., in case of positive SR transmission, SR may be transmitted through on/off keying on the SR resource (*Id.* (citing '082 Patent 2:62-64 and Dkt. No. 72-1 (Thompson Decl.) at ¶ 22).) Nokia contends that by choosing positive SR transmission on the SR channel, the UE is "generating a message comprising a scheduling request." (*Id.* at 2.)

Huawei contends that Nokia ties disclosure in the patent to some of the recited functions but not all of the functions. (Dkt. No. 71 at 5-6.) First, Huawei objects that Nokia fuses the first two functions together "generating a message comprising a scheduling request" and "configuring the message in a first configuration in response to a determination that the acknowledgement is not to be included"—into a new single function. Huawei contends that Nokia merely points to the constellation point, but that patent does not disclose an algorithm for "generating a message comprising a scheduling request." (*Id.* at 6.) Huawei contends that "a point on a constellation chart" says nothing about a "message," much less how to "generate" or "configure" that message. (*Id.*)

Second, Huawei contends that Nokia does not disclose an algorithm for the function "configuring the message in a second configuration comprising the acknowledgement in response to a determination that the acknowledgement is to be included, where the first configuration is distinct from the second configuration." Specifically, Huawei contends that Nokia points to

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nothing that would correspond to "a determination that the acknowledgement is to be included," and Huawei states that the patent discloses no such determination. (Dkt. No. 71 at 7 (citing Dkt. No. 71-1 (Laneman Dec.) at ¶ 26).) Huawei contends that the same is true for "a determination that the acknowledgement is not to be included" and "a determination that the negative acknowledgement is to be included" in the next two functions. (*Id*.)

Third, Huawei contends that the chart of constellation points is merely an outcome, not an algorithm. (*Id*. (citing *Cloud Farm Assocs. LP v. Volkswagen Grp. of Am., Inc.*, No. 2016-1448, 2017 WL 74768, at *7 (Fed. Cir. Jan. 9, 2017) ("Instead of offering the algorithm itself, this table merely offers the output of the algorithm. Nowhere in the patent offers a step-by-step procedure of how to arrive at the outputs disclosed in the table. In other words, the patent offers the ends but not the means, which is not sufficient for structure.")).)

As to the flowchart of Figure 8, Huawei contends that flowchart is backwards from the claimed function and thus does not provide an algorithm for the claimed function. Specifically, Huawei contends that the flowchart presumes "ACK/NACK information" is being sent, and performs different steps depending on whether a scheduling request is to be sent. (*Id*. at 8.) Huawei contends that, in the claims, the scheduling request is presumed, and different steps are performed depending on whether ACK/NACK information is to be sent at all, and if so what kind. (*Id*.)

The parties did not provide additional arguments for this term at the oral hearing. (Dkt. No. 84 at 25.)

Analysis

Huawei raises two primary arguments as to why differing portions of the function are not supported with corresponding algorithms. The Court finds that Nokia presents the more persuasive arguments as to the presence of algorithms for the functions as claimed.

First, Huawei contends that no algorithm exists for "generating a message comprising a scheduling request." However, the patent is replete with discussion of creating a message by using data from a constellation mapping scheme in which SR information is represented as part of the constellation map. This is clearly an algorithm for generating the claimed message. The claimed message is created by embedding SR information in the constellation mapping in the message. '082 Patent Figs. 3, 4, 5, 6, 8 and 12, 7:39- 8:59, 9:52-61. This provides an algorithm for the contested portion of the function. *See Finisar Corp. v. DirecTV GroupInc.*, 523 F.3d 1323, 1340 (Fed. Circ. 2008) ("This court permits a patentee to express that algorithm in any understandable terms including as a mathematical formula, in prose, or as a flow chart, or in any other manner that provides sufficient structure.") (internal citation omitted); *Chicago Board Options Exchange, Inc. v. International Securities Exchange, LLC*, 748 F.3d 1134, 1141 (Fed. Cir. 2014) ("We must also remember that 'a challenge to a claim containing a means-plus-function limitation as lacking structural support requires a finding, by clear and convincing evidence, that the specification lacks disclosure of structure sufficient to be understood by one skilled in the art as being adequate to perform the recited function.'") (citation omitted)).

Second, Huawei contends that no algorithm is provided regarding how to make a determination that an ACK or NACK state exists. Huawei is seeking, however, specific algorithms that go beyond the claimed function of this term. The function in question is "configuring…in response to a determination that the [ACK/NACK] is [not] to be included." The required algorithm

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relates to how to *configure* the message *in response* to a determination.[4] Again, the specification

clearly indicates an algorithm for how to configure the message in response to a determination.

Specifically, as shown in the specification, there are various techniques to use various constellation

mapping techniques to further include with the SR information additional ACK / NACK

information in the constellation map, be it a one bit map or a two bit map. '082 Patent Figs. 3, 4,

5, 6, 8 and 12, 7:39- 8:59, 9:52-61.

The Court construes "message generation means for generating a message comprising a scheduling request," "message generation means is further for: configuring the message in a first configuration in response to a determination that the acknowledgement is not to be included, and configuring the message in a second configuration comprising the acknowledgement in response to a determination that the acknowledgement is to be included, where the first configuration is distinct from the second configuration," and "the message generation means is further for configuring the message in a third configuration comprising the negative-acknowledgement in response to a determination that the negative-acknowledgement is to be included" to mean:

Function:

generating a message comprising a scheduling request

and

configuring the message in a first configuration in response to a determination that the acknowledgement is not to be included

and

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[4] The parties provide separate arguments in the next term with regard to the "determining means."

configuring the message in a second configuration comprising the acknowledgement in response to a determination that the acknowledgement is to be included, where the first configuration is distinct from the second configuration

and

configuring the message in a third configuration comprising the negative-acknowledgement in response to a determination that the negative-acknowledgement is to be included

Structure:

message generation means (10F) such as processor, memory, and/or associated software for mapping the constellation points shown in Figs. 3, 4, 5, 6, or 12, or the constellation points described in the corresponding text, e.g., 7:39- 8:59, 9:52-61, and equivalents thereof.

2. **"first determining means for determining whether an acknowledgement is to be transmitted in a same sub-frame as the message"**
   "second determining means for determining whether a negative-acknowledgement is to be transmitted in the same sub-frame as the message" ('082 Patent Claim 10)

Nokia's Proposed Construction	Huawei's Proposed Construction
Function: (Agreed) determining whether an acknowledgement [negative-acknowledgement] is to be transmitted in a same sub-frame as the message **Structure:** first [second] determining means (10E) such as processor, memory, and/or associated software for performing the algorithm shown in Fig. 8 and corresponding text, e.g., 9:52-61, and equivalents thereof	**Function:** (Agreed) determining whether an acknowledgement [negative-acknowledgement] is to be transmitted in a same sub-frame as the message **Structure:** The specification fails to set forth any algorithm for the function claimed in this software limitation. Claim is indefinite.

Huawei contends that the claim is indefinite for not disclosing an algorithm for the structure.

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Positions of the Parties

Nokia contends that the function of the "first/second determining means" is to determine whether the ACK or NACK is to be transmitted with SR. Nokia contends that the algorithm is disclosed in the passage:

> With SR=0 (e.g., in the case of negative SR transmission), the UE 10 transmits the ACK/NACK information using the ACK/NACK resources, with SR=1 (e.g., in the case of positive SR transmission), the UE 10 transmits the ACK/NACK information using the SR resources.

'082 Patent 7:39-43. Nokia contends that this describes that when SR and ACK need to be transmitted simultaneously, ACK is transmitted using SR resources. Similarly, when SR and NACK need to be transmitted simultaneously, NACK is transmitted using SR resources. (Dkt. No. 68 at 9.) Nokia contends that this corresponds to Blocks 8A and 8B of the flowchart of Figure 8. (*Id*.)
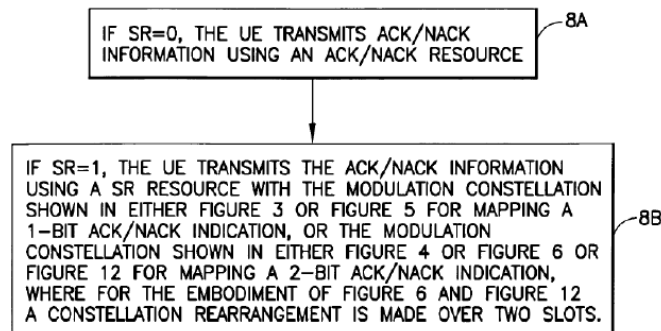

IF SR=0, THE UE TRANSMITS ACK/NACK INFORMATION USING AN ACK/NACK RESOURCE — 8A

IF SR=1, THE UE TRANSMITS THE ACK/NACK INFORMATION USING A SR RESOURCE WITH THE MODULATION CONSTELLATION SHOWN IN EITHER FIGURE 3 OR FIGURE 5 FOR MAPPING A 1-BIT ACK/NACK INDICATION, OR THE MODULATION CONSTELLATION SHOWN IN EITHER FIGURE 4 OR FIGURE 6 OR FIGURE 12 FOR MAPPING A 2-BIT ACK/NACK INDICATION, WHERE FOR THE EMBODIMENT OF FIGURE 6 AND FIGURE 12 A CONSTELLATION REARRANGEMENT IS MADE OVER TWO SLOTS. — 8B

FIG.8

Nokia contends that this teaches an algorithm in which the (1) "first determining means" determines whether an ACK is to be transmitted in the same sub-frame as the message by determining whether there is also a SR to be sent and (2) the "second determining means" determines whether a NACK is to be transmitted in the same sub-frame as the message by determining whether there is also a SR to be sent. (Dkt. No. 68 at 9-10.)

Finally, Nokia contends that "determining whether an ACK or NACK is to be transmitted in the same sub-frame as the message" is described in the patent in the passages: "the acknowledgement indicates that a downlink resource allocation grant has succeeded and that each of at least one corresponding codeword has been detected correctly" ('082 Patent 12:25-29) and "the negative-acknowledgement indicates that a downlink resource allocation grant has succeeded and that each of at least one corresponding codeword has not been detected correctly" (*id*. at 12:20-24). (Dkt. No. 68 at 10.)

Huawei contends that Nokia rewrites the claimed functions to be "determining whether the ACK **or** NACK is to be transmitted with SR." (*Id*.) Huawei contends that the actual claim language does not speak of the transmission of ACK and NACK in the disjunctive. Instead, Huawei contends that two separate determining steps are presented. Huawei contends that the claim language requires determining whether an ACK is to be transmitted in the same sub-frame as the message and then further determining whether a NACK is to be transmitted in the same sub-frame as the message. (Dkt. No. 71 at 9-10.) Huawei contends that Nokia's modified function reads out the language "in the same sub-frame as the message" that is part of the agreed functions and adds the language "to be transmitted with SR." (*Id*. at 10.)

As to the specification passage cited by Nokia (7:39-42), Huawei contends that the passage does not even reference "determining" and provides no guidance as to determining whether an ACK or NACK is transmitted. (*Id*.) Rather, Huawei contends that the passage merely treats, as a given fact, that an ACK or NACK is to be transmitted. Huawei contends that no teaching is provided regarding "determining whether" an ACK or NACK is to be transmitted. Huawei contends that same argument applies to the Figure 8 flow chart as the figure presupposes that it has been determined whether ACK/NACK should be transmitted. (*Id*. at 11.)

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Huawei contends that Nokia characterizes the function as "determining whether an ACK or NACK is to be transmitted in the same sub-frame as the message." Huawei contends, however, that this is not the function recited in the claim. (*Id.*) Huawei also contends that Nokia does not refer to any algorithms that perform that function. Huawei contends that, in any event, Nokia still does not disclose an algorithm for ***determining whether*** acknowledgements or negative acknowledgements are transmitted in the same sub-frame.

In reply, Nokia contends that the ACK and NACK are mutually exclusive. Nokia contends that this is confirmed by the algorithm disclosed in the patent specification for the function of "determining whether [an ACK or NACK] is to be transmitted:" "the acknowledgement indicates that a downlink resource allocation grant has succeeded and that each of at least one corresponding codeword has been detected correctly" ('082 Patent12:25-29), while "the negative-acknowledgement indicates that a downlink resource allocation grant has succeeded and that each of at least one corresponding codeword has not been detected correctly" ('082 Patent 12:20-24). Nokia contends that using this description of the algorithm, a person of ordinary skill in the art would be able to implement the means for determining whether an ACK or NACK is to be transmitted. (Dkt. No. 72 at 3 (citing Dkt. No. 72-1 (Thompson Decl.) at ¶ 30 (noting that the mechanism for transmitting ACK and NACK was well known)).)

As to Huawei's assertion that Nokia has read out "is to be transmitted in the same sub-frame as the message" (Dkt. No. 71 at 10), Nokia contends that as Nokia made clear, Figure 8 and the accompanying text discloses the algorithm for determining whether (i) an ACK is to be transmitted in the same sub-frame as the message, i.e., SR + ACK and (ii) a NACK is to be transmitted in the same sub-frame as the message, i.e., SR + NACK. (Dkt. No. 72 at 4.) Nokia further states that Figure 8 and the passage clearly show that the ACK/NACK is to be transmitted

with the SR when SR=1. (*Id.* (citing '082 Patent 7:39-43 and Dkt. No. 72-1 (Thompson Decl.) at ¶ 32).)

The parties did not provide additional arguments for this term at the oral hearing. (Dkt. No. 84 at 25-26.)

Analysis

The specification provides algorithm support for the claimed function. With regard to determining whether to transmit ACKs and NACKs, the specification provides a discussion as to how to determine an ACK or NACK condition:

> In a further exemplary embodiment of any one of the apparatus (10) above, the acknowledgement indicates that a downlink resource allocation grant has succeeded and that each of at least one corresponding codeword has been detected correctly

> In an additional exemplary embodiment of any one of the apparatus (10) above, where there are at least two corresponding codewords, the message generating module is also configured to configure the message in a fourth configuration and/or a fifth configuration in response to at least one corresponding codeword having been detected correctly and at least one corresponding codeword having not been detected correctly.

'082 Patent 12:25-37. Further, the specification provides an algorithm as to determining whether to provide the ACK and NACK in the same sub-frame as the message. Specifically, the specification teaches that when SR=1 the ACK/NACK information is included in the SR resource. '082 Patent 7:41-43, 9:54-55, Figure 8.

At the oral hearing, Nokia agreed to the Court's proposed construction which is adopted below. (Dkt. No. 84 at 25.)

The Court construes "first determining means for determining whether an acknowledgement is to be transmitted in a same sub-frame as the message" to mean:

Function:

determining whether an acknowledgement is to be transmitted in a same sub-frame as the message

Structure:

first determining means (10E) such as processor, memory, and/or associated software for performing the algorithm shown in 7:39-43, 9:52-55, 12:20-29 and Fig. 8, and equivalents thereof

   The Court construes "second determining means for determining whether a negative-acknowledgement is to be transmitted in the same sub-frame as the message" to mean:

Function:

determining whether a negative-acknowledgement is to be transmitted in a same sub-frame as the message

Structure:

second determining means (10E) such as processor, memory, and/or associated software for performing the algorithm shown in 7:39-43, 9:52-55, 12:20-29 and Fig. 8, and equivalents thereof

3. **"configuration" ('082 Patent Claims 1-10, 12-14, 17)**

Nokia's Proposed Construction	Huawei's Proposed Construction
Plain and ordinary meaning, such as "constellation point."	Plain meaning

   The parties dispute whether "configuration" should be construed as "constellation point." At the oral hearing, the Court proposed a construction of "plain and ordinary meaning." The Court

further noted that this construction may include constellation points but is not limited to constellation points. The parties agreed to the Court's proposal. (Dkt. No. 84 at 26.)

The Court construes the term "configuration" to have its plain and ordinary meaning.

4. **"a downlink resource allocation grant has succeeded" ('082 Patent Claims 1, 2, 11, 15, 16, 18)**

Nokia's Proposed Construction	Huawei's Proposed Construction
Plain and ordinary meaning	"a message granting a downlink resource allocation was successfully received"

Nokia contends that Huawei's construction excludes the situation in which a NACK signal is sent in response to a resource grant allocation.

<u>Positions of the Parties</u>

Nokia expresses a concern that Huawei's construction will confuse the jury with regard to what "successfully received" means. (Dkt. No. 72 at 4.) Nokia contends that, as provided in the specification, *either* ACK or NACK indicates that a resource allocation grant has succeeded, and that it is the DTX signal that indicates a grant has not succeeded. (*See* Dkt. No. 68 at 12.) Specifically, Nokia points to:

> [T]he negative-acknowledgement indicates that a downlink resource allocation grant has succeeded and that each of at least one corresponding codeword has not been detected correctly. [T]he acknowledgement indicates that a downlink resource allocation grant has succeeded and that each of at least one corresponding codeword has been detected correctly.

'082 Patent 12:20-30. Nokia contends that, thus, the term "downlink resource allocation grant has succeeded" describes any situation in which the UE would send an ACK or NACK: ACK being sent when the downlink resource allocation grant has succeeded, and the corresponding codewords have been detected correctly and NACK being sent when the downlink resource allocation grant

has succeeded, and the corresponding codewords have not been detected correctly. (Dkt. No. 68 at 12-13.)

Nokia objects to Huawei's construction as excluding NACKs. Nokia contends that in a NACK, while the codewords are not detected correctly, the downlink resource allocation still succeeds, but the reception of the downlink resource allocation was not entirely successful. Nokia contends that because Huawei's construction excludes the preferred NACK embodiment, it must be rejected. (*Id*. at 13.)

Huawei contends that its construction clarifies for a jury that (1) the technical term "downlink allocation grant" is a type of message—one granting a downlink resource allocation—and (2) for such a grant to "succeed" means that the message containing the grant was successfully received. Huawei contends that the parties do not appear to materially disagree on either point. (Dkt. No. 71 at 13.)

> Huawei points the following passage:
>
> The DTX situation relates to a failure of a DL resource allocation grant transmitted to a particular UE. When the DL resource allocation fails the ACK/NACK(s) associated with the PDCCH/PDSCH are missing from the given UL sub-frame (this is DTX from the ACK/NACK point of view), since the UE has for whatever reason missed the DL allocation and therefore has no reason to transmit or include an ACK/NACK in the UL sub-frame.

'082 patent 3:19-26. Huawei contends that the concepts which would be evident to a person of ordinary skill in the art (but not to a lay jury) from this brief passage are:

> 1. A downlink resource allocation grant (which the patent also refers to as a "downlink allocation grant") is something that is "transmitted" to a UE—in other words, it is a message.
>
> 2. A downlink resource allocation grant does exactly what it says: grants a downlink resource allocation. Such a grant informs the UE of an upcoming portion of the shared downlink channel that will contain data directed to the UE. If the UE successfully receives the grant, the UE can then attempt to receive the downlink

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channel on the resources specified in the grant, try to decode the signals it receives, and send an ACK or NACK as appropriate.

3. A downlink resource allocation grant message can "fail"—i.e., not be fully received by the UE. In that event, the UE cannot listen to the shared downlink channel and try to decode the data directed to the UE because it does not know when to do so. Conversely, for the grant message to "succeed" means that the grant message was fully received and thus the UE can follow the instructions in the grant message.

(Dkt. No. 71 at 14 (citing Dkt. No. 71-1 (Laneman Decl.) (citations omitted)).)

Huawei contends that its construction simplifies the concepts above to more readily show a jury that a downlink allocation grant is a message, as can be seen: a message granting a downlink resource allocation (i.e., "a downlink resource allocation grant") was successfully received (i.e., "has succeeded"). (Dkt. No. 71 at 14.) Huawei contends that Nokia "ultimately appears to agree with the above analysis, using slightly different language" and thus, the basis for a true dispute is unclear. (*Id*. at 15.)

The parties did not provide additional arguments for this term at the oral hearing. (Dkt. No. 84 at 26.)

Analysis

The specification makes clear that as utilized in the '082 Patent, a resource allocation grant has succeeded if either an ACK can be sent or sufficient information has been received to send a NACK:

[T]he negative-acknowledgement indicates that a downlink resource allocation grant has succeeded and that each of at least one corresponding codeword has not been detected correctly. [T]he acknowledgement indicates that a downlink resource allocation grant has succeeded and that each of at least one corresponding codeword has been detected correctly.

'082 Patent 12:20-30. A resource allocation grant "fails" in the DTX circumstance:

The DTX situation relates to a failure of a DL resource allocation grant transmitted to a particular UE. When the DL resource allocation fails the ACK/NACK(s) associated with the PDCCH/PDSCH are missing from the given UL sub-frame (this is DTX from the ACK/NACK point of view), since the UE has for whatever reason missed the DL allocation and therefore has no reason to transmit or include an ACK/NACK in the UL subframe.

'082 patent 3:19-26. This concept (that a resource allocation grant has succeeded if either an ACK can be sent or sufficient information has been received to send a NACK) is clear in the intrinsic record of the patent. Huawei's construction runs the risk of creating jury confusion by implying that a message must be entirely detected correctly (i.e., only the ACK state) to have "succeeded." In fact, Huawei implies as much in its brief by stating that "resource allocation grant message can 'fail'—i.e., not be *fully* received by the UE." (Dkt. No. 71 at 14 (emphasis added).) Such a statement contradicts the specification though, as a message not fully received may trigger a NACK, which, in the patent, is still deemed as "succeeded." The risk of jury confusion is further illustrated by Huawei's internal contradiction when Huawei clearly states that "[i]n both the ACK and NACK cases, the downlink resource allocation grant has succeeded…." (Dkt. No. 71 at 15.)

The specification is clear that either ACK or NACK indicates that a resource allocation grant has succeeded. Further, the claims themselves make this clear. For example, in one use of the term, the full context is "where the third indication indicates that a downlink resource allocation grant has succeeded and that each of the at least one corresponding codeword has not been detected correctly." '082 Patent 16:12-16 (claim 1). Such language conforms to the NACK condition described at '082 Patent 12:20-24. Thus, a grant has succeeded even in NACK situations. The meaning of the term is clear from the specification and claims, and Huawei's construction runs the risk of clouding that clear meaning.

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The Court construes the term "a downlink resource allocation grant has succeeded" to have its plain and ordinary meaning.

5. **"determining whether a third indication is to be transmitted in a sub-frame with an indication of a scheduling request, where the third indication indicates that a downlink resource allocation grant has succeeded and that each of the at least one corresponding codeword has not been detected correctly" ('082 Patent Claim 1)**

Nokia's Proposed Construction	Huawei's Proposed Construction
Plain and ordinary meaning	Indefinite

Huawei contends that the claim is indefinite due to multiple recitations of "a [first] indication of a scheduling request," "a sub-frame," and "a downlink resource allocation grant."

Positions of the Parties

Nokia contends that the fact that the claim uses the indefinite article "a" twice when introducing "a scheduling request," "a sub-frame," and "a downlink resource allocation grant," in different contexts, does not make the claim indefinite. Nokia contends that the terms are used in different, distinct circumstances, particularly in light of the preferred embodiments. (Dkt. No. 68 at 14.) Nokia contends that in one circumstance, where a downlink resource allocation grant has succeeded and the codewords have been detected correctly, an ACK should be sent. In the other circumstance, where a downlink resource allocation grant has succeeded and the codewords have not been detected correctly, a NACK should be sent. Nokia contends that there is nothing wrong with the patentee introducing "a downlink resource allocation" and "a sub-frame" in the portions of the claim corresponding to each circumstance. (*Id*.)

Nokia contends that it is understood that the UE will send an ACK or NACK in a sub-frame in response to each downlink resource allocation grant (along with its corresponding codeword(s)). Nokia contends that as disclosed, the second indication may be mapped to an ACK

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and the third indication may be mapped to a NACK (*Id.* (citing '082 Patent 13:50-62, Abstract).)

Nokia contends a person of ordinary skill in the art would understand that "determining whether a third indication [e.g., a NACK] is to be transmitted" is in response to the same downlink resource allocation grant for which it was "determine[d] whether a second indication [e.g., an ACK] is to be transmitted." Nokia contends that a person of ordinary skill would understand that an ACK or NACK is sent in a sub-frame in response to a downlink allocation grant and corresponding codewords as claim 1 states, "sending the message, via a wireless transmitter, in the sub-frame." (*Id.*)

Nokia contends that it is clear in the specification that an ACK or a NACK is sent in response to a downlink resource allocation grant in the sub-frame reserved for ACK/NACK: "acknowledgment indicates that a downlink resource allocation grant has succeeded and that each of at least one corresponding codeword has been detected correctly," while a "negative-acknowledgement indicates that a downlink resource allocation grant has succeeded and that each of at least one corresponding codeword has not been detected properly" '082 Patent 12:20-30.

Huawei contends that the claim is indefinite, because a person of ordinary skill cannot determine "with reasonable certainty," whether "a downlink resource allocation grant," "a sub-frame," and "an indication of a scheduling request," as they appear in this term, refers to a new downlink resource allocation, a new sub-frame, or a new indication of a new scheduling request, or ones that are recited earlier in the claim. (Dkt. No. 71 at 15-16.) Huawei points to the claim:

> 1. A method comprising:
> generating a message comprising *a first indication of a scheduling request*,
> determining whether a second indication is to be transmitted in *a sub-frame* with
>   the first indication, where the second indication indicates that *a downlink*
>   *resource allocation grant* has succeeded and that each of at least one
>   corresponding codeword has been detected correctly;

in response to a determination that the second indication is not to be included, the message is configured in a first configuration, and

in response to a determination that the second indication is to be included, the message further comprises the second indication and the message is configured in a second configuration,

where the first configuration is distinct from the second configuration; and

sending the message, via a wireless transmitter, in *the sub-frame*,

the method further comprising:

determining whether a third indication is to be transmitted in *a sub-frame* with *an indication of a scheduling request*, where the third indication indicates that *a downlink resource allocation grant* has succeeded and that each of the at least one corresponding codeword has not been detected correctly; and

in response to a determination that the third indication is to be included, the message further comprises the third indication and the message is configured in a third configuration.

'082 patent at claim 1 (emphasis added).

Huawei contends that each term may be construed in multiple manners. For example, Huawei states that the two recitations of "a downlink resource allocation grant" may be considered, on one hand, to be two different grants (i.e., "second" should have been used before the second grant), or alternatively considered to be the same grant (i.e., "the" should have been used before the second grant.). Huawei contends the scope of the claim is different under each interpretation. Huawei contends the same holds true for "a sub-frame" and "a scheduling request." Huawei notes that for "sub-frame" the claim actually recites, in order, "a sub-frame," "the sub-frame," and "a sub-frame." (Dkt. No. 71 at 16-17.)

Huawei contends that Nokia states that there are "different, clearly distinct circumstances" leading to the sending of an ACK or the sending of a NACK, and therefore there is "nothing wrong with the patentee introducing 'a downlink resource allocation' and 'a sub-frame' in the portions of the claim corresponding to each circumstance." (Dkt. No. 71 at 18 (quoting Dkt. No. 68 at 14).) Huawei contends that the claim could have been clear if the term had been drafted as "determining whether a third indication is to be transmitted in *the* sub-frame with *the* indication of a scheduling

request, where the third indication indicates that ***the*** downlink resource allocation grant has

succeeded and that each of ***the*** at least one corresponding codeword has not been detected

correctly." In such case, Huawei contends it would be clear (1) that the downlink resource

allocation grant and corresponding codeword(s) were the same as previously recited and (2) that

the third indication would be transmitted in the same sub-frame with the same scheduling request,

making the third indication and second indication mutually exclusive as Nokia appears to argue.

(Dkt. No. 71 at 18 (citing Dkt. No. 71-1 (Laneman Dec.) at ¶ 47-48).) Huawei contends, however,

that as drafted, the third indication either may or may not be mutually exclusive with the second—

there is no way to tell. (*Id*. (citing Dkt. No. 71-1 (Laneman Dec.) at ¶ 48).)

In reply, Nokia contents that the '082 Patent is directed to implementing "simultaneous

transmission of SR and ACK/NACK." '082 Patent 2:55-56. In the context of the claim, Nokia

asserts that these terms are used in clearly distinct circumstances and for determining which

circumstance applies. Specifically, the claims are directed to "determining" whether to send: (i)

SR (first indication), (ii) SR and ACK (second indication), or (iii) SR and NACK (third indication)

(Dkt. No. 72 at 5 (citing '082 Patent 13:50-62).) Nokia asserts that claim 1 makes clear that the

message is configured according to one of these circumstances and sent "in the sub-frame." Nokia

contends that a person of ordinary skill in the art would readily understand that the determining

step: (i) is in response to the same downlink resource allocation grant and its corresponding

codeword(s); (ii) relates to the same sub-frame; and (iii) determines whether to send the "indication

of a scheduling request." (*Id*. (citing Dkt. No. 72-1 (Thompson Decl.) at ¶¶ 40, 43).) Nokia

contends that Huawei's expert, Dr. Laneman, readily understood the claim to be written that way.

(*Id*. (citing Dkt. No. 71-1 (Laneman Decl.) at ¶ 46).)

Nokia contends that Huawei's alternative interpretation—determining that the NACK is in response to a different downlink resource allocation grant and sent with a different SR indication in a different sub-frame—is unreasonable when the claim is read in light of the specification and basic principles of signaling. (*Id*.) Nokia states that the parties agree that one of the purposes of the invention is to be able to send SR and NACK together. (*Id*. at 5-6 (citing Defendant's Technology Tutorial at 38-41).) Nokia contends that Huawei's alternative interpretation would not allow that purpose to be achieved. (*Id*. at 6 (citing Dkt. No. 72-1 (Thompson Decl.) at ¶ 45).) Nokia also cites to *Advanced Aerospace Techs., Inc. v. United States*, 124 Fed. Cl. 282, 297 (2015) (finding a claim term definite where a person of ordinary skill in the art could be reasonably certain about the meaning of a claim term "[i]n light of the purpose of the invention" even if there are multiple interpretations). Nokia contends that a person of skill in the art reading the claim language would understand with reasonable certainty that "determining whether a third indication is to be transmitted" refers to "downlink resource allocation grant," the "sub-frame," and the "indication of scheduling request" that was previously referenced.

The parties did not provide additional arguments for this term at the oral hearing. (Dkt. No. 84 at 26.)

Analysis

Claims must be read in context of the specification. Thus, each claim term is construed according to its ordinary and accustomed meaning as understood by one of ordinary skill in the art at the time of the invention in the context of the patent. *Phillips*, 415 F.3d at 1312–13. The specification clearly describes a situation of (i) SR (first indication), (ii) SR and ACK (second indication), or (iii) SR and NACK (third indication). *See* '082 Patent 7:21-64, 9:52-61, 11:15-20, 12:20-30, 13:40-62, Figures 3, 4, 8. Further, ACK occurs when "at least one corresponding

codeword has been detected correctly" and conversely NACK occurs when "at least one corresponding codeword has **not** been detected correctly." '082 Patent 12:20-29 (emphasis added). These are the two choices when the "a downlink resource allocation grant has succeeded." *Id*. The claim has two determining steps. Both determining steps relate to when "a downlink resource allocation grant has succeeded." However, the first step relates to when each codeword "has been detected correctly" and the second step relates to when each codeword "has not been detected correctly." It is clear from the context of the specification and the claim language that the first determining step and the second determining step relate to the same resource allocation grant and sub-frames, but the first step relates to when the condition of the codeword detection is such that each "has been" detected correctly and the second step relates to when each "has not been" detected correctly. Thus, the steps each relate to one of the alternative conditions of the codeword detection that may exist. In context of the specification, Nokia presents the better argument, and the claims are reasonably certain under the *Nautilus* test.

In addition to the intrinsic record, the extrinsic evidence of the expert declarations also supports Nokia's position. Though the experts disagree, the Court finds Nokia's extrinsic evidence more persuasive. Huawei's expert reads the claims in a vacuum without tying his positions to the intrinsic record. (Dkt. No. 71-1 (Laneman Decl.) at ¶¶ 42-48.) Nokia's expert ties the interpretation of the claims to the specification. (Dkt. No. 72-1 (Thompson Decl.) at ¶¶ 40-45.) The Court finds Nokia's expert evidence to be more persuasive as to the understanding that one skilled in the art would have of the claims in light of the specification and finds that this evidence provides further support for the Court's construction. *See Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831 (2015).

The Court construes the term "determining whether a third indication is to be transmitted in a sub-frame with an indication of a scheduling request, where the third indication indicates that a downlink resource allocation grant has succeeded and that each of the at least one corresponding codeword has not been detected correctly" to have its plain and ordinary meaning.

6. **"means for determining that at least one downlink allocation grant for the apparatus of the scheduling information was not received" ('035 Patent Claim 23)**

Nokia's Proposed Construction	Huawei's Proposed Construction
Function: determining that at least one downlink allocation grant for the apparatus of the scheduling information was not received	**Function:** determining that at least one downlink allocation grant for the apparatus of the scheduling information was not received
Structure: processor, memory, and/or associated software for performing the algorithm shown in Figs. 3 (specifically 3C) and 6 (specifically 6B and 6C) and discussed in the specification, e.g., 9:53-10:21, and equivalents thereof	**Structure:** The specification fails to set forth any algorithm for the function claimed in this software limitation. Claim is indefinite

The parties dispute whether an algorithm for the means structure is disclosed.

Positions of the Parties

Nokia contends that Figure 3 discloses a three step algorithm for the term:

```
┌─────────────────────────────────────────────┐
│  RECEIVING A SIGNAL FROM A NETWORK DEVICE    │──3A
└─────────────────────────────────────────────┘
                      │
                      ▼
┌─────────────────────────────────────────────┐
│  IN RESPONSE TO RECEIVING THE SIGNAL, DECODING│──3B
│  THE SIGNAL TO OBTAIN A DOWNLINK ALLOCATION   │
│  GRANT                                        │
└─────────────────────────────────────────────┘
                      │
                      ▼
┌─────────────────────────────────────────────┐
│  RESPONDING TO THE SIGNAL, WHERE THE RESPONSE │
│  MAY COMPRISE A DTX SYMBOL IN A LOCATION      │──3C
│  RESERVED FOR ACK/NACK TO COMMUNICATE TO THE  │
│  NETWORK DEVICE THAT THE DOWNLINK ALLOCATION  │
│  GRANT WAS NOT RECEIVED                        │
└─────────────────────────────────────────────┘
```
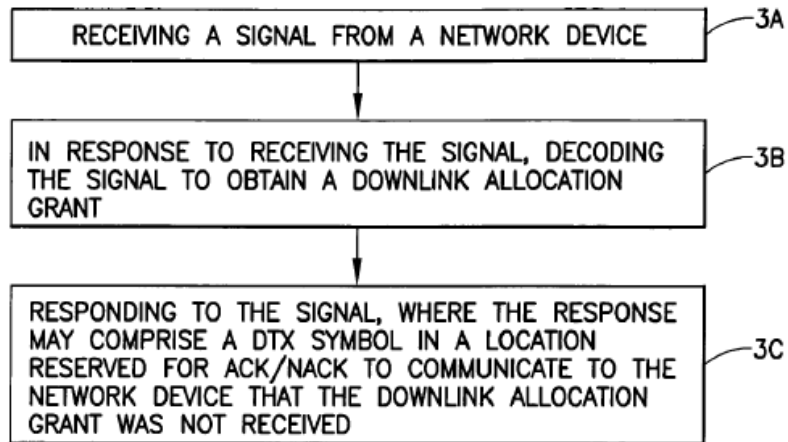
FIG.3

'035 Patent Figure 3. Nokia further points to the description of Figure 3:

> …as illustrated in FIG. 3, there is provided a method, apparatus, and computer program embodied on a computer readable memory and executable by a digital processor, of the user equipment for example, comprising receiving a signal from a network device (3A), in response to receiving the signal, decoding the signal to obtain a downlink allocation grant (3B), and responding to the signal, where the response may comprise a DTX symbol in a location reserved for ACK/NACK to communicate to the network device that the downlink allocation grant was not received (3C).

'035 Patent 8:50-60. Nokia also points to the passage:

> …the UE may only encode the HARQ 2-states (ACK or NACK) feedback from those scheduled DL subframes. This is achieved by comparing the downlink assignment index (DAI) in the UL grant to the DAI (as a pure counter) in DL grant, by which the UE can identify any missed DL assignment and its position among all transmitted DL assignments. If the UE finds some of the DL assignments are missed, the UE will select a "NACK" state to report for it, and the DTX-bit will overall look after the explicit DTX detection for all scheduled DL subframes.

'035 Patent 10:7-16. Nokia contends that Huawei ignores the explicit teaching of how to

determine, e.g., comparing downlink assignment indexes (DAIs). (Dkt. No. 72 at 6.)

Huawei contends that none of the three steps of Figure 3 disclose the "determining"

function. Huawei contends that in the figure the first step receives a signal, the second step decodes

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the signal to obtain a downlink allocation grant, and the third step responds to the signal "to communicate to the network device that the downlink allocation grant was not received." Huawei contends that absent is how the UE determined that the downlink allocation grant was not received. (Dkt. No. 71 at 19-20. (citing Dkt. No. 71-1 (Laneman Dec.) at ¶ 51).)

As to the passage at 10:7-16, Huawei contends this is at most a technique, not an algorithm. Huawei contends that the patent does not disclose details that would be required for an actual algorithm such as: (1) the relationship between the two downlink assignment indexes (DAIs); (2) how differences between the two might be interpreted; and (3) how simply comparing two numbers could indicate both the number and position of any missed downlink assignment. (Dkt. No. 71 at 20 (citing Dkt. No. 71-1 (Laneman Dec.) at ¶ 52).) Huawei also contends that the passage is unclear because (1) it refers to "the DAI in the UL grant" and "the DAI in the DL grant," but there is no temporal ordering of these grants, i.e., which one comes first, or how the alleged algorithm behaves differently in the two cases and (2) the phrase "(as a pure counter)" tied to "the DAI in the DL grant" suggests that "the DAI in the UL grant" is not a pure counter, but the text does not provide specification of what it is. (*Id*. (citing Dkt. No. 71-1 (Laneman Dec.) at ¶ 53).)

The parties did not provide additional arguments for this term at the oral hearing. (Dkt. No. 84 at 26-27.)

Analysis

Huawei is correct that Figure 3 (and 6) merely assumes DTX has been determined. These figures do not provide any indication as to how to determine scheduling information was not received (DTX), but rather just assume such determination is made. *See* '035 Patent Figure 3, 6 8:49-60, 10:36-55. However, Nokia also points to the specification at 9:53-10:21. Specifically, the specification describes comparing a downlink assignment index (DAI) in the uplink grant to the

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DAI (as a pure counter) in the downlink grant, and then the UE identifying any missed DL assignment. *Id*. at 10:6-16. Huawei contends that this is merely a "technique." The Court finds otherwise. The use of a DAI to determine if a downlink allocation grant was not received by comparing the number of downlink allocation grants sent with the number received is an algorithm provided in the specification for making the determination.

At the oral hearing, Nokia agreed to the Court's proposed construction which is adopted below. (Dkt. No. 84 at 26-27.)

The Court construes "means for determining that at least one downlink allocation grant for the apparatus of the scheduling information was not received" to mean:

Function: determining that at least one downlink allocation grant for the apparatus of the scheduling information was not received

Structure: processor, memory, and/or associated software for performing an algorithm using a downlink assignment index (DAI) as discussed in the specification at 9:53-10:21, and equivalents thereof.

7. **"means for sending a reply to the received scheduling information that comprises an indication of discontinuous transmission in response to the determining" ('035 Patent Claim 23)**

Nokia's Proposed Construction	Huawei's Proposed Construction
Function: sending a reply to the received scheduling information that comprises an indication of discontinuous transmission in response to the determining	**Function:** sending a reply to the received scheduling information that comprises an indication of discontinuous transmission in response to the determining
Structure: a transmitter, transceiver, processor, memory, and/or associated software for performing the algorithm shown in Figs. 3 (specifically 3C) and 6 (specifically 6D), and discussed in the specification, e.g.,	**Structure:** The specification fails to set forth any algorithm for the function claimed in this software limitation. Claim is indefinite.

6:57-7:57, 9:43-10:55, and equivalents thereof	

The parties dispute whether an algorithm for the means structure is disclosed.

Positions of the Parties

Nokia contends that Figure 3 (specifically 3C), Figure 6 (specifically 6D), and the corresponding text in the specification disclose an algorithm. Nokia points to Figure 3 step 3C:
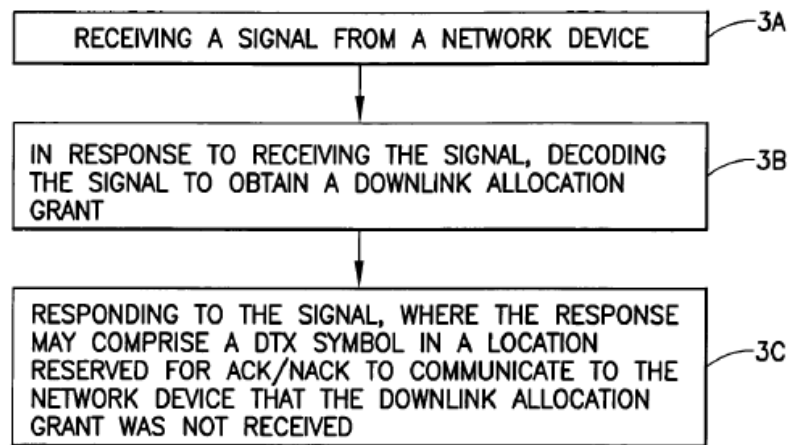

FIG.3

'035 Patent Figure 3. Nokia contends that the specification at 6:57-7:57 and Figure 2 provides algorithms for how to implement the DTX symbol in a location reserved for an ACK/NACK. (Dkt. No. 68 at 18.) Nokia also states that the specification discloses, "when the DTX is transmitted, every other symbol would use the constellation points reserved for ACK, while the rest of the symbols would use constellation points reserved for NACK," which can be referred to as a "Hadamard-spreading code selection." '035 Patent 6:65-7:1, 7:5-7. Nokia notes that the specification further gives an example of the implementation of the Hadamard-spreading code selection. (*Id*. at 7:9-15).

Nokia also contends that the patent discloses an embodiment with reference to Figure 6 in which the UE transmits a single DTX bit. Nokia contends that Figure 6 is described as showing that "the UE transmits a discontinuous transmission DTX indication with the UE's reply to the scheduling information" ('035 Patent 10:40-42) and Block 6C of Figure 6 states "DTX INDICATION = 1BIT." Nokia contends that additional details of this algorithm are disclosed at 9:43-10:55. (Dkt. No. 68 at 19.) Nokia further points to the disclosure that "Hadamard-spreading code selection is used to send the reply" '035 Patent 6:65-7:1; (Dkt. No. 72-2 (Camp Decl.) at ¶ 25.) Nokia also points to an embodiment where the UE transmits a single DTX bit and states Block 6C shows that "the UE transmits a discontinuous transmission DTX indication with the UE's reply to the scheduling information." (Dkt. No. 72 at 7 (citing '035 Patent 9:43-10:55, Fig. 6).)

Huawei contends that the function does not simply require sending something—it requires sending something *in response to the determining* (i.e., the previously-recited "means for determining that at least one downlink allocation grant for the apparatus of the scheduling information was not received"). (Dkt. No. 71 at 22.) Huawei contends that Nokia's alleged "algorithms" do not disclose sending in response to the previously-recited determining. Huawei contends that to the extent any of Nokia's "algorithms" in the specification simply say or imply that something is sent in response to a determining step, that cannot be an algorithm because it would simply be restating the function. (*Id.* (citing various Federal Circuit cases).)

Huawei contends that Figure 3 does not disclose an alleged algorithm for the claimed function: "sending a reply to the received scheduling information that comprises an indication of discontinuous transmission in response to the determining." Specifically, Huawei contends that the figure does not describe how sending a reply in response to a determination is accomplished. Huawei contends that the figure at most implies a reply will be sent, where Block 3C states

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"responding to the signal…." and "the response may comprise a DTX symbol in a location reserved for ACK/NACK…" '035 Patent Figure 3.

As to Figure 2 and the corresponding text at cols. 6:57-7:57, Huawei contends this disclosure provides structure for transmitting a DTX symbol in a location reserved for an ACK/NACK, as the specification expressly states:

> Fig. 2 illustrates an exemplary structure for transmitting an explicit DTX with the 1 or 2 bit ACK/NACK structure.

'035 patent at 7:34-35. Huawei contends that while a DTX symbol (an indication of discontinuous transmission) may be a component of the agreed function, that does not encompass the complete function, which is: "sending a reply to the received scheduling information that comprises an indication of discontinuous transmission in response to the determining." Huawei contends that Fig. 2 and the corresponding text do not disclose anything about the steps for sending a reply to the received scheduling information, nor how that is done in response to the determining. (Dkt. No. 71 at 23.)

Huawei contends that like Figure 3, Figure 6 merely discloses that the function occurs at Block 6D, and not how it is accomplished:

Huawei contends that the specification simply says "at block 6D the reply is a multi-ACK/NACK message for grants in the PDDCH…." '035 patent at 10:48-49. Huawei contends that does not disclose an algorithm. Huawei contends that though Nokia states that "additional details of this algorithm" are shown at 9:43-10:55, Nokia does not explain how this detail relates to the function

as the referenced passage says nothing about algorithms for performing a sending of a reply, let alone sending a reply that is sent "in response to the determining." (Dkt. No. 71 at 24.)

The parties did not provide additional arguments for this term at the oral hearing. (Dkt. No. 84 at 27.)

Analysis

Huawei primarily contends that an algorithm for how the "means for sending" operates "in response" to the determining step is not disclosed. The Court finds otherwise.

The claimed function, in its entirety, is "sending a reply to the received scheduling information that comprises an indication of discontinuous transmission in response to the determining." The parties do not dispute that the specification discloses providing a DTX symbol based on the detection of a discontinuous transmission. This functionality is described in detail throughout the specification, such as for example, Figures 2, 3, 6, and associated text. In a first "aspect" (5:1-3, 5:34-37, 6:49-8:60) corresponding to Figure 3, to communicate that a downlink grant was not received, a DTX symbol may be placed in a location reserved for ACK/NACK. '035 Patent Figure 3, 8:49-60. As to a particular way to implement this, the specification discloses the use of constellation points and a "Hadamard-spreading code selection" technique. *Id*. at 6:57-7:57. A second "aspect" (5:11-14, 5:37-40, 9:5-10:55) for sending the reply is disclosed with reference to an embodiment in the flow chart of Figure 6. *Id*. at 9:43-10:55, Figures 5A-5C, 6. In this technique, the UE transmits "a single DTX bit in the multi-bits ACK/NACK message." *Id*. at 9:43-45. Figures 5A-5C show embodiments of how such a DTX bit might be implemented. *Id*. at 10:22-23, Figures 5A-5C.

Huawei contends that the specification does not disclose how the sending means "responds" to the determination step. The Court disagrees. Each of the first and second "aspects"

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discussed above provides a variety of alternative responses depending upon whether the scheduling information was received or not. *See id.* at Figures 2A-2B, 3, 5A-5C, 6, 6:45-7:57, 8:49-60, 9:5-10:55. Thus, there is ample disclosure as to how the means for sending responds to the determination.

At the oral hearing, Nokia agreed to the Court's proposed construction which is adopted below. (Dkt. No. 84 at 27.)

The Court construes "means for sending a reply to the received scheduling information that comprises an indication of discontinuous transmission in response to the determining" to mean:

Function: sending a reply to the received scheduling information that comprises an indication of discontinuous transmission in response to the determining

Structure: a transmitter, transceiver, processor, memory, and/or associated software for performing one of the algorithms shown in (1) Figure 3 block 3C as discussed and shown in Figures 2A-2B, 6:45-7:57, and 8:49-60, or (2) Figure 6 block 6D as discussed and shown in Figures 5A-5C and 9:5-10:55, and equivalents thereof

8. **"scheduling information" ('035 Patent Claims 1, 3-4, 9, 12, 14, 19, 22-24, 26, 28-31, 33-35)**

Nokia's Proposed Construction	Huawei's Proposed Construction
Plain and ordinary meaning	"a single signal containing one or more downlink allocation grants"

The parties dispute whether "scheduling information" has to be "a single signal." At the oral hearing, Huawei changed its arguments and indicated that rather than a "single" signal,

Huawei sought a construction of "a message, signal or unit of information." (Dkt. No. 84 at 27-28.)

Positions of the Parties

Nokia contends that nothing in the specification of the '035 Patent requires that the scheduling information be a "single signal." Nokia contends that the portions of the specification to which Huawei points describe "a signal," and never use the term "single." (Dkt. No. 68 at 20.) Nokia contends that the indefinite article "a" does not have the same meaning as "single." (*Id.* (citing *KCJ Corp. v. Kinetic Concepts, Inc.,* 223 F.3d 1351, 1356 (Fed. Cir. 2000) ("This court has repeatedly emphasized that an indefinite article "a" or "an" in patent parlance carries the meaning of "one or more" in open-ended claims")).) Nokia contends that even if the specification disclosed an embodiment with a "single" signal, it is improper to read limitations from a preferred embodiment into the claims. Nokia contends that the specification places no limitations on the number of signals that comprises the "scheduling information," and has no lexicography or has no disclaimer. (*Id.* at 21.)

Huawei contends that the unified disclosure of the patent shows that the "scheduling information" is only a single signal. Huawei summarizes the patent as:

> To begin with, the problem the patent states it was setting out to solve was the inability to send an ACK or NACK if a downlink allocation grant was missed, and the resultant potential for misinterpretation of silence as an ACK or NACK. '035 patent at 5:42-49; see also NSN Br. at 4 ("providing DTX detection in situations where it is insufficient to signal DTX by transmitting nothing (i.e., not transmitting an ACK or NACK)") (emphasis in original). The patent therefore presents signaling DTX as an alternative to signaling ACK or NACK for a given downlink allocation grant. The patent then proceeds to teach that the claimed steps (receiving scheduling information; determining at least one downlink allocation grant of the scheduling information was not received; and sending an indication of discontinuous transmission in response to the determination) would occur in the same timeframe as the sending of an ACK or NACK were the downlink allocation grants successfully received.

(Dkt. No. 71 at 25.) Huawei contends that the repeated references to "a signal" and "the signal" (again, in the plain-English context of the specification) make clear that the process refers only to a single signal. Huawei points to Figure 3 which includes "receiving a signal" and "in response to receiving the signal" which Huawei contends corresponds to the "scheduling information." Huawei also contends that Figure 6 is the same except uses the actual claim language of "scheduling information." Huawei asserts that in Figure 6, it is taught that "[a]t block 6A the UE receives scheduling information (e.g., receives the PDCCH), and at block 6B, responsive to receiving the scheduling information at block 6A, the UE transmits a discontinuous transmission DTX indication with the UE's reply to the scheduling information." '035 patent at 10:38-42. Huawei contends that this passage, thus, directly equates "receiv[ing] scheduling information" to "receiv[ing] the PDCCH" (Physical Downlink Control Channel), which a person of skill in the art would understand to mean receiving a single message on that channel, even though that single message could contain more than one grant. (Dkt. No. 71 at 26 (citing Dkt. No. 71-1 (Laneman Dec.) at ¶ 62).) Huawei contends that block 6B reinforces the singular nature of the "scheduling information" by referring to "a reply to the scheduling information." Huawei contrasts this with the actual plural disclosure in block 6D of a "multi-ACK/NACK message for grants in the PDCHH [sic, PDCCH]." Huawei states that even for such a "multi-ACK/NACK message," the patent says that the multiple ACK/NACKs are in response to multiple grants in a single PDCCH. '035 patent at 10:58-61 ("If the DTX bit is set to 1 (or alternatively 0), this indicates that at least one grant that was sent to the UE in the single PDCCH/AT being ACK'd/NACK'd has been missed by the UE."). Huawei contends that this is all consistent with an understanding that the patent pertains to a single message on the PDCCH channel. (*Id.* at 26-27 (citing Dkt. No. 71-1 (Laneman Dec.) at ¶ 63).)

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As to Huawei's reliance on Figure 3 referencing "a signal," and assertion that scheduling information is limited to a single signal, Nokia notes that Figure 3 also recites "a downlink allocation grant." Nokia notes, however, that Huawei agrees that scheduling information includes "one or more downlink allocation grants." Nokia contends that this demonstrates that Huawei knows that the article "a" does not imply "only one" and that Huawei's "single signal" argument is unsupported by the reference to "a signal." (Dkt. No. 72 at 8.) Nokia states that similarly, Figure 6 does not limit "scheduling information" to a "single signal" or a "single message."

Nokia also contends that the '035 Patent discloses that the scheduling information is transmitted on the Physical Downlink Control Channel (PDCCH). Nokia states that because it is a channel, the PDCCH may carry one or more signals. (*Id.* (citing Dkt. No. 72-2 (Camp Decl.) at ¶ 31).) Nokia asserts that Huawei's Brief confirms that channels may contain multiple signals, when it states that "the UE can then attempt to receive the downlink channel on the resources specified in the grant, [and] try to decode the signals it receives." (*Id.* (citing Dkt. No. 71 at 14.) Nokia contends that, thus, the specification's reference to a "single PDCCH" describes a single channel that may include multiple signals. (*Id.*) Nokia further contends that even if the disclosure of a "single PDCCH" somehow meant a "single signal," it is improper to read limitations from a preferred embodiment into the claims.

At the oral hearing, Huawei acknowledged that the "single" limitation Huawei sought did not appropriately present the issue needing construction. (Dkt. No. 84 at 31-32.) Huawei stated that its concern regarding this term is that Nokia would include in "scheduling information" information that was not related to scheduling information. (*Id.*) Specifically, Huawei expressed concern that Nokia would interpret scheduling information as a collection of information that includes scheduling information and other information. Thus, Huawei expressed concern that

when the claim references determining that scheduling information was not received or sending a reply to the scheduling information, the determination and reply may be with regard to the non-scheduling information under Nokia's infringement contentions. Huawei, therefore, proposed that the "scheduling information" be construed as a "message, signal or unit of information." (*Id*. at 27-28.) Huawei contended that "scheduling information" is a "bucket" of scheduling information and that the reply must be to that bucket, not other unrelated information. (*Id*. at 28-30.)

Analysis

The term in question uses "information," which does not inherently mandate a "single" piece of information in an ordinary meaning. Further, Huawei has not pointed to clear language in the intrinsic record of lexicography, disavowal, or disclaimer mandating that the "scheduling information" is limited to "a single signal." *See GE Lighting Solutions*, 750 F.3d at 1309; *Cordis Corp.*, 561 F.3d at 1329. Huawei merely alleges that the only embodiment of the specification is a single signal. Even if Huawei is correct, an embodiment is not necessarily enough to read a limitation into the claim from the specification. *Arlington Indus., Inc. v. Bridgeport Fittings, Inc.*, 632 F.3d 1246, 1254 (Fed. Cir. 2011) ("[E]ven where a patent describes only a single embodiment, claims will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using words of expressions of manifest exclusion or restriction."). Moreover, the intrinsic record that Huawei points to is thin at best. Figure 3 does reference "a signal," but nowhere is the singular concept described, let alone emphasized to the point of limiting the broader term "scheduling information" to just one signal. Further, Figure 6 itself explicitly recites "scheduling information" as opposed to "a signal" which may thus imply more than a single signal.

Even Huawei acknowledges a message could contain more than one grant. (Dkt. No. 71 at 26.) Multiple grants would imply more than a single signal.

As raised at the oral hearing, the real dispute between the parties appears not to be a construction issue. Rather the dispute relates to Huawei's non-infringement factual position in which Huawei contends that what Nokia will point to for what was not received and to which a discontinuous transmission reply will be sent, is not information related to scheduling. Nokia does not dispute that the plain meaning of "scheduling information" is "information about scheduling." (Dkt. No. 72-2 (Camp Decl.) at ¶28.) The parties do not appear to be in disagreement as to this plain meaning. By rejecting Huawei's "single signal" limitation, the Court has resolved the claim construction dispute. *See O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1362 (Fed. Cir. 2008) ("district 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.").

The Court construes the term "scheduling information" to have its plain and ordinary meaning.

9. "persistent allocation" / "semi-persistent allocation" ('035 Patent Claims 5, 15)

Nokia's Proposed Construction	Huawei's Proposed Construction
Plain and ordinary meaning	Indefinite

The parties dispute whether guidance must be given as to the degree of "persistent" and "semi-persistent."

Positions of the Parties

Nokia contends that the specification provides guidance as to "persistent allocation:"

> VoIP is an example of an application which can use persistent allocation. In persistent allocation the UL resources are allocated persistently to the UE and thereby UL allocation grants are not sent.

'035 Patent 5:28-31. Nokia contends that persistent allocation refers to resources that are allocated continuously and therefore do not need to be allocated using uplink allocation grants. Nokia contends that because the term is explained in the specification, it is not indefinite. (Dkt. No. 68 at 22.) Nokia contends that similarly, the term "semi-persistent allocation" would be well understood from the description of the term "persistent allocation," as the allocation is not always persistent, but is only partially so. Nokia contends that this flows from the understanding of the ordinary meaning of the prefix "semi-." (*Id*. at 23.)

Nokia also points to the file history as indicating that the Examiner understood the term by stating:

> Hakkinen does not disclose wherein the at least one downlink allocation comprises a persistent allocation or a semi-persistent allocation, but does disclose that the scheme of Hakkinen is implemented or intended to be implemented at least for HSDPA, a key feature of the 3GPP specifications for UTRAN. The examiner takes official notice that downlink resource allocations for HSDPA can be semi-static and therefore an allocation may be persistent or semi-persistent at least to the same level as disclosed in applicant's specification.

(Dkt. No. 68-5 ('035 Patent File History) at NSNH00016290).) Nokia further contends that these terms were used by members of 3GPP in cited references in the '035 Patent file history, providing additional intrinsic evidence that a person of skill in the art would understand these terms. Nokia contends that both terms were used in submissions to 3GPP and in Section 36.213 of the 3GPP standard. (Dkt. No. 68 at 23 (citing Dkt. No. 68-5 ('035 Patent File History) at NSNH00015848 (referring to "persistent allocation" and "semi-persistent PUSCH transmission"), NSNH00015893-94 (referring to "semi-persistently scheduled PDSCH transmission")).) Nokia

contends that members of 3GPP use these terms because "persistent allocation" and "semi-persistent allocation" have a well-understood meaning to those skilled in the art.

As to the degree of persistency, Nokia contends that numerical precision in the claims, however, is not required if the language is as precise as the subject matter permits. (Dkt. No. 68 at 24 (citing *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1370 (Fed. Cir. 2014) ("Claim language employing terms of degree has long been found definite where it provided enough certainty to one of skill in the art when read in the context of the invention")).)

Nokia also contends that a person of ordinary skill in the art would understand the terms "persistent allocation" and "semi-persistent allocation" to be synonymous with persistent scheduling and semi-persistent scheduling. (Dkt. No. 72 at 9 (citing Dkt. No. 72-2 (Camp Decl.) at ¶¶ 33-34).) Nokia also contends that Huawei's expert, Dr. Laneman, readily admits that "persistent scheduling" and "semi-persistent scheduling" are known and understood. (*Id.* (citing Dkt. No. 71-1 at ¶ 67).)

Nokia contends that the patent specification states that "[i]n persistent allocation the UL resources are allocated persistently to the UE and thereby UL allocation grants are not sent." '035 Patent 5:28-31. Nokia contends that this is consistent with persistent scheduling, a concept known to one of ordinary skill in the art. (Dkt. No. 72 at 9 (citing Dkt. No. 72-2 (Camp Decl.) at ¶ 33).) Nokia contends that even Huawei's expert explains persistent scheduling as being similar to the '035 Patent's description of "persistent allocation." (*Id.* (citing Dkt. No. 71-1 at ¶ 67 ("In persistent scheduling, the eNodeB grants persistent allocations….")).) Nokia, thus, states that a person skilled in the art would understand that persistent allocation refers to resources that are allocated continuously and therefore do not need to be allocated using allocation grants. (*Id.* (citing Dkt. No. 72-2 (Camp Decl.) at ¶ 33).) As to Huawei's argument that this description of persistent allocation

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refs to the uplink, Nokia states that Huawei does not explain why the description of persistent allocation would change when applied to the downlink. Nokia asserts that a person of ordinary skill would understand the description as applying equally to the both (*Id*. (citing Dkt. No. 72-2 (Camp Decl.) at ¶ 33).)

Nokia contends that similarly, "semi-persistent allocation" is definite because it refers to resources that are sometimes allocated continuously. (*Id*. (citing Dkt. No. 72-2 (Camp Decl.) at ¶ 35).) Nokia contends that this is consistent with the term "semi-persistent scheduling." (*Id*. (citing Dkt. No. 72-2 (Camp Decl.) at ¶ 34).) Nokia states that semi-persistent scheduling is different from persistent scheduling, because semi-persistent refers to an allocation that is not always persistent.

Huawei first notes that though Nokia seeks a "plain and ordinary meaning" construction, Huawei provides a definition for the "persistent" that is derived from the specification. (Dkt. No. 71 at 28.) Further, Huawei notes that Nokia acknowledges that "semi-persistent" is not explicitly defined. Huawei contends that the specification does not give context as to how "semi-persistent," as used in the claims, fits into the specification's description of the alleged invention, because the specification states "[b]oth persistent and non-persistent cases are considered in various exemplary aspects of the invention…." '035 patent at 5:31-32. Huawei contends that the only meaning that can be discerned from the claims is that "persistent allocation" is not the same as "semi-persistent allocation." (Dkt. No. 71 at 28.)

Huawei also states that the specification references "persistent allocation" in the context of uplink, but the claims are drafted in reference to a downlink allocation. (*Id*. (citing '035 Patent 5:28-31).) Huawei further states that the file history excerpt highlights the problem as the Examiner specifically noted the lack of clarity in the patent, taking official notice that in the prior art, "an

allocation may be persistent or non-persistent at least to the same level as disclosed in applicant's specification." (Dkt. No. 68-5 ('035 Patent File History) at NSNH00016290.)

As to the file history documents, Huawei contends that the documents in question are all dated after the priority date of the '035 Patent, thus discounting their relevance. Further, Huawei states that none of the documents use the term "semi-persistent allocation" but rather "semi-persistent PUSCH transmission" and "semi-persistently scheduled PDSCH transmission." (Dkt. No. 71 at 29.) Huawei cites to its expert declaration as indicating that "semi-persistent allocation" is not a term of art. (*Id*. (citing Dkt. No. 71-1 (Laneman Dec.) at ¶ 67).)

At the oral hearing, Huawei stated that the primary issue is with reference to "semi-persistent." Huawei stated that the patent also references "non-persistent" and it is not clear what is the difference between "non-persistent" and "semi-persistent." (Dkt. No. 84 at 38-39.)

Analysis

The parties are in agreement as to several points. First, the patent provides disclosure as to a "persistent allocation" of *uplink* resources:

> VoIP is an example of an application which can use persistent allocation. In persistent allocation the UL resources are allocated persistently to the UE and thereby UL allocation grants are not sent.

'035 Patent 5:28-31. Second, both parties agree that "persistent scheduling" and "semi-persistent scheduling" are terms known in the art. Specifically, Huawei's expert testifies:

> To my understanding, there is no such thing as semi-persistent allocation. There is dynamic, persistent, and semi-persistent scheduling. In dynamic scheduling, each allocation is explicitly granted by the eNodeB as requested by the UE. ***In a persistent allocation, the eNodeB grants to a UE an initial allocation explicitly as well as periodic followup allocations implicitly.*** In persistent scheduling, the eNodeB grants persistent allocations to a UE for both initial transmissions as well as HARQ retransmissions. In semi-persistent scheduling, the eNodeB grants a persistent allocation to a UE for the initial transmissions only, and the HARQ retransmissions are requested and granted dynamically.

(Dkt. No. 71-1 (Laneman Dec.) at ¶ 67.)

As to "persistent allocation," (1) Huawei's expert states "the eNodeB grants to a UE an initial allocation explicitly as well as periodic follow up allocations implicitly" and (2) Nokia's expert states that "as understood by those skilled in the art, persistent allocation refers to resources that are allocated continuously and therefore do not need to be allocated using allocation grants." (Dkt. No. 71-1 (Laneman Dec.) at ¶ 67; Dkt. No. 72-2 (Camp Dec.) at ¶ 33.) Though the specification references a "persistent allocation" in context of an uplink transmission, the understanding of both experts are generally consistent with each other and consistent with the specification. Based on the intrinsic evidence and the extrinsic evidence, the Court finds "persistent allocation" to mean "resources are allocated persistently and thereby allocation grants are not sent."

As to "semi-persistent allocation," it is first noted that Huawei acknowledges that "semi-persistent scheduling" is known, but argues that "semi-persistent allocation" is not. In context of the specification and the extrinsic evidence provided to the Court as to the understanding of those skilled in the art, the Court rejects such distinction.

First, generally with regard to the use of "scheduling" and "allocation," both experts contend that "persistent scheduling" is known in the art. Huawei's expert defines the term in context of granting a "persistent allocation:" "In persistent scheduling, the eNodeB grants persistent allocations to a UE for both initial transmissions as well as HARQ retransmissions." (Dkt. No. 71-1 (Laneman Dec.) at ¶ 67.) Nokia's expert contends "'persistent allocation' is synonymous with persistent scheduling." (Dkt. No. 72-2 (Camp Dec.) at ¶ 33.) Whether one term defines the other or the two terms are synonymous, again the experts do not substantively disagree.

Further, the Court notes that for the "scheduling information" term discussed above, Huawei contended the term should be construed as including "allocation grants," again indicating the commonality of the allocation and scheduling concepts. It is further noted that the intrinsic record utilizes "scheduling information" in the context of information that includes allocations. *See* '035 Patent 14:1-56, 10:36-55. In context of the intrinsic evidence and the extrinsic evidence, the Court rejects Huawei's distinction.

Huawei acknowledges that "semi-persistent scheduling" is a term that is known to carry meaning in the art: "In semi-persistent scheduling, the eNodeB grants a persistent allocation to a UE for the initial transmissions only, and the HARQ retransmissions are requested and granted dynamically. (Dkt. No. 71-1 (Laneman Dec.) at ¶ 67.) Nokia agrees that the term is known in the art and states that "semi-persistent allocation" "refers to allocating a network resource but needing additional control information for that resource to remain allocated." (Dkt. No. 72-2 (Camp Dec.) at ¶ 34.) Again, conceptually the parties do not differ greatly. At the oral hearing, the Court inquired as to Huawei's expert's correlation of "scheduling" and "allocation," and Huawei's expert's acknowledgement that "semi-persistent scheduling" is known in the art. Huawei did not rebut its expert's statements and merely argued that the differences between non-persistent (not a claim term) and semi-persistent need to be identified. (Dkt. No. 84 at 39.) Based upon the extrinsic evidence presented to the Court as to the knowledge of those in the art, the Court finds that the term "semi-persistent allocation" carries meaning to one of skill in the art. *See Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831 (2015). Further, based on such meaning, the Court construes "semi-persistent allocation" to mean "resources are initially allocated but additional allocation grants are needed to remain allocated."

At the oral hearing the Court proposed constructions similar to those that the Court adopts

below, except "additional" was not included in the Court's proposal for "persistent allocation" but only included in the Court's proposal for "semi-persistent allocation." Nokia contended that the "additional" would further clarify that the "thereby allocation grants are not sent" does not refer to the initial allocation grant. (Dkt No. 84 at 36-37.) As discussed above, such a meaning conforms to the specification and the statements of both experts. The Court has included "additional" within both constructions. With the inclusion of "additional," Nokia agreed to the Court's construction. (*Id.*)

The Court construes "persistent allocation" to mean "resources are allocated persistently and thereby additional allocation grants are not sent."

The Court construes "semi-persistent allocation" to mean "resources are initially allocated but additional allocation grants are needed to remain allocated."

10. "a downlink assignment index that indicates a number of downlink allocations grant for the [communication node/apparatus] in the scheduling information" ('035 Patent Claims 9, 19)

Nokia's Proposed Construction	Huawei's Proposed Construction
"a downlink assignment index that indicates a number of downlink allocations granted for the [communication node/apparatus] in the scheduling information"	Indefinite

The parties dispute whether "grant" can be interpreted as "granted" and whether the claim grammar as originally presented renders the claim indefinite.

Positions of the Parties

Nokia contends that a typographical error exists: "grant" is supposed to be granted." (Dkt. No. 68 at 24.) Nokia contends that a person of skill in the art would easily recognize this, understand the claim as written, and readily understand how to correct the typographical error.

Nokia contends that there is no reasonable expert that could testify that the claim is confusing and that a person of ordinary skill could not resolve the typographical error. Nokia notes that in Huawei's cases against T-Mobile and Nokia, Huawei itself corrected several typographical errors in its patents. *Huawei Tech. Co. LTD., v. T-Mobile US, Inc.*, 2:16-cv-00052-JRG-RSP, Dkt. 110 at 1-2 (E.D. Tex. Dec. 9, 2016) (Huawei and Nokia agreeing that the claim term "b" should be construed as "by" and that the term "S-CSCF currently providing a service for the user fails" should be construed as "S-CSCF currently assigned to provide a service for the user has failed"); *Huawei Tech. Co. LTD. v. T-Mobile US, Inc.*, 2:16-cv-00055-JRG-RSP, Dkt. 108 at 1-2 (E.D. Tex. Dec. 7, 2016) (Huawei and Nokia agreeing that the claim term "the credit information" should be construed as "credit information" and the term "the collected charging data information of the UE" should be construed as "collected charging data information of the UE."). Nokia contends that a claim term, "read in light of the specification delineating the patent, and the prosecution history," need only to inform, "with reasonable certainty, those skilled in the art about the scope of the invention." *Nautilus*, 134 S. Ct. at 2124.

Nokia contends that the specification states that "the reply can comprise a downlink assignment index that indicates a number of downlink allocations in the scheduling information" '035 Patent 14:29-32. Nokia contends that reading this disclosure in the specification, a person of ordinary skill would readily understand the phrase to mean "a downlink assignment index that indicates a number of downlink allocations granted for the [communication node/apparatus] in the scheduling information." (Dkt. No. 68 at 25.)

Huawei contends that Nokia acknowledges that there is an error, but there are multiple ways to fix the error. (Dkt. No. 71 at 29.) Huawei contends that it is clear that some form of subject/verb error exists:

> a downlink assignment index that indicates a number of ***downlink allocations grant***
> for the [communication node/apparatus] in the scheduling information

'035 Patent Claims 9, 19 (emphasis added). Huawei contends that during the claim construction

proceedings, Nokia itself has proposed two interpretations. First, in the P.R. 4-3 Joint Claim

Construction Statement, Nokia proposed that the term should be corrected to read as follows:

> a downlink assignment index that indicates a number of ***downlink allocations*** for
> the [communication node/apparatus] in the scheduling information.

(Dkt. No. 57-1 at 19 (emphasis added).) Later, Nokia proposed its current construction, changing

"grant" to "granted:" "a number of ***downlink allocations granted.***" (Dkt. No. 71 at 30 (emphasis

added).)

Huawei contends that the two different potential corrections result in different inventions.

Huawei contends that Nokia's current correction is about a number of downlink allocations

"granted," while Nokia's earlier correction is about a number of downlink allocations generally,

granted or not. Huawei contends that Nokia argued both corrections and provided alleged

supporting evidence for both. (Dkt. No. 71 at 30-31.) Huawei notes that Nokia's current cited

supporting evidence ('035 Patent 14:29-32) uses the language of Nokia's original correction: "the

reply can comprise a downlink assignment index that indicates a number of downlink allocations

in the scheduling information."

Huawei contends that other ways exist to correct the error. Huawei contends that "s" could

be removed from "allocations" with "grant" then made plural ("grants"): "a downlink assignment

index that indicates a number of downlink allocation grants for the communication node in the

scheduling information." (Dkt. No. 71 at 30, n. 3.) Huawei contends that like Nokia's current

correction proposal, this alternative involves changing just two characters. Huawei contends that

this correction would produce yet another different meaning for the claim than the meanings resulting from NSN's proposed corrections. (*Id.*)

In reply, Nokia contends that the fact that the typographical error might be corrected in two ways, both of which achieve the same result, does not mean that the claim is indefinite. Nokia contends that a person of ordinary skill in the art would readily understand that the "number of downlink allocations grant" refers to the number of downlink allocations granted. With regard to Huawei's expert (Dr. Laneman) stating that a person of ordinary skill in the art could understand the claim phrase to mean "a number of downlink allocation grants" (Dkt. No. 71-1 (Laneman Decl.) at ¶ 72), Nokia contends this is a distinction without a difference. Nokia contends that a person of ordinary skill in the art would understand this phrase as having the same scope, whether construed using "allocation grants" or "allocations granted." (Dkt. No. 72 at 10 (citing Dkt. No. 72-2 (Camp Decl.) at ¶¶ 36-38).) Nokia contends that a person of ordinary skill in the art would understand "a number of downlink allocation grants" to indicate the number that had been granted. (*Id.* (citing Dkt. No. 72-2 (Camp Decl.) at ¶¶ 36-38).) Nokia notes that Huawei states in its own brief, a "downlink resource allocation grant" is a message "granting a downlink resource allocation." (*Id.* (citing Dkt. No. 71 at 14).) Nokia contends that its proposal of "downlink allocations granted" can be used interchangeably with "downlink allocation grants" or even with "downlink allocations" (as previously proposed by Nokia). (Dkt. No. 72 at 10.)

The parties did not provide additional arguments for this term at the oral hearing. (Dkt. No. 84 at 39-40.)

Analysis

The parties agree that the claim, as drafted, has a grammatical drafting error. Nokia has, at times, proposed two grammatically plausible ways to correct the claim language. Huawei has proposed a third grammatically plausible way to correct the claim language.

The definiteness standard of 35 U.S.C. § 112, ¶ 2 requires that:

> [A] patent's claims, viewed in light of the specification and prosecution history, inform those skilled in the art about the scope of the invention with reasonable certainty. The definiteness requirement, so understood, mandates clarity, while recognizing that absolute precision is unattainable.

Nautilus, Inc. v. Biosig Instruments, Inc., 134 S. Ct. 2120, 2129–30 (2014). The Federal Circuit has made clear the requirements needed for a district court to correct an error:

> This case presents the question whether a district court can act to correct an error in a patent by interpretation of the patent where no certificate of correction has been issued. We hold that a district court can do so only if (1) the correction is not subject to reasonable debate based on consideration of the claim language and the specification and (2) the prosecution history does not suggest a different interpretation of the claims.

Novo Industries, LP v. Micro Molds Corp., 350 F.3d 1348, 1354 (Fed. Cir. 2003). As drafted, the literal claim language does not make grammatical sense. Further, the claim language may be corrected in a variety of manners. Thus, (1) "grants" could be removed as originally proposed by Nokia, (2) "grants" could be changed to "granted" as currently proposed by Nokia, or (3) "allocations grant" could be changed to "allocation grants" as proposed by Huawei.

If the claim language might mean several different things and no informed and confident choice is available among the contending definitions, the claim is indefinite. *See Interval Licensing LLC v. AOL Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014) (citing *Nautilus, Inc.*, 134 S.Ct. at 2130, n.8 (2014)). The question before the Court is whether the different proposed interpretations might mean substantively different things. As an initial matter, the Court finds that changes (2) and (3) described above carry the same substantive meaning. In light of the specification and the overall

claim context, there is no substantive difference between "…a number of downlink allocations granted…" and "a number of downlink allocation grants…."

As to the differences between changes (1) and (2), the Court finds that a substantive difference in claim scope does not exist between the two proposals. First, Nokia's original construction ("a number of downlink allocations") and current construction ("a number of downlink allocations granted") carry the same meaning in context of the surrounding claim language and the specification. The parent claims, claims 1 and 12 for dependent claims 9 and 19 respectively, reference "downlink allocation grant for the communication node [for the apparatus]" The reply sent by the communication node indicates a number of such allocations. Whether the claim references "allocations" or "allocation granted" is no difference as in context of the claims 1/9 and 12/19 the allocations reference the "at least one allocation grant" of the parent claims. Such would be an understanding of both Nokia's original proposal (construction (1)) and current proposed construction (construction (2)) in light of the claims and specification.

Huawei contends that the original proposed construction could be viewed as meaning that "allocations" references all potential allocations generally, whether sent or not to the communication node. It is telling that Huawei merely provides attorney argument as to this interpretation and that Huawei's expert does not opine that such a meaning would be taken by one of ordinary skill in the art. (Dkt. No. 71-1 (Laneman Dec.) at ¶¶ 69-73.) Though Huawei's expert notes the grammar could be fixed multiple ways, there is no indication from the expert that the ultimate meaning of "allocations" or "allocation grants" to one skilled in the art would be different upon having the benefit of the specification. (*Id*. at ¶ 72.) Further, Huawei's reading of Nokia's original proposal is not plausible in light of the specification. Huawei has provided no citation to indicate that the specification provides any suggestion that the number of allocations in a reply

could reference all potential allocations as opposed to the allocations made. Though there may be different grammatical changes that could be made to the claim, in context of the surrounding claim language and the specification, the meaning of such changes remains the same. Thus, the claim provides reasonable certainty and is sufficiently definite. *See Interval Licensing*, 766 F.3d at 1371.

The Court finds that "a downlink assignment index that indicates a number of downlink allocations grant for the [communication node/apparatus] in the scheduling information" means "a downlink assignment index that indicates a number of downlink allocations granted for the [communication node/apparatus] in the scheduling information."

CONCLUSION

The Court adopts the constructions set forth in this opinion for the disputed terms of the patents-in-suit. The parties are ordered to not refer to each other's claim construction positions in the presence of the jury. Likewise, in the presence of the jury, the parties are ordered to refrain from mentioning any portion of this opinion, other than the actual definitions adopted by the Court. The Court's reasoning in this order binds the testimony of any witnesses, and any reference to the claim construction proceedings is limited to informing the jury of the definitions adopted by the Court.

SIGNED this 24th day of May, 2017.

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ROY S. PAYNE
UNITED STATES MAGISTRATE JUDGE