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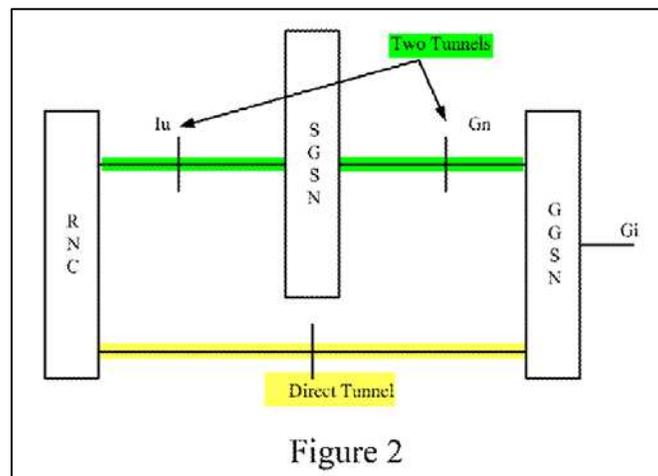
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I. BACKGROUND

A. The '675 and '627 Patents

The '675 Patent was filed on February 13, 2009 and issued on December 4, 2012. The '627 Patent is a continuation of the '675 Patent, and was filed on November 8, 2012 and issued on December 9, 2014. The '675 and '627 Patents share a common specification, and both are titled “Data Processing Method and System.” The '675 and '627 Patents generally relate to using network elements to perform a handover between 2G, 3G, and 4G systems. '627 Patent at Abstract.²

The specification states that “[i]n existing 3GPP protocols, user plane processing of UMTS is based on a two-tunnel mechanism [green] illustrated as in FIG. 2.” '627 Patent at 1:58–60.



Id. at Figure 2. The specification adds that “[i]n UMTS, the user plane processing is between a Radio Network Controller (RNC, a network element of a UTRAN, used to control wireless

² The Abstract of the '627 Patent follows:

A data processing method when the handover or change appears between systems includes: a Mobility Management network element sends a data forwarding tunnel identifier of a target side processing network element to a user plane anchor network element, obtains a data forwarding tunnel identifier of the user plane anchor network element, and sends the data forwarding tunnel identifier of the user plane anchor network element to a source data forwarding network element.

resources of the UTRAN) and an SGSN, and between an SGSN and a GGSN, over an Iu interface and a Gn interface respectively.” *Id.* at 1:60–64. The specification further states that “[f]or the two-tunnel mechanism, an SGSN handles both the user plane and the control plane; therefore control plane processing and user plane processing are not separate.” *Id.* at 1:64–67.

The specification adds that “[w]ith the introduction of High Speed Packet Access (HSPA) and IP Multimedia Subsystem (IMS), there will be a significant data flow growth in future 3GPP network.” *Id.* at 2:1–3. The specification states that “in order to improve data processing capability of UMTS, a new UMTS user plane processing mechanism, i.e. direct-tunnel mechanism, has been proposed.” *Id.* at 2:4–6. The direct-tunnel mechanism is illustrated in yellow in Figure 2. The specification states that “the user plane processing of UMTS is between an RNC and a GGSN, without an SGSN.” *Id.* at 2:6–8. The specification further states that “[f]or the direct-tunnel mechanism, an SGSN handles functions of the control plane only; therefore control plane processing and user plane processing are separate.” *Id.* at 2:8–11. The specification notes that “[i]n a direct-tunnel mechanism where a 3G SGSN no longer performs user plane data processing, data forwarding can not be done via a 3G SGSN. Therefore, the existing data processing method when a handover or change between a GERAN and a UTRAN takes place does not fit the direct-tunnel mechanism.” *Id.* at 4:8–14.

Figure 7 illustrates a disclosed embodiment of the invention for a data processing method when a handover from a GERAN (“2G”) to a UTRAN (“3G”) occurs. *Id.* at 6:9–10.

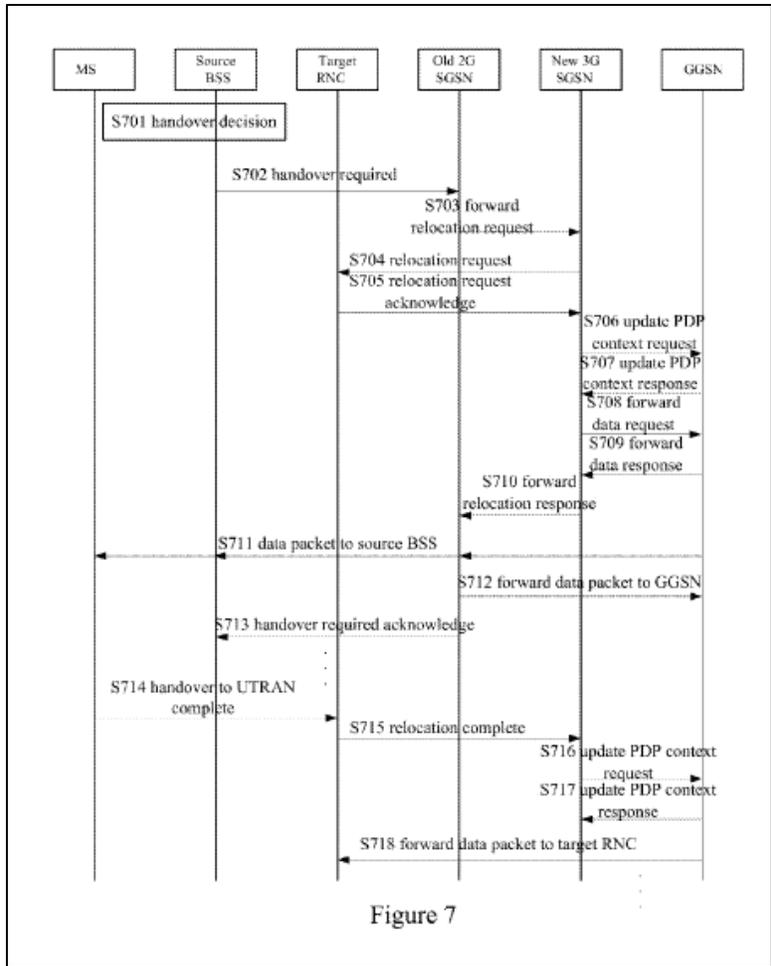


Figure 7

Id. at Figure 7. Specifically, the specification describes the steps as follows:

- As illustrated in FIG. 7, a data processing method when a handover from a GERAN to a UTRAN takes place includes:
- step S701: a source BSS decides to initiate a handover;
- step S702: the source BSS sends a handover request message to an old SGSN, i.e. 2G SGSN;
- step S703: the 2G SGSN sends a forward relocation request message to a new SGSN, i.e. 3G SGSN;
- step S704: the 3G SGSN builds a relocation request message, and sends the message to a target RNC;
- step S705: the target RNC sends a relocation request acknowledged message to the 3G SGSN;
- step S706: the 3G SGSN sends an update PDP context request message to a GGSN, to request to change user plane routing from the GGSN to the 3G SGSN;
- step S707: the GGSN returns an update PDP context response to the 3G SGSN;
- step S708: the 3G SGSN sends a forward data request to the GGSN, to request the GGSN to assign a data forwarding tunnel for data forwarding;
- step S709: the GGSN returns a forward data response message to the 3G SGSN,

assigns a data forwarding tunnel identifier to the data forwarding tunnel and carries the data forwarding tunnel identifier in the response message to the 3G SGSN, the data forwarding tunnel identifier includes IP address and TEID (Tunnel End Point Identifier);
step S710: the 3G SGSN sends a forward relocation response message to the 2G SGSN, a data forwarding tunnel identifier carried in the message is the data forwarding tunnel identifier of the GGSN;
step S711: the 2G SGSN receives a data packet from the GGSN, and sends the data packet to an MS via the source BSS;
step S712: for data of a lossless service, the 2G SGSN forwards the data packet to the GGSN according to the data forwarding tunnel identifier carried in the forward relocation response message sent by the 3G SGSN, the GGSN buffers the data packet after receiving the data packet forwarded by the 2G SGSN;
step S713: the 2G SGSN sends a handover request acknowledge message to the source BSS;
step S714: the MS sends a handover to UTRAN complete message to the target RNC;
step S715: the target RNC sends a relocation complete message to the 3G SGSN;
step S716: the 3G SGSN sends an update context request message to the GGSN;
step S717: the GGSN returns an update context response message to the 3G SGSN;
step S718: the GGSN forwards the buffered forwarded data packet to the target RNC.

Id. at 6:9–59. The specification states that “[w]ith the data processing methods in the direct-tunnel mechanism when a handover or change between a GERAN and a UTRAN takes place, a GGSN can buffer data forwarded by a source data forwarding network element and then send the data to a target side processing network element.” *Id.* at 4:55–59. The specification further states that this solves the problem with the direct-tunnel mechanism in the prior art, and allows “normal forwarding of service data in the direct-tunnel mechanism when a handover or change between a GERAN and a UTRAN takes place.” *Id.* at 4:62–67. The specification discloses or discusses a number of other embodiments using similar network elements to perform handovers between 2G, 3G, and 4G systems.

Claim 1 of the '675 Patent is an exemplary claim and recites the following elements (disputed term in italics):

1. A *data processing method in a handover procedure*, comprising:

exchanging messages, between a Mobility Management network element and a user plane anchor network element, to obtain a data forwarding tunnel identifier of the user plane anchor network element;

informing, by the Mobility Management network element, the user plane anchor network element of a data forwarding tunnel identifier of a target side processing network element;

informing, by the Mobility Management network element, a source data forwarding network element of the data forwarding tunnel identifier of the user plane anchor network element;

receiving, by the user plane anchor network element, data forwarded by the source data forwarding network element using the data forwarding tunnel identifier of the user plane anchor network; and

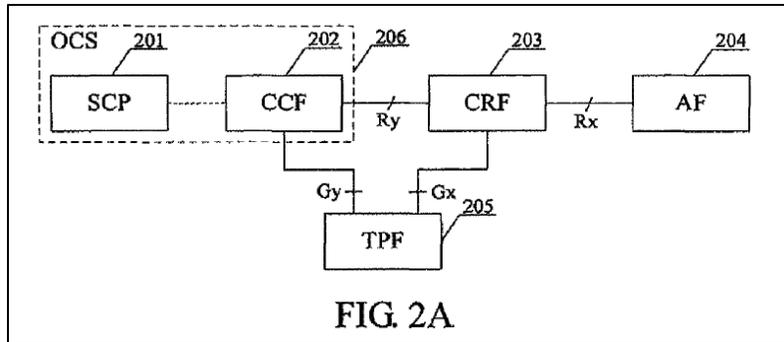
forwarding, by the user plane anchor network element, the data to the *target side processing network element*.

B. The '575 Patent

The '575 Patent was filed on November 10, 2006 and issued on August 5, 2014. The '575 Patent generally relates to a “method for improving service data flow based charging [FBC],” and is titled the same. '575 Patent at Abstract.³ Figure 2A illustrates a configuration of FBC for an online charging system.

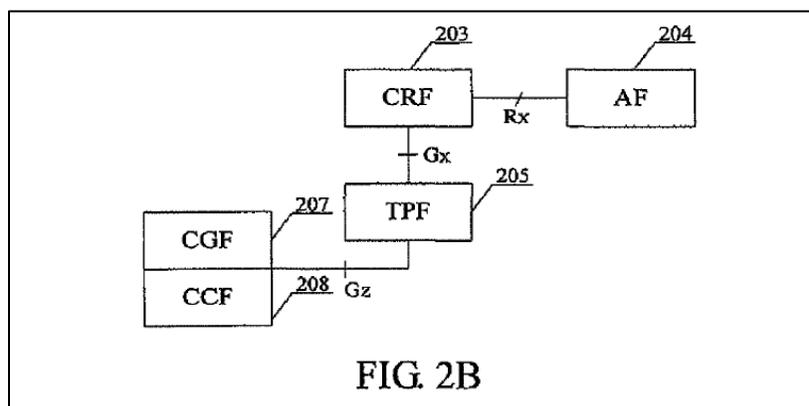
³ The Abstract of the '575 Patent follows:

A method for improving service data flow based charging and a system thereof are disclosed. A CRF may determine, according to input information provided by an AF or TPF, that the charging method for the current data flow service is an online or offline charging method, and provide the TPF with the charging rules with the corresponding mechanism. Moreover, the CRF may provide the TPF with the address information of an OCS or OFCS corresponding to the UE, to enable the TPF to address the corresponding OCS according to the address information of the OCS and trigger the following credit request procedure for the UE, or enable the TPF to address the corresponding OFCS according to address information of the OFCS and send collected charging data information of the UE to the OFCS. Therefore the charging procedure based on the FBC mechanism is more complete and more reasonable.



Id. at Figure 2A. The specification states that “the systematic configuration of FBC for the online charging includes an Online Charging System (OCS) 206, a Service Data Flow Based Charging Rule Function (CRF) 203, an Application Function (AF) 204, and a Traffic Plane Function (TPF) 205.” *Id.* at 3:29–33. The specification adds that “[t]he OCS 206 includes a Customized Application for Mobile Network Enhanced Logic (CAMEL) based Service Control Point (SCP) 201 and a Service Data Flow Based Credit Control Function (CCF) 202.” *Id.* at 3:34–37. The specification further states that “[t]he CCF 202 is connected through an Ry interface to the CRF 203, the CRF 203 is connected through an Rx interface to the AF 204 and through a Gx interface to the TPF 205; the CCF 202 is connected through a Gy interface to the TPF 205.” *Id.* at 3:37–41.

Figure 2B illustrates a configuration of FBC for the offline charging system.



Id. at Figure 2B. The specification states that “the systematic configuration of FBC for the offline charging includes a CRF 203, an AF 204, a TPF 205, a Charging Gateway Function (CGF) 207

and a Charging Collection Function (CCF) 208.” *Id.* at 3:42–45. The specification adds that “[t]he CRF 203 is connected through an Rx interface to the AF 204 and through a Gx interface to the TPF 205, the TPF 205 is connected through a Gz interface to the CGF 207 and to the CCF 208, respectively.” *Id.* at 3:45-49. The specification further states that “the functions of the CGF 207 and the CCF 208 are implemented by one network entity, which therefore provides the charging gateway functions and the charging collection functions for offline charging and is referred to as an Offline Charging System (OFCS) hereinafter.” *Id.* at 3:49-53

Having described the OCS and OFCS, the specification states that “the TPF 205 bears IP flow, and sends a Charging Rules Request to the CRF 203 through the Gx interface when an IP flow bearer is established.” *Id.* at 3:56–58. The specification further states that “[t]he Charging Rules Request carries the UE-related information, the bearer characteristics and the network-related information, wherein the UE-related information may be the Mobile Station International Integrated Services Digital Network (ISDN) Number (MSISDN), the International Mobile Subscriber Identifier (IMSI) and etc; and the network-related information may be the Mobile Network Code (MNC), the Mobile Country Code (MCC) and etc.” *Id.* at 3:58–66.

The specification also states that “[t]he bearer may be modified during the transmission of the IP flow, for example, the QoS parameter may be renegotiated, which may lead to different charging rules for the same UE service according to different QoS parameters, such as lower charging rate corresponding to lower QoS parameter.” *Id.* at 3:66-4:4. In this scenario, “the TPF 205 may resend a Charging Rules Request to the CRF 203 for new charging rules; the CRF 203 selects appropriate charging rules according to the input information provided by the TPF 205 described above, and returns to the TPF 205 the selected charging rules including the charging mechanism, charging type, charging keys, IP flow filter, charging rule priority and etc.” *Id.* at 4:4–12.

The specification further indicates that “[t]he charging mechanism may be online charging or offline charging; the charging type may be duration based charging or flow based charging, the charging key is a parameter related to the charging rate, whereby the CRF 203 may provide the TPF 205 with the charging rate related parameter instead of the charging rate directly; the IP flow filter is used for indicating the IP flows that need to be filtered for the TPF 205, and the TPF 205 charges for the filtered IP flows according to the charging rules.” *Id.* at 4:12–20.

Claim 1 of the ’575 Patent is an exemplary claim and recites the following elements (disputed term in italics):

1. A method for improving service data flow based charging in a communications network, comprising:
 - a Charging Rules Function (CRF) *determining a charging method* and charging rules in response to a service request or other trigger event, and
 - the CRF providing a Traffic Plane Function (TPF) with the charging rules and address information of a charging system.

II. APPLICABLE LAW

A. Claim Construction

“It is a ‘bedrock principle’ of patent law that ‘the claims of a patent define the invention to which the patentee is entitled the right to exclude.’” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (quoting *Innova/Pure Water Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). 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)). First, 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 factfinding must be reviewed for clear error on appeal.

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

B. Functional Claiming and 35 U.S.C. § 112, ¶ 6 (pre-AIA) / § 112(f) (AIA)⁴

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

⁴ Because two of the applications resulting in the Asserted Patents were filed before September 16, 2012, the effective date of the America Invents Act (“AIA”), the Court refers to the pre-AIA version of § 112.

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) (§ 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).

III. CONSTRUCTION OF AGREED TERMS

The parties agreed to the construction of the following phrases:

Claim Term/Phrase	Agreed Construction
the first instance of the term “the credit information” (’575 Patent, claims 3, 17)	“credit information”
“the collected charging data information of the UE” (’575 Patent, claims 11, 19)	“collected charging data information of the UE”

Docket No. 108 at 1-2. In view of the parties’ agreement on the proper construction of the identified terms, the Court hereby **ADOPTS** the parties’ agreed constructions.

During the claim construction hearing, the parties agreed to the construction of the

following phrases:

Claim Term/Phrase	Agreed Construction
“A Serving GPRS Support Node (SGSN), comprising:” (’627 Patent, claim 4)	The preamble is limiting.
“A Mobility Management Entity (MME), comprising:” (’627 Patent, claim 7)	The preamble is limiting.

The Court agrees that the preambles are limiting because they recite essential structure, and are “necessary to give life, meaning and vitality” to the claim. *Poly-Am., L.P. v. GSE Lining Tech., Inc.*, 383 F.3d 1303, 1309 (Fed. Cir. 2004). Moreover, the patentee clearly relied on the preamble during prosecution. *Catalina Mktg. Int’l Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002) (“[C]lear reliance on the preamble during prosecution to distinguish the claimed invention from the prior art transforms the preamble into a claim limitation because such reliance indicates use of the preamble to define, in part, the claimed invention.”) (citations omitted).

Referring to the prosecution history, independent claim 4 of the ’627 Patent was originally dependent claim 11. The preamble of original claim 7 recited “[a] Mobility Management network element, comprising a receiver and a sender” (Dkt. No. 126-4 at 3). Original dependent claim 11 further narrowed original claim 7 by reciting that the “Mobility Management network element is a 3G Serving GPRS Support Node (SGSN).” (*Id.* at 4). The examiner rejected claim 7, objected to claim 11, and stated that claim 11 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. (Dkt. No. 126-12 at 7-8). In response, the patentees canceled pending claim 7, and amended the preamble of claim 11 by

deleting “Mobility Management network element” and replacing it with “[a] Server GPRS Support Node (SGSN).” (Dkt. No. 126-13 at 4-5). The “SGSN” limitation only appears in the preamble of the claim. Accordingly, the amendment to the preamble defines the claimed invention, because it was relied upon to distinguish the prior art and is necessary to give life, meaning and vitality to the claim.

Similar to independent claim 4, independent claim 7 was originally dependent claim 12. As indicated above, the preamble of original claim 7 recited “[a] Mobility Management network element, comprising a receiver and a sender” (Dkt. No. 126-4 at 3). Original dependent claim 12 further narrowed original claim 7 by reciting that the “Mobility Management network element is a Mobility Management Entity (MME).” (*Id.* at 4). The examiner rejected claim 7, objected to claim 12, and stated that claim 12 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. (Dkt. No. 126-12 at 7-8). In response, the patentees canceled pending claim 7, and amended the preamble of claim 12 by deleting “Mobility Management network element” and replacing it with “[a] Mobility Management Entity (MME).” (Dkt. No. 126-13 at 4-5). The “Mobility Management Entity (MME)” limitation only appears in the preamble of the claim. Accordingly, the amendment to the preamble defines the claimed invention, because it was relied upon to distinguish the prior art and is necessary to give life, meaning and vitality to the claim.

To the extent that a party argues that the preambles are not limiting, the Court rejects this argument. Accordingly, in view of the intrinsic evidence and the parties’ agreement that the preambles of claims 4 and 7 of the ’627 Patent are limiting, the Court hereby **ADOPTS** the parties’ agreed constructions.

IV. CONSTRUCTION OF DISPUTED TERMS

The parties' dispute focuses on the meaning and scope of nineteen terms/phrases in the Asserted Patents.

1. “In a Mobility Management Entity (MME), a data processing method comprising”

<u>Disputed Term</u>	<u>Plaintiff’s Proposal</u>	<u>Defendants’ Proposal</u>
“In a Mobility Management Entity (MME), a data processing method comprising”	The preamble is non-limiting.	The preamble is limiting.

a) The Parties’ Positions

The parties dispute whether the preambles of claim 1, 10, and 11 of the '627 Patent are limiting. Plaintiff contends that the preambles are not claim limitations because they merely provide a name for the otherwise complete invention set out in the body of the claims. (Dkt. No. 119 at 18). According to Plaintiff, the claims at issue use the preambles as a reference point for the overall structure of the claim. *Id.* Plaintiff argues that the body of the claim is a complete description of the invention and does not rely in any way on the structure or functionality of the “MME” referred to by the preamble. *Id.* Plaintiff further argues that it is inappropriate to allow the name in the preamble to define the scope of the invention. *Id.*

Defendants respond that the applicant amended the preamble to claims 1, 10, and 11 during prosecution to specifically recite that the data processing method occurs “[i]n a Mobility Management Entity (MME).” (Dkt. No. 126 at 14). Defendants argue that this added language provides antecedent basis for the three subsequent recitations of “the MME” in the claim body. *Id.* Defendants further argue that the preambles do not merely provide a “reference point” or a “name” for the invention, as Plaintiff contends. (*Id.* at 17). Plaintiff did not provide arguments for this term in its Reply brief.

For the following reasons, the Court finds that the preamble **“In a Mobility Management**

Entity (MME), a data processing method comprising:” in claims 1, 10, and 11 of the ’627 Patent is limiting.

b) Analysis

The phrase “In a Mobility Management Entity (MME), a data processing method comprising:” appears in claims 1, 10, and 11 of the ’627 Patent. The Court finds that the phrase is used consistently in the claims and is intended to have the same general meaning in each claim. The Court further finds that the preambles are limiting because they recite essential structure, and are “necessary to give life, meaning and vitality” to the claim. *Poly-Am., L.P. v. GSE Lining Tech., Inc.*, 383 F.3d 1303, 1309 (Fed. Cir. 2004). Moreover, the patentee clearly relied on the preamble during prosecution. *Catalina Mktg. Int’l Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002) (“[C]lear reliance on the preamble during prosecution to distinguish the claimed invention from the prior art transforms the preamble into a claim limitation because such reliance indicates use of the preamble to define, in part, the claimed invention.”) (citations omitted).

Referring to the prosecution history of claims 1, 10, and 11, the preamble originally recited “a data processing method,” and was later amended to include “a Mobility Management Entity (MME).” For example, when the application was filed, the preamble of pending independent claim 1 recited “A data processing method, comprising . . .,” and pending dependent claim 6 recited that “[t]he data processing method according to claim 1, wherein . . . the Mobility Management network element is a Mobility Management Entity (MME).”⁵ (Dkt. No. 126-4 at 2-3). The examiner rejected claim 1 and objected to claim 6. (Dkt. No. 126-12 at 4-8). In response, the patentees canceled pending claim 1, and amended the preamble of pending claim 6 as follows: “In a Mobility Management Entity (MME), a data processing method comprising: . . . ~~The data~~

⁵ Pending claim 6 would ultimately issue as claim 1 of the ’627 Patent.

~~processing method according to claim 1, wherein~~” (Dkt. No. 126-13 at 2-4).

At that time, the patentees also added new pending claims 13 and 14 with the preamble reciting: “The data processing method according to claim 3, wherein”⁶ (*Id.* at 6). Pending claim 3 was later canceled, and the patentees amended each of pending claims 13 and 14 as follows: ~~“The data processing method according to claim 3~~In a Mobility Management Entity (MME), a data processing method comprising:” (Dkt. No. 126-14 at 2-5). These amendments indicate the use of the preambles to define the claimed invention.

Moreover, the language in each preamble provides the antecedent basis for “the MME” recited in the body of the claims. Claims 1, 10, and 11 each recite “In a *Mobility Management Entity (MME)*, a data processing method comprising: informing, by *the MME*, . . . obtaining, by *the MME*, . . . informing, by *the MME*,” ’627 Patent, at 17:39-48, 18:52-62, 19:8-17 (emphasis added). It is the Mobility Management Entity (MME)” in the preamble that is necessary to give meaning to “the MME” recited in the body of the claims. Accordingly, the preamble is limiting, because it was relied upon in the prosecution history and is necessary to give life, meaning and vitality to the claim.

c) Court’s Construction

The preamble “**In a Mobility Management Entity (MME), a data processing method comprising:**” in claims 1, 10, and 11 of the ’627 Patent is limiting.

2. The “unit” terms (“receiving unit . . .” / “sending unit . . .” / “storage unit . . .”)

⁶ Pending claims 13 and 14 would ultimately issue as claims 10 and 11 of the ’627 Patent.

<u>Disputed Term</u>	<u>Plaintiff's Proposal</u>	<u>Defendants' Proposal</u>
<p>“a receiver configured to receive a data forwarding tunnel identifier of a User Plane Entity (UPE) from the UPE”</p>	<p>Plain meaning. Not subject to 35 U.S.C. § 112 ¶ 6. If the Court determines this term is subject to 35 U.S.C. § 112 ¶ 6: Function: receive a data forwarding tunnel identifier of a User Plane Entity (UPE) from the UPE Structure: SGSN receiver and equivalents thereof</p>	<p>Function: receive a data forwarding tunnel identifier of a User Plane Entity (UPE) from the UPE Structure: The specification fails to set forth any algorithm or corresponding structure for the claimed function. Claim is indefinite.</p>
<p>“a sender configured to: send the data forwarding tunnel identifier of the UPE to a source Radio Network Controller (RNC), and send a data forwarding tunnel identifier of a Long Term Evolution (LTE) access network to the UPE”</p>	<p>Plain meaning. Not subject to 35 U.S.C. § 112 ¶ 6. If the Court determines this term is subject to 35 U.S.C. § 112 ¶ 6: Function: send the data forwarding tunnel identifier of the UPE to a source Radio Network Controller (RNC), and send a data forwarding tunnel identifier of a Long Term Evolution (LTE) access network to the UPE Structure: SGSN transmitter and equivalents thereof</p>	<p>Function: send the data forwarding tunnel identifier of the UPE to a source Radio Network Controller (RNC), and send a data forwarding tunnel identifier of a Long Term Evolution (LTE) access network to the UPE Structure: The specification fails to set forth any algorithm or corresponding structure for the claimed function. Claim is indefinite.</p>
<p>“the receiver is configured to receive a forward data response carrying the data forwarding tunnel identifier of the UPE, from the UPE”</p>	<p>Plain meaning. Not subject to 35 U.S.C. § 112 ¶ 6. If the Court determines this term is subject to 35 U.S.C. § 112 ¶ 6: Function: receive a forward data response carrying the data forwarding tunnel identifier of the UPE, from the UPE Structure: SGSN receiver and equivalents thereof</p>	<p>Function: receive a forward data response carrying the data forwarding tunnel identifier of the UPE, from the UPE Structure: The specification fails to set forth any algorithm or corresponding structure for the claimed function. Claim is indefinite.</p>
<p>“the sender is configured to send a forward data request to the UPE”</p>	<p>Plain meaning. Not subject to 35 U.S.C. § 112 ¶ 6. If the Court determines this term is subject to 35 U.S.C. § 112 ¶ 6: Function: send a forward data request to the UPE Structure: SGSN transmitter and equivalents thereof</p>	<p>Function: send a forward data request to the UPE Structure: The specification fails to set forth any algorithm or corresponding structure for the claimed function. Claim is indefinite.</p>

<p>“a receiver configured to receive a data forwarding tunnel identifier of a User Plane Entity (UPE) from the UPE”</p>	<p>Plain meaning. Not subject to 35 U.S.C. § 112 ¶ 6. If the Court determines this term is subject to 35 U.S.C. § 112 ¶ 6: Function: receive a data forwarding tunnel identifier of a User Plane Entity (UPE) from the UPE Structure: MME receiver and equivalents thereof</p>	<p>Function: receive a data forwarding tunnel identifier of a User Plane Entity (UPE) from the UPE Structure: The specification fails to set forth any algorithm or corresponding structure for the claimed function. Claim is indefinite.</p>
<p>“a sender configured to: send the data forwarding tunnel identifier of the UPE to a Long Term Evolution (LTE) access network, and send a data forwarding tunnel identifier of a target Radio Network Controller (RNC) to the UPE”</p>	<p>Plain meaning. Not subject to 35 U.S.C. § 112 ¶ 6. If the Court determines this term is subject to 35 U.S.C. § 112 ¶ 6: Function: send the data forwarding tunnel identifier of the UPE to a Long Term Evolution (LTE) access network, and send a data forwarding tunnel identifier of a target Radio Network Controller (RNC) to the UPE Structure: MME transmitter and equivalents thereof</p>	<p>Function: send the data forwarding tunnel identifier of the UPE to a Long Term Evolution (LTE) access network, and send a data forwarding tunnel identifier of a target Radio Network Controller (RNC) to the UPE Structure: The specification fails to set forth any algorithm or corresponding structure for the claimed function. Claim is indefinite.</p>
<p>“the receiver is configured to receive a forward data response carrying the data forwarding tunnel identifier of the UPE, from the UPE”</p>	<p>Plain meaning. Not subject to 35 U.S.C. § 112 ¶ 6. If the Court determines this term is subject to 35 U.S.C. § 112 ¶ 6: Function: receive a forward data response carrying the data forwarding tunnel identifier of the UPE, from the UPE Structure: MME receiver and equivalents thereof</p>	<p>Function: receive a forward data response carrying the data forwarding tunnel identifier of the UPE, from the UPE Structure: The specification fails to set forth any algorithm or corresponding structure for the claimed function. Claim is indefinite.</p>
<p>“the sender is configured to send a forward data request to the UPE”</p>	<p>Plain meaning. Not subject to 35 U.S.C. § 112 ¶ 6. If the Court determines this term is subject to 35 U.S.C. § 112 ¶ 6: Function: send a forward data request to the UPE Structure: MME transmitter and equivalents thereof</p>	<p>Function: send a forward data request to the UPE Structure: The specification fails to set forth any algorithm or corresponding structure for the claimed function. Claim is indefinite.</p>

“receipt unit configured to receive data forwarded by the source data forwarding network element”	Plain meaning. Not subject to 35 U.S.C. § 112 ¶ 6. If the Court determines this term is subject to 35 U.S.C. § 112 ¶ 6: Function: receive data forwarded by the source data forwarding network element Structure: receipt unit and equivalents thereof	Function : receive data forwarded by the source data forwarding network element Structure: The specification fails to set forth any algorithm or corresponding structure for the claimed function. Claim is indefinite.
“sending unit configured to forward the received data to the target side processing network element”	Plain meaning. Not subject to 35 U.S.C. § 112 ¶ 6. If the Court determines this term is subject to 35 U.S.C. § 112 ¶ 6: Function: forward received data to the target side processing network element Structure: sending unit and equivalents thereof	Function: forward the received data to the target side processing network element Structure: The specification fails to set forth any algorithm or corresponding structure for the claimed function. Claim is indefinite.

a) The Parties’ Positions

The parties dispute whether the “unit” terms are subject to § 112 ¶ 6. Defendants contend that the terms are governed by § 112 ¶ 6 because they do not recite or connote sufficiently definite structure for the terms “receipt unit,” “sending unit,” “receiver,” and “sender.” (Dkt. No. 126 at 9). According to Defendants, the most that is disclosed is the generic “receipt unit,” “sending unit,” “tunnel identifier acquisition unit,” and “tunnel identifier sending unit” of Figure 20. *Id.*

Defendants argue that each of the disputed terms of the ’675 Patent replace the word “means” with the nonce word “unit,” and then recite function performed by the “unit.” (*Id.* at 10). Defendants contends that “unit” is a nonce word that may “operate as a substitute for ‘means’ in the context of § 112, ¶ 6,” and that the terms “receiver” and “sender” operate in similar fashion. *Id.* (citing *St. Lawrence Comm’cns. LLC v. ZTE Corp.*, No. 2:15-CV-349-JRG, 2016 WL 6275390, at *18-*19 (E.D. Tex. Oct. 24, 2016)). Defendants further argue that the prefixes “receipt” and “sending” do not impart any structure into the term “unit.” (*Id.* at 11). Defendants contend that they merely reiterate the function that the “unit” is configured to perform. *Id.*

Defendants further argue that nothing in the claims or specification suggest that the term

“unit” has sufficiently definite structure. *Id.* Defendants also argue that none of these four terms is a well-known structure in the relevant art. *Id.* (citing Dkt. No. 126-1 at ¶ 25). Defendants further contend that the standard referenced by Plaintiff makes no mention of a “receipt unit,” “sending unit,” “receiver,” or “sender,” much less a reference to any structure within a network element. (Dkt. No. 126 at 11). Defendants argue that the reference simply recites the same function of “receiving” or “sending” without structural content. *Id.*

Defendants also argue that the meaning of “receipt unit,” “sending unit,” “receiver,” or “sender” depends on the context in which the term is being used. *Id.* (citing Dkt. No. 126-1 at ¶ 25). According to Defendants, in the context of communications between a cellular device and a base station, receivers, senders, and transmitters are known structures for the transmission of radio waves modulated in accordance with published specifications. (Dkt. No. 126 at 12) (citing Dkt. No. 126-1 at ¶ 26). Defendants contend that these structures are available as components for cellular radio communication, but cellular radio communications play no part in the ’675 or ’627 Patents’ asserted claims. *Id.* Defendants argue that the accused network elements within a packet core network communicate over a wired connection typically using Internet Protocol, not wirelessly via modulated radio communication. *Id.*

Defendants also argue that a switch or a router are separate components within a network and would not be considered well-known structures within a network element connoted by a “receipt unit” or a “sending unit.” (Dkt. No. 126 at 12) (citing Dkt. No. 126-1 at ¶ 31). Defendants further contend that a network card would not be configured to do any of the claimed functions of the construed terms. (Dkt. No. 126 at 12) (citing Dkt. No. 126-1 at ¶ 32). Defendants also argue that a person of ordinary skill in the art (“POSITA”) would not understand whether a structure “configured to” perform any of those functions is hardware or software. (Dkt. No. 126 at 13).

According to Defendants, the functional disclosure contained in the specification merely discloses an MME or SGSN sending and receiving data, and describes the “receipt unit” and “sending unit” by their functions. (Dkt. No. 126 at 13) (citing Dkt. No. 126-1 at ¶¶ 26-27). Defendants contend that this description discloses no structure to a POSITA. (Dkt. No. 126 at 13) (citing Dkt. No. 126-1 at ¶ 29). Finally, Defendants also argue that neither the specification of the ’675 and ’627 Patents nor TS 23.401 V0.2.0 discloses any receiver or sender structure, and therefore the disputed terms are indefinite. (Dkt. No. 126 at 13-14) (citing Dkt. No. 126-1 at ¶¶ 32-33).

Plaintiff responds that none of these terms use the “means for” language. (Dkt. No. 119 at 13-14). Plaintiff argues that both the intrinsic and extrinsic evidence shows that the terms recite well understood structures “configured to” send or receive well understood data types in the claimed handover process. (*Id.* at 14). Plaintiff contends that each of these terms are used within a larger network component, such as an MME or SGSN, that must include those structures to achieve their purpose (*e.g.*, sending and receiving appropriate data). *Id.* Plaintiff argues that the common specification of the ’675 and ’627 Patents include numerous examples of a data “sender” and a data “receiver” sending and receiving data, using structures well understood by practitioners in the art. (*Id.* at 14-15). According to Plaintiff, each of the examples describes receiving and sending data using similar functional language as in the claims. (*Id.* at 15).

Plaintiff further argues that the extrinsic evidence, such as the actual 3GPP standards, provide useful and objective resources for determining the meaning of terms as understood by persons of ordinary skill in the relevant art. *Id.* According to Plaintiff, the ’627 and ’675 Patents are standard essential patents for the 3GPP TS 23.401 standard, and in particular relate to the handover methods described in Section 5.5.2.1 of that standard. (Dkt. No. 119 at 15) (citing Dkt. No. 119-1). Plaintiff contends that Section 5.5.2.1 includes nearly identical process flow charts as

shown in the patent, and includes descriptions of the standard using similar terminology of that in the claims. *Id.* Plaintiff argues that the standard simply states which element is being used to “send” a particular type of data to another element to accomplish that step of the handover. (Dkt. No. 119 at 16).

In the alternative, Plaintiff argues that even if these terms are construed under § 112, ¶ 6, the specification sets forth sufficient structure corresponding to the claims. *Id.* Plaintiff contends that the specification repeatedly describes MMEs and SGSNs sending and receiving data that would be readily appreciated by a person of ordinary skill in the art. *Id.* Plaintiff argues that there should be no doubt that a person of ordinary skill in the art would recognize that the structures of a “sender” and a “receiver” are necessarily part of the devices recited in the patent claims. (*Id.* at 17). Plaintiff contends that these are well known devices with well known structures for sending and receiving data. *Id.*

In its reply, Plaintiff argues that the claim elements at issue are drawn to the most fundamental functionality in the telecommunications arts (*i.e.*, sending and receiving data). (Dkt. No. 137 at 2). Plaintiff contends that the issue is not whether the word “unit” standing alone is sufficient, but whether when taken as a whole the words of the claim element are “understood by persons of ordinary skill in the art to have a sufficiently definite meaning as the name for structure.” (Dkt. No. 137 at 3) (citing *Williamson*, 792 F.3d at 1349). Plaintiff further argues that the structural meaning is conveyed by the modifiers “sending” and “receipt” and by the remainder of the claim elements, which describe the coupling of the structures sending and receiving the data. (Dkt. No. 137 at 3). According to Plaintiff, these terms readily convey structure and are not meaningless modifiers, because sending and receiving data is fundamental in the telecommunications arts. (Dkt. No. 137 at 4) (citing Dkt. No. 138 at ¶¶ 25-26).

Plaintiff further contends that the 3GPP standards themselves use the same terms (*e.g.*, “sending” and “receiving” of data) to convey structure, and have been readily understood by practitioners for years as a blueprint to build telecommunications networks. (Dkt. No. 137 at 4) (citing Dkt. No. 138 at ¶ 27). Plaintiff also argues that the claims at issue here are not subject to means-plus-function construction because the inputs and outputs are specified in the claim as well as how the claim elements interact with each other via structural configurations. (Dkt. No. 137 at 4). Plaintiff further contends that the notion that those skilled in the art would not be familiar with the structure of “receivers” for a wired system cannot be adopted, particularly because wired network connections predated wireless network connections. (*Id.* at 5) (citing Dkt. No. 138 at ¶¶ 28-32). Finally, Plaintiff argues that it has never taken the position or stated that a switch or a router was in fact the receiver or sender. (Dkt. No. 137 at 5).

For the following reasons, the Court finds that the term “**receiver**” is not subject to § 112, ¶ 6, and should be construed to mean “**receiver of a Serving GPRS Support Node (SGSN)**” in claims 4 and 5 of the ’627 Patent, and should be construed to mean “**receiver of a Mobility Management Entity (MME)**” in claims 7 and 8 of the ’627 Patent. The Court further finds that the term “**sender**” is not subject to § 112, ¶ 6, and should be construed to mean “**transmitter of a Serving GPRS Support Node (SGSN)**” in claims 4 and 5 of the ’627 Patent, and should be construed to mean “**transmitter of a Mobility Management Entity (MME)**” in claims 7 and 8 of the ’627 Patent. The Court also finds that the term “**receipt unit**” is not subject to § 112, ¶ 6, and should be construed to mean “**receiver of a user plane anchor network element**” in claim 6 of the ’675 Patent. The Court further finds that the term “**sending unit**” is not subject to § 112, ¶ 6, and should be construed to mean “**transmitter of a user plane anchor network element**” in claim 6 of the ’675 Patent.

b) Analysis

The phrase “a receiver configured to receive a data forwarding tunnel identifier of a User Plane Entity (UPE) from the UPE” appears in claim 4 of the ’627 Patent. The phrase “a sender configured to: send the data forwarding tunnel identifier of the UPE to a source Radio Network Controller (RNC), and send a data forwarding tunnel identifier of a Long Term Evolution (LTE) access network to the UPE” appears in claim 4 of the ’627 Patent. The phrase “the receiver is configured to receive a forward data response carrying the data forwarding tunnel identifier of the UPE, from the UPE” appears in claim 5 of the ’627 Patent. The phrase “the sender is configured to send a forward data request to the UPE” appears in claim 5 of the ’627 Patent. The phrase “a receiver configured to receive a data forwarding tunnel identifier of a User Plane Entity (UPE) from the UPE” appears in claim 7 of the ’627 Patent. The phrase “a sender configured to: send the data forwarding tunnel identifier of the UPE to a Long Term Evolution (LTE) access network, and send a data forwarding tunnel identifier of a target Radio Network Controller (RNC) to the UPE” appears in claim 7 of the ’627 Patent. The phrase “the receiver is configured to receive a forward data response carrying the data forwarding tunnel identifier of the UPE, from the UPE” appears in claim 8 of the ’627 Patent. The phrase “the sender is configured to send a forward data request to the UPE” appears in claim 8 of the ’627 Patent. The phrase “receipt unit configured to receive data forwarded by the source data forwarding network element” appears in claim 6 of the ’675 Patent. The phrase “sending unit configured to forward the received data to the target side processing network element” appears in claim 6 of the ’675 Patent. As indicated, none of the claims recite the word “means.”

“It is well settled that ‘[a] claim limitation that actually uses the word ‘means’ invokes a rebuttable presumption that § 112, [¶] 6 applies.’” *Apex Inc. v. Raritan Comput., Inc.*, 325 F.3d

1364, 1371 (Fed. Cir. 2003) (quotation omitted). It is also equally understood that “a claim term that does not use ‘means’ will trigger the rebuttable presumption that § 112, ¶ 6 does not apply.” *Id.* (quotation omitted). The presumption against the application of § 112, ¶ 6 may be overcome if a party can “demonstrate[] that the claim term fails to ‘recite sufficiently definite structure’ or else recites ‘function without reciting sufficient structure for performing that function.’” *Williamson*, 792 F.3d at 1339 (quoting *Watts v. XL Sys., Inc.*, 232 F.3d 877, 880 (Fed. Cir. 2000)). “In undertaking this analysis, we ask if the claim language, read in light of the specification, recites sufficiently definite structure to avoid § 112, ¶ 6.” *Robert Bosch, LLC v. Snap-On Inc.*, 769 F.3d 1094, 1099 (Fed. Cir. 2014) (citing *Inventio AG v. Thyssenkrupp Elevator Ams. Corp.*, 649 F.3d 1350, 1357 (Fed. Cir. 2011)).

None of the claims recite the word “means.” Therefore, there is a rebuttable presumption that § 112, ¶ 6 does not apply. Defendants have failed to rebut the presumption because “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.” *Williamson*, 792 F.3d at 1348. Specifically, the intrinsic evidence demonstrates that a person of ordinary skill in the art would understand the necessary structure of the “receiver” and “sender” in claims 4, 5, 7, and 8 of the ’627 Patent, as well as the necessary structure of the “receipt unit” and “sending unit” in claim 6 of the 675 Patent.

As discussed above, the preambles of claims 4, 5, 7, and 8 of the ’627 Patent are limiting. The preamble of claim 4 recites “[a] Serving GPRS Support Node (SGSN), comprising.” The preamble of claim 7 recites “A Mobility Management Entity (MME), comprising.” The claims then recite “a receiver configured to” and “a sender configured to.” Thus, a person of ordinary skill in the art would understand that the sender of claims 4 and 5 is the transmitter of a Serving GPRS Support Node (SGSN), and that the receiver of claim 4 and 5 is the receiver of a Serving

GPRS Support Node (SGSN). Likewise, a person of ordinary skill in the art would understand that the sender of claims 7 and 8 is a transmitter of a Mobility Management Entity (MME), and that the receiver of claims 7 and 8 is a receiver of a Mobility Management Entity (MME).

Similarly, claim 6 of the 675 Patent recites “a user plane anchor network element . . . wherein the user plane anchor network element is provided with a receipt unit configured to . . . , and a sending unit configured to . . .” A person of ordinary skill in the art would understand that the receipt unit is a receiver of a user plane anchor network element, and that the sending unit is a transmitter of a user plane anchor network element. The specification also states that the user plane anchor network element may be a Gateway GPRS Support Node (GGSN) in certain embodiments. ’627 Patent at 16:32–41.

The claim language further describes the inputs and outputs of these components, and what it is that they “receive” or “send.” For example, the “receipt unit” is “configured to receive data forwarded by the source data forwarding network element” while the “sending unit” is “configured to forward the received data to the target side processing network element.” *See, e.g.*, ’675 Patent at claim 6. As explained in *E2E*, § 112, ¶ 6 does not apply when the written description provides context as to the “inputs and outputs” and how the claimed components “interact[] with other components . . . in a way that . . . inform[s] the structural character of the limitation-in-question or otherwise impart[s] structure.” *E2E Processing, Inc. v. Cabela’s Inc.*, 2015 U.S. Dist. LEXIS 86060, *20 (E.D. Tex. July 2, 2015) (quoting *Williamson*, 792 F. 3d at 1351). Each of the disputed terms is used within a larger network component, such as an MME or SGSN, which must include those structures to achieve their stated objective (*e.g.*, sending and receiving appropriate data).

Moreover, the specification includes examples of a data “sender” sending, and a data “receiver” receiving with each using structures well understood by a person of ordinary skill in

the art. For example, the specification states the following:

When a handover or change from a UTRAN system to an SAE system takes place, the 3G SGSN and the UPE exchange messages including a forward data request message and a forward data response message, to obtain a data forwarding tunnel identifier of the UPE, and inform the source RNC of the data forwarding tunnel identifier of the UPE. The source RNC forwards a data packet to the UPE; the UPE buffers the forwarded data packet and forwards the buffered forwarded data packet to the evolved access network on completion of update of user plane routing.

When a handover or change from an SAE system to a UTRAN system takes place, the MME and the UPE exchange messages including a forward data request message and a forward data response message, to obtain a data forwarding tunnel identifier of the UPE, and inform the evolved access network of the data forwarding tunnel identifier of the UPE. The evolved access network forwards a data packet to the UPE; the UPE buffers the forwarded data packet and forwards the buffered forwarded data packet to the target RNC on completion of update of user plane routing.

'627 Patent at 9:48–66. The specification provides numerous other examples of a “sender” sending data, and a “receiver” receiving data. *See, e.g.*, '627 Patent at 6:35–38 (“[S]tep 710, the 3G SGSN sends a forward relocation response message to the 2G SGSN, a data forwarding tunnel identifier carried in the message is the data forwarding tunnel identifier of the GGSN.”); 6:39-41 (“[S]tep S711; the 2G SGSN receives a data packet from the GGSN, and sends the data packet to an MS via the source BSS.”); 7:16-18 (“[S]tep S809: the 3G SGSN receives a data packet from the GGSN, and sends the data packet to an MS via the source RNC.”); 10:30-32 (“[S]tep 1209: the 2G SGSN receives a data packet from the GGSN, and sends the data packet to an MS via the source BSS.”); 13:25-31 (“[T]he MME and the UPE exchange messages including a forward data request message and a forward data response message, to obtain a data forwarding tunnel identifier of the UPE. Meanwhile the MME informs the UPE of a tunnel identifier of the targete[d] RNC and then informs the evolved access network of the data forwarding tunnel identifier of the UPE.”); 9:27-31 (“When a handover or change from a GERAN system to an SAE system takes place, the MME and the UPE (user plane anchor of the GERAN/UTRAN and the SAE) exchange messages

including a forward data request message and a forward data response message.”). Each of these examples describes receiving and sending data using similar words as in the claims, and indicate that these terms have an “understood meaning in the art” and thus are not subject to § 112 ¶ 6 construction. *See Chrimar Sys. v. ADTRAN, Inc.*, 2016 U.S. Dist. LEXIS 79555, *38 (E.D. Tex. June 17, 2016) (“Where a claim term has an understood meaning in the art, it recites sufficient structure.”).

Defendants argue that the only disclosure is the generic “receipt unit,” “sending unit,” “tunnel identifier acquisition unit,” and “tunnel identifier sending unit” of Figure 20. (Dkt. No. 126 at 9). The Court disagrees. As discussed above, the claim language indicates that the recited “sender,” “receiver,” “receipt unit,” and “sending unit” are used within a larger network component, such as an MME or SGSN. The intrinsic evidence further indicates that an MME or SGSN must include those structures to achieve the recited objectives (*e.g.*, sending and receiving appropriate data). *See, e.g., Linear Tech. Corp. v. Impala Linear Corp.*, 379 F.3d 1311, 1319-21 (Fed. Cir. 2004) (“circuit [for performing a function]” found to be sufficiently definite structure because the claim recited the “objectives and operations” of the circuit).

Defendants also argue that “unit” is a nonce word that may “operate as a substitute for ‘means’ in the context of § 112, ¶ 6,” and that the terms “receiver” and “sender” operate in similar fashion. (Dkt. No. 126 at 10). Defendants err by focusing on the word “unit” in isolation from the broader language and requirements of the claim. By focusing only on the word “unit,” Defendants ignore the structural requirements elsewhere in the claim that provide necessary structure. In other words, the issue is not whether the word “unit” standing alone is sufficient, because here a person of ordinary skill in the art would understand that the disputed term “have a sufficiently definite meaning as the name for structure.” *Williamson*, 792 F.3d at 1348.

Defendants further argue that the meaning of “receipt unit,” “sending unit,” “receiver,” or “sender” depends on the context in which the term is used. (Dkt. No. 126 at 11). Defendants contend that “[i]n the context of communications between a cellular device and a base station, receivers, senders, and transmitters are known structures for the transmission of radio waves modulated in accordance with published specifications,” but are not known structures for a packet core network. (Dkt. No. 126 at 12). The Court is not persuaded by Defendants’ argument. The Court agrees that context matters, and here the context is provided by the surrounding claim language and the intrinsic evidence.

The sending and receiving of data are fundamental functions for the recited terms, and a person of ordinary skill in the art would understand the structures used to send and receive data. The receiving unit and sending unit would be understood to be the structure for receiving and sending data, respectively. Likewise, the sender and receiver would be understood to be the structure for sending and receiving data, respectively. Indeed, the specification contains multiple figures illustrating flow charts for data processing. Figures 7, 8, 9, 10, 12, 13, 14, 15, 16, 17, 18 and 19 show information flowing among the MS, RNC, BSS, SGSN, GGSN. Each arrow in these flow charts indicates the direction of information flow. Therefore, the intrinsic evidence provides the proper context for the disputed terms, and indicates that “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.” *Williamson*, 792 F.3d at 1348.

Although the terms are not subject to § 112 ¶ 6, the Court finds that a person of ordinary skill in the art would understand that the receiver, sender, receipt unit, and sending unit would be contained within the appropriate network element. Specifically, the preamble of claim 4 of the ’627 Patent recites “[a] Serving GPRS Support Node (SGSN), comprising.” The preamble of claim

7 of the '627 Patent recites “A Mobility Management Entity (MME), comprising.” The claims then recite “a receiver configured to” and “a sender configured to.” Thus, a person of ordinary skill in the art would understand that the sender of claims 4 and 5 is a transmitter of a Serving GPRS Support Node (SGSN), and that the receiver of claim 4 and 5 is a receiver of a Serving GPRS Support Node (SGSN). Likewise, a person of ordinary skill in the art would understand that the sender of claims 7 and 8 is a transmitter of a Mobility Management Entity (MME), and that the receiver of claims 7 and 8 is a receiver of a Mobility Management Entity (MME).

Similarly, claim 6 of the 675 Patent recites “a user plane anchor network element . . . wherein the user plane anchor network element is provided with a receipt unit configured to . . . , and a sending unit configured to” A person of ordinary skill in the art would understand that the receipt unit is a receiver of a user plane anchor network element, and that the sending unit is a transmitter of a user plane anchor network element. Finally, in reaching its conclusion, the Court has considered the extrinsic evidence submitted by the parties, and given it its proper weight in light of the intrinsic evidence.

c) Court's Construction

The Court finds that the term “**receiver**” is not subject to § 112, ¶ 6, and construes the term to mean “**receiver of a Serving GPRS Support Node (SGSN)**” in claims 4 and 5 of the '627 Patent, and construes the term to mean “**receiver of a Mobility Management Entity (MME)**” in claims 7 and 8 of the '627 Patent. The Court further finds that the term “**sender**” is not subject to § 112, ¶ 6, and construes the term to mean “**transmitter of a Serving GPRS Support Node (SGSN)**” in claims 4 and 5 of the '627 Patent, and construes the term to mean “**transmitter of a Mobility Management Entity (MME)**” in claims 7 and 8 of the '627 Patent. The Court also finds that the term “**receipt unit**” is not subject to § 112, ¶ 6, and construes the term to mean “**receiver**

of a user plane anchor network element” in claim 6 of the ’675 Patent. The Court further finds that the term **“sending unit”** is not subject to § 112, ¶ 6, and construes the term to mean **“transmitter of a user plane anchor network element”** in claim 6 of the ’675 Patent.

3. Claims 4 and 7 of the ’627 Patent

<u>Disputed Term</u>	<u>Plaintiff’s Proposal</u>	<u>Defendants’ Proposal</u>
“A Serving GPRS Support Node (SGSN), comprising: ... wherein the data forwarding tunnel identifier of the UPE is used by the source RNC to forward data to the UPE, and the data forwarding tunnel identifier of the LTE access network is used by the UPE to forward the data received from the source RNC to the LTE access network.”	Plain meaning	Indefinite / incapable of construction.
“A Mobility Management Entity (MME), ... comprising: ... wherein the data forwarding tunnel identifier of the UPE is used by the LTE access network to forward data to the UPE, and the data forwarding tunnel identifier of the target RNC is used by the UPE to forward the data received from the LTE access network to the target RNC.”	Plain meaning	Indefinite / incapable of construction.

a) The Parties’ Positions

The parties dispute whether claims 4 and 7 of the ’627 Patent are indefinite under *IPXL Holdings, L.L.C. v. Amazon.com, Inc.*, 430 F.3d 1377 (Fed. Cir. 2005), for reciting both an

apparatus and a method of using the apparatus. Plaintiff contends that the claims specifically recite an apparatus, such as an MME or SGSN, which configures a tunnel within a network environment. (Dkt. No. 119 at 20). According to Plaintiff, the “wherein” clause at issue describes the configuration of the tunnel in greater detail by specifying what the end points are and what kind of traffic the tunnel carries. *Id.* Plaintiff contends that infringement of these claims occurs as soon as an apparatus is made or sold (or offered for sale) with the ability to configure the claimed tunnel. (*Id.* at 21).

Plaintiff further argues that the Federal Circuit cases make clear that even the use of an active verb does not turn the claim into an improper mixed method and apparatus claim. *Id.* (citing *UltimatePointer, L.L.C. v. Nintendo Co.*, 816 F.3d 816, 819 (Fed. Cir. 2016); *Microprocessor Enhancement Corp. v. Texas Instruments Inc.*, 520 F.3d 1367, 1375 (Fed. Cir. 2008); *HTC Corp. v. ICom GmbH & Co., KG*, 667 F.3d 1270, 1273 (Fed. Cir. 2012)). Plaintiff contends that the disputed claim language is similar to the active verbs used in these cases, and describes the larger network environment in which the claimed apparatus resides. (Dkt. No. 119 at 22).

Defendants argue that apparatus claims 4 and 7 of the '627 Patent recite the required structure and functionality for a SGSN or MME, but also require that two other entities to actually receive messages from the SGSN or MME, and then forward data based upon those messages. (Dkt. No. 126 at 18). According to Defendants, claims 4 and 7 recite functionality divorced from any cited structure and should be found invalid. (*Id.* at 19). Defendants argue that this is not a case where the clause describes the configuration of the tunnel in greater detail. (*Id.* at 20). Defendants contend that the clause requires that the tunnel identifier “is used” by a totally different entity “to forward data,” and requires an additional tunnel identifier “is used” by another entity “to forward the data.” *Id.* Defendants argue that the claims recite structure, but then require an action by a

totally separate entity and thus are invalid. *Id.*

Defendants also argue that the cases cited by Plaintiff do not save these claims. (Dkt. No. 126 at 21). According to Defendants, in each of those cases, the alleged action in question was required to be performed by the claimed structure itself. *Id.* Defendants argue that claims 4 and 7 plainly fall within the camp of indefinite claims like those at issue in *IPXL*, *Katz*, and *E-Watch*. (Dkt. No. 126 at 21) (citing *IPXL*, 430 F.3d at 1384; *In re Katz*, 639 F.3d 1303, 1318 (Fed. Cir. 2015); *E-Watch Inc. v. Apple, Inc.*, No. 2:13-CV-1061-JRG-RSP, 2015 WL 1387947 at *6-*7 (E.D. Tex. Mar. 25, 2015)).

Plaintiff replies that Defendants' argument that claims 4 and 7 are invalid under *IPXL* is legally flawed because the *HTC* case is squarely contradictory. (Dkt. No. 137 at 6-7) (citing *HTC Corp. v. ICom GmbH & Co., KG*, 667 F.3d 1270 (Fed. Cir. 2012)). Plaintiff argues that the claims are directed to novel MME or SGSN structures that must be used in a particular network environment. (Dkt. No. 137 at 7). Plaintiff contends that the "wherein" clause is not requiring an action be performed by the claimed MME structure, but instead is defining the network environment in which the MME is configured to operate, and in particular, the functional capability of the tunnel identifier being used. *Id.* According to Plaintiff, infringement of claim 7 can be readily determined by looking at the MME and the actions it must be capable of performing in the specified network environment. *Id.*

For the following reasons, the Court finds that claims 4 and 7 of the '627 Patent are not indefinite under *IPXL*, and that the disputed clause should be given their plain and ordinary meaning.

b) Analysis

"A single patent may include claims directed to one or more of the classes of patentable

subject matter, but no single claim may cover more than one subject matter class.” *IPXL*, 430 F.3d at 1384 (holding indefinite a claim covering both an apparatus and a method of using that apparatus). Claim 4 recites a Serving GPRS Support Node (SGSN), comprising “a receiver configured to receive” a tunnel identifier, and “a sender configured to: send” the tunnel identifiers to other network elements. Similarly, claim 7 recites a Mobility Management Entity or MME, comprising “a receiver configured to receive” a tunnel identifier, and “a sender configured to: send” the tunnel identifiers to other network elements. Defendants agree that there are no *IPXL* issues for these elements of claims 4 and 7.

Instead, Defendants argue that the “wherein” clause requires other network entities to actually receive and “use[]” the tunnel identifiers to forward data. (Dkt. No. 126 at 19). Specifically, Defendants argue that the wherein clause requires that the tunnel identifier “is used” by a different entity (a source RNC in claim 4 and a LTE access network in claim 7) “to forward data,” and that an additional tunnel identifier “is used” by another entity (the User Plan Entity (UPE)) “to forward the data.” Defendants contend that this action by a separate entity makes the apparatus claim invalid.

The Court disagrees with Defendants’ analysis. First, in all of the cases cited by Defendants, the courts found that the respective claims were invalid because they claimed both an apparatus and use of the apparatus *by a user*. See *IPXL*, 430 F.3d at 1384 (finding invalid a claim that recited structure, but then required a user using one of the structures); *In re Katz*, 639 F.3d 1303, 1318 (Fed. Cir. 2015) (finding invalid a claim reciting an “interface means” but then requiring a “caller[] digitally enter[ing] data”); *E-Watch Inc. v. Apple, Inc.*, 2015 U.S. Dist. LEXIS 37216, *26-27 (E.D. Tex. Mar. 25, 2015) (finding invalid an apparatus claim that also required “movement by the user”). Unlike the cases cited by the Defendants, the claims do not recite both

structure and use of the structure *by a user*.

Contrary to Defendants' representation, the claims of *HTC Corp. v. ICom GmbH & Co., KG*, 667 F.3d 1270 (Fed. Cir. 2012), are very similar to the disputed claims.⁷ In *HTC*, the claim recited “[a] mobile station for use with a network including a first base station and a second base station that achieves a handover from the first base station to the second base station by: *storing* link data for a link in a first base station, *holding . . .*, initially *maintaining* a storage of the link data in the first base station . . .” *HTC*, 667 F.3d at 1273 (emphasis added). The Federal Circuit found that “[t]he plain language of claims 1 and 18 indicates that *the network, not the mobile station, performs the enumerated functions*,” and that “the six functions define the network environment; they are *not functions performed by the mobile station*.” *Id.* at 1274 (emphasis added). The Court held that the claims were valid under *IPXL*, stating that “Claims 1 and 18, likewise, make clear that infringement occurs when one makes, uses, offers to sell, or sells the claimed apparatus: the mobile station—which must be used in a particular network environment.” *Id.* at 1277.

Here, the claims are directed to a MME or SGSN structure that is used in a particular network environment. For example, claim 7 is directed to a MME structure and its associated components creating a tunnel identifier. The claim further includes a wherein clause that defines the network environment in which the tunnel identifier is used: “wherein the data forwarding tunnel identifier of the UPE is used by the LTE access network to forward data to the UPE.” Like

⁷ Defendants represented to the Court that “in *HTC*, the claimed ‘mobile station’ was ‘storing’ and ‘maintaining’ link data.” (Dkt. No. 126 at 21) (citing *HTC Corp. v. ICom GmbH & Co., KG*, 667 F.3d 1270, 1273 (Fed. Cir. 2012)). This is not an accurate statement of the conclusions of the court in *HTC*. Instead, the Federal Circuit concluded that “[t]he plain language of claims 1 and 18 indicates that *the network, not the mobile station, performs the enumerated functions*,” and “the six functions define the network environment; they are *not functions performed by the mobile station*.” *Id.* at 1274 (emphasis added)

the claims in *HTC*, the “wherein” clause does not require an action to be performed by the claimed MME structure, but instead defines the network environment in which the MME is configured to operate, and in particular, the functional capability of the tunnel identifier being used. Accordingly, “Claims [4] and [7], likewise, make clear that infringement occurs when one makes, uses, offers to sell, or sells the claimed apparatus: the [Serving GPRS Support Node (SGSN) or the Mobility Management Entity (MME)]—which must be used in a particular network environment.” *HTC* at 1277.

c) Court’s Construction

The Court finds that claims 4 and 7 of the ’627 Patent are not indefinite under *IPXL*, and the disputed clauses will be given their plain and ordinary meaning.

4. The Method Steps of Claim 1 of the ’675 Patent

<u>Disputed Term</u>	<u>Plaintiff’s Proposal</u>	<u>Defendants’ Proposal</u>
Steps of the “data processing method in a handover procedure”	Plain meaning; the steps need not be performed in the order recited.	Steps must be performed in the order recited.

a) The Parties’ Positions

The parties dispute whether the steps of claim 1 of the ’675 Patent must be performed in the order recited. Plaintiff argues that nothing in the grammar of the claim explicitly or implicitly requires a particular order of the steps. (Dkt. No. 119 at 23). Plaintiff contends that it makes no difference which of the “informing” step occurs first, or whether they occur simultaneously. *Id.* Plaintiff argues that the specification provides specific examples of the first informing step being performed meanwhile or at the same time as the exchanging step is being performed. *Id.* (citing ’675 Patent at 12:61–13:33). According to Plaintiff, Defendants cannot overcome the well-established presumption that method claim steps need not be performed in order. *Id.*

Defendants respond that the plain language of claim 1 makes clear that the steps must be

performed in order. (Dkt. No. 126 at 22). Defendants argue that the Mobility Management network element cannot “inform[] . . . a source data forwarding network element of the [user plane anchor network element’s] data forwarding tunnel identifier” until the Mobility Management network element “exchang[es] messages . . . [with] a user plane anchor network element, to obtain” it. (*Id.* at 23). Defendants contend that it is only after this step can “the source data forwarding network element [forward data to the user plane anchor network element] using [that] data forwarding tunnel identifier,” and only then can that data be forwarded to the target. *Id.*

Defendants further contend that every procedure disclosed in the specification are presented as ordered steps. *Id.* (citing ’675 Patent at 2:9–3:65, 6:5–8:60, 9:65–12:56, 13:47–15:53, Figs. 3-10, 12-19). Defendant also argue that the procedures have numbered steps where nodes request and receive information and then later relay that information to other nodes. (Dkt. No. 126 at 23) (citing ’675 Patent at 2:9–3:65, 6:5–8:60, 9:65–12:56, 13:47–15:53, 6:25130, Figs. 3-10, 12-19).

Defendants further argue that the prosecution history confirms that the steps of claim 1 must be performed in order. (Dkt. No. 126 at 23). Defendants contend that claim 1 as originally filed contained only the “receiving” and “forwarding” limitations, and thus necessarily must have been in order. *Id.* Defendants argue that the first amendment added the “exchanging” step and the (now) second “informing” step to be performed in necessary order. *Id.* Defendants further argue that by the final amendment, claim 1 was amended to add the limitation of claim 3 to a specific location within the ordered steps of claim 1. (Dkt. No. 126 at 24). Defendants contend that the applicant argued that the prior art does not show the added “informing” step. *Id.* Defendants further contend that the examiner indicated that the first “informing” step was not found in the art in the reasons for allowance. *Id.* According to Defendants, the decision to place the added “informing”

step after the “exchanging” step was meaningful and the only limitation giving rise to any alleged novelty. *Id.*

Defendants also contend that ignoring the appropriate order for information transfer in a network procedure would result in failures and errors. (Dkt. No. 126 at 25). According to Defendants, standardization bodies employ a standardized tool known as Message Sequence Charts (“MSC”) for describing communication in a network and the appropriate order for each message. *Id.* (citing Dkt. No. 126-5). Defendants contend that this style of describing a method procedure is the very same manner in which the procedures of the ’675 Patent are described in Figures 3-10 and 12-19. (Dkt. No. 126 at 25).

For the following reasons, the Court finds that Steps [1], [3], [4], and [5] must occur in the order recited, but the claim does not exclude intervening steps. The Court further finds that Step [2] must occur before Step [5], but otherwise is not required to occur before or after any other recited step.

b) Analysis

“[A]lthough a method claim necessarily recites the steps of the method in a particular order, as a general rule the claim is not limited to performance of the steps in the order recited, unless the claim explicitly or implicitly requires a specific order.” *Baldwin Graphic Sys., Inc. v. Siebert, Inc.*, 512 F.3d 1338, 1345 (Fed. Cir. 2008) (citing *Interactive Gift Express, Inc. v. Compuserve Inc.*, 256 F.3d 1323, 1342–43 (Fed. Cir. 2001)). A two-part test is used to determine whether the claims require a specific order. *See Altiris, Inc. v. Symantec Corp.*, 318 F.3d 1363, 1369 (Fed. Cir. 2003). First, the Court looks to the claim language to determine if logic or grammar requires performance of the steps in the order written and, if not, the Court examines the rest of the specification to decide whether it “directly or implicitly requires such a narrow construction.”

Id. at 1370.

Here, the claim language explicitly requires a number of the steps to occur before others.

Claim 1 recites the following steps:

1. A data processing method in a handover procedure, comprising:
 - [STEP 1] exchanging** messages, between a Mobility Management network element and a user plane anchor network element, to obtain a data forwarding tunnel identifier of the user plane anchor network element;
 - [STEP 2] informing**, by the Mobility Management network element, the user plane anchor network element of a data forwarding tunnel identifier of a target side processing network element;
 - [STEP 3] informing**, by the Mobility Management network element, a source data forwarding network element of the data forwarding tunnel identifier of the user plane anchor network element;
 - [STEP 4] receiving**, by the user plane anchor network element, data forwarded by the source data forwarding network element using the data forwarding tunnel identifier of the user plane anchor network element; and
 - [STEP 5] forwarding**, by the user plane anchor network element, the data to the target side processing network element.

'675 Patent at Claim 1 (annotated and highlighted). Starting with Step 5, the recited “data” (red) cannot be forwarded by the user plane anchor network element (turquoise) to the to the target side processing network element (yellow) until “the data” is received by the user plane anchor network element (turquoise) in Step 4. Therefore, Step 4 must occur before Step 5. Similarly, the source data forwarding network element (dark green) can only send the data to the user plane anchor network element (turquoise) after it has been informed of the of the “data forwarding tunnel identifier of the user plane anchor network element” (purple) in Step 3. Therefore, Step 3 must occur before Step 4. Likewise, the Mobility Management network element (light green) can only inform the source data forwarding network element (dark green) of the data forwarding tunnel identifier of the user plane anchor network element (purple) after the Mobility Management

network element (light green) obtains a data forwarding tunnel identifier of the user plane anchor network element (purple) in Step 1. Therefore, Step 1 must occur before Step 3.

Regarding Step 2, the claim language only requires that it occur before Step 5, because the user plane anchor network element (turquoise) can only forward the data (red) to the target side processing network element (yellow) after it has been informed of the “data forwarding tunnel identifier” (grey) of the target side processing network element (yellow) in Step 2. Therefore, Step 2 must occur before Step 5. Likewise, the user plane anchor network element (turquoise) in Step 2 must be the same the user plane anchor network element (turquoise) in each Step 5. However, neither logic nor grammar require the steps to occur in any other order.

Defendants argue that the “Mobility Management network element cannot ‘inform[] . . . a source data forwarding network element of the [user plane anchor network element’s] data forwarding tunnel identifier’ until the Mobility Management network element ‘exchang[es] messages . . . [with] a user plane anchor network element, to obtain’ it.” (Dkt. No. 126 at 22). As indicated above, the Court agrees that Step 1 must occur before Step 3, and that Step 4 and Step 5 must follow sequentially. *See Mantech Envtl. Corp. v. Hudson Envtl. Servs.*, 152 F.3d 1368, 1375-76 (Fed. Cir. 1998) (“[T]he sequential nature of the claim steps is apparent from the plain meaning of the claim language and nothing in the written description suggest otherwise.”).

Defendants also argue that the prior art and embodiments of the invention, are presented as ordered steps. (Dkt. No. 126 at 23). The Court agrees with Defendants to the extent that Defendants’ argument does not contradict the ordering required by the claim language itself. Defendants further argue that the prosecution history also confirms that the steps of claim 1 must be performed in order. (Dkt. No. 126 at 23). Claim 1 as originally filed contained only the “receiving” step (Step 4) and “forwarding” step (Step 5). The first amendment to the claim added

the “exchanging” step (Step 1) and the second “informing” step (Step 3). (Dkt. No. 126-3 at 3). Claim 1 was then amended to add the limitation of dependent claim 3 within the ordered steps of independent claim 1. (126-15 at 9). However, the patentee did not clearly and unmistakably argue that the recited order distinguished the claim from the prior art. Instead, the patentee argued that the prior art does not teach or suggest each and every element of claim 1. (Dkt. No. 126-15 at 6) (“[I]t is respectfully submitted that Shaheen does not teach or suggest each and every element of independent claim 1”). Contrary to Defendants’ suggestion, arguing that the prior art does not include an element does not “implicitly affirm” that the steps must be performed in the recited order.

Defendants also contend that the standardization bodies employ a standardized tool known as Message Sequence Charts (“MSC”) for describing communication in a network and the appropriate order for each message. (Dkt. No. 126 at 25). Defendants argue that this style of describing a method procedure is the same one used to describe the procedures in Figures 3-10 and 12-19. *Id.* The Court agrees with Defendants to the extent that Defendants’ argument does not contradict the ordering required by the claim language itself. Moreover, the Court notes that the specification discloses at least one alternative data processing method. ’627 Patent at 4:55–67 (“With the data processing methods in the direct-tunnel mechanism when a handover or change between a GERAN and a UTRAN takes place, a GGSN can buffer data forwarded by a source data forwarding network element and then send the data to a target side processing network element; *alternatively*, the GGSN can send the data forwarded by the source data forwarding network element directly to the target side processing network element.”) (emphasis added). Thus, the intrinsic evidence explicitly indicates that a strict ordering of steps to one disclosed embodiment would be improper. Finally, in reaching its conclusion, the Court has considered the

extrinsic evidence submitted by the parties, and given it its proper weight in light of the intrinsic evidence.

c) Court’s Construction

Steps [1], [3], [4], and [5] of claim 1 of the ’675 Patent must occur in the order recited, but the claim does not exclude intervening steps. Step [2] must occur before Step [5], but otherwise is not required to occur before or after any other recited step.

5. The “Informing” Step of Claim 1 and the “Inform” Phrase in Claim 6 of the ’675 Patent

<u>Disputed Term</u>	<u>Plaintiff’s Proposal</u>	<u>Defendants’ Proposal</u>
“informing, by the Mobility Management network element, the user plane anchor network element of a data forwarding tunnel identifier of a target side processing network element” / “inform the user plane anchor network element of a data forwarding tunnel identifier of the target side processing network element”	Plain meaning.	“independently of the exchanging messages step, informing, by the Mobility Management network element, the user plane anchor network element of a data forwarding tunnel identifier of a target side processing network element” / “independently of the exchange messages step, inform the user plane anchor network element of a data forwarding tunnel identifier of the target side processing network element”

a) The Parties’ Positions

The parties dispute whether claims 1 and 6 of the ’675 Patent require the additional language of “independently of the exchanging messages step,” as Defendants propose. Plaintiff argues that the specification provides specific examples of the informing step being performed meanwhile, or at the same time as, the exchanging step is being performed. (Dkt. No. 119 at 24) (citing ’675 Patent at 12:61–13:33, 10:13–22). Plaintiff contends that there is no requirement that method steps be performed in any particular order, or that they cannot be performed together. (Dkt.

No. 119 at 25). Plaintiff further argues that claim 6 does not have an “exchange messages step” anywhere within its body, or does not have any steps within its body at all. *Id.* According to Plaintiff, there is no order to performing because performance is not required for infringement of an apparatus claim. *Id.*

Defendants respond that their construction clarifies that the “informing” step may not be subsumed within the “exchanging” step. (Dkt. No. 126 at 26). Defendants contend that in addition to the required order, claims 1 and 6 also recite separate and independent steps of “exchanging messages” and “informing.” *Id.* Defendants argue that the “exchanging messages” step is separated and distinguished from the “informing” step by a line indentation. *Id.* Defendants further argue that every instance in the specification that Plaintiff points to identifies these steps separately. (*Id.* at 27) (citing ’675 Patent at 12:61–13:1). According to Defendants, this demonstrates that the step of “the MME and the UPE exchange messages” is separate and distinct from the step of “[m]eanwhile the MME informs the UPE of a tunnel identifier of the [target] access network side.” (Dkt. No. 126 at 27).

Finally, Defendants argue that their construction is appropriate given the claim amendments made during prosecution. *Id.* Defendants contend that the “informing” step was added to distinguish the claim from the cited art. *Id.* Defendants further contend that this step was the only limitation cited by the examiner in the reasons for allowance. *Id.*

Plaintiff replies that there is nothing “improper” as a matter of claim construction about allowing two method steps to be performed at the same time. (Dkt. No. 137 at 8). Plaintiff argues that the portion of the specification highlighted by Defendants refute its argument. *Id.* According to Plaintiff, the word “meanwhile” means “at the same time” and directly contradicts Defendants’ construction. *Id.* (citing <http://www.dictionary.com/browse/meanwhile>). Plaintiff further argues

that adopting Defendants’ construction would read out embodiments where the two claimed steps occur at the same time. (Dkt. No. 137 at 8) (citing ’675 Patent at 10:12–26, Figures 12, 13, 14, and 15). Finally, Plaintiff argues that Defendants wrongly suggest that the informing steps must be independent because they were added during prosecution. (Dkt. No. 137 at 9). According to Plaintiff, both “exchanging messages” and “informing ... of a data forwarding tunnel identifier” must be performed by the infringing system, but can occur at the same or different time. *Id.*

For the following reasons, the Court finds that the phrase **“informing, by the Mobility Management network element, the user plane anchor network element of a data forwarding tunnel identifier of a target side processing network element”** in claim 1 of the ’675 Patent, and the phrase **“inform the user plane anchor network element of a data forwarding tunnel identifier of the target side processing network element”** in claim 6 of the ’675 Patent should be given their **plain and ordinary meaning**.

b) Analysis

The phrase “informing, by the Mobility Management network element, the user plane anchor network element of a data forwarding tunnel identifier of a target side processing network element” appears in claim 1 of the ’675 Patent. The phrase “inform the user plane anchor network element of a data forwarding tunnel identifier of the target side processing network element” appears in claim 6 of the ’675 Patent. The Court finds that Defendants’ construction should be rejected because it is inconsistent with the intrinsic evidence. The exchanging step of claim 1 recites that the Mobility Management network element and the user plane anchor network element exchange messages to obtain a data forwarding tunnel identifier of the user plane anchor network element. The informing step of claim 1 further requires the Mobility Management network element to inform the user plane anchor network element of a data forwarding tunnel identifier of a target

side processing network element. Thus, the exchanging step and informing step explicitly recite the scope of the claims without requiring the step to be performed “independently,” as Defendants propose. As discussed above, the only requirement is that STEPS 1, 3, 4, and 5 are performed in the recited order, and that STEP 2 is performed before STEP 5. Defendants’ construction would improperly add an unwarranted limitation to the ordering of the claims by requiring STEP 1 and STEP 2 to be performed “independently.”

Moreover, the specification provides examples that are inconsistent with Defendants’ construction. For example, the specification states that that “the MME and the UPE exchange messages” and “[m]eanwhile the MME informs the UPE of a tunnel identifier of the access network side.” ’675 Patent at 12:61–66. Similar to the claim language, this indicates that the informing step may be performed at the same time (*i.e.*, meanwhile) as the exchanging step. Defendants argue that “meanwhile” should be interpreted to mean “separate and distinct.” The Court disagrees.

Defendants also argue that the informing step was added during prosecution, and thus is required to occur independently (*i.e.*, separately and distinctly from) the “exchanging messages” step. (Dkt. No. 126 at 27). As discussed above, the patentee did not clearly and unmistakably argue that the amendments require the steps to be performed independently. Instead, the patentee argued that the prior art does not teach or suggest each and every element of claim 1. (Dkt. No. 126-15 at 6) (“[I]t is respectfully submitted that Shaheen does not teach or suggest each and every element of independent claim 1”). Contrary to Defendants’ suggestion, arguing that the prior art does not include an element does not mean that an “independent” or “separate and distinct” requirement should be read into the claims. As indicated above, the claim language explicitly recites the requirements of each step. Moreover, there is nothing improper with allowing two method steps

to be performed at the same time. Finally, in reaching its conclusion, the Court has considered the extrinsic evidence submitted by the parties, and given it its proper weight in light of the intrinsic evidence.

c) Court’s Construction

The phrase **“informing, by the Mobility Management network element, the user plane anchor network element of a data forwarding tunnel identifier of a target side processing network element”** in claim 1 of the ’675 Patent, and the phrase **“inform the user plane anchor network element of a data forwarding tunnel identifier of the target side processing network element”** in claim 6 of the ’675 Patent will be given their **plain and ordinary meaning**.

6. “target side processing network element”

<u>Disputed Term</u>	<u>Plaintiff’s Proposal</u>	<u>Defendants’ Proposal</u>
“target side processing network element”	Plain meaning.	“a processing network element of a different Radio Access Network than the source data forwarding network element”

a) The Parties’ Positions

The parties dispute whether the source and targeting networking element are from “a different Radio Access Network,” as Defendants propose. Plaintiff argues that nothing in the specification or claim language rises to level of a disavowal sufficient to support Defendants’ construction. (Dkt. No. 119 at 26). Plaintiff contends that the system and method of the ’675 Patent are directed to the operations needed to accomplish handovers as a mobile phone moves between the coverage areas of cell towers. *Id.* Plaintiff argues that by limiting the claim to handovers where two “different Radio Access Networks” are required, Defendants are trying to improperly limit the claim to particular embodiments. (*Id.* at 27). Plaintiff further contends that there is no issue of lexicography. *Id.* According to Plaintiff, without any basis to allege the “exacting” standard needed

to show a disavowal under *GE Lighting*, the claims should simply be given their plain meaning. *Id.* (citing *GE Lighting Sols., LLC v. AgiLight, Inc.*, 750 F.3d 1304, 1309 (Fed. Cir. 2014)). Plaintiff contends that this claim element is easily understood by a person of ordinary skill in the art, and should not be unduly restricted. *Id.*

Defendants respond that a handover can occur intra-RAN within a specific Radio Access Network (or RAN), for example moving from one 4G cell to another 4G cell, or can occur inter-RAN between different RANs, for example moving from a 4G cell to a 3G cell. (Dkt. No. 126 at 27). Defendants argue that the claims and specification leave no doubt that the purported invention relates to inter-RAN handover or changes. (*Id.* at 28). Defendants contend that the “target side” node always refers to an element of a different RAN than the source element. (*Id.*) (citing ’675 Patent at 2:9–3:65, 6:5–8:60, 9:65–12:56, 13:47–15:53). Defendants further argue that the claims and specification are directed to purportedly solving a problem unique to inter-RAN handovers, such that “target side” must connote a different RAN. (Dkt. No. 126 at 28).

Defendants also contend that the specification explicitly explains that the purported problem was handover from one RAN to a different RAN, where one of those networks implemented direct tunnel (*e.g.*, 3G) and one did not (*e.g.*, 2G). (*Id.* at 29). Defendants argue that the specification describes the purported solution to this inter-RAN problem in the context of “a handover or change between a 2G system and a 3G system takes place.” *Id.* (citing ’675 Patent at 4:15–19, 4:56–61). Defendants contend that the Detailed Description section goes on to explain three overarching embodiments for these inter-RAN handovers or changes, and for each provides four examples with figures. (Dkt. No. 126 at 30) (citing ’675 Patent at 5:61–8:60 and Figs. 7-10 (first embodiment); 9:65–12:56 and Figs. 12-15 (second embodiment); 13:34–15:53 and Figs. 16-19 (third embodiment)). Defendants further argue that Plaintiff does not cite to anything in the

specification that provides even a hint that the invention relates to intra-RAN (*e.g.*, 4G to 4G) handovers. (Dkt. No. 126 at 30). According to Defendants, the entirety of the specification is directed toward a specific problem involving inter-RAN handover and a solution unique to that problem. (*Id.* at 31).

Plaintiff replies that Defendants argue without support that the word “side” in “target side” must refer to a different RAN. (Dkt. No. 137 at 9). Plaintiff argues that there is no reason why a handover from a 4G network region served by one MME to a second 4G network region would not consider each region a “side” of the handover. (*Id.* at 10). Plaintiff contends that Defendants provide no evidence supporting that each “side” of a handover is synonymous with a different RAN. *Id.* According to Plaintiff, Defendants primarily argue that the claims should be limited to embodiments disclosed in the specification. *Id.*

Plaintiff also argues that Defendants’ construction is wrong because it would preclude the embodiments and dependent claims where a 2G SGSN is the “target side processing network element” since it is actually an element of the core network, not a radio access network. (Dkt. No. 137 at 10). Plaintiff also contends that Defendants’ construction is internally inconsistent because it limits handovers from a 2G network to either a 3G or a 4G network. (*Id.* at 11). Plaintiff argues that Defendants concede inter-RAN includes 3G to 4G. *Id.*

For the following reasons, the Court finds that the term “**target side processing network element**” should be given its **plain and ordinary meaning**.

b) Analysis

The term “target side processing network element” appears in claims 1 and 6 of the ’675 Patent. The Court finds that the term is used consistently in the claims and is intended to have the same general meaning in each claim. The Court further finds that the claims are not limited to the

inter-RAN handovers disclosed in the specification. Defendants argue that Plaintiff omits the word “side” from the term “target side processing network element.” According to Defendants, if both cells are of the same RAN, there cannot be a target “side.” (Dkt. No. 126 at 28). Defendants only support for this argument is that the specification always refers to the “target side” node as an element of a different RAN than the source element. *Id.* Although Defendants accurately describe the embodiments in the specification, the Court finds that Defendants’ construction improperly limits the claims to the disclosed embodiments. *Unwired Planet, LLC v. Apple Inc.*, 829 F.3d 1353, 1359 (Fed. Cir. 2016) (“[W]e have repeatedly held that it is ‘not enough that the only embodiments, or all of the embodiments, contain a particular limitation’ to limit claims beyond their plain meaning.”) (quoting *Thorner v. Sony Computer Entm't Am. LLC*, 669 F.3d 1362, 1366–67 (Fed. Cir. 2012)).

The system and method of the '675 Patent are directed to the operations needed to accomplish handovers as a mobile phone moves between the coverage areas of cell towers (*i.e.*, handovers from 4G to 3G networks, 4G to 2G networks, 3G to 4G networks, 2G to 4G networks, and intra-4G). These network types are referred to as “radio access networks.” For example, a 3G network is referred to as a “UMTS Territorial Radio Access Network (UTRAN),” a 2G network is referred to as a “GSM/EDGE Radio Access Network (GERAN),” and a 4G network is referred to as an “Evolved UMTS Terrestrial Radio Access Networks (E-UTRAN).” '675 Patent at 1:20-25, 8:61-65. Defendants are correct that the only handovers disclosed in the specification are inter-RAN handovers.

However, in *Unwired Planet*, the Federal Circuit stated that “[c]laim terms are generally given their ordinary and customary meaning as understood by a person of ordinary skill in the art when read in the context of the specification and prosecution history. We have recognized ‘only

two exceptions to this general rule: 1) when a patentee sets out a definition and acts as his own lexicographer, or 2) when the patentee disavows the full scope of a claim term either in the specification or during prosecution.” *Unwired Planet*, 829 F.3d 1358 (citations omitted). Defendants have not argued disavowal or provided persuasive evidence that each “side” of a handover is synonymous with a different RAN. Moreover, the dependent claims further limit the scope of the claims to specific 2G, 3G, and 4G network elements. *See* ’675 Patent at Claims 2-6 and 7-10. Accordingly, the Court is not persuaded by Defendants’ argument.

Defendants also contend that the background of the invention describes a problem that arose when 3GPP implemented a “direct tunnel” solution within 3G, but not within 2G. Specifically, Defendants argue that “the Summary of the Invention states that “[a] data processing method and system are *provided by the present invention*, in order to implement data forwarding in a direct-tunnel mechanism *when a handover or change between a 2G system and a 3G system takes place.*” (Dkt. No. 126 at 29) (citing ’675 Patent at 4:15–19). The problem with Defendants’ “present invention” argument is that it would limit the claims to handovers from a 2G to a 3G system. Defendants concede that inter-RAN includes 3G to 4G by stating that a handover “can occur inter-RAN between different RANs, for example moving from a 4G cell to a 3G cell.” (Dkt. No. 126 at 27). Moreover, Defendants cite portions of the specification discussing 3G to 4G handovers. (*Id.* at 30) (citing ’675 Patent at 9:20–23). Therefore, Defendants’ “present invention” argument is inconsistent with the intrinsic evidence. Finally, in reaching its conclusion, the Court has considered the extrinsic evidence submitted by the parties, and given it its proper weight in light of the intrinsic evidence.

e) Court’s Construction

The term “**target side processing network element**” will be given its **plain and ordinary**

meaning.

7. The “Empty” Address Terms

<u>Disputed Term</u>	<u>Plaintiff’s Proposal</u>	<u>Defendants’ Proposal</u>
“The method according to claim 3, wherein the address information is empty”	“The method according to claim 3, wherein the OCS address is not provided by the CRF”	Indefinite / incapable of construction.
“The method according to claim 8, wherein the address information of the OFCS is empty”	“The method according to claim 8, wherein the OFCS address is not provided by the CRF”	Indefinite / incapable of construction.

a) The Parties’ Positions

The parties dispute whether dependent claims 5 and 11 contradict independent claim 1 by requiring that the address information “is not provided.” Plaintiff argues that independent claim 1 recites an address for one of the charging systems to be communicated from the “CRF” to the “TPF,” and dependent claims 5 and 11 refer to “empty” OCS and OFCS addresses. (Dkt. No. 119 at 28). According to Plaintiff, when a dependent claim refers to “empty” address information for a particular charging system, it means the CRF does not provide the address for that system, and can send the TPF the “address information” for another charging system. (*Id.* at 29). Plaintiff contends that this is when the TPF is able to use a pre-configured address for that particular system. *Id.* (citing ’575 Patent at 9:41–46). Plaintiff also contends that when the CRF provides “empty” address information that means that the address information is not provided, and thus the TPF sends the charging data information of the UE to the pre-configured OCS or OFCS. (Dkt. No. 119 at 29). Plaintiff further argues that construction is necessary to clarify the terms for the jury in order to explain what “empty” address information means. *Id.* Plaintiff contends that it has shown that the claims are amenable to construction and are not indefinite. *Id.* (citing *Aero Prod. Int’l, Inc. v. Intex Recreation Corp.*, 466 F.3d 1000, 1016 (Fed. Cir. 2006)).

Defendants respond that independent claim 1 requires that a “CRF provid[es] a [TPF] with . . . address information.” (Dkt. No. 126 at 32). Defendants argue that if the “address information is empty,” as in dependent claims 5 and 11, then there is nothing for the CRF to provide. *Id.* According to Defendants, it is impossible to read claim 5 or 11 as narrower than claim 1, because a CRF cannot simultaneously “provide” and “not provide” an address. *Id.* Defendants further argue that the contradiction between claims 5 and 11, and independent claim 1 is particularly significant because it pierces the heart of the claim. (*Id.* at 33). Defendants argue that the alleged novelty over prior art was the provisioning of address information. *Id.* (citing Fig. 3A and 5). Defendants contend that Figures 3A and 5 disclose a procedure in which a TPF requests charging rules from a CRF (Step 302A/502); a CRF determines the appropriate charging rules (Step 303A/503); and the CRF provides charging rules to the TPF (Step 304A/504). *Id.* According to Defendants, the figures are essentially identical but for the asserted novelty in Step 504 of Figure 5 (*i.e.*, the provisioning of address information). *Id.*

Plaintiff replies that there are two broad types of charging systems, online (OCS) and offline (OFCS), and within a single type there may be primary and secondary instances with different addresses. (Dkt. No. 137 at 11) (citing ’575 Patent at 9:29–34). According to Plaintiff, providing either type of addresses is plainly considered by the independent claim’s language. (Dkt. No. 137 at 11). Plaintiff argues that the two dependent claims each covers a scenario where the address of one type of charging system is not sent. *Id.* Plaintiff contends that in certain situations, the address of a particular charging system may be empty (*i.e.*, not provided), and thus a pre-configured address may be used in its place. *Id.* (citing ’575 Patent at 9:41–46). Plaintiff argues that in these dependent claims, one of the addresses (either OFCS or OCS) is provided, and another address is not in lieu of a pre-configured address. (Dkt. No. 137 at 11).

For the following reasons, the Court finds that claims 5 and 11 of the '575 Patent are indefinite for failing to comply with 35 U.S.C. § 112, ¶ 4.⁸

b) Analysis

The Court finds that dependent claims 5 and 11 contradict independent claim 1, and thus are indefinite for failing to comply with 35 U.S.C. § 112, ¶ 4. *Multilayer Stretch Cling Film Holdings, Inc. v. Berry Plastics Corp.*, 831 F.3d 1350, 1362 (Fed. Cir. 2016) (citing, inter alia, 35 U.S.C. § 112(d)) (“A dependent claim that contradicts, rather than narrows, the claim from which it depends is invalid.”); *see also Pfizer, Inc. v. Ranbaxy Labs. Ltd.*, 457 F.3d 1284, 1291-92 (Fed. Cir. 2006) (holding a claim invalid under pre-AIA 35 U.S.C. § 112 ¶ 4 for claiming subject matter that was “non-overlapping” with the claim from which it depended).

The Court agrees that dependent claims 5 and 11 are directed to the scenario where the address information is empty. The Court also agrees that “empty” means that the address is not provided. However, the “empty” address scenario of dependent claims 5 and 11 directly contradicts independent claim 1. Claim 1 recites “CRF *providing* a [TPF] with . . . address information of a charging system.” ('575 Patent at Claim 1) (emphasis added). Dependent claims 5 and 11 further require “the address information” to be “empty” or “not provided.” If the “address information is *empty*,” then the CRF has not provided the address information to the TPF as required by claim 1. Indeed, the specification states that “when the CRF *does not provide the TPF with an OCS address*, in other words, when the OS address provided by the CRF for the TPF is *empty*, the TPF sends a Credit Request to the pre-configured OCS to establish a credit request session with the set OCS.” '575 Patent at 9:42–46 (emphasis added). Therefore, the dependent

⁸ Because the application resulting in the '575 Patent was filed before September 16, 2012, the effective date of the America Invents Act (“AIA”), the Court refers to the pre-AIA version of § 112.

claims are nonsensical by requiring the provided address information to not be provided.

Plaintiff's contention is also inconsistent with arguments made during prosecution. In distinguishing the 3GPP reference, the patentees argued as follows:

However, section 5.2 nowhere speaks to online charging systems (OCSs) or offline charging systems (OFCSs), and in particular, does not speak to how TPFs are provided with the address information of associated charging systems. More particularly, and in sharp contrast to Applicants' method as claimed in amended independent claim 1, section 5.2 of 3GPP does not teach or suggest that a Charging Rules Function (CRF) determines a charging method and charging rules in response to a service request or other trigger event, and then providing a Traffic Plane Function (TPF) with the charging rules together with address information of a charging system."

(Dkt. No. 126-7 at 8-9) (emphasis in original). The patentees argued that the amended claims "more clearly highlight that the *Charging Rules Function (CRF) provides the Traffic Plane Function (TPF) both* with charging rules according to an identified charging method *and address information* of a charging system for applying the charging rules occurs dynamically (i.e., in response to a service request or other trigger event)." (*Id.* at 7) (emphasis added). As argued by the patentees, these amendments were "to further clarify the nature of their invention." (126-7 at 8). Accordingly, dependent claims 5 and 11 not only make the claims nonsensical, but would also remove the limitation of the CRF providing address information for at least one charging system to the TPF.

Plaintiff contends that the two dependent claims each cover a scenario where the address of one type of charging system is not sent. (Dkt. No. 137 at 11). Plaintiff argues that one address (either OFCS or OCS) could be provided, and a second address would not be provided in lieu of a pre-configured address. *Id.* Although Plaintiff's argument is plausible for independent claim 1, it ignores the antecedent basis provided for the term "address information" in the dependent claims. Claim 1 recites that a "CRF provid[es] a [TPF] with . . . address information of a charging system." Dependent claim 3 further recites that "after the CRF provid[es] the TPF with the address

information, . . . the TPF request[s] the credit information from the OCS according to the address information.” Thus, “the address information” in dependent claim 5 is the address provided by the CRF in independent claim 1, and used by the TPR in dependent claim 3. Claim 5 contradicts the claim language of claims 1 and 3 by reciting that the “address information” provided by the CRF was in fact not provided by the CRF. Accordingly, the Court rejects Plaintiff’s argument and finds that dependent claims 5 and 11 are indefinite for failing to comply with 35 U.S.C. § 112, ¶ 4.

c) Court’s Construction

Dependent claims 5 and 11 of ’575 Patent are indefinite for failing to comply with 35 U.S.C. § 112, ¶ 4.

8. “Determining a Charging Method”

<u>Disputed Term</u>	<u>Plaintiff’s Proposal</u>	<u>Defendants’ Proposal</u>
“determining a charging method”/ “determine a charging method”	Plain meaning.	“determining whether the charging method is online charging or offline charging”

a) The Parties’ Positions

The parties dispute whether “determining” requires the CRF to decide from among multiple charging methods, as Defendants propose. Plaintiff contends that Defendants’ proposal mirrors the claim language and would not be helpful to the factfinder. (Dkt. No. 119 at 30). Plaintiff argues that there is no basis to require additional words to be added to these understandable elements. *Id.*

Defendants respond that the intrinsic record strongly supports the conclusion that “determining a charging method” refers to a decision between the two charging systems. (Dkt. No. 126 at 35). Defendants agree that during prosecution of the ’575 Patent, the patentees amended independent claims 1 and 16 to add the “determining a charging method” and “determine a charging method” steps. *Id.* (citing Dkt. No. 126-7 at 2). Defendants further argue that the patentee

cited portions of the specification that disclosed determining a charging method. (Dkt. No. 126 at 35) (citing Dkt. No. 126-7 at 7). Defendants contend that a “determination *result*” must mean that the CRF has made a choice. (Dkt. No. 126 at 35) (citing ’575 Patent, at 10:54–64). According to Defendants, “determining a charging method” refers to a decision between two possible charging methods. (Dkt. No. 126 at 35).

Defendants also contend that a construction is required because that parties have raised a dispute regarding the proper scope of the claims. (*Id.* at 36) (citing *O2 Micro Int’l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1360 (Fed. Cir. 2008)). Defendants argue that “plain meaning” is not enough, and without guidance from the Court, a jury could not determine what the term “charging method” means. (Dkt. No. 126 at 36). Defendants contend that it is necessary to construe the limitation to resolve whether the patent covers a situation where a CRF can only ever charge data to an online charging system. (*Id.* at 37).

For the following reasons, the Court finds that the phrase “**determining a charging method**” and the phrase “**determine a charging method**” should be construed to mean “**determining whether the charging method is online charging or offline charging.**”

b) Analysis

The phrase “determining a charging method” appears in claim 1 of the ’575 Patent. The phrase “determine a charging method” appears in claim 16 of the ’575 Patent. The Court finds that the phrases are used consistently in the claims and is intended to have the same general meaning in each claim. The Court further finds that the phrase “determining a charging method” means “determining whether the charging method is online charging or offline charging.” The intrinsic evidence indicates that the existing 3GPP standard at the time of the invention disclosed that subscribers could be charged and billed to an online or offline charging system. ’575 Patent at

3:27–54, Figures 2A and 2B.

The intrinsic evidence further indicates that it was these two systems that determine whether the charging method is online charging or offline charging. For example, the specification states that “[a]fter determining that the charging method for a certain data flow service is online charging . . .” ’575 Patent at 8:43–44, *see also* 8:52–53 (“Likewise, after determining that the charging method for a certain data flow service is offline charging”). Similarly, the specification states “upon receiving the Charging Rules Request, the CRF firstly determines that the charging method of the current packet data service is online charging” ’575 Patent at 10:11–14, *see also* 11:8–9 (“[T]he CRF determines the charging method of the current packet data service as the online charging method”). These examples indicate that “determining” means “determining whether the charging method is online charging or offline charging.” This is further confirmed by the prosecution history.

During prosecution of the ’575 Patent, the patentees amended independent claim 1 to add the “determining a charging method” step, and amended independent claim 16 to add the “determine a charging method” step. In support of the amendments, the patentees cited to the portions of the specification discussed above and distinguished the 3GPP reference as follows:

However, section 5.2 nowhere speaks to online charging systems (OCSs) or offline charging systems (OFCSs), and in particular, does not speak to how TPFs are provided with the address information of associated charging svstems. More particularly, and in sharp contrast to Applicants’ method as claimed in amended independent claim 1, section 5.2 of 3GPP does not teach or suggest that a Charging Rules Function (CRF) determines a charging method and charging rules in response to a service request or other trigger event, and then providing a Traffic Plane Function (TPF) with the charging rules together with address information of a charging system.”

(Dkt. No. 126-7 at 8-9) (emphasis in original). The patentees further argued that the amended claims “more clearly highlight that the *Charging Rules Function (CRF) provides the Traffic Plane Function (TPF) both* with charging rules according to an identified charging method *and address*

information of a charging system for applying the charging rules occurs dynamically (i.e., in response to a service request or other trigger event).” (*Id.* at 7) (emphasis added). As argued by the patentees, the prior art did not teach determining a charging method, and did not “speak to online charging systems (OCSs) or offline charging systems (OFCSs).” (Dkt. No. 126-7 at 9). Accordingly, a person of ordinary skill in the art would understand that “determining” means “determining whether the charging method is online charging or offline charging.” Indeed, the specification states that “the offline charging implementation procedure . . . is quite similar to the corresponding online charging implementation procedure, *with such differences as the determination result by the CRF on the charging method* of the current packet data service being the offline charging method,” ’575 Patent at 10:54–64 (emphasis added).

Plaintiff argues that “[t]here is no real debate as to what this claim element refers to, nor is it unclear what the simple words of the claim mean.” (Dkt. No. 119 at 30). However, “[w]hen the parties raise an actual dispute regarding the proper scope of [the] claims, the court, not the jury, must resolve that dispute.” *O2 Micro*, 521 F.3d at 1360. Accordingly, the Court provides a construction regarding the proper scope of these claims. Finally, in reaching its conclusion, the Court has considered the extrinsic evidence submitted by the parties, and given it its proper weight in light of the intrinsic evidence.

c) Court’s Construction

The Court construes the phrase “**determining a charging method**” and the phrase “**determine a charging method**” to mean “**determining whether the charging method is online charging or offline charging.**”

V. CONCLUSION

The Court adopts the constructions above for the disputed and agreed terms of the Asserted

Patents. Furthermore, the parties should ensure that all testimony that relates to the terms addressed in this Order is constrained by the Court's reasoning. However, in the presence of the jury the parties should not expressly or implicitly refer to each other's claim construction positions and should not expressly refer to any portion of this Order that is not an actual construction adopted by the Court. The references to the claim construction process should be limited to informing the jury of the constructions adopted by the Court.

SIGNED this 17th day of May, 2017.


ROY S. PAYNE
UNITED STATES MAGISTRATE JUDGE