UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

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| CORE WIRELESS LICENSING S.A.R.L.,<br>Plaintiff,<br>v.<br>APPLE INC,<br>Defendant. | Case No. 15-cv-05008-PSG<br>**CLAIM CONSTRUCTION ORDER**<br>**(Re: Docket No. 193)** |

Plaintiff Core Wireless Licensing, S.a.r.l. alleges that Defendant Apple Inc. infringes U.S. Patent Nos. 6,477,151, 6,633,536 and 7,782,818. On April 18, 2016, the parties appeared for a hearing to resolve a total of ten claim construction disputes.[1] The court issued a summary construction order later that day and explained that it would later issue a more complete order setting out the court's full reasoning and analysis.[2] The court now does just that.

## I.

All three of the patents at issue relate to wireless communication systems and cellular networks. Each was filed in the late 1990s or early 2000s and initially assigned to Nokia Corporation or a related entity.[3] Before transferring the patents in suit, along with several thousand others, to Core Wireless, Nokia designated all of them essential to implementing a variety of wireless communication standards.[4]

[1] *See* Docket No. 206.

[2] *See* Docket No. 207.

[3] *See* Docket No. 202-1 at 1; Docket No. 202-3 at 1; Docket No. 202-6 at 1.

[4] *See* Docket No. 109 at ¶¶ 15-19.

The '151 patent was filed on November 10, 1998 and issued on November 5, 2002.[5] It discloses "[a] method of synchronising radio signal transmission slots at a mobile station to radio signal reception slots at a base station subsystem to account for a propagation delay between the mobile station and the base station subsystem."[6] Cellular telephone networks contain fixed base station subsystems and portable mobile stations—i.e., cell phones or other mobile devices.[7] Because base station subsystems can only receive data from one mobile station at a time on a particular frequency band, base station subsystems in modern cellular networks dynamically allocate time slots for each mobile station based on the latter's data transmission needs.[8]

To account for propagation delay—the time it takes for transmissions to reach the base station subsystem from the mobile station—the mobile station transmits data to the base station subsystem some amount of time before the time slot allocated to the mobile station, so that the data transmission arrives at the base station subsystem at the correct time.[9] That amount of time, which is recalculated regularly to compensate for the mobile station's movement, is called a timing advance value, or TAV,[10] as depicted in Figure 3 of the '151 patent:

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[5] *See* Docket No. 202-1 at 1. The patent was assigned to Nokia Mobile Phones Ltd. *See id.*

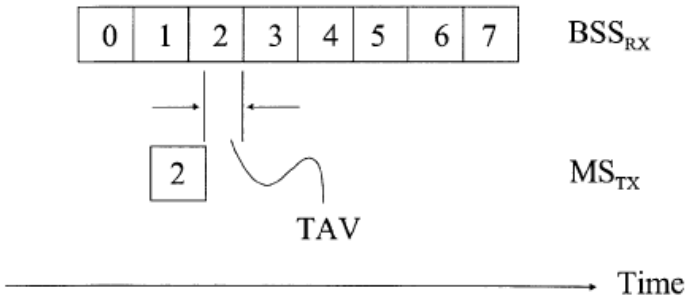
[6] *Id.*

[7] *See id.* at fig. 2.

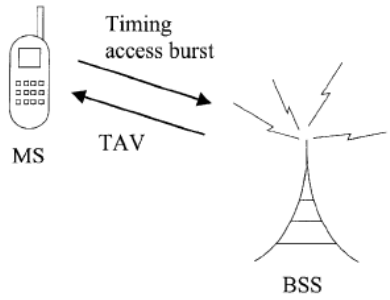
[8] *See id.* at col. 1 ll. 26-37. For example, in the GPRS protocol, "a given frequency band is divided in the time domain into multi-frames, each multi-frame consisting in turn of 52 TDMA (Time Division Multiple Access) frames," where each frame is 4.615 milliseconds long and is itself "divided into eight consecutive slots of equal duration." *Id.* at col. 1, ll. 42-47.

[9] *See id.* at col. 2 ll. 21-28.

[10] *See id.* at col. 2 ll. 21-31.




To establish a TAV, each mobile station periodically sends a "timing access burst" to the base station subsystem.[11] The base station subsystem then calculates a TAV for each channel allocated to the mobile station and transmits updated TAVs periodically to all mobile stations,[12] as depicted in Figure 4 of the '151 patent:




A TAV is required not only for uplink channels—meaning data transmission channels for sending information from the mobile station to the base station subsystem—but also for downlink channels, because even on downlink channels "certain signalling data (e.g. acknowledgements) is going in the reverse direction (i.e. the uplink direction)."[13] The '151 patent teaches sharing the same TAV between both the uplink and downlink channels.[14] By decreasing the number of data slots that must be devoted to transmitting timing advance information, the invention increases the

[11] *Id.* at col. 2 ll. 39-45.

[12] *See id.* at col. 2 ll. 45-48; *id.* at col. 2 l.66-col. 3 l.50.

[13] *Id.* at col. 2 ll. 32-38.

[14] *See id.* at col. 3 ll. 64-66.

number of mobile stations that can use the same time slot for transmitting that information.[15]

Accordingly, Claims 13 and 14 of the '151 patent read:

> 13. A mobile station for use in a radio telephone network, the radio telephone network comprising a base station subsystem and a plurality of mobile stations for communicating with the base station subsystem and in which radio signal transmission slots at a mobile station are synchronised to radio signal reception slots at the base station subsystem to account for a propagation delay between the mobile station and the base station subsystem, the reception slots corresponding to uplink and/or downlink user data packet switched transmission channels allocated dynamically by the base station subsystem, the mobile station being configured to receive:
>
> a single timing advance index allocated to the mobile station at the base station subsystem, which index identifies one idle frame in a multiframe structure in which the mobile station should transmit a timing access burst to the base station subsystem and one or more further idle frames in the multiframe structure in which the mobile station should receive an updated timing advance value;
>
> the one or more further idle frames in the multiframe structure identified by the timing advance index;
>
> an idle frame slot number, which is allocated to the mobile station at the base station subsystem, identifying the time slot in the idle frames when the timing access burst and the timing advance values should be transmitted;
>
> the updated timing advance value in the further one or more idle frames, and the mobile station further being configured to transmit; and
>
> data using the timing advance index and the idle frame slot number to determine timing advance values for all user data channels allocated to the mobile station.
>
> 14. A mobile station for use in a radio telephone network, the radio telephone network comprising a base station subsystem and a plurality of mobile stations for communicating with the base station subsystem and in which radio signal transmission slots at a mobile station are synchronised to radio signal reception slots at the base station subsystem to account for a propagation delay between the mobile station and the base station subsystem, the reception slots corresponding to uplink and/or downlink user data packet switched transmission channels allocated dynamically by the base station subsystem, the mobile station being configured to:
>
> receive a timing advance value once, from the base station subsystem to the mobile station, and to;
>
> advance transmission slots at the mobile station for both the uplink and downlink channels using the received timing advance value so that transmitted data is received at the base station subsystem in the allocated base station subsystem reception slots.[16]

[15] *See id.* at col. 3 ll. 59-67.

[16] *Id.* at col. 10 ll. 9-61.

The '536 patent was filed on September 16, 1997 and issued on October 14, 2003.[17] It discloses "[a] method and a transmitter . . . and a receiver . . . for transmitting messages . . . in a digital telecommunications system."[18] Transmissions between mobile stations and base station subsystems in a cellular network fall into two categories: (1) "speech," a broad term of art including not just human speech but also all other user data, such as messaging, multimedia, email and data from the Internet; and (2) signaling data, meaning messages that control how the system operates.[19] Ordinarily, user data and signaling data use entirely different transmission channels.[20] However, cellular networks may evolve to require more or different signaling messages than the signaling channel can accommodate.[21]

The '536 patent addresses this problem by sending signaling messages through the speech channel using a technique called frame stealing. Cellular networks use various algorithms to detect or correct the errors inevitably introduced by over-the-air transmission.[22] For example, the GSM protocol uses a cyclic redundancy check by which the receiver can verify that a particular frame of data was transmitted correctly.[23] Frame stealing involves intentionally marking certain speech transmission frames as "bad" and storing signaling data in those frames instead of speech.[24] Ideally, the signaling messages will require so few stolen speech frames that the user will perceive little or no interruption in speech.[25] This also preserves backwards compatibility: old

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[17] *See* Docket No. 202-3 at 1. The patent was assigned to Nokia Telecommunications Oy. *See id.*

[18] *Id.*

[19] *Id.* at col. 1 ll. 9-22.

[20] *See id.* at col. 2 ll. 33-49.

[21] *See id.* at col. 4 ll. 32-57.

[22] *See id.* at col. 3 ll. 11-51; *id.* at col. 6 ll. 45-61.

[23] *See id.* at col. 6 ll. 61-63.

[24] *Id.* at col. 6 l.64-col. 7 l.3.

[25] *See id.* at col. 7 ll. 3-29.

devices that do not implement the invention simply ignore the signaling messages.[26]

Claim 1 of the '536 patent reads:

> 1. A method for transmitting messages and user information in a digital telecommunications system, the method comprising:
>
> sending the user information via a transmission channel in transmission frames assigned to the user information, wherein each transmission frame has one of two states, the states being a good state and a bad state;
>
> for each different message, defining a corresponding unique bit pattern;
>
> [] for each individual message, placing the corresponding bit pattern into a transmission frame;
>
> transmitting each message by marking as the message at least one transmission frame which is assigned to the user information; and
>
> restricting the number of consecutive frames marked as messages to a sufficiently low number so as not to substantially impair the quality of the user information, wherein the marking substantially consists of inserting a bit pattern corresponding to the message into the at least one transmission frame and setting the state of the transmission frame to bad.[27]

The '818 patent was filed on January 19, 2001 and issued on August 24, 2010.[28] It discloses a system and method for connecting a mobile phone to a cellular communication network.[29] The coverage area of a cellular network is typically divided into areas—called "routing areas" in GPRS networks and "location areas" in GSM and UMTS networks—which are themselves divided into cells.[30] Typically, each area is assigned a single serving node—called a "Serving GPRS Support Node" or SGSN in a GPRS network, for example—and all communications from or to mobile phones in a particular area go through the corresponding serving node.[31] This dependency has a negative effect on the fault tolerance of the network: if the

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[26] *See id.* at col. 7 ll. 44-53; *id.* at col. 11 ll. 33-49.

[27] *Id.* at col. 12 ll. 11-30.

[28] *See* Docket No. 202-6 at 1. The patent was assigned to Nokia Corporation. *See id.*

[29] *See id.*

[30] *Id.* at col. 1 ll. 36-56.

[31] *Id.* at col. 1 ll. 19-33, 49-56.

serving node breaks down or requires maintenance, the associated area is completely shut down.[32] The solution is to allow multiple serving nodes to serve the same area.[33]

The '818 patent teaches a number of techniques for selecting a particular serving node among all of the serving nodes available for an area. For example, when connecting to the cellular network in an area, a cell phone may select a serving node, also called a "core network (CN) node," using a "core network (CN) identifier"; if the cell phone does not choose a specific service node, the routing equipment may select a default serving node for the cell phone.[34] In one possible mechanism for choosing a serving node, the cell phone sends a request for a serving node to a radio network controller (RNC), which then contacts a DNS (Domain Name System) server to obtain a list of serving nodes available for a given area.[35] This flow is depicted in Figure 3 of the '818 patent:

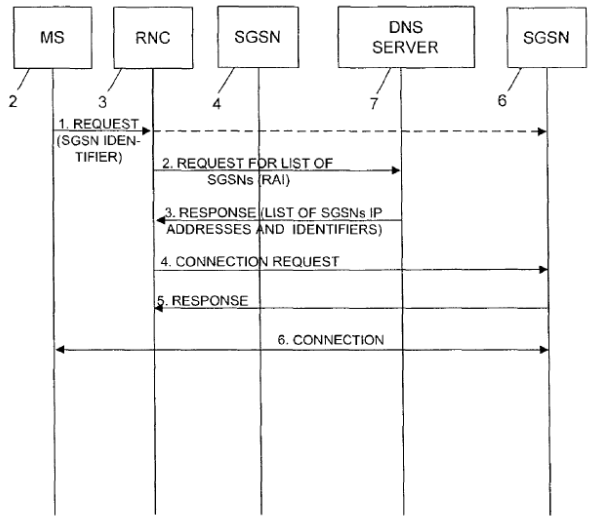


**Fig. 3**

[32] *See id.* at col. 1 ll. 57-63.

[33] *See id.* at col. 1 l.64-col. 2 l.23.

[34] *Id.* at col. 6 ll. 12-61.

[35] *See id.* at col. 7 ll. 39-50, 57-67; *id.* at col. 10 l.60-col. 12 l.46.

Claim 41 of the '818 patent reads:

> 41. A method, comprising:
>
> storing an operator identifier and/or a core network element identifier;
>
> inserting the core network element identifier to a connection initiating message for establishing a connection; and
>
> sending said connection initiating message comprising the core network element identifier to a radio network controller, the radio network controller configured to select a core network element from a sub-list of core network elements selected from core network elements stored on a list to connect to a user equipment, the core network elements in the sub-list serving a particular routing area where the user equipment is currently located, the core network elements in the sub-list selected based on one or more of: an area identifier associated with the particular routing area where the user equipment is located and the core network element identifier;
>
> wherein the core network elements stored on the list serve a plurality of different routing areas, wherein each of the core network elements stored on the list serves one of the plurality of different routing areas.[36]

Following the *Markman* hearing held in this case, the court construed the disputed claim terms as follows:[37]

| PATENT NO. | CLAIM TERM/PHRASE | CONSTRUCTION |
|---|---|---|
| **'151** | "the radio telephone network comprising a base station subsystem and a plurality of mobile stations for communicating with the base station subsystem and in which radio signal transmission slots at a mobile station are synchronised to radio signal reception slots at the base station subsystem to account for a propagation delay between the mobile station and the base station subsystem, the reception slots corresponding to uplink and/or downlink user data packet switched transmission channels allocated dynamically by the base station subsystem" | This portion of the claim is limiting. The phrase "base station subsystem" throughout the claims should be construed as "radio access network, which is a system of base station equipment (transceivers, controllers, etc.) which is responsible for communicating with mobile stations in a certain area." |
| **'151** | "receive a timing advance value once" | "receive a timing advance value one time for a multiframe structure" |
| **'151** | "data" | plain and ordinary meaning |
| **'151** | "for both the uplink and downlink channels" | "for transmissions in the uplink direction on both the uplink and downlink channels" |
| **'536** | "good state" | "state flagging that the frame contains error-free user information" |

[36] *Id.* at col. 26 l.50-col. 27 l.4.

[37] *See* Docket No. 207.

| | | |
|---|---|---|
| **'536** | "bad state" | "state flagging that the frame does not contain error-free user information" |
| **'536** | "bit pattern" | "sequence of bits conveying a signaling message not delineated by a code word" |
| **'536** | "substantially impair the quality of the user information" | indefinite |
| **'818** | "routing area" | "area where a mobile station is registered in the serving node and where eventually the serving node pages the mobile station to establish downlink connection" |
| **'818** | "an inserter configured to insert the core network identifier to an connection initiating message for establish an connection [sic]" | indefinite |

## II.

This court has jurisdiction under 28 U.S.C. §§ 1331 and 1338. The parties further consented to the jurisdiction of the undersigned magistrate judge under 28 U.S.C. § 636(c) and Fed. R. Civ. P. 72(a).[38]

Ten years after the Federal Circuit's seminal *Phillips* decision,[39] the canons of claim construction are now well-known—if not perfectly understood—by both parties and courts. "To construe a claim term, the trial court must determine the meaning of any disputed words from the perspective of one of ordinary skill in the pertinent art at the time of filing."[40] This requires a careful review of the intrinsic record comprised of the claim terms, written description and prosecution history of the patent.[41]

While claim terms "are generally given their ordinary and customary meaning," the claims themselves and the context in which the terms appear "provide substantial guidance as to the

[38] *See* Docket Nos. 158, 161.

[39] *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc).

[40] *Chamberlain Group, Inc. v. Lear Corp.*, 516 F.3d 1331, 1335 (Fed. Cir. 2008).

[41] *See id.* (citing *Phillips*, 415 F.3d at 1312) ("To construe a claim term, the trial court must determine the meaning of any disputed words from the perspective of one of ordinary skill in the pertinent art at the time of filing. Intrinsic evidence, that is the claims, written description, and the prosecution history of the patent, is a more reliable guide to the meaning of a claim term than are extrinsic sources like technical dictionaries, treatises, and expert testimony.").

meaning of particular claim terms." Indeed, a patent's specification "is always highly relevant to the claim construction analysis."[42] Claims "must be read in view of the specification, of which they are part."[43] Although the patent's prosecution history "lacks the clarity of the specification and thus is less useful for claim construction purposes," it "can often inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be."[44] The court also has the discretion to consider extrinsic evidence, including dictionaries, learned treatises and testimony from experts and inventors.[45] Such evidence, however, is "less significant than the intrinsic record in determining the legally operative meaning of claim language."[46]

A patent applicant must "particularly point[] out and distinctly claim[] the subject matter which the applicant regards as his invention."[47] "[A] patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention."[48] The

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[42] *Phillips*, 415 F.3d at 1312-15.

[43] *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995); *see also Ultimax Cement Mfg. Corp v. CTS Cement Mfg. Corp.*, 587 F. 3d 1339, 1347 (Fed. Cir. 2009).

[44] *Phillips*, 415 F.3d at 1317 (internal quotations omitted).

[45] *See id.* ("Although we have emphasized the importance of intrinsic evidence in claim construction, we have also authorized district courts to rely on extrinsic evidence, which 'consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises.'") (quoting *Markman*, 52 F.3d at 980).

[46] *Id.* (citing *C.R. Bard, Inc. v. U.S. Surgical Corp.*, 388 F.3d 858, 862 (Fed. Cir. 2004)) (internal quotations and additional citations omitted).

[47] 35 U.S.C. § 112(b). The asserted patents were filed before the effective date of the Leahy Smith America Invents Act ("AIA"), which applies to patent applications filed on or after September 16, 2012. Therefore, all citations to § 112 refer to the pre-AIA statute, which contains paragraph numbers rather than lettered subsections.

[48] *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2124 (2014).

definiteness standard requires "clear notice of what is claimed, thereby appris[ing] the public of what is still open to them."[49] Therefore, "a patent does not satisfy the definiteness requirement of § 112 merely because 'a court can ascribe *some* meaning to a patent's claims.'"[50] "The claims, when read in light of the specification and the prosecution history, must provide objective boundaries for those of skill in the art."[51]

The court has construed some claims as "means-plus-function" claims, meaning that they are "drafted in a manner that invokes 35 U.S.C. § 112, para. 6."[52] That provision permits a patentee to express a claim limitation "as a means or step for performing a specified function without the recital of structure . . . in support thereof," but it restricts such claims to cover only "the corresponding structure . . . described in the specification and equivalents thereof."[53] A claim's "use of the word 'means' creates a presumption that § 112, ¶ 6 applies."[54] When a claim does not use the word, the opposite presumption applies.[55] The latter presumption can be overcome, however, by a showing that a person of ordinary skill in the art would not understand the words of the claim to "have a sufficiently definite meaning as the name for structure."[56]

Construing a means-plus-function claim limitation is a two-step process. "First, the court must determine the claimed function. Second, the court must identify the corresponding structure

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[49] *Id.* at 2129.

[50] *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014) (quoting *Nautilus*, 134 S. Ct. at 2130).

[51] *Id.*

[52] *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1347 (Fed. Cir. 2015) (en banc).

[53] 35 U.S.C. § 112, ¶ 6.

[54] *Williamson*, 792 F.3d at 1349.

[55] *See id.* at 1348.

[56] *Id.* at 1349.

in the written description of the patent that performs the function."[57] "Means-plus-function claim limitations under § 112 ¶ 6 must satisfy the definiteness requirement of § 112 ¶ 2."[58] If the court cannot "identify any 'corresponding structure, material, or acts described in the specification,' the claim term is indefinite."[59] "Even if the specification discloses a 'corresponding structure,' the disclosure must be adequate; the patent's specification must provide 'an adequate disclosure showing what is meant by that [claim] language.'"[60]

**III.**

The parties request construction of a total of four claim terms as to the '151 patent. The court construes these terms as follows:

[57] *Noah Sys., Inc. v. Intuit Inc.*, 675 F.3d 1302, 1311 (Fed. Cir. 2012) (quoting *Applied Med. Res. Corp. v. U.S. Surgical Corp.*, 448 F.3d 1324, 1332 (Fed. Cir. 2006)).

[58] *EON Corp. IP Holdings LLC v. AT&T Mobility LLC*, 785 F.3d 616, 621 (Fed. Cir. 2015) (citing *S3 Inc. v. nVIDIA Corp.*, 259 F.3d 1364, 1367 (Fed. Cir. 2001)).

[59] *Media Rights Techs., Inc. v. Capital One Fin. Corp.*, 800 F.3d 1366, 1374 (Fed. Cir. 2015) (quoting *Robert Bosch, LLC v. Snap-On Inc.*, 769 F.3d 1094, 1097 (Fed. Cir. 2014)).

[60] *Noah Sys.*, 675 F.3d at 1311-12 (alteration in original) (quoting *In re Donaldson Co.*, 16 F.3d 1189, 1195 (Fed. Cir. 1994) (en banc)).

A. **Issue #1: "radio telephone network"**

| **CLAIM TERM #1** | |
|---|---|
| "the radio telephone network comprising a base station subsystem and a plurality of mobile stations for communicating with the base station subsystem and in which radio signal transmission slots at a mobile station are synchronised to radio signal reception slots at the base station subsystem to account for a propagation delay between the mobile station and the base station subsystem, the reception slots corresponding to uplink and/or downlink user data packet switched transmission channels allocated dynamically by the base station subsystem" | |
| **Core Wireless' Preferred Construction** | **Apple's Preferred Construction** |
| This portion of the claim is not limiting. The phrase "base station subsystem" throughout the claims should be construed as "radio access network, which is a system of base station equipment (transceivers, controllers, etc.) which is responsible for communicating with mobile stations in a certain area"; otherwise, the term has its plain and ordinary meaning. | This portion of the claim is limiting. The phrase "base station subsystem" should have its plain and ordinary meaning. |
| **CONSTRUCTION** | |
| This portion of the claim is limiting. The phrase "base station subsystem" throughout the claims should be construed as "radio access network, which is a system of base station equipment (transceivers, controllers, etc.) which is responsible for communicating with mobile stations in a certain area." | |

This term appears in claims 13 and 14 of the '151 patent. In both claims, the term precedes the phrase "the mobile station being configured to:" and a semicolon-separated list of claim limitations.[61] Core Wireless contends that the claim term does not limit the scope of the claims because it is part of the preamble to the claims and simply describes the intended use for the claimed invention.

Ordinarily, "the word 'comprising' is an open transition phrase" from the preamble to the body of the claim.[62] True, the portion preceding the colon—which includes the claim term at issue—simply describes the prior art; the claims focus on the configuration of the mobile station.

[61] Docket No. 202-1 at col. 10 ll. 9-61.

[62] *Scanner Techs. Corp. v. ICOS Vision Sys. Corp., N.V.*, 365 F.3d 1299, 1305 (Fed. Cir. 2004) (quoting *AFG Indus. Inc. v. Cardinal IG Co., Inc.*, 239 F.3d 1239, 1245 (Fed. Cir. 2001)); *see also Vehicular Techs. Corp. v. Titan Wheel Int'l, Inc.*, 212 F.3d 1377, 1383 (Fed. Cir. 2000) ("A drafter uses the term 'comprising' to mean 'I claim at least what follows and potentially more.'").

But that purported preamble does far more than merely "state a purpose or intended use for the invention."[63] Instead, it provides essential context for the claims, including the synchronization mechanism the system uses to account for propagation delay. Additionally, "limitations in the body of the claim rely upon and derive antecedent basis from the preamble," so the preamble is "a necessary component of the claimed invention."[64] The claim term does limit the invention.

Because the claim term is limiting, the jury will need to understand the term "base station subsystem," but the phrase does not explain itself. In fact, Core Wireless points out that the phrase is a term of art specific to GPRS, but the '151 patent is not restricted to that protocol, and Core Wireless alleges infringement by devices implementing the LTE protocol.[65] Core Wireless' proposed construction of the phrase comports with the specification and provides helpful context for the remainder of the claim. The court therefore adopts that construction.

The portions of claims 13 and 14 following the word "comprising" are limiting. The court construes "base station subsystem" throughout the claims as "radio access network, which is a system of base station equipment (transceivers, controllers, etc.) which is responsible for communicating with mobile stations in a certain area."

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[63] *Braintree Labs., Inc. v. Novel Labs., Inc.*, 749 F.3d 1349, 1357 (Fed. Cir. 2014) (quoting *Rowe v. Dror*, 112 F.3d 473, 478 (Fed. Cir. 1997)).

[64] *Proveris Sci. Corp. v. Innovasystems, Inc.*, 739 F.3d 1367, 1372 (Fed. Cir. 2014) (quoting *NTP, Inc. v. Research in Motion, Ltd.*, 418 F.3d 1282, 1306 (Fed. Cir. 2005)).

[65] *See* Docket No. 212 at 39:4-40:2.

B. **Issue #2: "receive a timing advance value once"**

| **CLAIM TERM #2** | |
|---|---|
| "receive a timing advance value once" | |
| **Core Wireless' Preferred Construction** | **Apple's Preferred Construction** |
| "receive a timing advance value that is shared by both uplink and downlink channels in the uplink direction" | "receive one timing advance value for all uplink and downlink channels allocated to the mobile station per each multiframe structure" |
| **CONSTRUCTION** | |
| "receive a timing advance value one time for a multiframe structure" | |

This term appears in claim 14 of the '151 patent, which describes a system that uses timing advance values to ensure that transmissions from a mobile station reach a base station subsystem in designated time slots. The claim teaches a mobile station configured to "receive a timing advance value once, from the base station subsystem to the mobile station" and "advance transmission slots at the mobile station for both the uplink and downlink channels using the received timing advance value."[66] In this way, both "the uplink and downlink channels of a mobile station . . . will share the same timing advance value."[67]

For the term "receive a timing advance value once," both parties propose constructions that refer to how the claimed invention shares that TAV between the uplink and downlink channels. However, much of the remainder of the claim already describes how the mobile station will use the TAV: to "advance transmission slots at the mobile station for both the uplink and downlink channels using the received timing advance value."[68] In construing the term at issue, the use of the received TAV is beside the point.

The other point of disagreement between the parties is whether to construe the claim to require that the TAV be received once per multiframe structure. Both sides agree that the TAV

[66] Docket No. 202-1 at col. 10 ll. 54-59.

[67] *Id.* at col. 3 ll. 63-66.

[68] *Id.* at col. 10 ll. 56-59.

must be updated regularly,[69] but the word "once" in the claim is not enough to convey this. The abstract of the patent describes calculating and transmitting updated TAVs "once every 8 multiframes,"[70] as does the specification itself.[71] In the absence of any other meaningful standard for how often the TAV should be updated, the court opts for Apple's proposal.

The court construes "receive a timing advance value once" as "receive a timing advance value one time for a multiframe structure."

C. **Issue #3: "data"**

| **CLAIM TERM #3** | |
|---|---|
| "data" | |
| **Core Wireless' Preferred Construction** | **Apple's Preferred Construction** |
| "user or signaling data" | plain and ordinary meaning |
| **CONSTRUCTION** | |
| plain and ordinary meaning | |

This term appears in claims 13 and 14 of the '151 patent. Both of these claims teach that TAVs are used for "user data" channels.[72] In addition, claim 13 discloses a mobile station "configured to receive . . . data . . . to determine timing advance values for all user data channels allocated to the mobile station,"[73] and claim 14 describes the mobile station using the TAV when "transmitt[ing] data" on "both the uplink and downlink channels."[74] Core Wireless seeks to

[69] *See id.* at col. 2 ll. 29-31 ("[I]t is necessary to recalculate the propagation delay at regular intervals and to provide the updated values to the MS.").

[70] *Id.* at 1.

[71] *See id.* at col. 3 ll. 30-31 ("[A] TAV for a given channel is updated only once every eight multiframes . . . ."); *id.* at col. 3 ll. 45-55 (describing sending TAVs every eight multiframes).

[72] *Id.* at col. 10 ll. 17, 41, 50.

[73] *Id.* at col. 10 ll. 19-20, 39-41.

[74] *Id.* at col. 10 ll. 55-61.

clarify that, at least where the word "data" is used in isolation, it can mean both user and signaling data. As Core Wireless notes, the specification states that mobile stations use TAVs when transmitting both user data and signaling data on user data channels.[75]

Because the plain meaning of the term "data" incorporates user and signaling data, construing the term is not necessary. That said, Apple is not correct in its contention that the term "data" in these claims refers exclusively to user data.[76] Both claims mention a user data channel, but those channels necessarily carry signaling data as well.[77] Where the term "data" is used without a modifier in these claims, it does not just mean "user data."

The court construes "data" according to its plain and ordinary meaning.

D. **Issue #4: "for both the uplink and downlink channels"**

| **CLAIM TERM #4** | |
|---|---|
| "for both the uplink and downlink channels" | |
| **Core Wireless' Preferred Construction** | **Apple's Preferred Construction** |
| "for both the uplink channels and for signaling data (*e.g.*, acknowledgements) in the uplink direction for the downlink channels" | plain and ordinary meaning |
| **CONSTRUCTION** | |
| "for transmissions in the uplink direction on both the uplink and downlink channels" | |

This term also appears only in claim 14 of the '151 patent, which teaches a mobile station that uses the same TAV for both uplink and downlink channels. Core Wireless urges the court to construe this term to state explicitly that the TAV is used only for uplink communications on the downlink channel. Apple argues that doing so would effectively read "downlink channel" out of the claim because that phrase represents—both in the prior art and in the '151 specification—a

[75] *See id.* at col. 2 ll. 32-38.

[76] *See* Docket No. 212 at 77:4-79:3.

[77] *See* Docket No. 202-1 at col. 2 ll. 32-38; col. 10 ll. 17-19, 49-52.

channel for "user data transmission from the [base station subsystem] to the [mobile station]."[78]

Core Wireless makes the more persuasive case. As the Eastern District of Texas found in construing the same claim:

> In context of the specification, it is clear that reference to downlink channels includes the corresponding uplink transmissions of the downlink channel. "Both the uplink and downlink channels will share the same timing advance value for transmissions in the uplink direction." '151 Patent at 3:64-66. Further, "a TAV is also required when a downlink channel is established as, even though user data is coming from the BSS to the MS, certain signalling data (e.g., acknowledgements) is going in the reverse direction (i.e., the uplink direction)." *Id.* at 2:34-38. In this context, the patent also states: "[t]here is no need to repeat the transmission of timing advance information for all channels, as the same timing advance value can be used for all uplink transmissions (associated with both uplink and downlink channels)." *Id.* at 7:7-10. Defendants have pointed to no uses of a TAV for the downlink transmissions of a downlink channel. In contrast, as noted above, the specification repeatedly teaches the use of a TAV for the uplink transmission of a downlink channel.[79]

Apple admits that the specification discloses using the TAV for uplink communications over the downlink channel. Nonetheless, Apple contends that the court should not read the claim term to cover only those communications, since the claim itself is not drawn so narrowly. In essence, Core Wireless believes that the claim requires only that the mobile station use the TAV for uplink communications over the downlink channel, while Apple suggests that the mobile station may or must use the TAV for the downlink channel in some other way. Apple may be right that its plain meaning construction would not exclude the embodiments disclosed in the specification. But the court's duty at this stage is "to resolve a dispute about claim scope that has been raised by the parties," and it cannot "le[ave] this question of claim scope unanswered" by declining to construe the claim.[80] The specification supports Core Wireless' view.

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[78] *Id.* at col. 6 ll. 50-51.

[79] *Core Wireless Licensing S.A.R.L. v. LG Elecs., Inc.*, Case Nos. 14-cv-00911, 14-cv-00912, 2015 WL 6746910, at *20 (E.D. Tex. Nov. 4, 2015).

[80] *Eon Corp. IP Holdings v. Silver Spring Networks*, 815 F.3d 1314, 1319 (Fed. Cir. 2016) (citing *O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co., Ltd.*, 521 F.3d 1351, 1360, 1362 (Fed. Cir. 2008)).

The court construes "for both the uplink and downlink channels" as "for transmissions in the uplink direction on both the uplink and downlink channels."[81]

## IV.

The parties request construction of a total of four claim terms as to the '536 patent. The court construes these terms as follows:

### A. Issue #1: "good state" / "bad state"

| **CLAIM TERM #5** | |
|---|---|
| "good state" | |
| **Core Wireless' Preferred Construction** | **Apple's Preferred Construction** |
| "a state of a frame from which the receiver can conclude that the frame should be treated as a normal good speech frame" | "a frame state indicating that the frame was transmitted error-free over an air interface" |
| **CONSTRUCTION** | |
| "state flagging that the frame contains error-free user information" | |

| **CLAIM TERM #6** | |
|---|---|
| "bad state" | |
| **Core Wireless' Preferred Construction** | **Apple's Preferred Construction** |
| "a state of a frame from which the receiver can conclude that the frame should not be treated as a normal good speech frame" | "a frame state characterized by a flag indicating that the frame was not transmitted error-free over an air interface" |
| **CONSTRUCTION** | |
| "state flagging that the frame does not contain error-free user information" | |

These terms appear in all asserted claims of the '536 patent. As above, the invention of the '536 patent uses a technique called frame stealing to send signaling messages in transmission frames intended for "speech," meaning in this context any user data. The patent takes advantage

[81] The court has modified Core Wireless' construction to clarify that the specification teaches using the TAV only for uplink communications over both channels. *See* Docket No. 202-1 at col. 3 ll. 64-66; *id.* at col. 7 ll. 7-10.

of the fact that wireless protocols define mechanisms for the receiver of a speech transmission frame to detect whether over-the-air transmission introduced an error in the frame.[82] The '536 patent teaches intentionally marking speech transmission frames as "bad," in whatever way the underlying wireless protocol defines, and storing signaling messages in those frames instead.[83] The patent is not restricted to a particular protocol.[84] It generically defines "[a] 'bad' frame within the context of the present application [as] a frame wherefrom the receiver can conclude that the frame should not be treated as a normal good frame,"[85] and the specification does not explicitly define a "good frame."

Core Wireless proposes that the court should adopt this construction, with the addition of the word "speech" to clarify that the claim refers to "good" and "bad" "speech frames," defined in the specification as "a frame that is used in the system concerned to transmit information, such as speech, music or other sound, a video signal, or multimedia."[86] For its part, Apple points to the prosecution history. To overcome an indefiniteness rejection, the applicant argued that "a bad frame is a well-known term of art meaning a flag that indicates whether or not a frame was transmitted error-free over an air interface."[87]

Neither party's proposal is of much help. Core Wireless' suggestion is circular. Claim 9, for example, describes a method for receiving messages,[88] but Core Wireless would have a term in that claim defined only in terms of what "the receiver can conclude." Also, as Apple notes, this

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[82] *See* Docket No. 202-3 at col. 3 l.33-col. 4 l.10; *id.* at col. 6 ll. 45-63.

[83] *See id.* at col. 6 l.64-col. 7 l.3.

[84] *See id.* at col. 11 l.65-col. 12 l.9.

[85] *Id.* at col. 6 ll. 58-61.

[86] *Id.* at col. 6 ll. 54-58.

[87] Docket No. 202-4 at 6.

[88] *See* Docket No. 202-3 at col. 12 ll. 50-64.

construction makes no reference to the inventor's stated intent of relying on the preexisting concept of a "bad frame."[89]

Apple's preferred construction, meanwhile, is confusing and unnecessarily limiting. The '536 patent teaches storing signaling messages in "bad" frames, so a construction that mentions whether the "frame was transmitted error-free over an air interface" might lead the jury astray. Moreover, Apple's construction restricts the claims to wireless protocols that use a simple "flag" for marking whether the frame was transmitted error-free—unlike the exemplary GSM-based embodiment in the specification, which uses a more complex cyclic redundancy check.[90] Apple cites the Federal Circuit's guidance that "the prosecution history . . . limits the interpretation of claims so as to exclude any interpretation that may have been disclaimed or disavowed during prosecution in order to obtain claim allowance."[91] But the statement in the prosecution history did not seek to narrow a claim; it simply explained that the concept of a "bad" frame was well known in the prior art, while citing a GSM textbook as an example.[92]

The court therefore chooses a third option. The specification uses the terms "good" and "bad" to refer to those concepts in the context of the underlying wireless protocol.[93] A "bad" frame, therefore, is one that does not contain error-free user information, regardless of whether over-the-air transmission introduced an error or the sender stole the frame to send a signaling message instead. And it is something about the frame itself—a flag, a CRC or perhaps something else entirely, depending on the wireless protocol at issue—that indicates whether a frame is "good" or "bad" in this sense.

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[89] *See id.* at col. 6 ll. 31-37; *id.* at col. 7 ll. 41-57; *id.* at col. 11 ll. 32-64.

[90] *See id.* at col. 8 l.39-col. 9 l.23.

[91] *Standard Oil Co. v. Am. Cyanamid Co.*, 774 F.2d 448, 452 (Fed. Cir. 1985).

[92] *See* Docket No. 202-4 at 6.

[93] *See* Docket No. 202-3 at col. 6 ll. 58-61; *id.* at col. 8 ll. 57-60; *id.* at col. 9 l.66-col. 10 l.5.

The court construes "good state" as "state flagging that the frame contains error-free user information." The court construes "bad state" as "state flagging that the frame does not contain error-free user information."

B. **Issue #2: "bit pattern"**

| **CLAIM TERM #7** | |
|---|---|
| "bit pattern" | |
| **Core Wireless' Preferred Construction** | **Apple's Preferred Construction** |
| plain and ordinary meaning | "a sequence of bits conveying a signalling message; not a code word that delineates the message" |
| **CONSTRUCTION** | |
| "sequence of bits conveying a signaling message not delineated by a code word" | |

This term appears in all asserted claims of the '536 patent. The specification describes at length exactly how signaling messages are stored in the stolen speech transmission frames. Each possible signaling message has a corresponding pattern of bits.[94] Even if only a small number of signaling messages are possible—for example, only 20—the bit patterns should be much longer than necessary—for example, 100 bits—for two reasons.[95] First, this makes it "impossible in practice for a speech encoder . . . to produce one of the 20 selected message code words of e.g. 100 bits by chance," so that, when a receiver detects a bit pattern corresponding to a signaling message, it can know for certain that the transmitter intended to send a signaling message.[96] Second, this allows for some error correction in signaling message transmission—even if a message code word contains a few errors, the receiver still can correctly interpret the message so long as it does not deviate from the predefined code word by too much.[97]

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[94] *See id.* at col. 10 ll. 21-23.

[95] *See id.* at col. 10 ll. 25-30.

[96] *Id.* at col. 10 ll. 30-40.

[97] *See id.* at col. 10 l.55-col. 11 l.20.

As the prosecution history shows, this mechanism for transmitting signaling messages differed from a prior art reference in which "the beginning and end of a message are explicitly indicated by separate code words."[98] In the '536 patent, by contrast, "no separate code words are needed, and message detection is based only on individual messages."[99] Apple observes that "explicit statements made by a patent applicant during prosecution to distinguish a claimed invention over prior art may serve to narrow the scope of a claim."[100] Even if the plain and ordinary meaning of the term "bit pattern" might incorporate the use of code words to set off the start and end of a message, the prosecution history bars any such interpretation of the claim.

The court construes "bit pattern" as "sequence of bits conveying a signaling message not delineated by a code word."

C. **Issue #3: "substantially impair the quality of the user information"**

| **CLAIM TERM #14** | |
|---|---|
| "substantially impair the quality of the user information" | |
| **Core Wireless' Preferred Construction** | **Apple's Preferred Construction** |
| plain and ordinary meaning | indefinite |
| **CONSTRUCTION** | |
| indefinite | |

This term appears in claims 1 and 17 of the '536 patent. The claims specify that, when transmitting signaling messages, the sender must "restrict[] the number of consecutive [stolen] frames . . . to a sufficiently low number so as not to substantially impair the quality of the user information."[101]

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[98] Docket No. 202-4 at 8 (emphasis omitted).

[99] *Id.*

[100] *Spectrum Int'l, Inc. v. Sterilite Corp.*, 164 F.3d 1372, 1378 (Fed. Cir. 1998) (citations omitted).

[101] Docket No. 202-3 at col. 12 ll. 24-25; *id.* at col. 13 ll. 37-40.

Apple argues that the claim is indefinite because a person of ordinary skill in the art could not ascertain with reasonable certainty how many consecutive stolen frames would be a "sufficiently low number," or how many frames could be stolen before the process would "substantially impair" the quality of the user data transmission. These terms of degree may be definite if they "provide[] enough certainty to one of skill in the art when read in the context of the invention."[102] However, "[t]he claims, when read in light of the specification and the prosecution history, must provide objective boundaries for those of skill in the art."[103]

At least on one point, the specification seems clear: stealing a single frame would fall within the claimed invention.[104] But the edges of the claim are murkier. The specification says that the method "does not normally impair the quality of the reception at all" and that "[t]he effect on speech quality is practically non-existent."[105] However, it also says that even "[c]hange of one speech frame may cause a perceptible snap in the speech"[106] and that sending messages "will deteriorate the quality of speech to some extent."[107] And on the specific question of if and when the claims permit stealing *two* consecutive speech frames, the '536 patent is essentially silent. In short, the claims leave a "zone of uncertainty"—which *Nautilus* bars.[108]

The court finds that the term "substantially impair the quality of the user information" is indefinite.

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[102] *Interval Licensing*, 766 F.3d at 1370 (citing *Eibel Process Co. v. Minn. & Ont. Paper Co.*, 261 U.S. 45, 65-66 (1923)).

[103] *Id.* at 1371 (citing *Nautilus*, 134 S. Ct. at 2130 & n.8).

[104] *See* Docket No. 202-3 at col. 6 ll. 47-54; *id.* at col. 7 ll. 7-12.

[105] *Id.* at col. 7 ll. 12-14, 28-29.

[106] *Id.* at col. 6 ll. 47-48.

[107] *Id.* at col. 11 ll. 44-49.

[108] 134 S. Ct. at 2129 (quoting *United Carbon Co. v. Binney & Smith Co.*, 317 U.S. 228, 236 (1942)).

## V.

The parties request construction of two claim terms as to the '818 patent. The court construes these terms as follows:

A. **Issue #1: "routing area"**

| **CLAIM TERM #9** | |
|---|---|
| "routing area" | |
| **Core Wireless' Preferred Construction** | **Apple's Preferred Construction** |
| "the area where a mobile station is registered in the serving node and where eventually the serving node pages the mobile station to establish downlink connection" | plain and ordinary meaning |
| **CONSTRUCTION** | |
| "area where a mobile station is registered in the serving node and where eventually the serving node pages the mobile station to establish downlink connection" | |

This term appears in claims 30 and 41 of the '818 patent, which are, respectively, a related apparatus and method claim. As above, the '818 patent teaches a mechanism by which multiple serving nodes, or core network elements, can serve a single area. These claims in particular disclose a cell phone—or, in the parlance of the claims, "user equipment"—sending a "connection initiating message comprising [a] core network element identifier to a radio network controller."[109] The radio network controller then can select a core network element for the cell phone based on "an area identifier associated with the particular routing area where the user equipment is located and the core network element identifier."[110]

The parties dispute the interpretation of the term "routing area" in these claims. The background section of the specification says the following about the term:

> Routing Area (RA) is a standard term used in conjunction with GPRS, while GSM and UMTS Circuit Switched systems use the term Location Area (LA). In both case [sic], the area is referring to the area where a mobile station is registered in the serving node (e.g.

[109] Docket No. 202-6 at col. 25 ll. 20-22, 25-27; *id.* at col. 26 ll. 56-58, 61-63.

[110] *Id.* at col. 25 ll. 28-32; *id.* at col. 26 ll. 63-67.

> SGSN or MSC/VLR), and where eventually the serving node pages the mobile station to establish downlink connection.[111]

Core Wireless therefore proposes that the court construe "routing area" according to the language in the background, minus the parenthetical phrase with examples of what serving nodes were called in the then-prevalent wireless protocols.

Apple, however, argues that the definition in the specification is not the patentee's lexicography because the specification defines the broader term "area," not "routing area."[112] The specification acknowledges that the term "routing area" is a "standard term" used consistent with the plain meaning in the GPRS standard.[113] The GPRS standard, in turn, defines the term as "an area in which a mobile station, in certain operation modes, may move freely without updating the SGSN. A routing area may include one or several cells. A RA is always contained within a location area."[114] As a result, Apple seeks a plain and ordinary meaning construction—which, presumably, it would use to argue that a GPRS routing area is required for infringement.

On balance, Core Wireless has the better argument. The specification consistently uses the term "routing area" interchangeably with "area" and "location area."[115] More importantly, although the claims themselves only use the term "routing area," the specification clearly indicates

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[111] *Id.* at col 1 ll. 40-46.

[112] *See Merck & Co., Inc. v. Teva Pharm. USA, Inc.*, 395 F.3d 1364, 1370 (Fed. Cir. 2005) (noting that, absent "sufficient clarity to put one reasonably skilled in the art on notice that the inventor intended to redefine the claim term," "claim terms should be construed consistently with their ordinary and customary meanings, as determined by those of ordinary skill in the art").

[113] Docket No. 202-6 at col 1 ll. 40-41.

[114] Docket No. 202-8 at § 3.12; *see also* Docket No. 202-9 at § 3.9 ("The Routing Area (RA) is defined as an area in which a mobile station, in certain operation modes, may move freely without updating the SGSN. A routing area includes one or several GERAN/UTRAN cells. A RA is always contained within a location area.").

[115] *See, e.g.*, Docket No. 202-6 at col. 1 ll. 57-63 (discussing "GSM and UMTS" but using the term "routing area"); *id.* at col. 4 ll. 46-47 (referring to an "RAI," or routing area identifier, in the context of "GSM and UMTS"); *id.* at col. 12 ll. 58-61 (using "location area" in the context of a GPRS embodiment).

that the claimed invention is not restricted to GPRS networks.[116] Despite the ambiguous language in the background section, as a whole the specification would "put one reasonably skilled in the art on notice" of the inventor's intent to define "routing area" more broadly than its use in the GPRS context.[117] Core Wireless' definition comports with the specification and would help the jury.

The court construes "routing area" as "area where a mobile station is registered in the serving node and where eventually the serving node pages the mobile station to establish downlink connection."

B. **Issue #2: "inserter configured to insert the core network identifier"**

| **CLAIM TERM #13** | |
|---|---|
| "an inserter configured to insert the core network identifier to an connection initiating message for establish an connection [sic]" | |
| **Core Wireless' Preferred Construction** | **Apple's Preferred Construction** |
| Not governed by § 112 ¶ 6. In the alternative:<br>Function: "insert the core network identifier to a connection initiating message for establish [sic] a connection"<br>Structure: the structure described in cols. 3:54-59 and 4:37-41, and statutory equivalents thereof | indefinite |
| **CONSTRUCTION** | |
| indefinite | |

This term appears in claim 30 of the '818 patent, which essentially describes an apparatus that performs the method disclosed in claim 41. The apparatus of claim 31 comprises "an inserter configured to insert the core network identifier to an connection initiating message for establish an connection [sic]" as well as "a transmitter configured to send said connection initiating message . . . to a radio network controller."[118]

[116] *See id.* at col. 2 ll. 27-48; col. 22 ll. 34-36.

[117] *Merck*, 395 F.3d at 1370.

[118] Docket No. 202-6 at col. 25 ll. 14, 17-22.

The first question with respect to this claim is whether it is a means-plus-function claim at all. Core Wireless argues, with the support of an expert declaration,[119] that a POSITA would understand the term "inserter" to mean something specific, just like the words "detent mechanism" in *Greenberg v. Ethicon Endo-Surgery, Inc.*[120] Core Wireless' expert points to programming language constructs named "inserters" and a part of the 3GPP specification that discusses inserting.[121] But, unlike a detent mechanism, the word "inserter" only evokes the function of inserting. In fact, Core Wireless' sole suggestion for commonly understood structure for the term relates to classes in the C++ programming language that do nothing more than insert software objects into others.[122] In the field of wireless communication technology, the term "inserter" has no "reasonably well understood meaning in the art."[123]

Because Apple does not dispute that the claim teaches a function, the only remaining issue is whether the specification adequately discloses a "corresponding structure" for the claim.[124] Core Wireless cites language in the specification teaching that "the user equipment may then add an identifier information such as CN identifier to a message."[125] According to Core Wireless and its expert, "[a] person of ordinary skill in the art would understand that the 'user equipment' here refers to a terminal device used in cellular communication, such as a cell phone or other mobile stations" and that these devices necessarily contain "a specific programmable processor called a baseband processor or baseband chip."[126]

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[119] *See* Docket No. 203-6 at ¶¶ 10, 25-31.

[120] 91 F.3d 1580, 1583 (Fed. Cir. 1996).

[121] *See* Docket No. 203-6 at ¶¶ 29-32; *id.*, Exs. B, C, D.

[122] *See id.*, Exs. B, C.

[123] *Greenberg*, 91 F.3d at 1583.

[124] 35 U.S.C. § 112, ¶ 6.

[125] Docket No. 202-6 at col. 4 ll. 37-39.

[126] Docket No. 203-6 at ¶ 35.

This is unconvincing. First of all, claim 30 itself refers to "user equipment," so the term "inserter" in the same claim cannot just mean the same thing.[127] A more plausible reading of the claim is that the user equipment is the entire claimed apparatus, not just the inserter. And Core Wireless' argument that the specification inherently discloses a baseband processor is beside the point. "Having failed to provide any disclosure of the structure for the . . . function, [Core Wireless] cannot rely on the knowledge of one skilled in the art to fill in the gaps."[128]

In any case, even if the specification did disclose a processor, the Federal Circuit requires means-plus-function claims implemented by a special purpose computer to disclose an algorithm for performing the function.[129] "[T]he algorithm may be expressed as a mathematical formula, in prose, or as a flow chart, or in any other manner that provides sufficient structure."[130] Although the specification discloses "add[ing] an identifier information . . . to a message,"[131] Core Wireless points to nothing in the specification that teaches precisely how the inserter does so. That disclosure does not provide sufficient structure.

The court finds that the term "an inserter configured to insert the core network identifier to an connection initiating message for establish an connection" is indefinite.

**SO ORDERED.**

Dated: June 3, 2016

PAUL S. GREWAL
United States Magistrate Judge

[127] Docket No. 202-6 at col. 25 ll. 26-28.

[128] *Function Media, L.L.C. v. Google, Inc.*, 708 F.3d 1310, 1319 (Fed. Cir. 2013).

[129] *See Williamson*, 792 F.3d at 1352.

[130] *Id.* (citing *Noah Sys., Inc. v. Intuit Inc.*, 675 F.3d 1302, 1312 (Fed. Cir. 2012)).

[131] Docket No. 202-6 at col. 4 ll. 37-41; *see also id.* at col. 3 ll. 54-59 ("[T]he identifier such as CN (Core Network) Identifier may be added to a message, e.g. RRC (Radio Resource Control) message . . . .").