

**IN THE UNITED STATES DISTRICT COURT  
FOR THE EASTERN DISTRICT OF TEXAS  
MARSHALL DIVISION**

INTELLECTUAL VENTURES II LLC,

Plaintiff,

v.

SPRINT SPECTRUM L.P. ET AL,

Defendants.

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No. 2:17-cv-662-JRG-RSP

**CLAIM CONSTRUCTION MEMORANDUM OPINION AND ORDER**

Before the Court is the opening claim construction brief of Intellectual Ventures II LLC (“Plaintiff”) (ECF No. 180, filed on September 14, 2018),<sup>1</sup> the response of Sprint Spectrum L.P., Nextel Operations, Inc., T-Mobile USA, Inc., T-Mobile US, Inc., Ericsson Inc., Telefonaktiebolaget LM Ericsson, and Nokia of America Corporation (collectively “Defendants”) (ECF No. 194, filed on October 3, 2018), and Plaintiff’s reply (ECF No. 207, filed on October 15, 2018). The Court held a hearing on the issues of claim construction and claim definiteness on November 1, 2018. Having considered the arguments and evidence presented by the parties at the hearing and in their briefing, the Court issues this Order.

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<sup>1</sup> Citations to the parties’ filings are to the filing’s number in the docket (ECF No.) and pin cites are to the page numbers assigned through ECF.

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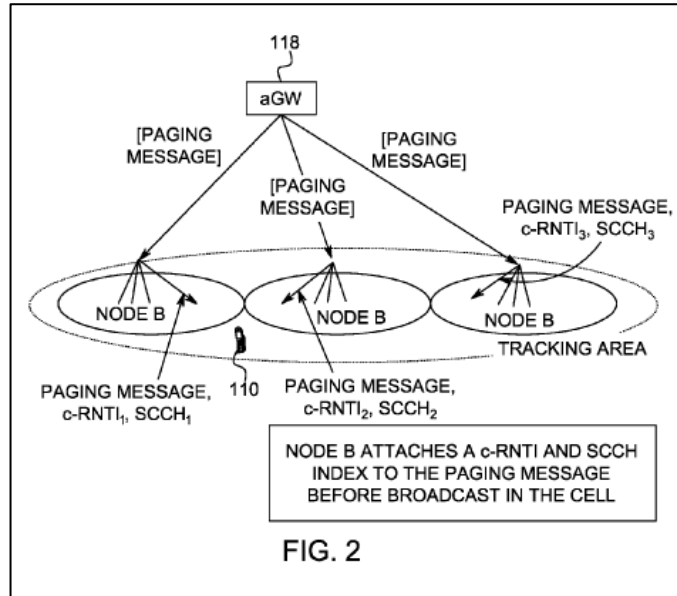
## I. BACKGROUND

Plaintiff alleges infringement of U.S. Patents No. 8,682,357 (the “’357 Patent”), No. 8,897,828 (the “’828 Patent”), No. 8,953,641 (the “’641 Patent”), No. 9,320,018 (the “’018 Patent”), No. 9,532,330 (the “’330 Patent”), and No. 9,681,466 (the “’466 Patent”) (collectively, the “Asserted Patents”).

### A. U.S. Patents No. 8,682,357 and No. 9,532,330

The ’357 and ’330 Patents are each entitled “Paging in a Wireless Network.” They are related, share a common disclosure, and claim a common priority date of May 2, 2006. These patents are directed to technology for paging mobile devices (user equipment or UEs) in a wireless network with a message to ready the UE for communication. The message uses a radio network temporary identifier (RNTI) and an indication of dedicated communication resources to facilitate connecting the UE for network communication.

Figure 2 of the patents, reproduced here, illustrates an exemplary wireless network comprising an access gateway (aGW, 118), various Node-B base stations, each servicing a cell, and UE (110). The aGW sends a paging message to the Node Bs to initiate communication with a UE. The Node Bs attach a cell-specific RNTI (c-RNTI) and an indication of resources for



the communications to the paging message, and then broadcast the modified message in the cell. If the message is intended for a recipient UE, the UE communicates using the c-RNTI and the indication of resources. ’357 Patent col.2 l.60 – col.3 l.6, col.5 ll.4–15.

The abstract of the '357 Patent provides:

Paging in a wireless network is described. A user equipment (UE) in idle mode is paged by sending a message on a control channel having an allocation of resources for a shared channel and a radio network temporary identity (RNTI) associated with other UE's including the UE. The paging message may include an International Mobile Subscriber Identity (IMSI) or a Temporary Mobile Subscriber Identity (TMSI).

The abstract of the '330 Patent provides:

A signal that includes an allocation of physical resources may be sent in a long-term evolution (LTE) network. The signal may be derived from a paging radio network temporary identity (RNTI). A paging message may be sent on a shared channel on the allocated physical resources.

Claim 11 of the '357 Patent and Claim 1 of the '330 Patent, exemplary method and device claims respectively, provide:

**11.** A method performed by a wireless network, the method comprising:  
sending, by a first network device, a paging signal to a second network device;  
paging, by the second network device, a user equipment (UE) in idle mode by sending a message on a control channel, the message having an allocation of resources for a shared channel and a radio network temporary identity (RNTI) associated with a plurality of UEs including the UE;  
sending, by the second network device, a paging message in the allocated resources for the shared channel; and  
wherein the paging message includes an International Mobile Subscriber Identity (IMSI) or a Temporary Mobile Subscriber Identity (TMSI).

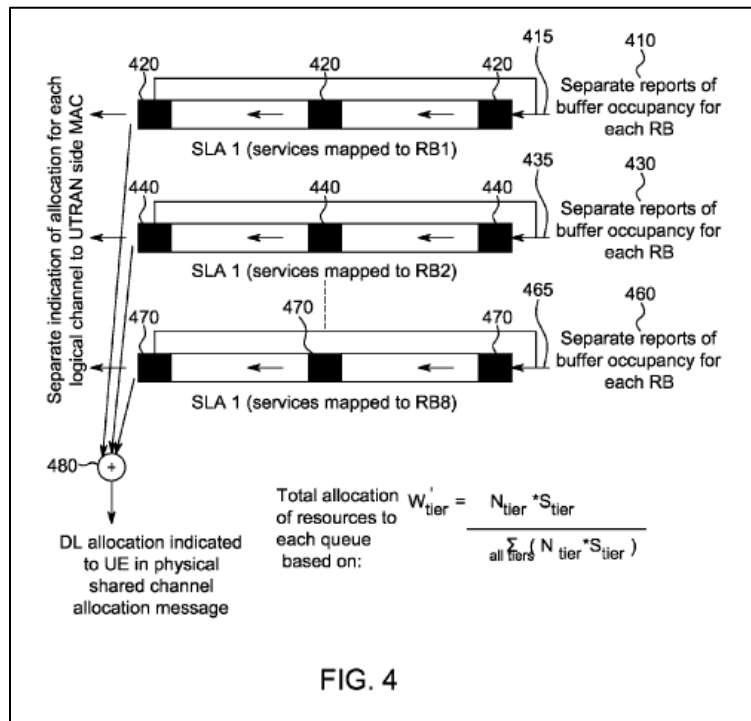
**1.** A network device comprising:  
circuitry configured to receive, from a core network, a paging message related to a user equipment (UE);  
a processor configured to send, on a control channel in a long-term evolution (LTE) network in response to reception of the paging message, a signal to indicate a page of the UE and the signal includes an indication of a shared channel for the UE to receive;  
wherein the signal is derived from a radio network temporary-identifier (RNTI); and  
the processor further configured to send a transmission to the UE on the indicated shared channel.

**B. U.S. Patents No. 9,320,018 and No. 9,681,466**

The '018 Patent is entitled “Scheduling Data Transmission in a Wireless Network” and the '466 Patent is entitled “Scheduling Transmissions on Channels in a Wireless Network.” The patents are related, share a common disclosure, and claim a priority date of May 8, 2006. These patents are directed to technology for allocating communication resources across various data for transmission in a wireless network.

The patents disclose a system in which user data is queued and allocated a share of finite physical communication resources according to a queue-based weighting scheme. Figure 4 of the patents, reproduced here, illustrates such an allocation. Radio-bearer queues (RB1, RB2, RB8) include an indication of the volume of data for transmission for each user in the queue (as opposed to the data for transmission itself). Resources are allocated to users at the head of the queue based on the number of users in the queue ( $N_{\text{tier}}$ ) multiplied by an allocation weight associated with the queue ( $S_{\text{tier}}$ ) and divided by the sum over all queues of  $N_{\text{tier}} \times S_{\text{tier}}$ . Ultimately, the allocated resources are used for communication of the user’s data. If the user has data remaining in the buffer, the user is then placed to the back of the queue for subsequent resource allocation and data communication. '018 Patent col.8 ll.7–44.

With reference to Figure 6, the patents disclose a process that is used to limit the number of queues served at a single instant in time. Queue allocation weights are determined as



described with reference to Figure 4 and free resources are allocated to the queues according to these weights. If the number of queues that are allocated resources is greater than the maximum queues allowed, only the top-weighted queues are allocated resources. Queues that do not make the cut are assigned a  $N_q$  ( $N_{\text{tier}}$ ) value of zero and new allocation weights are calculated. Resources are allocated according to the new weights (and the allocations are tweaked to account for any rounding errors or queues' minimum-resource requirements). *Id.* at col.10 l.37 – col.12 l.14.

The abstract of the '018 Patent provides:

Scheduling data transmissions in a wireless network is disclosed. A first value related to a radio bearer is provided to a user equipment (UE) by a wireless network. The wireless network also sends an allocation message for an uplink transmission and receives data in response. The data is selected from a plurality of radio bearers of the UE in response to the received first value and based on a second value.

The abstract of the '466 Patent provides:

Allocation of resources in a wireless network are described where resources are allocated for data of each channel having a second parameter above zero prior to another channel's data for transmission having a third parameter less than or equal to zero. The second parameter may be derived from a first channel's first parameter and the third parameter is derived from a second channel's first parameter.

Claim 12 of the '018 Patent and Claim 1 of the '466 Patent, exemplary method and device claims respectively, provide:

**12.** A method performed by a wireless network, the method comprising:  
sending, by the wireless network, a first parameter for each of a plurality of radio bearers of a user equipment (UE), wherein each of the plurality of radio bearers is associated with a channel;  
sending, by the wireless network, an allocation message for an uplink resource to the UE;  
receiving, by the wireless network, data from the plurality of radio bearers in response to the allocation message, wherein allocation of resources for the data of each channel of a radio bearer having a second parameter above zero is provided before another channel's data for transmission having a third parameter less than or equal to zero; and  
wherein the second parameter is derived from a first channel's first parameter and the third parameter is derived from a second channel's first parameter.

**1.** A user equipment (UE) comprising:

circuitry configured to receive, from a network device, a first transmission including a first parameter corresponding to each of a plurality of channels and a second transmission including an allocation message for an uplink resource from the network device;

a processor configured to allocate resources in response to the allocation message, wherein resources are allocated for data of each channel having a second parameter above zero prior to another channel's data for transmission having a third parameter less than or equal to zero; and

wherein the second parameter is derived from a first channel's first parameter and the third parameter is derived from a second channel's first parameter.

**C. U.S. Patent No. 8,897,828**

The '828 Patent is entitled "Power Control in a Wireless Communication System." The application that issued as the patent was filed August 12, 2004. This patent is directed to technology for managing communication-signal power levels in a wireless network.

Figure 4 of the patents illustrates a power-control system in which aspects of the prior-art closed-loop control, which processes transmit power control (TPC) commands based on comparing a measured signal-to-noise-plus-interference ratio (SNIR) to a target SNIR (412), are combined with aspects of the prior-art open-loop control, which estimate signal path losses based

on comparing the received strength of a beacon signal to the transmitted strength of that signal (432). TPC commands may be accumulated (420) and the accumulated value combined with a path-loss estimate to set a transmit power level (436). The patent also discloses that TPC commands may be used without accumulation—where the transmit

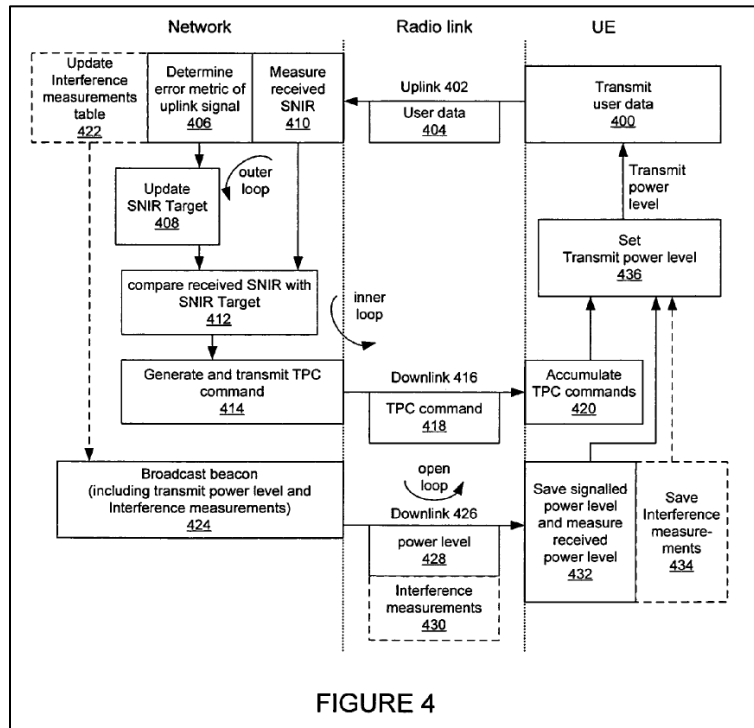


FIGURE 4

power level is updated each time a new TPC command is received. '828 Patent col.7 1.64 – col.10

1.13.

The abstract of the '828 Patent provides:

Power control in a wireless network is disclosed. Transmit power control (TPC) commands may be accumulated by a user equipment (UE). If accumulation is enabled, the UE may receive on a single physical channel an allocation of a scheduled uplink resource and a TPC command. The TPC command may be accumulated with other received TPC commands. A transmit power for an uplink communication based on both the path loss and the accumulated TPC commands may then be calculated by the UE. If accumulation is not enabled, the UE may receive an allocation of a scheduled uplink resource to transmit data at a calculated power level.

Claims 1 and 8 of the '828 Patent, exemplary method and device claims respectively, provide:

**1.** A method performed by user equipment (UE), the method comprising:  
receiving, by the UE, an indication of whether accumulation of transmit power control (TPC) commands is enabled;  
determining, by the UE, a path loss of a downlink channel;  
receiving, on a single physical channel by the UE if accumulation is enabled, an allocation of a scheduled uplink resource and a TPC command, wherein the TPC command is accumulated with other received TPC commands;  
calculating, by the UE if accumulation is enabled, transmit power in association with an uplink communication based on both the path loss and the accumulated TPC commands; and  
receiving, on the single physical channel by the UE if accumulation is not enabled, an allocation of a scheduled uplink resource to transmit data at a power level calculated by the UE based on the path loss.

**8.** A user equipment (UE) characterized in that:  
circuitry is configured to receive, by the UE, an indication of whether accumulation of transmit power control (TPC) commands is enabled;  
circuitry is configured to determine a path loss of a downlink channel;  
the circuitry is further configured to receive, on a single physical channel if accumulation is enabled, an allocation of a scheduled uplink resource and a TPC command, wherein the TPC command is accumulated with other received TPC commands;  
circuitry is configured to calculate, by the UE if accumulation is enabled, transmit power in association with an uplink communication based on both the path loss and the accumulated TPC commands; and  
the circuitry is further configured to receive, on the single physical channel by the UE if accumulation is not enabled, an allocation of a scheduled uplink resource to transmit data at a power level calculated by the UE based on the path loss.

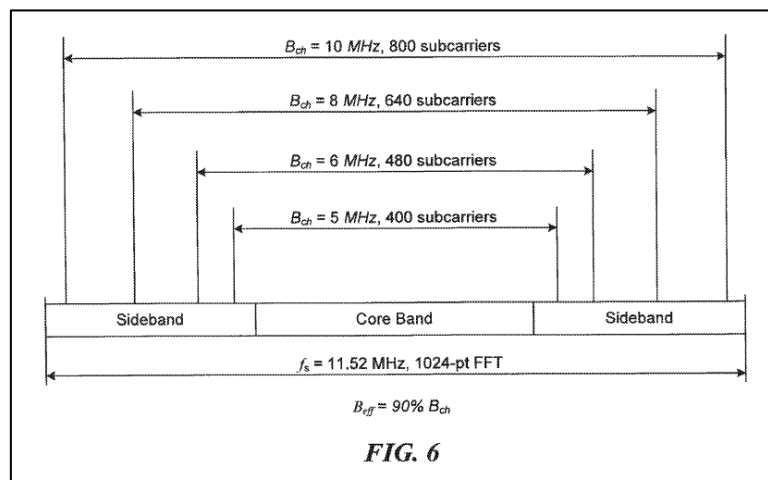


#### D. U.S. Patent No. 8,953,641

The '641 Patent is entitled "Methods and Apparatus for Multi-Carrier Communications with Variable Channel Bandwidth." The patent purports to be a continuation of an application that issued as U.S. Patent No. 7,787,431 ("the '431 Patent")<sup>2</sup> and claims priority to several provisional applications filed between January 29, 2004 and May 1, 2004. The '641 Patent is directed to technology for variable-bandwidth communication in a wireless network.

Figure 6 of the patent, reproduced here, illustrates an example of a variable-bandwidth system.

Multiple bands of different widths are defined by varying the number of subcarriers in the bands. A core-band is defined as one that is narrower than the smallest channel-bandwidth. The bandwidth outside the core-band comprises the



sidebands. The patent specification provides:

to operate in a variable bandwidth (VB) environment, specific signaling and control methods are required. Radio control and operation signaling is realized through the use of a core-band (CB). A core-band, substantially centered at the operating center frequency, is defined as a frequency segment that is not greater than the smallest operating channel bandwidth among all the possible spectral bands that the receiver is designed to operate with. . . .

In one embodiment relevant or essential radio control signals such as preambles, ranging signals, bandwidth request, and/or bandwidth allocation are transmitted within the CB. In addition to the essential control channels, a set of data channels and their related dedicated control channels are placed within the CB to maintain basic radio operation.

<sup>2</sup> The '431 Patent was the subject of Inter Partes Review (IPR) 2016-01664. This IPR considered the scope of "transmit a broadcast channel in an orthogonal frequency division multiple access (OFDMA) core-band," a term currently before the Court with regard to the '641 Patent.

'641 Patent col.4 ll.16 – col.5 l.17.

The abstract of the '641 Patent provides:

Methods and apparatus for multi-carrier communication with variable channel bandwidth are disclosed, where the time frame structure and the OFDM symbol structure are invariant and the frequency-domain signal structure is flexible. In one embodiment, a mobile station, upon entering a geographic area, uses a core-band to initiate communication and obtain essential information and subsequently switches to full operating bandwidth of the area for the remainder of the communication. If the mobile station operates in a wide range of bandwidths, the mobile station divides the full range into sub-ranges and adjusts its sampling frequency and its FFT size in each sub-range.

Claims 1 and 25 of the '641 Patent, exemplary method and device claims respectively, provide:

**1.** A cellular base station, comprising:  
circuitry configured to transmit a broadcast channel in an orthogonal frequency division multiple access (OFDMA) core-band, wherein the core-band is substantially centered at an operating center frequency and the core-band includes a first plurality of subcarrier groups, wherein each subcarrier group includes a plurality of subcarriers, the core-band defined as a frequency segment with a bandwidth that is not greater than a smallest operating channel bandwidth among a plurality of operating channel bandwidths, the core-band having a same value for the plurality of operating channel bandwidths, wherein the circuitry is further configured to maintain a fixed spacing between adjacent subcarriers and to adjust a number of usable subcarriers to realize a variable band, wherein the number of usable subcarriers is determined based on the plurality of operating channel bandwidths; and  
circuitry configured to transmit control and data channels using the variable band including a second plurality of subcarrier groups, wherein the variable band includes at least the core-band.

**11.** A method performed by a mobile station, comprising:  
receiving broadcast information by the mobile station to access an orthogonal frequency division multiple access (OFDMA) system, wherein the broadcast information is received only in a first band having a first bandwidth and the broadcast information is carried by a plurality of groups of subcarriers with each group having a plurality of contiguous subcarriers;  
determining a second bandwidth of a second band that is associated with the OFDMA system based upon the broadcast information received in the first band, wherein a second bandwidth of the second band is greater than the first bandwidth of the first band; and  
based upon the determination of the second bandwidth,  
receiving the second band,

wherein the first band is contained within the second band,  
wherein a data channel is carried by at least one subcarrier group of the  
second band,  
wherein the plurality of contiguous subcarriers have fixed spacing,  
wherein a number of usable subcarriers is adjustable to realize a variable  
band, wherein the number of usable subcarriers is determined based on  
a plurality of operating channel bandwidths, and  
wherein the first band is defined as a frequency segment with a bandwidth  
that is not greater than a smallest operating channel bandwidth among  
the plurality of operating channel bandwidths, the first band having a  
same value for the plurality of operating channel bandwidths, wherein  
the mobile station is configured to operate within the plurality of  
operating channel bandwidths.

## **II. LEGAL PRINCIPLES**

### **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. Conceptoronic, 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 not helpful to a court. *Id.* 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. Departing from the Ordinary Meaning of a Claim Term**

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

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

To disavow or disclaim the full scope of a claim term, the patentee’s statements in the specification or prosecution history must amount to a “clear and unmistakable” surrender. *Cordis*

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

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

**C. Definiteness Under 35 U.S.C. § 112, ¶ 2 (pre-AIA) / § 112(b) (AIA)<sup>4</sup>**

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

When a term of degree is used in a claim, “the court must determine whether the patent provides some standard for measuring that degree.” *Biosig Instruments, Inc. v. Nautilus, Inc.*, 783 F.3d 1374, 1378 (Fed. Cir. 2015) (quotation marks omitted). Likewise, when a subjective term is used in a claim, “the court must determine whether the patent’s specification supplies some standard for measuring the scope of the [term].” *Datamize, LLC v. Plumtree Software, Inc.*, 417

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<sup>4</sup> The Court refers to the pre-AIA version of § 112 but understands there is no substantial difference between definiteness under the pre-AIA version and under the AIA version of the statute.

F.3d 1342, 1351 (Fed. Cir. 2005). The standard “must provide objective boundaries for those of skill in the art.” *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014).

### III. CONSTRUCTION OF DISPUTED TERMS

**A. “the message having an allocation of resources for a shared channel and a radio network temporary identity (RNTI) associated with a plurality of UEs including the UE”**

Disputed Term <sup>5</sup>	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p>“the message having an allocation of resources for a shared channel and a radio network temporary identity (RNTI) associated with a plurality of UEs including the UE”</p> <ul style="list-style-type: none"> <li>• ’357 Patent Claims 11, 30, 47</li> </ul>	<p>Plain and ordinary meaning, the message conveying an allocation of resources for a shared channel and conveying a radio network temporary identity (RNTI) associated with a plurality of UEs including the UE</p>	<p>the message having an allocation of resources for a shared channel and an allocation of a radio network temporary identity (RNTI) associated with a plurality of UEs including the UE</p>

#### **The Parties’ Positions**

Plaintiff submits: This term has its plain and ordinary meaning and no construction is required. Under the plain meaning, a message “having” information is a message “conveying” that information. And the information conveyed is: (1) “an allocation of resources for a shared channel” and (2) “a radio network temporary identity (RNTI) associated with a plurality of UEs including the UE.” That is, the term is not directed to “an allocation of” an RNTI. As described in the ’357 Patent, it is the RNTI that is included in the message, rather than an allocation of the RNTI. ECF No. 180 at 9–11.

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<sup>5</sup> For all term charts in this Order, the claims in which the term is found are listed with the term but: (1) only the highest-level claim in each dependency chain is listed and (2) only asserted claims identified in the parties’ P.R. 4-5 Joint Claim Construction Chart (ECF No. 210) are listed.



In addition to the claims themselves, Plaintiff cites the following **intrinsic evidence** to support its position: '357 Patent figs.5, 9, 13–16, col.3 ll.21–29, col.4 ll.27–29, col.6 ll.58–63, col.8 ll.55–56, col.9 ll.25–26, col.9 l.59 – col.10 l.1, col.10 ll.15–19, col.10 ll.22–28, col.10 ll.37–40, col.10 ll.59–62, col.10 l.67 – col.11 l.5.

Defendants respond: A message “having” information is distinct from a message “conveying” information in that the former reflects content and the latter reflects transmission. And the claims separately recite “sending” the message, the transmission step. The term is directed to a message “having an allocation of”: (1) “resources for a shared channel” and (2) “a radio network temporary identity (RNTI) associated with a plurality of UEs including the UE.” That is, the message includes an allocation of RNTI. This comports with the description of the invention in the '357 Patent, which includes description of allocation of RNTI and shared channels to UEs. And it comports with the prosecution history, which includes description of assigning temporary identifiers to UEs. ECF No. 194 at 7–11.

In addition to the claims themselves, Defendants cite the following **intrinsic evidence** to support their position: '357 Patent col.1 ll.6–7, col.1 ll.38–39, col.3 ll.2–10, col.5 ll.10–15, col.5 ll.25–34, col.7 ll.26–37, col.7 l.63 – col.8 l.1, col.8 ll.6–19; '357 Patent File Wrapper May 2, 2006 Application (Defendants' Ex. A, ECF No. 194-2), November 23, 2009 Amendment (Defendants' Ex. B, ECF No. 194-3).

Plaintiff replies: The RNTI is a specific identifier that is included in—and necessarily conveyed by—the message. And while the patent may describe selecting an identifier, there is no description of sending an allocation of the identifier rather than the identifier itself. ECF No. 207 at 3–4. It is unclear what “allocation of an RNTI” even means.

Plaintiff cites further **intrinsic evidence** to support its position: '357 Patent col.3 ll.2–4, col.5 l.1 – col.6 l.67, col.8 ll.62–64, col.10 ll.15–21.

### **Analysis**

The issue in dispute is whether the message has an “allocation of a radio network temporary identity (RNTI) associated with a plurality of UEs including the UE” or, rather, “a radio network temporary identity (RNTI) associated with a plurality of UEs including the UE.” The message includes an RNTI and not simply an allocation of an RNTI.

While the '357 and '330 Patents include numerous descriptions of selecting or allocating an RNTI for a UE or group of UEs, there is no description of including simply an allocation of an RNTI that is not the RNTI itself. In contrast, there are repeated descriptions of attaching or affixing an RNTI to a paging message. *See, e.g.*, '357 Patent fig.2, col.2 l.65 – col.3 l.3 (“affix the paging message with a ... c-RNTI”), col.5 ll.9–10 (“attaches a c-RNTI ... to the message”), col.5 ll.26–29 (“the paging signal ... includes ... c-RNTI”). And the claim language explicitly requires that the RNTI is “associated with a plurality of UEs including the UE,” so there is no need to use “allocation” to capture the association between the RNTI and the UE. In this context, “allocation of” in the claim language at issue modifies “resources” but not “a radio network temporary identity (RNTI) associated with a plurality of UEs including the UE.” *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1316 (Fed. Cir. 2005) (en banc) (“The construction that stays true to the claim language and most naturally aligns with the patent’s description of the invention will be, in the end, the correct construction.”) (quoting *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998)).

The Court rejects Plaintiff’s proposal to rewrite “having” as “conveying.” It is not clear if Plaintiff intends any difference in meaning between the two terms, but the plain meaning of

“having” is readily accessible without further construction. And construing “having” as “conveying” threatens to improperly change the scope of the claim in that the former connotes content while the latter potentially connotes an action.

Accordingly, the Court construes the term as follows:

- “the message having an allocation of resources for a shared channel and a radio network temporary identity (RNTI) associated with a plurality of UEs including the UE” means “the message having: (1) an allocation of resources for a shared channel and (2) a radio network temporary identity (RNTI) associated with a plurality of UEs including the UE.”

**B. “the signal”**

<b>Disputed Term</b>	<b>Plaintiff’s Proposed Construction</b>	<b>Defendants’ Proposed Construction</b>
“the signal” <ul style="list-style-type: none"> <li>• ’330 Patent Claims 1, 8, 18, 25</li> </ul>	Plain and ordinary meaning, no construction necessary.  <b>alternative:</b> the signal to indicate a page of the UE	the signal that (1) indicates a page of the UE and (2) includes an indication of the shared channel for the UE to receive
“the signal” <ul style="list-style-type: none"> <li>• ’330 Patent Claims 9, 17, 26, 34</li> </ul>	Plain and ordinary meaning, no construction necessary.  <b>alternative:</b> the signal to indicate a page from the network device	the signal that (1) indicates a page from a network device and (2) includes an indication of the shared channel

Because the parties’ arguments and proposed constructions with respect to these terms are related, the Court addresses the terms together.

**The Parties’ Positions**

Plaintiff submits: The term “the signal” refers to prior references in the claim of “a signal” that form the term’s antecedent basis. Claims 1 and 18 of the ’330 Patent recite “a signal to indicate a page of the UE” and Claims 9 and 26 recite “a signal to indicate a page from a network device.”

Defendants’ proposed construction improperly substitutes “that indicates” for the “to indicate” explicit in the claim language. And Defendants’ construction needlessly includes language elsewhere explicit in the claims. ECF No. 180 at 12–14.

Defendants respond: The claims expressly require the signal to have two attributes: (1) that it indicates a page and (2) that it includes an indication of the shared channel. Plaintiff’s proposed construction threatens to exclude the second attribute. ECF No. 194 at 11–12.

Plaintiff replies: There is no need to include language in the construction of “the signal” that is elsewhere expressed in the claims. ECF No. 207 at 4–5.

### Analysis

The issue in dispute appears to be whether “signal to indicate a page” should be rewritten as “signal that indicates a page.” The Court sees no reason to change “to indicate” to “that indicates.”

The parties agree that “the signal” refers to “a signal” earlier recited in the claims. This signal is explicitly defined in the claims. For example, Claim 1, reproduced here and annotated by the Court, requires that “a signal” is “to indicate a page of the UE,” “includes an indication of a shared channel for the UE to receive,” and “is derived from a radio network temporary-identifier (RNTI).” The other independent claims recite similar or analogous limitations. That is, “the signal” is explicitly defined in the claims. And this definition is clear and accessible without need for elucidation.

The Court rejects Defendants’ proposal to rewrite “to indicate” as “that indicates.” It

<p>1. A network device comprising: circuitry configured to receive, from a core network, a paging message related to a user equipment (UE); a processor configured to send, on a control channel in a long-term evolution (LTE) network in response to reception of the paging message, <i>a signal</i> to indicate a page of the UE and <i>the signal</i> includes an indication of a shared channel for the UE to receive; wherein <i>the signal</i> is derived from a radio network temporary-identifier (RNTI); and the processor further configured to send a transmission to the UE on the indicated shared channel.</p>
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is not clear if Defendants intend any difference in meaning between the two terms, but the plain meaning of “to indicate” is readily accessible without further construction. And construing “to indicate” as “that indicates” threatens to improperly change the scope of the claim in that the former connotes capability and purpose while the latter potentially connotes action.

Accordingly, the Court rejects Defendants’ “that indicates” language and holds that “the signal” has its plain and ordinary meaning without the need for further construction.

**C. The “wherein allocation of resources” and “wherein resources are allocated” terms.**

Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p>“wherein allocation of resources for the data of each channel [of a radio bearer] having a second parameter above zero is provided [before/prior to] another channel’s data for transmission having a third parameter less than or equal to zero”</p> <ul style="list-style-type: none"> <li>• ’018 Patent Claims 12, 16, 20</li> <li>• ’466 Patent Claims 4, 9</li> </ul>	<p>Plain and ordinary meaning, wherein allocation of resources for the data of each channel of a radio bearer having a second parameter above zero is provided before the allocation for another channel's data for transmission having a third parameter less than or equal to zero</p>	<p>wherein allocation of resources for the data of each channel of a radio bearer having a second parameter above zero must be provided for transmission of that data before another channel’s data having a third parameter less than or equal to zero</p> <p><b>alternative:</b> indefinite</p>
<p>“wherein resources are allocated for data of each channel [of a radio bearer] having a second parameter above zero [before/prior to] another channel’s data for transmission having a third parameter less than or equal to zero”</p> <ul style="list-style-type: none"> <li>• ’018 Patent Claims 24</li> <li>• ’466 Patent Claims 1, 6</li> </ul>	<p>Plain and ordinary meaning, wherein allocation of resources for the data of each channel of a radio bearer having a second parameter above zero is provided before the allocation for another channel's data for transmission having a third parameter less than or equal to zero</p>	<p>wherein resources must be allocated such that transmission of the data of each channel [of a radio bearer] having a second parameter above zero takes place before transmission of data of another channel [of a radio bearer] having a third parameter less than or equal to zero</p> <p><b>alternative:</b> indefinite</p>

Because the parties' arguments and proposed constructions with respect to these terms are related, the Court addresses the terms together.

### **The Parties' Positions**

Plaintiff submits: These terms all are directed to allocation of resources between two sets of data—the resources for one set are allocated before the other set. This allocation refers to setting the relative priority of the two data sets—one set has priority over the other. This is not simply the order of transmission of the data, as Defendants' propose. ECF No. 180 at 14–18.

In addition to the claims themselves, Plaintiff cites the following **intrinsic evidence** to support its position: '018 Patent fig.4–6, col.2 ll.58–59, col.3 ll.22–24, col.4 ll.11–13, col.4 ll.15–16, col.9 ll.21–28, col.9 ll.38–45, col.9 l.55 – col.10 l.18, col.10 ll.28–30, col.10 ll.37 – col.12 l.14.

Defendants respond: These terms each include an error—they are missing words in either of the clauses separated by the “prior to”/“before” language. Given the description of the invention in the '018 and '466 Patents and the claim language surrounding the terms, the error may be corrected only by making clear that the temporal aspect of the term relates to the transmission of the data. As described in the patents, data with a parameter not greater than zero receive no allocation of communication resources and therefore cannot transmit. One set of data (with parameter greater than zero) is therefore transmitted before the other set (with parameter less than or equal to zero). Plaintiff's proposed construction improperly excludes the “for transmission” requirement expressed in the terms. Finally, if both Defendants' and Plaintiff's proposed constructions are reasonable, then the term renders claims indefinite because there are multiple reasonable corrections to the error in the claim language. ECF No. 194 at 12–20.

In addition to the claims themselves, Defendants cite the following **intrinsic evidence** to support their position: '018 Patent fig.6, col.3 ll.22–24, col.4 ll.11–16, col.8 ll.12–28, col.9 ll.38–45, col.10 ll.28–30, col.10 ll.37–40, col.11 ll.5–47, col.12 ll.1–12.

Plaintiff replies: There is no error in the claim language that needs to be corrected, no missing words that need to be added. Rather, the claim language plainly refers to the allocation of resources for two different sets of data, wherein the allocation for one is performed before the allocation for the other. The patents describe a resource-allocation process that is not simply transmitting one data set before the other. Resources are allocated to queues based on parameter values, then data in the queues are transmitted at “a single instant in time.” The “for transmission” language in the term refers to the data that is considered in the third parameter—it is only data that is “for transmission,” not other data associated with the “another” channel. ECF No. 207 at 5–7.

Plaintiff cites further **intrinsic evidence** to support its position: '018 Patent col.9 ll.11–20, col.9 ll.54 – col.12 l.33.

### **Analysis**

The dispute is whether this term requires transmission of one set of data (with a second parameter above zero) before transmission of another set of data (with a third parameter less than or equal to zero). It does not. It requires allocation of communication resources to one set of data before allocation of resources to the another set of data. This does not necessarily set the order of transmission of the data.

There is no error in the claim language. The limitation at issue is directed to the relative timing of communication-resource allocation. The Court agrees with Plaintiff that “for transmission” is an attribute of the “another channel’s data.” “For transmission” does not mandate that data with

the second parameter greater than zero is necessarily transmitted before the data with the third parameter less than or equal to zero.

The timing of transmission of data and resource allocation is not as simple as Defendants suggest. It is true that the patents describe an embodiment in which a zero-value parameter yields no resource allocation to data. '018 Patent col.10 l.37 – col.12 l.14. But it is not clear from this that the zero-value-parameter data is necessarily transmitted only after all the greater-than-zero-value-parameter data. For example, the patents describe that after allocation of resources to a user's data, "the user is placed at the back of the queue (assuming there is still buffer occupancy left for this user given the resource that has been allocated)." *Id.* at col.8 ll.13–23. This suggests that some of the data in the queue may not be transmitted but is instead sent to the back of the queue, subject to another iteration of weighted-resource allocation. In this subsequent iteration of weighted-resource allocation, it may be that data originally associated with a zero-value parameter is now associated with a parameter greater than zero and is transmitted with or before the data sent to the back of the queue. *See id.* at col.10 l.37 – col.12 l.14.

Accordingly, the Court construes these terms as follows:

- '018 Patent Claims 12, 16, 20 and '466 Patent Claims 4,9: "wherein allocation of resources for the data of each channel [of a radio bearer] having a second parameter above zero is provided [before/prior to] another channel's data for transmission having a third parameter less than or equal to zero" means "wherein allocation of resources for a first set of data is provided before any allocation of resources for a second set of data, where the first set of data is the data of each channel of a radio bearer having a second parameter above zero and the second set of data is another channel's data-for-transmission having a third parameter less than or equal to zero";



- '018 Patent Claim 24 and '466 Patent Claims 1, 6: “wherein resources are allocated for data of each channel [of a radio bearer] having a second parameter above zero [before/prior to] another channel’s data for transmission having a third parameter less than or equal to zero” means “wherein resources are allocated for a first set of data before any are allocated for a second set of data, where the first set of data is the data of each channel of a radio bearer having a second parameter above zero and the second set of data is another channel’s data-for-transmission having a third parameter less than or equal to zero.”

**D. “the single physical channel”**

<b>Disputed Term</b>	<b>Plaintiff’s Proposed Construction</b>	<b>Defendants’ Proposed Construction</b>
“the single physical channel” • '828 Patent Claims 1, 15	Plain and ordinary meaning, a channel capable of carrying an allocation of a scheduled uplink resource and a TPC command	the same physical channel on which the UE receives the allocation of a scheduled uplink resource and a TPC command
“the single physical channel” • '828 Patent Claim 8, 22		the same physical channel on which the circuitry is configured to receive the allocation of a scheduled uplink resource and a TPC command
“the single physical channel” • '828 Patent Claim 29		the same physical channel on which the network device sends the allocation of a scheduled uplink resource and a TPC command
“the single physical channel” • '828 Patent Claim 36		the same physical channel on which the circuitry is configured to send the allocation of a scheduled uplink resource and a TPC command

Because the parties' arguments and proposed constructions with respect to these terms are related, the Court addresses the terms together.

### **The Parties' Positions**

Plaintiff submits: The term refers to "a single physical channel" previously recited in the claims. Defendants' proposed construction requiring the "same" physical channel is ambiguous in that it is unclear whether Defendants intend "same" to mean that the channel necessarily be used for both allocation of a scheduled uplink resource and a TPC command, even when accumulation is not enabled. ECF No. 180 at 20–22.

In addition to the claims themselves, Plaintiff cites the following **intrinsic evidence** to support its position: '828 Patent, at [57] Abstract, col.12 ll.39–54.

Defendants respond: The term means that the physical channel used when accumulation is not enabled is the same physical channel used when accumulation is enabled. This does not require that a TPC command is received in both modes. But it does require that "the single physical channel" has more than just capability in common with the previously recited "a single physical channel." It must be the same channel. ECF No. 194 at 21–22.

Plaintiff replies: The claims are directed to methods having two modes, one in which accumulation is enabled and one in which it is not. The methods do not require operation in both modes; therefore, it is improper to require that the physical channel be used in both modes. The single physical channel simply needs to be capable of carrying a TPC command. ECF No. 207 at 7–8.

### **Analysis**

The issue is whether "the single physical channel" must be the same for the accumulation-enabled mode as for the accumulation-not-enabled mode. It must. This requires more than just "a

channel capable of carrying an allocation of a scheduled uplink resource and a TPC command.”  
But it does not require actual operation in both modes.

The parties agree the “the single physical channel” refers to “a physical channel” earlier recited in the claims. This physical channel is used when accumulation is enabled and when it is not enabled. For example, Claim 1 of the ’828 Patent, reproduced here and annotated by the Court, requires receiving an allocation of resource and a TPC command on “a single physical channel” when accumulation is enabled and receiving an allocation of resource on “the single physical channel” when accumulation is not enabled. It is the same physical channel.

The plain meaning of the claims comports with an embodiment described in the patent. Specifically, the patent describes a “new physical channel” that includes “fast allocation and scheduling information . . . thereby informing the UE of the uplink resources that it may use” and can “be used as the feedback channel for the combined power control scheme.” ’828 Patent col.12 ll.44–44. “For example, an allocation/scheduling channel could carry TPC commands.” *Id.* at col.12 ll.49–51. That is, one physical channel—a single physical channel—carries both uplink resource and a TPC command (if the TPC command is present).

Accordingly, the Court construes the terms as follows:

1. A method performed by user equipment (UE), the method comprising:  
receiving, by the UE, an indication of whether accumulation of transmit power control (TPC) commands is enabled;  
determining, by the UE, a path loss of a downlink channel;  
receiving, on ***a single physical channel*** by the UE if accumulation is enabled, an allocation of a scheduled uplink resource and a TPC command, wherein the TPC command is accumulated with other received TPC commands;  
calculating, by the UE if accumulation is enabled, transmit power in association with an uplink communication based on both the path loss and the accumulated TPC commands; and  
receiving, on ***the single physical channel*** by the UE if accumulation is not enabled, an allocation of a scheduled uplink resource to transmit data at a power level calculated by the UE based on the path loss.

- '828 Patent Claims 1, 15: “the single physical channel” means “the same physical channel on which the UE receives the allocation of a scheduled uplink resource and a TPC command if accumulation were enabled”;
- '828 Patent Claims 8, 22: “the single physical channel” means “the same physical channel on which the circuitry is configured to receive the allocation of a scheduled uplink resource and a TPC command if accumulation were enabled”;
- '828 Patent Claim 29: “the single physical channel” means “the same physical channel on which the network device sends the allocation of a scheduled uplink resource and a TPC command if accumulation were enabled”; and
- '828 Patent Claim 36: “the single physical channel” means “the same physical channel on which the circuitry is configured to send the allocation of a scheduled uplink resource and a TPC command if accumulation were enabled.”

**E. “[receiving/receive/sending/send] ... if accumulation is not enabled, an allocation of a scheduled uplink resource to transmit data [to the wireless network/network device] at a power level calculated by the UE based on the path loss”**

Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
<p>“[receiving/receive/sending/send] . . . if accumulation is not enabled, an allocation of a scheduled uplink resource to transmit data [to the wireless network/network device] at a power level calculated by the UE based on the path loss”</p> <ul style="list-style-type: none"> <li>• '828 Patent Claims 1, 8, 15, 22, 29, 36</li> </ul>	<p>Plain and ordinary meaning, (no negative limitation required)</p>	<p>Plain and ordinary meaning, [receiving/receive/sending] . . . if accumulation is not enabled an allocation of a scheduled uplink resource to transmit data to the wireless network at a power level calculated by the UE based on the path loss and without using a TPC command</p>

### **The Parties' Positions**

Plaintiff submits: The claim language does not preclude inclusion of a TPC command when accumulation is not enabled. Therefore, Defendants' negative limitation is improper. ECF No. 180 at 22–23.

Defendants respond: Under the plain meaning of the term, the claims do not allow for TPC commands when accumulation is not enabled. If the term is construed to allow TPC commands when accumulation is not enabled, then the claim language specifying that TPC commands are received when accumulation is enabled would be superfluous. Construing the claims so that TPC commands are used when accumulation is enabled and are not allowed when accumulation is not enabled comports with the description of the invention. The '828 Patent describes two power-control systems, a closed-loop system that uses TPC commands and an open-loop system that does not. The claims are directed to open- and closed-loop control when accumulation is enabled and to open-loop operation when accumulation is not enabled. ECF No. 194 at 23–25.

In addition to the claims themselves, Defendants cite the following **intrinsic evidence** to support their position: '828 Patent figs.2–4, col.6 l.55 – col.7 l.2., col.7 ll.10–19, col.7 ll.64–66, col.8 ll.4–11, col.8 ll.48–56, col.8 l.66 – col.9 l.18, col.9 ll.47–62, col.11 ll.39–42.

Plaintiff replies: TPC commands are not prohibited when accumulation is not enabled just because they are required when accumulation is enabled. The patent contemplates use of TPC commands for power adjustment both when accumulation is enabled and when it is not. When accumulation enabled, power adjustment is based on the accumulated TPC value. When accumulation is not enabled, power adjustment is based on the last TPC value. ECF No. 207 at 8–9.

Plaintiff cites further **intrinsic evidence** to support its position: '828 Patent, at [57] Abstract, figs.3–4, 5C, col.7 ll.16–19, col.7 ll.64–66, col.8 l.66 – col.9 l.15, col.9 l.55 – col.10 l.14, col.11 ll.19–25, col.12 ll.7–65.

### **Analysis**

The issue in dispute here is whether, when accumulation is not enabled in the user equipment (UE), a “power level calculated by the UE based on the path loss” necessarily is not also based on a transmit power control (TPC) command. The claim language has no such limitation.

The distinction between the accumulation-enabled mode and the accumulation-not-enabled mode is whether TPC commands are accumulated for use in setting the UE’s transmit-signal power level. As described in the '828 Patent, a power-control system according to the invention may use TPC commands in at least three ways: (1) accumulate the TPC commands and use the accumulated value to update the transmit power level every frame period, (2) update the transmit power level each time a new TPC command is received, and (3) update the transmit power level each time a new TPC command or a new power level is received. '828 Patent col.8 l.66 – col.9 l.10. Thus, the patent describes using TPC commands outside of a mode in which the TPC commands are accumulated.

The claims do not restrict use of information in calculating the power level. Rather, the claims require certain information but are otherwise open-ended. In the claimed accumulation-enabled mode, the power level is *necessarily* “based on both the path loss and the accumulated TPC commands.” *See, e.g., id.* at col.13 ll.48–51 (Claim 1). In the claimed accumulation-not-enabled mode, the power level is necessarily “based on the path loss.” *Id.* at col.13 ll.52–55 (Claim 1). Thus, the accumulated TPC commands are required in one mode but are not required in the other. Use of “based on” in the patent suggests that, as for the “comprising” and transitions in the claims,

the set of information following “based on” is not closed. For example, Claim 6, which depends from Claim 1, recites “wherein the calculated transmit power is based on a selected transport format.” *Id.* at col.13 ll.66–67. If “based on” mandated a closed set, then Claim 6 is impossible as it appends the power-level calculations of Claim 1. Ultimately, Defendants have not shown that reading in a negative limitation is mandated either by the description or the claim language.

Accordingly, the Court rejects Defendants’ proposed “and without using a TPC command” and holds that accumulation-not-enabled term has its plain and ordinary meaning without the need for further construction.

**F. “transmit a broadcast channel in an orthogonal frequency division multiple access (OFDMA) core-band”**

Disputed Term	Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“transmit a broadcast channel in an orthogonal frequency division multiple access (OFDMA) core-band” <ul style="list-style-type: none"> <li>• ’641 Patent Claim 1</li> </ul>	Plain and ordinary meaning, transmitting a broadcast channel, wherein the entire channel is contained within an orthogonal frequency division multiple access (OFDMA) core-band	transmit a broadcast channel, wherein the entire broadcast channel is contained within the OFDMA core band and provides essential radio control channels and a set of data channels in the core band to maintain basic radio operation

**The Parties’ Positions**

Plaintiff submits: The term plainly denotes where the transmitted broadcast channel is located—in an OFDMA core-band. In an Inter Partes Review of the ’641 Patent’s parent, U.S. Patent No. 7,787,431 (the “’431 Patent”),<sup>6</sup> the Patent Trial and Appeal Board interpreted this term to denote that the entire broadcast channel is located in an OFDMA core-band. This construction

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<sup>6</sup> The ’641 Patent issued from a continuation of the application that issued as the ’431 Patent; thus, they share a substantially identical disclosure of the invention. *See* ’641 Patent, at [63] Related U.S. Application Data.

is supported by an exemplary embodiment disclosing a broadcast channel entirely within a core-band. There is no intrinsic support for Defendants' proposed additional limitation, "wherein the entire broadcast channel . . . provides essential radio control channels and a set of data channels in the core band to maintain basic radio operation." At most, the patent includes a description of essential control channels and exemplary data channels in the core-band, but not in the broadcast channel. It would be improper to read this feature of an exemplary embodiment into the construction of "core-band," let alone "broadcast channel." ECF No. 180 at 23–26.

In addition to the claims themselves, Plaintiff cites the following **intrinsic evidence** to support its position: '641 Patent col.4 l.66 – col.5. l.4, col.5 ll.7–17, col.6 ll.23–30; '431 Patent; Final Written Decision, *Ericsson Inc. et al. v. Intellectual Ventures II LLC*, IPR2015-01664 ('431 Patent), Paper 24 (PTAB Feb. 8, 2017) (Plaintiff's Ex. 8, ECF No. 180-9).

Defendants respond: The term requires the entire broadcast channel to be entirely within the OFDMA core-band, but this is because of Plaintiff's argument to overcome a prior-art reference in the Inter Partes Review of the '431 Patent. Plaintiff's IPR-argument is based on the '431 Patent's disclosure that is identical to the '641 Patent's disclosure at column 5, lines 7 to 17. Per the IPR-argument, the "entire broadcast channel" includes provision of "essential radio control channels and a set of data channels in the core-band to maintain basic radio operation." This limitation should be included in the construction of "transmit a broadcast channel in an orthogonal frequency division multiple access (OFDMA) core-band." ECF No. 194 at 26–33.

In addition to the claims themselves, Defendants cite the following **intrinsic evidence** to support their position: '641 Patent col.5 ll.7–17, col.6 ll.23–30; '431 Patent (Defendants' Ex. F, ECF No. 194-7); *Ericsson Inc. et al. v. Intellectual Ventures II LLC*, IPR2015-01664 ('431 Patent): Decision – Institution of Inter Partes Review, Paper 7 (PTAB Feb. 11, 2016) (Defendants' Ex. C,



ECF No. 194-4), Patent Owner Response, Paper 13 (PTAB May 9, 2016) (Defendants' Ex. E, ECF No. 194-6), Declaration of Kenneth Zeger, Ph.D., Exhibit 2001 (PTAB May 9, 2016) (Defendants' Ex. G, ECF No. 194-8); Final Written Decision, Paper 24 (PTAB Feb. 8, 2017) (Defendants' Ex. D, ECF No. 194-5).

Plaintiff replies: A broadcast channel does not provide data channels. It provides control information. The argument in the '431 Patent IPR is that a broadcast channel located both inside and outside the core-band contradicts the purpose of an embodiment disclosing the broadcast channel (control channels) and data channels entirely within the core-band. The broadcast channel and data channels are distinct. ECF No. 207 at 9–12.

Plaintiff cites further **intrinsic evidence** to support its position: '641 Patent col.3 ll.54–56; '431 Patent (Plaintiff's Ex. 9, ECF No. 207-2); *Ericsson Inc. et al. v. Intellectual Ventures II LLC*, IPR2015-01664 ('431 Patent): Declaration of Zygmunt J. Haas, Ph.D., Exhibit 1012 (PTAB Aug. 3, 2015) (Plaintiff's Ex. 10, ECF No. 207-3), Patent Owner Response, Paper 13 (PTAB May 9, 2016) (Plaintiff's Ex. 13, ECF No. 207-6), Declaration of Kenneth Zeger, Ph.D., Exhibit 2001 (PTAB May 9, 2016) (Plaintiff's Ex. 11, ECF No. 207-4), Record of Oral Hearing, Paper 23 (PTAB Jan. 12, 2017) (Plaintiff's Ex. 12, ECF No. 207-5), Response Brief of Appellee Intellectual Ventures II LLC, 2017-2242, ECF No. 23 (Fed. Cir. Nov. 14, 2017) (Plaintiff's Ex. 14, ECF No. 207-7).

### **Analysis**

The issue here is whether “broadcast channel” necessarily “provides essential radio control channels and a set of data channels in the core band to maintain basic radio operation.” It provides control channels essential to maintain basic radio operation, but it does not necessarily provide data channels.

“Broadcast channel” has a customary meaning. Neither party identifies the use of “broadcast channel” in the ’641 Patent other than in the claim set.<sup>7</sup> This was also an issue when construing “transmit a broadcast channel in an orthogonal frequency division multiple access (OFDMA) core-band” in the IPR of the ’431 Patent. *See, e.g.*, Record of Oral Hearing, *Ericsson Inc. et al. v. Intellectual Ventures II LLC*, IPR2015-01664, Paper 23 at 12:14 – 15:17 (PTAB Jan. 12, 2017), ECF No. 207-5 at 16. In the IPR, the parties understood that “broadcast channel” has a customary meaning related to radio-control information, not to user data. *See, e.g., id.*; Haas Decl., IPR2015-01664, Exhibit 1012 at ¶¶ 66–67 (PTAB Aug. 3, 2015), ECF No. 207-3 at 41–42; Zeger Decl, IPR2015-01664, Exhibit 2001 at ¶¶ 57–59 (PTAB May 9, 2016), ECF No. 207-4 at 26–29. The parties also distinguished “control channel” from “data channel.” Patent Owner Response, IPR2015-01664, Paper 13 at 20–21 (PTAB May 9, 2016), ECF No. 194-6 at 28–29. And the patent disclosure at issue in the IPR, ’641 Patent column 5 lines 7 through 17,<sup>8</sup> regards provision of channels in a core-band that are used to maintain basic radio operation, not provision of user-data channels in a broadcast channel. Thus, the Court understands that “broadcast channel” has a customary meaning related to radio-control information, not to user data.<sup>9</sup>

The issue in the IPR of the ’431 Patent concerned where the broadcast channel was located—entirely within the core-band or only partly within the core-band—not whether the broadcast channel included or provided data channels. Patent Owner Response, IPR2015-01664, Paper 13 at 15, 27–37 (PTAB May 9, 2016), ECF No. 194-6 at 23, 35–45; Final Written Decision, IPR2015-

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<sup>7</sup> The term “broadcasting channel” is used in the ’641 Patent to denote a channel with control information (“bandwidth information”). ’641 Patent col.6 ll.23–30.

<sup>8</sup> This is identical to the disclosure at column 5 lines 8 through 18 of the ’431 Patent.

<sup>9</sup> The term “broadcast channel” and its acronym “BCH” are used in other of the Asserted Patents to denote a channel for radio-control information. *See, e.g.*, ’357 Patent col.7 ll.7–15, col.12 ll.3–4; ’828 Patent col.5 ll.8–10. This further supports that “broadcast channel” has a customary meaning related to control information, not data.

01664, Paper 24 at 8–9, (PTAB Feb. 8, 2017), ECF No. 194-5 at 9–10. The argument there was: (1) certain information (control and data) must be included in the core-band to maintain basic radio operation (the “primary state of operation”), (2) if part of the broadcast channel is transmitted outside the core-band, then the information in the core-band is insufficient to reach the primary state, and (3) the prior-art references at issue did not include a broadcast channel in the core-band. Given that “broadcast channel” customarily refers to a channel for radio-control information, this IPR statement is not clearly defining that “broadcast channel” in the ’431 Patent (and, by extension, the ’641 Patent) necessarily includes data channels. Rather, it suggests simply that the broadcast channel includes control information essential for basic radio operation and must be in the core-band. This is not the disavowal of claim scope that Defendants suggest. *See Cordis Corp. v. Boston Sci. Corp.*, 561 F.3d 1319, 1329 (Fed. Cir. 2009) (“A disclaimer must be clear and unmistakable, and unclear prosecution history cannot be used to limit claims.” (quotation marks omitted)); *3M Innovative Props. Co. v. Tredegar Corp.*, 725 F.3d 1315, 1326 (Fed. Cir. 2013) (“Where an applicant’s statements are amenable to multiple reasonable interpretations, they cannot be deemed clear and unmistakable.”). “Broadcast channel” does not necessarily include or provide “data channels.”

Accordingly, the Court rejects Defendants’ proposed construction and construes the term as follows:

- “transmit a broadcast channel in an orthogonal frequency division multiple access (OFDMA) core-band” means “transmit a broadcast channel that includes control channels essential to maintain basic radio operation, wherein the entire broadcast channel is contained within an orthogonal frequency division multiple access (OFDMA) core-band.”

#### **IV. CONCLUSION**

The Court adopts the constructions above for the disputed 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 15th day of November, 2018.**

  
ROY S. PAYNE  
UNITED STATES MAGISTRATE JUDGE