

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

MOBILE TELECOMMUNICATIONS
TECHNOLOGIES, LLC,

v.

LEAP WIRELESS INTERNATIONAL,
INC., et al.

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CASE NO. 2:13-CV-885-JRG-RSP

CLAIM CONSTRUCTION
MEMORANDUM AND ORDER

On March 18, 2015, the Court held a hearing to determine the proper construction of the disputed claim terms in United States Patents No. 5,590,403, 5,659,891, and 5,915,210. After considering the arguments made by the parties at the hearing and in the parties' claim construction briefing (Dkt. Nos. 54, 62 & 66),¹ the Court issues this Claim Construction Memorandum and Order.

¹ Citations to documents (such as the parties' briefs and exhibits) in this Claim Construction Memorandum and Order refer to the page numbers of the original documents rather than the page numbers assigned by the Court's electronic docket unless otherwise indicated.

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I. BACKGROUND

Plaintiff brings suit alleging infringement of United States Patents No. 5,590,403 (“the ‘403 Patent”), 5,659,891 (“the ‘891 Patent”), and 5,915,210 (“the ‘210 Patent”) (collectively, the “patents-in-suit”). In general, the patents-in-suit relate to wireless messaging systems.

Below, the Court addresses the ‘403 Patent and the ‘210 Patent together and addresses the ‘891 Patent separately, and the Court groups the terms as to which Defendants have argued indefiniteness, as the parties have done.

Shortly before the start of the March 18, 2015 hearing, the Court provided the parties with the Court’s preliminary constructions of the disputed terms, based upon review of the parties’ briefing, with the aim of focusing the parties’ arguments and facilitating discussion. Those preliminary constructions are set forth within the discussion of each term, below.

II. LEGAL PRINCIPLES

“It is a ‘bedrock principle’ of patent law that ‘the claims of a patent define the invention to which the patentee is entitled the right to exclude.’” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (quoting *Innova/Pure Water Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). To determine the meaning of the claims, courts start by considering the intrinsic evidence. *See id.* at 1313; *see also 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. *See Phillips*, 415 F.3d at 1314; *C.R. Bard*, 388 F.3d at 861. Courts give claim terms their 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

entire patent. *Phillips*, 415 F.3d at 1312-13; *accord Alloc, Inc. v. Int'l Trade Comm'n*, 342 F.3d 1361, 1368 (Fed. Cir. 2003).

The claims themselves provide substantial guidance in determining the meaning of particular claim terms. *Phillips*, 415 F.3d at 1314. First, a term's context in the asserted claim can be very instructive. *Id.* Other asserted or unasserted claims can 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.* at 1315 (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.'" *Phillips*, 415 F.3d at 1315 (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)); *accord Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1325 (Fed. Cir. 2002). This is true because a patentee may define his own terms, give a claim term a different meaning than the term would otherwise possess, or disclaim or disavow the claim scope. *Phillips*, 415 F.3d at 1316. In these situations, the inventor's lexicography governs. *Id.* The specification may also resolve the meaning of ambiguous claim terms "where the ordinary and accustomed meaning of the words used in the claims lack sufficient clarity to permit the scope of the claim to be ascertained from the words alone." *Teleflex*, 299 F.3d at 1325. 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)); accord *Phillips*, 415 F.3d at 1323.

The prosecution history is another tool to supply the proper context for claim construction because a patent applicant may also define a term in prosecuting the patent. *Home Diagnostics, Inc., v. Lifescan, Inc.*, 381 F.3d 1352, 1356 (Fed. Cir. 2004) (“As in the case of the specification, a patent applicant may define a term in prosecuting a patent.”). “[T]he prosecution history (or file wrapper) 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.” *Standard Oil Co. v. Am. Cyanamid Co.*, 774 F.2d 448, 452 (Fed. Cir. 1985).

Although extrinsic evidence can 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 (citations and internal quotation marks omitted). Technical dictionaries and treatises may help a court understand the underlying technology and the manner in which one skilled in the art might use claim terms, but technical dictionaries and treatises may provide definitions that are too broad or may not be indicative of how the term is used in the patent. *Id.* at 1318. Similarly, expert testimony may aid a court in understanding the underlying technology and determining the particular meaning of a term in the pertinent field, but an expert’s conclusory, unsupported assertions as to a term’s definition are entirely unhelpful to a court. *Id.* Generally, extrinsic evidence is “less reliable than the patent and its prosecution history in determining how to read claim terms.” *Id.*

In general, prior claim construction proceedings involving the same patents-in-suit are “entitled to reasoned deference under the broad principals of *stare decisis* and the goals

articulated by the Supreme Court in *Markman*, even though *stare decisis* may not be applicable *per se*.” *Maurice Mitchell Innovations, LP v. Intel Corp.*, No. 2:04-CV-450, 2006 WL 1751779, at *4 (E.D. Tex. June 21, 2006) (Davis, J.); *see TQP Development, LLC v. Inuit Inc.*, No. 2:12-CV-180, 2014 WL 2810016, at *6 (E.D. Tex. June 20, 2014) (Bryson, J.) (“[P]revious claim constructions in cases involving the same patent are entitled to substantial weight, and the Court has determined that it will not depart from those constructions absent a strong reason for doing so.”); *see also Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 839-40 (2015) (“prior cases will sometimes be binding because of issue preclusion and sometimes will serve as persuasive authority”) (citation omitted).

III. THE PARTIES’ STIPULATED TERMS

The parties have reached agreement on constructions for certain terms, as stated in their P.R. 4-3 Joint Claim Construction and Prehearing Statement (Dkt. No. 49 at Ex. A) and in their P.R. 4-5(d) Joint Claim Construction Chart (Dkt. No. 67 at Ex. A). The parties’ agreements are set forth in Appendix A to this Claim Construction Memorandum and Order.

IV. DISPUTED TERMS IN U.S. PATENTS NO. 5,590,403 AND 5,915,210

The ’403 Patent is titled “Method and System for Efficiently Providing Two Way Communication Between a Central Network and a Mobile Unit.” The ’403 Patent issued on December 31, 1996, and bears a filing date of November 12, 1992. In general, the ’403 Patent relates to dynamic reassignment of transmitters from one zone to another. The Abstract of the ’403 Patent states:

A two-way communication system for communication between a system network and a mobile unit. The system network includes a plurality of base transmitters and base receivers included in the network. The base transmitters are divided into zonal assignments and broadcast in simulcast using multi-carrier modulation techniques. The system network controls the base transmitters to broadcast in simulcast during both systemwide and zonal time intervals. The system network

dynamically alters zone boundaries to maximize information throughput. The preferred mobile unit includes a noise detector circuit to prevent unwanted transmissions. The system network further provides an adaptive registration feature for mobile units which controls the registration operations by the mobile units to maximize information throughput.

The '210 Patent is titled "Method and System for Providing Multicarrier Simulcast Transmission." The '210 Patent issued on June 22, 1999, and bears a filing date of July 24, 1997. The '210 Patent is a continuation of a continuation of the '403 Patent. Because the '403 Patent and the '210 Patent therefore share a common written description and figures, the Court herein cites the specification of only the '403 Patent unless otherwise indicated.

The Court previously addressed the '403 Patent in *Mobile Telecommunications Technologies, LLC v. Clearwire Corp., et al.*, No. 2:12-CV-308, Dkt. No. 72 (E.D. Tex. July 1, 2013) ("*Clearwire*") (attached to Defendants' response brief as Exhibit E).

The Court also addressed the '403 Patent and the '210 Patent in *Mobile Telecommunications Technologies, LLC v. Sprint Nextel Corp., et al.*, Nos. 2:12-CV-832, Dkt. No. 162 (E.D. Tex. May 2, 2014) ("*Sprint*") (attached to Defendants' response brief as Exhibit F); *see* Civil Action Nos. 2:13-CV-258, 2:13-CV-259 (consolidated with *Sprint*).

The Court further addressed the '403 Patent and the '210 Patent in *Mobile Telecommunications Technologies, LLC v. T-Mobile USA, Inc., et al.*, No. 2:13-CV-886, Dkt. No. 108 (E.D. Tex. Jan. 23, 2015) ("*T-Mobile*") (attached to Defendants' response brief as Exhibit G).

Relevant findings from *Clearwire*, *Sprint*, and *T-Mobile* are set forth as to particular disputed terms below.

Finally, although Defendants’ response brief mentions “principles of collateral estoppel” (Dkt. No. 62 at 13), Defendants have not identified the elements of any estoppel, let alone demonstrated that any such elements have been met here as to any disputed term.

A. “transmitter[s]” and “base transmitter[s]”

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
No construction necessary; plain and ordinary meaning	“plain and ordinary meaning with the understanding that transmitting multiple signals or outputs from a single structural unit cannot suffice as multiple [base] transmitters”

Dkt. No. 54 at 6; Dkt. No. 62 at 12. The parties submit that these terms appear in Claims 1, 10, and 11 of the ’403 Patent and Claims 1 and 10 of the ’210 Patent.

Shortly before the start of the March 18, 2015 hearing, the Court provided the parties with the following preliminary construction: “Plain meaning.”

(1) The Parties’ Positions

Plaintiff submits: “The remaining dispute is that [Defendants] propose[] an additional, negative limitation imported from dicta in the Clearwire Order. This Court rejected the exact same construction when it was proposed by T-Mobile, and should likewise reject [Defendants’] proposal.” Dkt. No. 54 at 7. Plaintiff emphasizes that, “[h]ere, neither party has proposed that transmitting multiple signals or outputs from a single transmitter can suffice as multiple transmitters.” *Id.* Nonetheless, Plaintiff argues, “the asserted patents disclose that a single device can comprise multiple structural units.” *Id.*

Defendants respond that “[t]he Court’s opinion on this issue is not dicta,” and Plaintiff’s “two-sentence rehash of its previously failed arguments” should be rejected. Dkt. No. 62 at 13. Defendants urge that “[Plaintiff’s] continued advancement of its repeatedly rejected claim construction arguments underscores the necessity of expressly integrating the Court’s ‘single-

unit’ finding into its formal claim construction order.” *Id.* at 14. “At a minimum,” Defendants argue, “the Court should do as it did in the *Apple [(Sprint)]* case, namely by ‘[e]xpressly adopt[ing] the *Clearwire* findings’ so as to prohibit [Plaintiff] from making arguments contrary to the Court’s findings. The Court reached a similar conclusion in the T-Mobile case.” *Id.* at 15 n.15 (citations omitted).

Plaintiff replies: “All parties here acknowledge that simulcasting requires two or more transmitters. [Defendants’] proposal would confuse the jury and create a new question about the meaning of a ‘single structural unit.’” Dkt. No. 66 at 5.

(2) Analysis

In *Clearwire*, the Court construed the terms “transmitter” and “base transmitter” in the ‘403 Patent to have their plain and ordinary meaning. *See Clearwire* at 4-5. The Court also found:

Although the Court recognizes that claims 1 and 10 are method claims, a person of ordinary skill in the art would understand the terms “transmitter” and “base transmitter” to refer to a structural unit, and thus, the number of transmitters in a given system or method is dependent on structure, not function. . . . [T]he Court rejects [Plaintiff’s] implication that transmitting multiple signals or outputs from a single structural unit can suffice as multiple transmitters.

Id. at 5 (citing ‘403 Patent at 15:42-44). Nonetheless, the Court also “reject[ed] *Clearwire*’s proposition that a ‘transmitter’ must be spatially separated or geographically dispersed from other transmitters, because *Clearwire* has provided no evidence to support reading such a limitation into the claims.” *Id.* at 6.

In *Sprint*, shortly before the March 7, 2014 claim construction hearing, the Court provided the parties with the following preliminary construction for these disputed terms: “Plain [meaning] ([e]xpressly adopt the *Clearwire* findings but do not provide them to the jury as part

of a constr[uction].” *Sprint* at 10. During the March 7, 2014 hearing, all parties in *Sprint* agreed to the Court adopting its preliminary construction. *Id.*

In *T-Mobile*, the parties disputed the proper construction, but the Court again adopted the *Clearwire* findings. *See T-Mobile* at 11.

Having considered the arguments presented in the present case, the Court reaches the same conclusions here as in *Clearwire*. Those conclusions, however, need not be set forth in an explicit claim construction. Defendants’ proposal in that regard would tend to confuse rather than clarify the scope of the claims and is therefore hereby expressly rejected.

The Court therefore hereby construes “**transmitter[s]**” and “**base transmitter[s]**” to have their **plain meaning**. The Court further hereby adopts the above-quoted conclusions reached in *Clearwire* and orders that at trial the parties shall not present any arguments inconsistent with those conclusions.

B. “set of transmitters” and “set of base transmitters”

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“one or more [base] transmitter[s]”	“a set of at least two [base] transmitters”

Dkt. No. 54 at 8; Dkt. No. 62 at 15. The parties submit that these terms appear in Claims 1 and 10 of the ’403 Patent.

Shortly before the start of the March 18, 2015 hearing, the Court provided the parties with the following preliminary constructions: “set[s] of at least two transmitters” and “set of at least two base transmitters.”

(1) The Parties’ Positions

Plaintiff re-urges its arguments from the prior claim construction proceedings, such as that the specification discloses an embodiment in which a “set” of transmitters for a particular

zone could include only one transmitter. *See* Dkt. No. 54 at 8-11. Plaintiff explains: “In order to meet the intra-set simulcast requirement of Claim 10, a single set must have two transmitters. Unlike Claim 10, the inter-set simulcast requirement of Claim 1 can be met with only a single transmitter in each set, as explicitly disclosed in the description of the preferred embodiment of FIGS. 6 & 7.” *Id.* at 10.

Defendants respond that the Court has previously rejected Plaintiff’s arguments multiple times and should do so again here. Dkt. No. 62 at 15.

Plaintiff replies that “[b]ecause the specification discloses a single transmitter meeting the limitation of ‘transmitting by a set of transmitters,’ [Plaintiff] maintains that the proper course most consistent with the intrinsic record would be to remove the numerosity requirement from the set of transmitter element, recognize that ‘set’ simply implies shared characteristics, and decline to construe the term which is non-technical and will not confuse the jury.” Dkt. No. 66 at 6.

At the March 18, 2015 hearing, the parties agreed to rest on their briefing without oral argument.

(2) Analysis

For the same reasons set forth in *T-Mobile*, the Court finds that the use of the plural form of “transmitters” demonstrates that a “set of transmitters” requires two or more transmitters. *See T-Mobile* at 13-17; *see, e.g., Leggett & Platt, Inc. v. Hickory Springs Mfg. Co.*, 285 F.3d 1353, 1357 (Fed. Cir. 2002) (“At the outset, the claim recites ‘support wires’ in the plural, thus requiring more than one welded ‘support wire.’”). The Court thus reaches the same conclusion here as in *T-Mobile*.

The Court accordingly hereby construes the disputed terms as set forth in the following

chart:

<u>Term</u>	<u>Construction</u>
“set of transmitters”	“set of at least two transmitters”
“set of base transmitters”	“set of at least two base transmitters”

C. “[first/second] set of transmitters”

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
No construction necessary; plain and ordinary meaning	<p>“first set of at least two transmitters assigned to a portion of a geographic area”</p> <p>“second set of at least two transmitters assigned to a different portion of a geographic area than that to which the first set of transmitters is assigned”</p>

Dkt. No. 54 at 11; Dkt. No. 62 at 16. The parties submit that these terms appear in Claim 1 of the ’403 Patent.

Shortly before the start of the March 18, 2015 hearing, the Court provided the parties with the following preliminary constructions: “a set of transmitters that is not identical to the ‘second set of transmitters’” and “a set of transmitters that is not identical to the ‘first set of transmitters.’”

(1) The Parties’ Positions

Plaintiff argues that the claims contain no geographic limitations, and “the specification itself discloses that transmitters may cover overlapping areas.” Dkt. No. 54 at 12 (citing ’403 Patent at 4:65-5:3).

Defendants respond that although “transmitters may cover overlapping areas,” Defendants’ proposed construction “clarifies that the claimed sets of transmitters cannot be

assigned to the exact same geographic area.” Dkt. No. 62 at 16. Defendants explain that “[i]f the coverage areas of the claimed ‘first set of base transmitters’ and ‘second set of base transmitters’ are identical, that frustrates the purpose of the alleged invention in the ’403 patent” because “[r]equiring transmission exclusively in simulcast . . . restricts or even eliminates the purported efficiency gain of the ’403 patent’s alleged invention.” *Id.* at 17.

Plaintiff replies that “[w]hile certain embodiments disclose spatial dispersement, importing limitations from embodiments into patent claims is erroneous.” Dkt. No. 66 at 6. Plaintiff also submits that “[e]ven if a mobile unit is located in an overlapping coverage area, transmitting different information during the same time period can increase throughput and efficiency.” *Id.* at 7.

At the March 18, 2015 hearing, both sides were agreeable to the Court’s preliminary construction. Plaintiff, however, qualified its agreement by noting that Plaintiff would disagree with any requirement of different geographic coverage areas.

(2) Analysis

As the parties appeared to agree at the March 18, 2015 hearing, construction is appropriate to clarify that the “first” and “second” sets of transmitters are not identical groups of transmitters. This finding is further supported by the recital of distinct “first” and “second” sets. *See 3M Innovative Props. Co. v. Avery Dennison Corp.*, 350 F.3d 1365, 1371 (Fed. Cir. 2003) (“The use of the terms ‘first’ and ‘second’ is a common patent-law convention to distinguish between repeated instances of an element or limitation.”). In other words, the “first” and “second” sets must be distinct in order to give meaning to all of the words of the claim. *See Merck & Co., Inc. v. Teva Pharms. USA, Inc.*, 395 F.3d 1364, 1372 (Fed. Cir. 2005) (“A claim

construction that gives meaning to all the terms of the claim is preferred over one that does not do so.”).

To whatever extent Defendants are maintaining that these disputed terms require geographic limitations, however, Defendants’ argument is hereby expressly rejected. Of note, the Court rejected a similar proposal in *Clearwire*:

The Court rejects Clearwire’s contention that a “set” of transmitters must be geographically dispersed. The claims merely recite a set of transmitters. Clearwire attempts to read into the claims the particular embodiments of the specification but does not point to language of disavowal in the specification or the prosecution history. In fact, the claims themselves include their own geographical limitations (with regard to regions of space divided into zones), further counseling against reading the features of the preferred embodiments into the definition of the terms “set of transmitters” and “set of base transmitters.”

Clearwire at 8.

The Court accordingly hereby construes the disputed terms as set forth in the following chart:

<u>Term</u>	<u>Construction</u>
“first set of transmitters”	“a set of transmitters that is not identical to the ‘second set of transmitters’”
“second set of transmitters”	“a set of transmitters that is not identical to the ‘first set of transmitters’”

D. “zone” and “second zone”

“zone”	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“portion of a region of space”	“portion of a geographic area”

“second zone”	
Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
No construction necessary; plain and ordinary meaning	“second zone that covers a different portion of a geographic area than the first zone”

Dkt. No. 54 at 13; Dkt. No. 62 at 17 & 18. The parties submit that these terms appear in Claim 10 of the ’403 Patent.

Shortly before the start of the March 18, 2015 hearing, the Court provided the parties with the following preliminary constructions: “portion of a region of space” and “portion of a region of space that is not identical to the ‘first zone.’”

(1) The Parties’ Positions

Plaintiff argues that the Court should apply its prior construction of “zone” as meaning “portion of a region of space.” Dkt. No. 54 at 13-14. Plaintiff also argues that Defendants’ proposal as to “second zone” should be rejected because “the patent specification itself discloses overlapping zones.” *Id.* at 14 (citing ’403 Patent at 4:65-5:3).

As to “second zone,” Defendants respond that their proposed construction “ensures that the claimed zones cannot be the exact same geographic area.” Dkt. No. 62 at 18. For example, Defendants argue that the disclosed concept of “zonal dithering” “makes no sense if the claimed zones are allowed to completely overlap such that coverage areas of the claimed ‘first set of base transmitters’ and ‘second set of base transmitters’ are identical.” *Id.* at 18-19.

Plaintiff replies: “Defendants observe that the embodiments in the specification discuss zones that do not completely overlap and argue that therefore the claims must also be so limited. That is not the law.” Dkt. No. 66 at 8. Plaintiff also argues that the claimed invention may be applied with completely overlapping zones for purposes of load balancing. *Id.*

At the March 18, 2015 hearing, the parties agreed to the Court’s preliminary construction for “zone” but did not agree to the preliminary construction for “second zone.” Plaintiff urged that under some circumstances, such as through what the specification refers to as “zonal dithering” (*see* ’403 Patent at 23:53 & Fig. 25), the “second zone” could end up occupying the same space as the first zone.

(2) Analysis

Claim 10 of the ’403 Patent recites (emphasis added):

10. A method of communicating messages between a plurality of base transmitters and mobile receivers within a region of space divided into a plurality of zones with each zone having at least one base transmitter assigned thereto, the communication method comprising the steps of:

(a) transmitting substantially simultaneously a first information signal and a second information signal to communicate messages to the mobile receivers, the first information signal being transmitted in simulcast by a first set of base transmitters assigned to a *first zone*, and the second information signal being transmitted in simulcast by a second set of base transmitters assigned to a *second zone*;

(b) dynamically reassigning one or more of the base transmitters in the first set of base transmitter [*sic*, transmitters] assigned to the *first zone* to the second set of base transmitters assigned to the *second zone* as a function of the messages to be communicated in an area, thereby creating an updated first set of base transmitters and an updated second set of base transmitters; and

(c) transmitting substantially simultaneously a third information signal and a fourth information signal, the third information signal being transmitted in simulcast by the updated first set of base transmitters, and the fourth information signal being transmitted in simulcast by the updated second set of base transmitters to communicate additional messages to said mobile receivers.

In *Clearwire*, the Court noted that: “claim 10 states ‘a region of space divided into a plurality of zones.’ In this way, the claims themselves define a zone as a portion of a region of space.” *Clearwire* at 7. The Court also “reject[ed] Clearwire’s contention that a zone consists of its assigned transmitters.” *Id.*

The specification discloses: “Generally, the communication system of the present invention roughly divides various regions of space into portions called zones.” ’403 Patent

at 9:40-43; *see id.* at 4:65-5:3 (referring to “overlap areas between two or more zones”); *see also id.* at Fig. 25.

Construction is appropriate to clarify that the “first” and “second” zones are not identical regions of space. This finding is supported by the recital of distinct “first” and “second” zones. *See 3M*, 350 F.3d at 1371 (“The use of the terms ‘first’ and ‘second’ is a common patent-law convention to distinguish between repeated instances of an element or limitation.”); *See Merck*, 395 F.3d at 1372 (“A claim construction that gives meaning to all the terms of the claim is preferred over one that does not do so.”).

The Court accordingly hereby construes the disputed terms as set forth in the following chart:

<u>Term</u>	<u>Construction</u>
“zone”	“portion of a region of space”
“second zone”	“portion of a region of space that is not identical to the ‘first zone’”

E. “[first/second/third] block of information”

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
No construction necessary; plain and ordinary meaning	“[first] [second] [third] block of information from the system information signal”

Dkt. No. 54 at 15; Dkt. No. 62 at 19 (square brackets Defendants’). The parties submit that these terms appear in Claim 1 of the ’403 Patent.

Shortly before the start of the March 18, 2015 hearing, the Court provided the parties with the following preliminary construction: “[first/second/third] block of information from the system information signal.”

(1) The Parties' Positions

Plaintiff argues that “[t]he term ‘block of information’ is commonly understood in the art, clear on its face, and therefore does not require construction.” Dkt. No. 54 at 15.

Defendants respond that their proposed construction “mak[es] clear to the jury that the blocks of information recited in steps (c), (d), and (e) of claim 1 come from the system information signal recited in step (a).” Dkt. No. 62 at 19.

Plaintiff replies that “this point is not in dispute.” Dkt. No. 66 at 8. Instead, Plaintiff argues, the issue is that Defendants’ proposed construction would require “not only that the *information* be the same, but that the *blocks* also be the same,” thereby “exclud[ing] embodiments where the system information signal is sent in a series of blocks, and the same information is reorganized into a new series of blocks prior to transmission.” *Id.* at 8-9.

(2) Analysis

Claim 1 of the ’403 Patent recites (emphasis added):

1. A method for information transmission by a plurality of transmitters to provide broad communication capability over a region of space, the information transmission occurring during at least both a first time period and a second time period and the plurality of transmitters being divided into at least a first and second set of transmitters, the method comprising the steps of:

(a) generating a system information signal which includes a plurality of blocks of information;

(b) transmitting the system information signal to the plurality of transmitters;

(c) transmitting by the first and second sets of transmitters a *first block of information* in simulcast during the first time period;

(d) transmitting by the first set of transmitters a *second block of information* during the second time period; and

(e) transmitting by the second set of transmitters a *third block of information* during the second time period.

The first, second, and third blocks of information are introduced in above-quoted steps (c), (d), and (e) by the indefinite article, “a,” rather than the definite article, “the.” Whereas use

of “the” would indicate antecedent basis, “a” generally introduces a term with no antecedent. In support of its argument that the blocks recited in steps (c), (d), and (e) can be different than the blocks introduced in step (a), Plaintiff cites *PersonalWeb Technologies, LLC v. NEC Corp. of America, LLC*, No. 6:11-CV-655, 2013 WL 4015332, at *21 (E.D. Tex. Aug. 5, 2013) (rejecting indefiniteness argument for claim reciting “a data item,” followed by “the data item,” followed by another recitation of “a data item”; citing *Microprocessor Enhancement Corp. v. Texas Instruments Inc.*, 520 F.3d 1367, 1375 (Fed. Cir. 2008)). Dkt. No. 66 at 9; *see 3M*, 350 F.3d at 1371 (“The use of the terms ‘first’ and ‘second’ is a common patent-law convention to distinguish between repeated instances of an element or limitation.”).

Nonetheless, rejecting Defendants’ interpretation would render superfluous the phrase “which includes a plurality of blocks of information” in above-quoted step (a). Such a construction would be disfavored. *See Merck*, 395 F.3d at 1372 (“A claim construction that gives meaning to all the terms of the claim is preferred over one that does not do so.”).

At the March 18, 2015 hearing, Plaintiff argued that the “which includes . . .” phrase would not be rendered superfluous because Plaintiff reads the word “information” in steps (c), (d), and (e) as referring back to the “information” recited in step (a). Because “information” in steps (c), (d), and (e) is introduced without the definite article, “the,” Plaintiff’s position as to “information” is inconsistent with Plaintiff’s position as to the “block” terms. That is, because “information” and “block” are recited in a similar fashion in steps (c), (d), and (e), either both “information” and “block” refer back to step (a) or neither of them do. Plaintiff’s effort to avoid the disfavor of rendering claim language superfluous is therefore unavailing.

On balance, the plain language of the claim demonstrates that the “block[s]” transmitted must be the same “blocks” included in the system information signal. In particular, as noted

above, to find otherwise would render superfluous the phrase “which includes a plurality of blocks of information” in above-quoted step (a). Although the first, second, and third blocks are introduced with the indefinite article, “a,” in above-quoted steps (c), (d), and (e), the recital of *specific* blocks is not necessarily inconsistent with those blocks being from among the plurality of blocks recited in above-quoted step (a). *See Applied Med. Res. Corp. v. U.S. Surgical Corp.*, 448 F.3d 1324, 1333 n.3 (Fed. Cir. 2006) (“[T]he use of two terms in a claim requires that they connote different *meanings*, not that they necessarily refer to two different *structures*.”) (emphasis in original). The specification is also consistent with the Court’s finding in this regard. *See* ’403 Patent at 10:23-62.²

The Court therefore hereby construes “**[first/second/third] block of information**” to mean “**[first/second/third] block of the plurality of blocks of information from the system information signal.**”

V. DISPUTED TERMS IN U.S. PATENT NO. 5,659,891

The ’891 Patent is titled “Multicarrier Techniques in Bandlimited Channels.” The ’891 Patent issued on August 19, 1997, and bears a filing date of June 7, 1995. In general, the ’891 Patent relates to operating more than one carrier within a single channel. The Abstract of the ’891 Patent states:

A method of multicarrier modulation using co-located transmitters to achieve higher transmission capacity for mobile paging and two-way digital communication in a manner consistent with FCC emission mask limits. Co-location of the transmitters obviates the need for stringent, symmetrical subchannel interference protection and provides for a wider range of operating parameters, including peak frequency deviation, bit rate, and carrier frequencies, to obtain optimal transmission performance.

² Defendants have also cited prosecution history, but that evidence cited by Defendants has not affected the Court’s analysis of this disputed term. *See* Dkt. No. 62, Ex. J, IPR 2013-00306, Paper 22, 1/24/2014 Patent Owner’s Response to Decision to Initiate Trial for *Inter Partes* Review at 14-15.

The Court addressed the '891 Patent in *Sprint* and *T-Mobile*, and relevant findings therein are set forth as to particular disputed terms below.

A. “single mask-defined bandlimited channel”

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
“a channel confined to a frequency range”	“a channel confined to a frequency range allocated by the FCC for mobile paging use”

Dkt. No. 54 at 16; Dkt. No. 62 at 21. The parties submit that this term appears in Claims 1, 3, and 5 of the '891 Patent.

Shortly before the start of the March 18, 2015 hearing, the Court provided the parties with the following preliminary construction: “a channel confined to a frequency range.”

(1) The Parties’ Positions

Plaintiff submits that in *T-Mobile* the Court rejected the same additional limitations that Defendants propose here. Dkt. No. 54 at 16. Plaintiff emphasizes that “[t]he FCC is not mentioned in any of the Claims of the '891 Patent, and emission masks are used by various organizations, such as the IEEE for example.” *Id.* Plaintiff also notes that the term “paging” appears only in the preambles. *Id.* at 17.

Defendants respond that “[t]he '891 patent consistently characterizes the ‘present invention’ as limited to mobile paging and FCC mask requirements,” and “the '891 Patent consistently and solely refers to FCC masks.” Dkt. No. 62 at 21-22.

Plaintiff replies by reiterating: “The FCC is not mentioned in any of the claims of the '891 Patent, and the patent specification—while explaining the background of the invention in relation to FCC requirements—carefully avoids importing any regulatory limitation into the claimed invention.” Dkt. No. 66 at 9-10.

(2) Analysis

For substantially the same reasons set forth in *T-Mobile*, the Court hereby expressly rejects Defendants’ proposed construction. *See T-Mobile* at 26-29. The Court likewise adopts the construction reached in *T-Mobile*. *See id.*

The Court therefore hereby construes “**single mask-defined bandlimited channel**” to mean “**a channel confined to a frequency range.**”

B. Preambles of Claims 1, 3, and 5

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
No construction necessary	“The Preambles of independent claims 1, 3 and 5 are limiting”

Dkt. No. 54 at 17; Dkt. No. 62 at 23.

Shortly before the start of the March 18, 2015 hearing, the Court provided the parties with the following preliminary construction: “Preambles are limiting.”

(1) The Parties’ Positions

Plaintiff argues that “[t]he use of the term ‘paging’ in the preamble is merely a descriptive name for the systems in which the methods recited by the Claims may be performed.” Dkt. No. 54 at 17.

Defendants respond that “[t]his Court has previously determined, with no objection by [Plaintiff], that the preambles of claims 1, 3 and 5 of the ’891 patent are limiting.” Dkt. No. 62 at 23. Moreover, Defendants argue, “the preambles of independent claims 1, 3, and 5 both provide antecedent bases for the body of the claims and describe structure underscored as important by the specification.” *Id.* at 24.

Plaintiff replies by reiterating that “the claim body otherwise defines a structurally complete invention” and that the preamble “merely extols benefits, features or intended uses of the claimed invention.” Dkt. No. 66 at 10.

At the March 18, 2015 hearing, the parties agreed to rest on their briefing without oral argument.

(2) Analysis

In *T-Mobile*, “[a]t the October 21, 2014 hearing, given the Court’s other preliminary constructions, Plaintiff had no objection to the Court’s preliminary construction that the preambles of Claims 1, 3, and 5 are limiting.” *T-Mobile* at 47. Here, however, the parties dispute whether the preambles are limiting.

In general, a preamble limits the invention if it recites essential structure or steps, or if it is “necessary to give life, meaning, and vitality” to the claim. *Pitney Bowes[, Inc. v. Hewlett-Packard Co.]*, 182 F.3d [1298,] 1305 [(Fed. Cir. 1999)]. Conversely, a preamble is not limiting “where a patentee defines a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention.” *Rowe v. Dror*, 112 F.3d 473, 478, 42 USPQ2d 1550, 1553 (Fed. Cir. 1997).

Catalina Mktg. Int’l, Inc. v. Coolsavings.com, Inc., 289 F.3d 801, 808 (Fed. Cir. 2002); *see, e.g., Eaton Corp. v. Rockwell Int’l Corp.*, 323 F.3d 1332, 1339 (Fed. Cir. 2003) (“When limitations in the body of the claim rely upon and derive antecedent basis from the preamble, then the preamble may act as a necessary component of the claimed invention.”); *Proveris Scientific Corp. v. Innovasystems, Inc.*, 739 F.3d 1367, 1373 (Fed. Cir. 2014) (“The phrase ‘the image data’ clearly derives antecedent basis from the ‘image data’ that is defined in greater detail in the preamble as being ‘representative of at least one sequential set of images of a spray plume.’”).

In Claims 1, 3, and 5 of the ‘891 Patent, the preambles provide antecedent basis for several terms that appear in the bodies of the claims (emphasis added):

1. A method of operating *a plurality of paging carriers* in a single mask-defined, bandlimited channel comprising the step of transmitting *said carriers* from the same location with *said carriers* having center frequencies within said channel such that the frequency difference between the center frequency of the outer most of *said carriers* and the band edge of the mask defining said channel is more than half the frequency difference between the center frequencies of *each adjacent carrier*.

* * *

3. A method of operating *at least two paging carriers* each in **a corresponding subchannel** of a single mask-defined, bandlimited channel comprising the step of transmitting *said carriers* from the same location with *each carrier* centrally located in **said corresponding subchannel** wherein the frequency difference between the center frequency of the outer most of **said corresponding subchannels** and the band edge of the mask defining said channel is more than half the frequency difference between the center frequencies of *each adjacent carrier*.

* * *

5. In a paging system having **a plurality of transmitters** transmitting *a plurality of modulated carriers* over a single mask-defined, bandlimited channel and a plurality of mobile receiving units independently receiving one of *said plurality of carriers*, a method of operating *said plurality of carriers* in said channel to achieve higher transmission capacity comprising the steps of:

co-locating **said plurality of transmitters** such that *said plurality of carriers* can be emanated from the same transmission source; and

transmitting *said plurality of carriers* over a plurality of subchannels spaced within the mask defining said channel wherein the frequency difference between the center frequency of the outer most *carriers* and the band edge of said mask is greater than half the frequency difference between the center frequencies of *each adjacent carrier*.

Further, the Field of Invention states that a purpose of the claimed invention relates to “a method for operating more than one carrier in *a single mask-defined, bandlimited channel* assigned to mobile *paging* use.” ’891 Patent at 1:6-8 (emphases added). Similarly, the Summary of the Invention begins: “It is an object of this invention to achieve higher capacity over a *bandlimited channel* for *paging* without the need for stringent subchannel interference protection.” *Id.* at 2:15-17 (emphases added).

Thus, particularly in light of the extensive use of these preambles to provide antecedent basis for terms used in the bodies of the claims, the preambles “recite[] essential structure.” *Catalina Mktg.*, 289 F.3d at 808; *see C.W. Zumbiel Co. v. Kappos*, 702 F.3d 1371, 1385 (Fed. Cir. 2012) (“Here, ‘containers’ as recited in the claim body depend on ‘a plurality of containers’ in the preamble as an antecedent basis. Therefore, these terms recited in the preamble are limitations”). Further, the entireties of the preambles are limiting. *See Proveris*, 739 F.3d at 1373 (“The phrase ‘the image data’ clearly derives antecedent basis from the ‘image data’ that is *defined in greater detail in the preamble* as being ‘representative of at least one sequential set of images of a spray plume.’”) (emphasis added); *see also Bell Commc’ns Research, Inc. v. Vitalink Commc’ns Corp.*, 55 F.3d 615, 620 (Fed. Cir. 1995) (“[W]hen the claim drafter chooses to use *both* the preamble and the body to define the subject matter of the claimed invention, the invention so defined, and not some other, is the one the patent protects”).

The Court therefore hereby construes Claims 1, 3, and 5 of the ‘891 Patent such that the **preambles are limiting**.

VI. INDEFINITENESS

The Supreme Court of the United States has recently “read [35 U.S.C.] § 112, ¶ 2 to require that a patent’s claims, viewed in light of the specification and prosecution history, inform those skilled in the art about the scope of the invention with reasonable certainty.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2129 (2014). “A determination of claim indefiniteness is a legal conclusion that is drawn from the court’s performance of its duty as the construer of patent claims.” *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1347 (Fed. Cir. 2005) (citations and internal quotation marks omitted), *abrogated on other grounds by Nautilus*, 134 S. Ct. 2120.

A. “transmitting substantially simultaneously,” “representing a portion of the information signal substantially not represented by others of the first plurality of carrier signals,” and “corresponding to and representing substantially the same information as respective carrier signals of the first plurality of carrier signals”

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
No construction necessary; plain and ordinary meaning	Indefinite

Dkt. No. 54 at 19; *see* Dkt. No. 62 at 3-9. The parties submit that these terms appear in Claim 10 of the ’403 Patent and Claims 1, 10, and 19 of the ’210 Patent.³

Shortly before the start of the March 18, 2015 hearing, the Court provided the parties with the following preliminary construction: “Not indefinite.”

(1) The Parties’ Positions

Plaintiff argues that the word “substantially” “has an easily understood plain and ordinary meaning, is commonly used in patent claims, and has been successfully construed by various courts many times.” Dkt. No. 54 at 20.

As to the “representing . . .” terms, Defendants respond that “neither the specification nor the prosecution history of the ’210 patent provides any guidance as to what degree the parameters-at-issue can vary and still fall within the scope of the claim.” Dkt. No. 62 at 4.

³ Plaintiff’s opening brief also presented argument as to the following terms: “means for transmitting a first plurality of carrier signals within the desired frequency band, each of the first plurality of carrier signals representing a portion of the information signal substantially not represented by others of the first plurality of carrier signals” and “means for transmitting a second plurality of carrier signals in simulcast with the first plurality of carrier signals, each of the second plurality of carrier signals corresponding to and representing substantially the same information as a respective carrier signal of the first plurality of carrier signals.” These terms are not addressed in Defendants’ response brief or Plaintiff’s reply brief, and the parties did not address these terms at the March 18, 2015 hearing, so evidently these terms are no longer in dispute (apart from disputes as to any constituent terms addressed in the present Claim Construction Memorandum and Order). The Court therefore does not address these terms. *See CardSoft, LLC v. VeriFone, Inc.*, 769 F.3d 1114, 1119 (Fed. Cir. 2014) (“Arguments that are not appropriately developed in a party’s briefing may be deemed waived.”).

As to “transmitting substantially simultaneously,” Defendants respond that “neither the specification nor the prosecution history describes any embodiment that would inform one skilled in the art with reasonable certainty as to the degree by which transmissions must occur simultaneously to fall within the scope of claim 10.” *Id.* at 6. Further, Defendants argue, “all of the intrinsic record support that [Plaintiff] cites in its Opening Brief relates to the timing of ‘simulcast’ transmissions of the *same signal* in one zone and *not* to the meaning of ‘transmitting substantially simultaneously’ *different signals* in different zones as used in the claims.” *Id.* at 8.

Plaintiff replies, as to “transmitting substantially simultaneously,” that “Defendants do not address why a PHOSITA [(person having ordinary skill in the art)] could not apply the same principles of ‘substantial’ simultaneity disclosed in the context of simulcasting to the two sets of transmitters that are sending different information in Claim 10.” Dkt. No. 66 at 2. As to “substantially the same information,” Plaintiff replies that “[a] PHOSITA could understand this and realize that despite carrying substantially identical information, two corresponding carrier signals could include small amounts of extraneous information that is not identical, such as, inter alia, errors or error correcting codes.” *Id.* at 3. As to the “portion of the information signal substantially not represented,” Plaintiff replies that “a PHOSITA would understand that a number of subcarriers emanating from the same transmitter, despite carrying substantially different information, may still include a small amount of redundancy.” *Id.*

(2) Analysis

“We do not understand the Supreme Court to have implied in *Nautilus* . . . that terms of degree are inherently indefinite.” *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1370 (Fed. Cir. 2014).

On one hand, the specification refers to “information” transmitted in simulcast as the “same” or “identical.” *See* ’403 Patent at 1:50-53 & 11:44-47.

On the other hand, the specification uses the term “substantially” when referring to “the same, or substantially the same, frequencies.” ’403 Patent at 11:63-12:1 (“[F]or mobile units at or near the interference areas between adjacent zones, poor communication to those mobile units is likely during the zonal time interval because transmitters in adjacent zones will be simultaneously transmitting different data on the same, or substantially the same frequencies.”). The specification also discloses that signals from a plurality of transmitters might not be in perfect synchronization, as caused by: “(1) timing shifts in the delivery of the modulating waveform to each of the transmitters; (2) timing shifts internal to each transmitter; and (3) timing shifts caused by propagation distances and anomalies.” ’403 Patent at 2:36-41.

Also, in the *Sprint* litigation the Court noted:

In even the most advanced of technology, there are often delays that are imperceptible to the end user but necessary for computing systems to function properly. Even without the “cyclic shifts” proposed by Apple, it is entirely likely that if you drill down far enough (to the femtosecond, for example) that most real world computing systems – even the ones initially embodied in the patent specifications at issue here – are incapable of transmitting information in a *perfectly* simultaneous fashion. The question of whether Apple’s particular implementation . . . introduces enough delay that it fails to infringe the claims as construed is a question of fact for the jury.

No. 2:12-CV-832, Dkt. No. 375, 11/6/2014 Memorandum Order at 2-3 (emphasis in original).

On balance, the specification conveys sufficient context such that a person of ordinary skill in the art would understand the patentee’s use of the term “substantially” with reasonable certainty. *See Seattle Box Co. v. Indus. Crating & Packaging, Inc.*, 731 F.2d 818, 826 (Fed. Cir. 1984) (rejecting indefiniteness argument as to “substantially equal to”); *see also Nautilus*, 134 S. Ct. at 2129; *Deere & Co. v. Bush Hog, LLC*, 703 F.3d 1349, 1359 (Fed. Cir. 2012) (“This court

has repeatedly confirmed that relative terms such as ‘substantially’ do not render patent claims so unclear as to prevent a person of skill in the art from ascertaining the scope of the claim.”).

For example, as Plaintiff urged at the March 18, 2015 hearing, use of the term “substantially” allows for errors, and the potential for such errors is demonstrated by the disclosures regarding error correcting codes. *See, e.g.*, ’403 Patent at 3:17-24 & 27:13-30. The specification discloses that error correcting codes were well known to persons of ordinary skill in the art at the relevant time. *See id.* at 3:23-24 & 27:27-30. Finally, it is noteworthy that whereas Defendants have submitted the declaration of an expert regarding the “band edge” terms (addressed below), Defendants have not submitted any expert opinion in support of their indefiniteness arguments as to these “substantially” terms. *See* Dkt. No. 62-13, 2/15/2015 Acampora Decl.

The Court therefore hereby expressly rejects Defendants’ indefiniteness arguments as to these terms. No further construction is necessary.

B. “same location,” “co-locating,” and “said plurality of carriers can be emanated from the same transmission source”

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
No construction necessary; plain and ordinary meaning	Indefinite

Dkt. No. 49, Ex. B at p. 5 of 6; Dkt. No. 54 at 22. The parties submit that these terms appear in Claims 1, 3, and 5 of the ’891 Patent.

Plaintiff submits that the Court addressed these terms in *T-Mobile*, and Plaintiff argues that the specification provides ample context for a person of ordinary skill in the art to understand these terms. Dkt. No. 54 at 22-23.

These terms are not addressed in Defendants’ response brief or Plaintiff’s reply brief, and the parties did not address these terms at the March 18, 2015 hearing, so evidently these terms are no longer in dispute. The Court therefore does not address these terms. *See CardSoft, LLC v. VeriFone, Inc.*, 769 F.3d 1114, 1119 (Fed. Cir. 2014) (“Arguments that are not appropriately developed in a party’s briefing may be deemed waived.”).

C. “the frequency difference between the center frequencies of each adjacent carrier,” “the frequency difference between the center frequency of the outer most of said carriers and the band edge of the mask defining said channel,” “the frequency difference between the center frequency of the outer most of said corresponding subchannels and the band edge of the mask defining said channel,” and “the frequency difference between the center frequency of the outer most carriers and the band edge of said mask”

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
No construction necessary; plain and ordinary meaning	Indefinite

Dkt. No. 54 at 23; *see* Dkt. No. 62 at 9-12. The parties submit that these terms appear in Claims 1, 3, and 5 of the ’891 Patent.

Shortly before the start of the March 18, 2015 hearing, the Court provided the parties with the following preliminary construction: “Not indefinite.”

(1) The Parties’ Positions

Plaintiff submits that the Court has previously construed these terms and that “[Defendants] ha[ve] presented no evidence that a PHOSITA would not understand th[ese] term[s] with reasonable certainty.” Dkt. No. 54 at 23.

Defendants respond that “[Plaintiff] asserts that the ’891 Patent is not limited to th[e] FCC paging context. And outside of this very specific example in the FCC paging context, the specification fails to provide any guidance that would inform one skilled in the art how to identify a ‘band edge of a mask’ with any reasonable certainty.” Dkt. No. 62 at 2; *see id.* at 9-12.

Further, Defendants argue, the 70 dB attenuation example disclosed in the specification demonstrates that there may be multiple different points of interest among different standards or even within the same standard. *Id.* at 11. Defendants conclude that “[g]iven a lack of guidance in the specification for selecting a ‘band edge’ of import from multiple available band edge candidates and the lack of anything in the claim language limiting the band edge of the mask to a particular context, the scope of ‘band edge of the mask’ is completely unknown.” *Id.* at 12 (footnote omitted).

Plaintiff replies: “The absolute location of the band edge of the mask has nothing to do with the inventive aspect of the ’891 Patent. Rather, the patent discloses a novel method of subcarrier spacing relative to the band edge of *any* mask.” Dkt. No. 66 at 4.

At the March 18, 2015 hearing, Plaintiff argued that the term “band edge” does not necessarily refer to a single frequency but rather can refer to lines drawn between the points that define a particular mask.

(2) Analysis

Claims 1, 3, and 5 of the ’891 Patent recite (emphasis added):

1. A method of operating a plurality of paging carriers in a single mask-defined, bandlimited channel comprising the step of transmitting said carriers from the same location with said carriers having center frequencies within said channel such that the *frequency difference between the center frequency of the outer most of said carriers and the band edge of the mask defining said channel* is more than half the frequency difference between the center frequencies of each adjacent carrier.

* * *

3. A method of operating at least two paging carriers each in a corresponding subchannel of a single mask-defined, bandlimited channel comprising the step of transmitting said carriers from the same location with each carrier centrally located in said corresponding subchannel wherein the *frequency difference between the center frequency of the outer most of said corresponding subchannels*

and the band edge of the mask defining said channel is more than half the frequency difference between the center frequencies of each adjacent carrier.

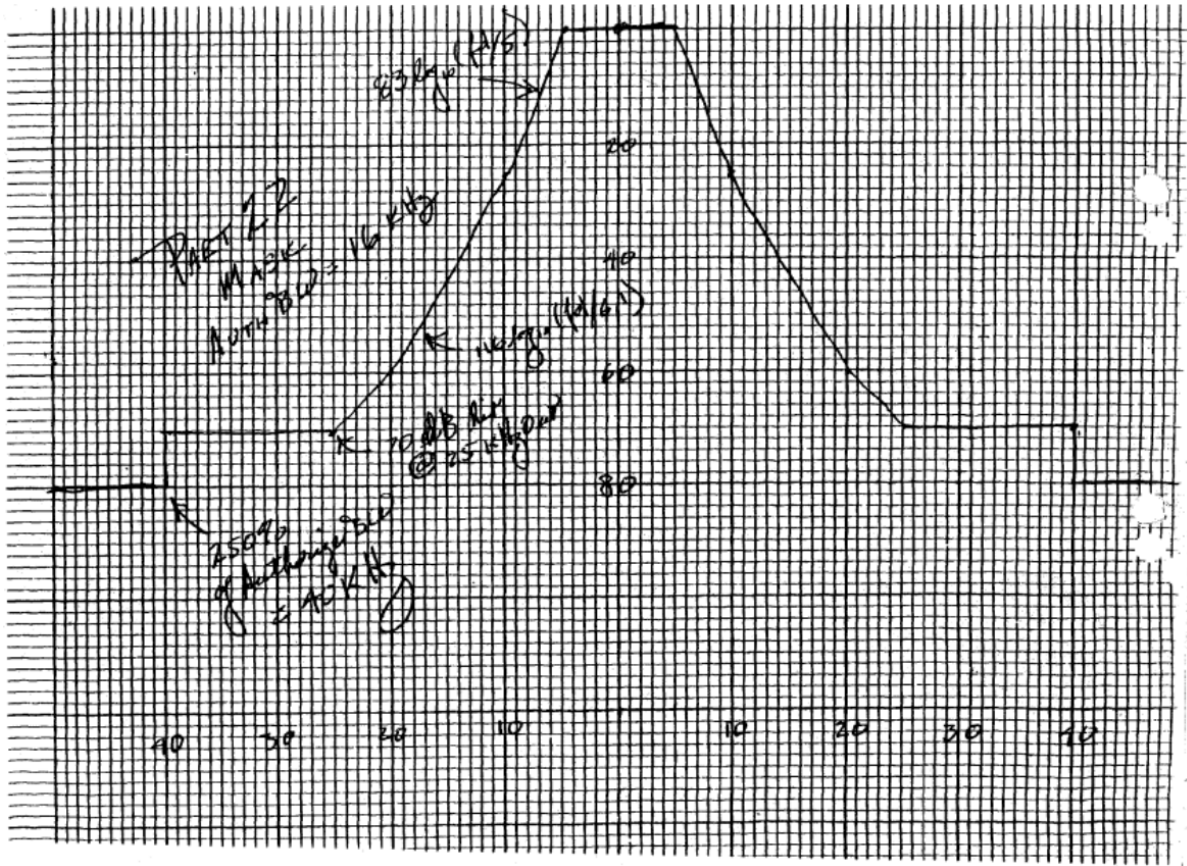
* * *

5. In a paging system having a plurality of transmitters transmitting a plurality of modulated carriers over a single mask-defined, bandlimited channel and a plurality of mobile receiving units independently receiving one of said plurality of carriers, a method of operating said plurality of carriers in said channel to achieve higher transmission capacity comprising the steps of:

co-locating said plurality of transmitters such that said plurality of carriers can be emanated from the same transmission source; and

transmitting said plurality of carriers over a plurality of subchannels spaced within the mask defining said channel wherein the *frequency difference between the center frequency of the outer most carriers and the band edge of said mask* is greater than half the frequency difference between the center frequencies of each adjacent carrier.

Defendants have cited a sketch presented during prosecution in which, Defendants submit, the patentee referred to various aspects of mask boundary definition. *See* Dkt. No. 62, Ex. D at p. 4 of 4 (MTEL-LEAP00000387). The legibility of the sketch attached to Defendants' response brief is marginal, but the sketch appears to depict attenuation at various distances from a center frequency. The sketch is reproduced here:



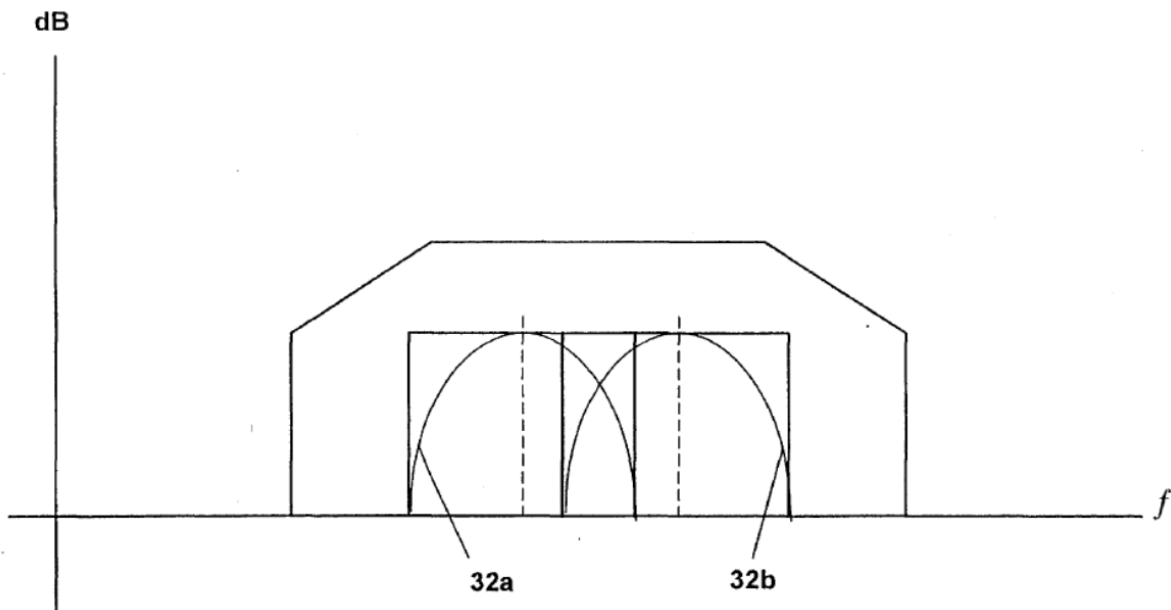
Defendants emphasize that the sketch was submitted by the patentee along with FCC regulations that have multiple significant frequency points, any one of which, Defendants argue, could be considered the “band edge” without further guidance. *See id.* at pp. 2-3 of 4; *see also* Dkt. No. 62-13, 2/15/2015 Acampora Decl. at ¶¶ 17-18.

At the March 18, 2015 hearing, Plaintiff countered that rather than being limited to any particular point, the “band edge” is defined by the lines between points in the above-reproduced sketch. As to how to perform the calculations recited in the disputed terms, Plaintiff explained that the appropriate band edge frequencies can be identified by drawing a horizontal line at the maximum amplitude of a particular carrier signal. For example, Plaintiff referred to Figure 3B (reproduced below).

The specification discusses Figure 3B as follows:

Referring to FIG. 3A, two submasks defining two subchannels, 30a and 30b, are asymmetrically located within a single mask-defined, bandlimited channel 31, resulting in some subchannel overlap. FIG. 3B depicts two carriers, 32a and 32b, operating respectively over two asymmetrically-located subchannels, resulting in some carrier overlap. In accordance with this asymmetry, the frequency difference between the center frequency of each carrier and the nearest band edge of the mask is greater than half the frequency difference between the center frequencies of the two carriers.

'891 Patent at 4:25-35. Figure 3B is reproduced here:



Plaintiff thus concludes that the band edge, for purposes of the carrier signals illustrated in Figure 3B, would be “fm1” and “fm2” as identified by Defendants’ expert, Dr. Acampora, in the following annotated version of Figure 3B that appears in Dr. Acampora’s declaration:

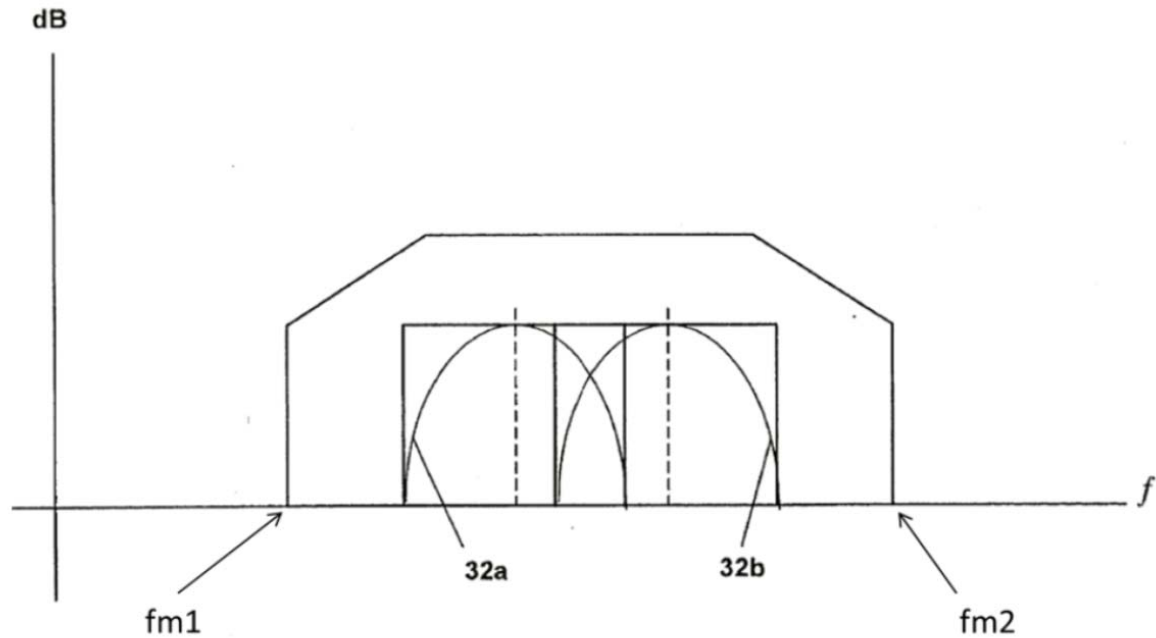


FIGURE 3B

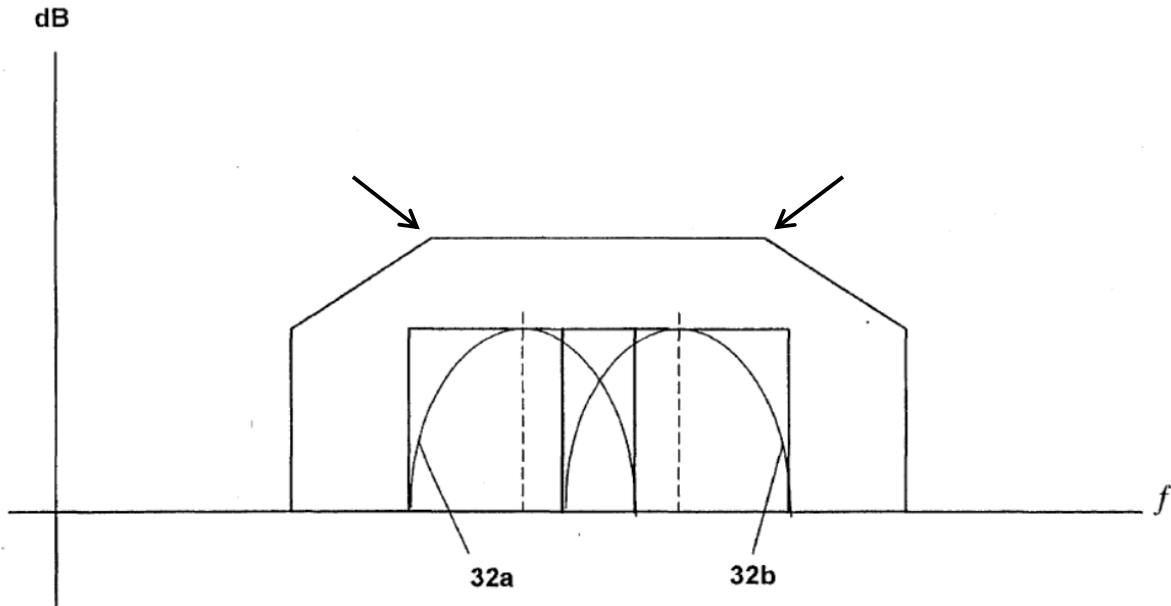
Dkt. No. 62-13, 2/15/2015 Acampora Decl. at p. 4.

Plaintiff's reliance on the amplitude of the carrier signals, however, is amorphous and is not supported by the specification. Moreover, such an interpretation would fail to give adequate notice to the public regarding the scope of the claims. *See Nautilus*, 134 S. Ct. at 2129 (“a patent must be precise enough to afford clear notice of what is claimed, thereby apprising the public of what is still open to them”) (citations, internal quotation marks, and square brackets omitted).

For example, in the above-reproduced sketch from the prosecution history, no carrier signals are illustrated. Further, even in Figure 3B, presumably the illustrated mask would permit the carrier signal amplitude to increase to the level of the upper horizontal line in Figure 3B. *See* '891 Patent at 4:25-35; *see also id.* at Fig. 3A.

Instead, a person of ordinary skill in the art would readily conclude that the “band edge” frequencies are the innermost frequencies at which the mask requires attenuation of the signal.

For example, in Figure 3B, the relevant band edge frequencies are at the inside of the downward slopes of the mask. These points are identified with arrows in the following reproduction of Figure 3B:



Further, although generally claims are not limited by the figures,⁴ it is noteworthy that whereas the difference between each center frequency and the corresponding above-illustrated “fm1” and “fm2” is substantially greater than the difference between the center frequencies, the difference between each center frequency and the corresponding innermost point of each downward slope (indicated above) is slightly more than half the difference between the center frequencies. The Court’s interpretation thus best reconciles the figures, the written description, and the above-quoted claim language.

⁴ See *MBO Labs. Inc. v. Becton, Dickinson & Co.*, 474 F.3d 1323, 1333 (Fed. Cir. 2007) (“[P]atent coverage is not necessarily limited to inventions that look like the ones in the figures. To hold otherwise would be to import limitations [i]nto the claim[s] from the specification, which is fraught with danger.”).

Naturally the relevant points could vary from mask to mask, but on balance the specification provides sufficient context for a person of ordinary skill in the art to understand the “band edge” with reasonable certainty. *See Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 806 F.2d 1565, 1576 (Fed. Cir. 1986) (regarding a chair leg portion “so dimensioned as to be insertable through the space between the doorframe of an automobile and one of the seats thereof,” finding that “[t]he patent law does not require that all possible lengths corresponding to the spaces in hundreds of different automobiles be listed in the patent, let alone that they be listed in the claims”); *see also Nautilus*, 134 S. Ct. at 2129; *PPG Indus. v. Guardian Indus. Corp.*, 156 F.3d 1351, 1355 (Fed. Cir. 1998) (“[A]fter the court has defined the claim with whatever specificity and precision is warranted by the language of the claim and the evidence bearing on the proper construction, the task of determining whether the construed claim reads on the accused product is for the finder of fact.”).

Finally, to whatever extent applying this interpretation to a particular mask may yield multiple relevant frequency differences, all such frequency differences must satisfy the claim limitations. This is consistent with Plaintiff’s acknowledgement, at the March 18, 2015 hearing, that the claim limitations must be satisfied at all relevant points along the band edge.

The Court therefore hereby expressly rejects Defendants’ indefiniteness arguments as to these terms. No further construction is necessary.

VII. CONCLUSION

The Court adopts the constructions set forth in this opinion for the disputed terms of the patents-in-suit.

The parties are ordered that they may not refer, directly or indirectly, to each other’s claim construction positions in the presence of the jury. Likewise, the parties are ordered to

refrain from mentioning any portion of this opinion, other than the actual definitions adopted by the Court, in the presence of the jury. Any reference to claim construction proceedings is limited to informing the jury of the definitions adopted by the Court.

SIGNED this 12th day of May, 2015.


ROY S. PAYNE
UNITED STATES MAGISTRATE JUDGE

APPENDIX A

<u>Term</u>	<u>Parties' Agreement</u>
United States Patents No. 5,590,403 and 5,915,210	
“plurality of” ('403 Patent, Claims 1, 10; '210 Patent, Claims 1, 10, 19)	“at least two”
“transmit/transmitting/transmitted . . . in simulcast” ('403 Patent, Claims 1, 10; '210 Patent, Claims 1, 10, 19)	“transmit/transmitting/transmitted . . . the same information at the same time”
“carrier signal” ('210 Patent, Claims 1, 10, 19)	“radio frequency signal that is capable of being modulated to carry information”
United States Patent No. 5,659,891	
“plurality of” ('891 Patent, Claims 1, 3, 5)	“at least two”
“paging carriers” ('891 Patent, Claims 1, 3)	“transmission signals that can be modulated to carry paging information”

Dkt. No. 49 at Ex. A; Dkt. No. 67 at Ex. A.