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

GENERAL ACCESS SOLUTIONS, LTD.,	§	
	§	
Plaintiff,	§	CIVIL ACTION NO. 2:20-CV-00007-RWS
	§	
v.	§	
	§	
SPRINT SPECTRUM L.P., SPRINTCOM, INC, ASSURANCE WIRELESS USA, L.P.,	§	
	§	
Defendants.	§	

ORDER

On September 9, 2020, the Court heard argument on the proper construction of certain claim terms in United States Patent No. 7,230,931 ("the '931 patent). Based on the parties' oral arguments, the parties' written arguments (Docket Nos. 84, 88 & 92), the intrinsic evidence and the extrinsic evidence, the Court issues this Claim Construction Order. *See Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 574 U.S. 318, 331–32 (2015); *Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005) (en banc).

TABLE OF CONTENTS

Page

I. BACKGROUND 3

II. APPLICABLE LAW 4

A. Claim Construction 4

B. Departing from the Ordinary Meaning of a Claim Term 7

III. CONSTRUCTION OF AGREED TERMS 8

IV. CONSTRUCTION OF DISPUTED TERMS 8

1. The preambles of claims 1 and 19 9

2. "wireless access devices disposed at a plurality of subscriber premises" and "wireless access device[s]" 13

3. "directed scanning beam signal[s]" 22

4. "[transmits/transmitting], in said downlink portion of said TDD frame, second downlink data traffic" 30

5. "a first beam map containing scanning beam information usable by said wireless access devices to [detect/receive] said [first] directed scanning beam signal[s]" 36

V. CONCLUSION 38

PETITIONER VERIZON
EX. 1013

I. BACKGROUND

The ’931 patent, entitled “Wireless Access System Using Selectively Adaptable Beam Forming in TDD Frames and Method of Operation,” issued on June 12, 2007, and claims an earliest priority date of January 19, 2001. The patent describes:

> A transceiver for use in a wireless access network comprising a plurality of base stations, each of the plurality of base stations capable of bidirectional time division duplex (TDD) communication with wireless access devices disposed at a plurality of subscriber premises in a corresponding cell site of the wireless access network. The transceiver is associated with a first base station and comprises transmit path circuitry associated with a beam forming network for transmitting directed scanning beam signals in a sector of a cell site of the first base station. The transmit path circuitry transmits at a start of a TDD frame a broadcast beam signal comprising a start of frame field and subsequently transmits downlink data traffic in a downlink portion of the TDD frame to at least one of the wireless access devices using at least one directed scanning beam.

’931 patent at Abstract. Claims 1 and 10 of the ‘931 patent, exemplary independent claims, recite as follows (with disputed terms in italics):

> 1. ***For use in a wireless access network comprising a plurality of base stations, each of said plurality of base stations capable of bidirectional time division duplex (TDD) communication with wireless access devices disposed at a plurality of subscriber premises in an associated cell site of said wireless access network, a transceiver associated with a first of said plurality of base stations comprising***:
>
> transmit path circuitry associated with a beam forming network capable of transmitting ***directed scanning beam signals*** each directed to substantially only ***wireless access devices*** within a different one of a plurality of sectors of a cell site associated with said first base station, wherein said transmit path circuitry
>
> transmits, at a start of a TDD frame, a broadcast beam signal to wireless access devices within more than one of said sectors, the broadcast beam signal comprising a start of frame field, and
>
> subsequently transmits, in a downlink portion of said TDD frame, first downlink data traffic to substantially only wireless access devices within one of said sectors using one of said directed scanning beam signals.
>
> 10. A fixed wireless access network comprising:
>
> a plurality of base stations, each of said base stations capable of bidirectional time division duplex (TDD) communication with ***wireless access devices disposed at a plurality of subscriber premises*** in a cell site associated with said each base station, wherein said each base station comprises:
>
> transmit path circuitry associated with a beam forming network capable of transmitting ***directed scanning beam signals*** each directed to substantially

PETITIONER VERIZON
EX. 1013

> only ***wireless access devices*** within a different one of a plurality of sectors of a cell site associated with said first base station, wherein said transmit path circuitry
>
> transmits, at a start of a TDD frame, a broadcast beam signal to wireless access devices within more than one of said sectors, the broadcast beam signal comprising a start of frame field, and
>
> subsequently transmits, in a downlink portion of said TDD frame, first downlink data traffic to substantially only wireless access devices within one of said sectors using one of said directed scanning beam signals.

'931 patent at 30:31–52, 31:22–43.

The '931 patent is the subject of *Inter Partes* Review proceeding IPR2017-01889 (the "IPR Proceeding") brought by Sprint Spectrum L.P. The United States Court of Appeals for the Federal Circuit recently affirmed in part, vacated in part, and remanded the PTAB's final decision in the proceeding. *Sprint Spectrum L.P. v. Gen. Access Sols., Ltd.*, 812 F. App'x 999 (Fed. Cir. 2020). Plaintiff "conceded the unpatentability of independent claims 1, 10, and 19." *Id*. at 1001.

II. APPLICABLE LAW

A. Claim Construction

"It is a 'bedrock principle' of patent law that 'the claims of a patent define the invention to which the patentee is entitled the right to exclude.' " *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (quoting *Innova/Pure Water Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). To determine the meaning of the claims, courts start by considering the intrinsic evidence. *Id.* at 1313; *C.R. Bard, Inc. v. U.S. Surgical Corp.*, 388 F.3d 858, 861 (Fed. Cir. 2004); *Bell Atl. Network Servs., Inc. v. Covad Commc'ns Group, Inc.*, 262 F.3d 1258, 1267 (Fed. Cir. 2001). The intrinsic evidence includes the claims themselves, the specification, and the prosecution history. *Phillips*, 415 F.3d at 1314; *C.R. Bard, Inc.*, 388 F.3d at 861. The general rule—subject to certain specific exceptions discussed *infra*—is that each claim term is construed according to its ordinary and accustomed meaning as understood by one of

PETITIONER VERIZON
EX. 1013

ordinary skill in the art at the time of the invention in the context of the patent. *Phillips*, 415 F.3d at 1312–13; *Alloc, Inc. v. Int'l Trade Comm'n*, 342 F.3d 1361, 1368 (Fed. Cir. 2003); *Azure Networks, LLC v. CSR PLC*, 771 F.3d 1336, 1347 (Fed. Cir. 2014) ("There is a heavy presumption that claim terms carry their accustomed meaning in the relevant community at the relevant time.") (vacated on other grounds).

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

"[C]laims 'must be read in view of the specification, of which they are a part.' " *Id.* (quoting *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995) (en banc)). "[T]he specification 'is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.' " *Id.* (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)); *Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1325 (Fed. Cir. 2002). But, "'[a]lthough the specification may aid the court in interpreting the meaning of disputed claim language, particular embodiments and examples appearing in the specification will not generally be read into the claims.' " *Comark Commc'ns*,

PETITIONER VERIZON
EX. 1013

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

PETITIONER VERIZON
EX. 1013

than the patent and its prosecution history in determining how to read claim terms." *Id.* The Supreme Court has 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., 574 U.S. 318, 331–32 (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."[1] *Golden Bridge Tech., Inc. v. Apple Inc.*, 758 F.3d 1362, 1365 (Fed. Cir. 2014) (quoting *Thorner v. Sony Computer Entm't Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012)); *see also GE Lighting Solutions, LLC v. AgiLight, Inc.*, 750 F.3d 1304, 1309 (Fed. Cir. 2014) ("[T]he specification and prosecution history only compel departure from the plain meaning in two instances: lexicography and disavowal."). The standards for finding lexicography or disavowal are "exacting." *GE Lighting Solutions*, 750 F.3d at 1309.

To act as his own lexicographer, the patentee must "clearly set forth a definition of the disputed claim term," and "clearly express an intent to define the term." *Id.* (quoting *Thorner*, 669

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

PETITIONER VERIZON
EX. 1013

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

III. CONSTRUCTION OF AGREED TERMS

The parties agreed to the construction of the following phrase:

Claim Phrase	Agreed Construction
"a first beam map containing scanning beam information usable by said wireless access devices"	"any information that is usable by said wireless access devices to detect said directed scanning beam signals"

Docket No. 73 at 1. In view of the parties' agreement on the proper construction of the identified phrase, the Court hereby **ADOPTS** the parties' agreed construction.

IV. CONSTRUCTION OF DISPUTED TERMS

The parties dispute the meaning of five terms or phrases used in the '931 patent. The Court takes each term or phrase in turn.

PETITIONER VERIZON
EX. 1013

1. The preambles of claims 1 and 19

Disputed Term	Plaintiff's Proposal	Defendants' Proposal
The preamble of claim 1	not limiting	limiting
The preamble of claim 19	not limiting	limiting

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

The Parties' Positions

Plaintiff submits that the preambles of claims 1 and 19—specifically, the phrase "wireless access devices disposed at a plurality of subscriber premises" in each—are not limiting because they are not necessary to give life, meaning and vitality to the claims. Rather, in Plaintiff's view, the phrase is a nonlimiting statement of intended use. Plaintiff points to the '931 patent's disclosure that "[t]hose skilled in the art will understand that the principles of the present invention may be implemented in ***any*** suitably arranged wireless access system." Docket No. 84 at 13–16 (citing '931 patent at 11:51–54 (Plaintiff's emphasis and modification)).

In addition to the claims themselves, Plaintiff cites the following **intrinsic evidence** to support its position: '931 patent at 11:51–54.

Defendants respond that the preambles of claims 1 and 19 are limiting because: (1) they provide an important aspect of the invention of the '931 patent that is not expressed in the bodies of the claims and (2) they provide antecedent basis for terms in the bodies of the claims and are necessary to understand the terms in the bodies. Docket No. 88 at 9–14.

In addition to the claims themselves, Defendants cite the following **intrinsic evidence** to support their position: '931 patent at Abstract, 4:19–21, 5:22–28, 9:1–12, 9:16–34, 11:55–65, 14:26–28, 22:52–57.

PETITIONER VERIZON
EX. 1013

Analysis

The issue in dispute is whether the preambles of claims 1 and 19 are limiting. They are.

The disputed preambles are limiting in their entirety. "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." *Acceleration Bay, LLC v. Activision Blizzard, Inc.*, 908 F.3d 765, 770 (Fed. Cir. 2018) (quotation marks and citations omitted). A preamble is limiting, however, when it is "necessary to give life, meaning, and vitality to the claim." *Catalina Mktg. Int'l, Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002) (quotation marks and citations omitted). For example, "dependence on a particular disputed preamble phrase for antecedent basis may limit claim scope because it indicates a reliance on both the preamble and claim body to define the claimed invention." *Id.* "Likewise, when the preamble is essential to understand limitations or terms in the claim body, the preamble limits claim scope." *Id.* "Further, when reciting additional structure or steps underscored as important by the specification, the preamble may operate as a claim limitation." *Id.* Here, the preambles state more than an intended use. They reflect important aspects of the described invention and are essential to understanding limitations in the claim bodies.

Both preambles provide important details that inform the proper understanding of the claimed invention and are therefore limiting. For instance, claim 1 provides:

> **1.** For use in a wireless access network comprising a plurality of base stations, each of said plurality of ***base stations*** ***capable of bidirectional time division duplex (TDD) communication with wireless access devices disposed at a plurality of subscriber premises*** in an associated cell site of said wireless access network, a transceiver associated with ***a first of said plurality of base stations*** comprising:
>
> transmit path circuitry associated with a beam forming network capable of transmitting directed scanning beam signals each directed to substantially only wireless access devices within a different one of a plurality of sectors of a cell site associated with ***said first base station***, wherein said transmit path circuitry

PETITIONER VERIZON
EX. 1013

> transmits, at a start of a TDD frame, a broadcast beam signal to wireless access devices within more than one of said sectors, the broadcast beam signal comprising a start of frame field, and
> subsequently transmits, in a downlink portion of said TDD frame, first downlink data traffic to substantially only wireless access devices within one of said sectors using one of said directed scanning beam signals.

'931 patent at 30:31–52 (emphasis added). Notably, the preamble provides antecedent basis for "said first base station" and recites characteristics of that base station—specifically, that it is one of many, each of which is "capable of bidirectional time division duplex (TDD) communication with wireless access devices disposed at a plurality of subscriber premises in an associated cell site of said wireless access network." This is not a statement of intended use. It is a detailed statement of the capability that the first base station recited in the body of the claim must have. Indeed, this capability is set forth in the patent as a "primary object of the present invention":

> it is a primary object of the present invention to provide a transceiver for use in a wireless access network comprising a plurality of base stations, each of the plurality of base stations ***capable of bidirectional time division duplex (TDD) communication with wireless access devices disposed at a plurality of subscriber premises in a corresponding cell site of the wireless access network***.

See, e.g., *id*. at 9:17–23. Because this "primary" capability of the base station is expressed only in the preamble, and because the preamble provides the antecedent basis for the "first base station" recited in the body of the claim, the preamble provides important context for understanding the invention. Specifically, the preamble sets forth the scope of the "first base station" in the body of the claim by structurally defining it in the preamble according to recited capabilities.

The preamble of claim 19 provides similar context for understanding the claimed method:

> **19.** For use in a wireless access network comprising a plurality of base stations, each of said plurality of base stations capable of bidirectional time division duplex (TDD) communication with wireless access devices disposed at a plurality of subscriber premises in ***<u>an</u> associated cell site*** of said wireless access network, a method of ***communicating with a first of said plurality of base stations*** comprising the steps of:
>
> transmitting, at a start of a TDD frame, a broadcast beam signal to wireless access devices within more than one of a plurality of sectors within ***<u>said</u>***

PETITIONER VERIZON
EX. 1013

> ***associated cell site***, the broadcast beam signal comprising a start of frame field capable of synchronizing receivers in said wireless access devices; and transmitting, in a downlink portion of said TDD frame, first downlink data traffic to substantially only wireless access devices in a first of said sectors using a first directed scanning beam signal.

Id. at 32:16–34. The preamble provides antecedent basis for "said associated cell site." It also provides important context that tethers the operation of the communication method to a particular base station. Without the language in the preamble, the claim does not otherwise express what is transmitting the broadcast beam signal and downlink data traffic to the wireless access devices. Similarly, the preamble clarifies the effect that "associated" has in the body of the claim. When the body of the claim is interpreted with an eye to the preamble, it is clear that the "first of said plurality of base stations" is transmitting the signal and traffic. The preamble also makes clear that the "associated cell site" is associated with that base station and is not just any cell site in the wireless access network. This understanding aligns with the description of the invention in the specification. For example, and as set forth above, a primary object of the invention relates to communicating between a base station and a wireless access device in the cell site which corresponds to the base station. Thus, reference to the preamble is necessary to understand the proper scope of the claim, specifically the "first of said plurality of base stations," which is structurally defined in the preamble according to recited capabilities.

While the preambles are limiting, Defendants' proposed fixed-wireless-access-device limitation is not appropriate. The preambles require only that the base station be capable of communicating with specific wireless access devices; it does not require that it actually do so. *See, e.g.*, *Advanced Software Design Corp. v. Fiserv, Inc.*, 641 F.3d 1368, 1374–76 (Fed. Cir. 2011) (distinguishing between limitations "that define the environment in which an accused infringer must act or describe capabilities that an accused device must have" from those "that must be [satisfied] by an accused infringer"); *Mastermine Software, Inc. v. Microsoft Corp.*, 874 F.3d 1307,

PETITIONER VERIZON
EX. 1013

1315–16 (Fed. Cir. 2017) (noting that claim-recited "verbs [may] represent permissible functional language used to describe capabilities" and thereby indicate that a structural component "possesses the recited structure which is capable of performing the recited functions" (quotation and modification marks omitted)). Further, the "wireless access devices" recited in the bodies of the claims do not necessarily refer back to the "wireless access devices" recited in the preambles. The "wireless access devices" in the claim bodies are not preceded by a "said" or "the" article, which would signal reference to an antecedent.

Accordingly, the Court holds that the preambles of claims 1 and 19 are limiting in their entirety.

2. "wireless access devices disposed at a plurality of subscriber premises" and "wireless access device[s]"

Disputed Term	Plaintiff's Proposal	Defendants' Proposal
"wireless access devices disposed at a plurality of subscriber premises"	The relevant portions of the preambles to claims 1 and 19 are not limiting. No construction necessary; the words should be given their plain and ordinary meaning. To the extent the Court determines that a construction is necessary, General Access proposes the following: • wireless access devices at multiple subscriber locations	wireless access device[s] that [are/is] fixed at subscriber premises
"wireless access device[s]"	No construction necessary; the words should be given their plain and ordinary meaning.	wireless access device[s] that [are/is] fixed at subscriber premises

PETITIONER VERIZON
EX. 1013

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 that, even if "wireless access devices disposed at a plurality of subscriber premises" in the preambles is limiting, the devices are not "fixed" anywhere. In Plaintiff's view, the '931 patent explains that the devices are simply "disposed" at subscriber premises, meaning that they are located there. Plaintiff points out that, during prosecution of the patent, the Examiner repeatedly rejected claims directed to "wireless access devices" by relying on a prior art reference that disclosed mobile wireless devices in automobiles ("*Scott*"[2]). Plaintiff contends that the applicant did not distinguish *Scott* by suggesting that the wireless access devices of the '931 patent are necessarily fixed but rather noted the invention's use of a directional antenna to focus on devices within a single sector of a cell. Further, Plaintiff says, claim 10 and its dependent claims are expressly directed to "fixed" networks, indicating that "fixed" is not an inherent aspect of the claims that do not recite "fixed." Plaintiff submits that neither "disposed" nor "premises" in the claims mandates straying from the broad plain meaning of "wireless access devices" to require that they be fixed. Rather, in Plaintiff's view, that devices are "disposed" at "subscriber premises" simply indicates that the devices are located there. Ultimately, Plaintiff believes, there is nothing in the intrinsic record that justifies limiting "wireless access devices" to fixed-location devices. Plaintiff further submits that Defendants asserted in the IPR Proceeding that the claims are invalid in light of prior art that teaches base stations which can be directed to mobile terminals

[2] U.S. Patent No. 6,094,421.

PETITIONER VERIZON
EX. 1013

("*Vornefield*"[3]) and prior art that teaches both fixed and mobile devices simply at a "location" ("*Majidi-Ahy*"[4]). Docket No. 84 at 13–14, 16–27.

In addition to the claims themselves, Plaintiff cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence**: '931 patent at Abstract, 3:28–31, 4:30–45, 5:22–28, 6:29–31, 9:2–4, 9:16–22, 11:49–54; '931 patent file wrapper January 10, 2006 Office Action at 2–3 (Plaintiff's Ex. B, Docket No. 84-2 at 4–5), May 18, 2006 Amendment and Response at 12–13 (Plaintiff's Ex. D, Docket No. 84-4 at 3–4), June 7, 2006 Office Action at 9 (Plaintiff's Ex. E, Docket No. 84-5 at 9), October 13, 2006 Pre-Appeal Brief Request for Review at 1–2 (Plaintiff's Ex. F, Docket No. 84-6 at 2–3); *Scott* at Fig. 3A, 7:53–55 (Plaintiff's Ex. C, Docket No. 84-3); *Majidi-Ahy* at 4:31–40, 16:41–47 (Plaintiff's Ex. H, Docket No. 84-8); Theodore Rappaport, *Wireless Communications* at 398, 439, 445–49 (1996) (Plaintiff's Ex. K, Docket No. 84-11 at 4–10); Anader Benyamin-Seeyar et al., *Draft Document for SC-FDE PHY Layer System for Sub 11 GHz BWA* at 47 (2001) (Plaintiff's Ex. L, Docket No. 84-12 at 47). **Extrinsic evidence**: *Webster's New International Dictionary* at 752, 2937[5] (2d ed. 1961), "device," "disposed," "wireless" (Plaintiff's Ex. J, Docket No. 84-10 at 4–5, 8); *Webster's New World Dictionary* at 7, 396, 1533 (3d college ed. 1993), "access," "dispose," "wireless" (Plaintiff's Ex. I, Docket No. 84-9 at 4, 6–7); IPR Petition[6] at 20 (Plaintiff's Ex. G, Docket No. 84-7 at 3); GAO Report[7] at 46–47 (Plaintiff's Ex. M, Docket No. 84-13 at 3–4); ITU, *Recommendation ITU-R F. 1399 Vocabulary of Terms for Wireless Access* at 1–2 (1999) (Plaintiff's Ex. N. Docket No. 84-14 at 2–3); Loutfi

[3] Ulrich Vornefeld et al., *SDMA Techniques for Wireless ATM*, IEEE Communications Magazine 52–57 (Nov. 1999).
[4] U.S. Patent No. 7,366,133.
[5] The relevant portion of Plaintiff's exhibit lacks the page number for "device."
[6] Petition for Inter Partes Review of U.S. Patent No. 7,230,931 Under 35 U.S.C. §§ 311–319 and 37 C.F.R. § 42.100, *Sprint Spectrum L.P. v. General Access Solutions, Ltd.*, IPR2017-01889 (P.T.A.B. July 28. 2017), Paper No. 1.
[7] General Accounting Office, *Report to the Subcommittee on Antitrust, Business Rights and Competition, Committee on the Judiciary, U.S. Senate TELECOMMUNICATIONS Technological and Regulatory Factors Affecting Consumer Choice of Internet Providers GAO-01-93* (Oct. 2000).

PETITIONER VERIZON
EX. 1013

Nuaymi, *WiMax Technology for Broadband Wireless Access* at figs.1.4, 1.5, 1.6 (2007) (Plaintiff's Ex. O, Docket No. 84-15 at 6–7); Institute of Electrical and Electronic Engineers, Inc., *IEEE Std. 802.16-2001* at 8 (2002) (Plaintiff's Ex. P, Docket No. 84-16 at 4).

Defendants respond that the wireless access devices that are "disposed at . . . subscriber premises" must be fixed at the premises; otherwise, the "disposed" language has no effect. Specifically, Defendants contend that construing the wireless access devices to encompass mobile devices would improperly render the "disposed at . . . subscriber premises" language meaningless. The plain meaning of "premises," Defendants say, refers to a building, not to just any location. And as described in the '931 patent, devices "disposed at . . . subscriber premises" indicates devices fixed at or to a building. Defendants point out that the patent states that the "present invention" is directed to "fixed networks" (citing '931 patent at 9:16–23). To Defendants, even applying the dictionary definitions of "disposed" that Plaintiff proposes means that a device cannot be said to be "disposed at . . . subscriber premises" if it moves from the premises—the device would no longer be ordered or arranged at the premises if that were the case. Defendants further contend that every recitation of "wireless access device" in the claims refers to an earlier recited wireless access device "disposed at . . . subscriber premises," such that all wireless access devices must be disposed at subscriber premises. Defendants submit that, if the claims are read any other way, it "would imply that base stations must communicate with wireless access devices with which they need not be able to communicate." Finally, Defendants argue that neither the prosecution history regarding *Scott* nor Defendants' position in the IPR Proceeding regarding *Vornefeld* indicate that the wireless access devices are anything but fixed because both *Scott* and *Vornefeld* teach fixed wireless access devices and because the IPR Proceeding applies a different claim-construction standard than governs here. Docket No. 88 at 14–23.

PETITIONER VERIZON
EX. 1013

In addition to the claims themselves, Defendants cite the following intrinsic and extrinsic evidence to support their position: **Intrinsic evidence**: '931 patent at Fig. 1, 4:19–21, 5:18–31, 9:1–4, 9:16–23, 9:31–33, 9:38–39, 9:56–58, 9:61–63, 9:66–67, 10:4–5, 11:51–55, 11:64–12:4, 13:17–18; '931 patent file wrapper June 7, 2006 Office Action at 9 (Plaintiff's Ex. E, Docket No. 84-5 at 9); *Scott* at 23:60–62 (Defendants' Ex. 5, Docket No. 88-6); *Vornefeld* at 52–53, 56, 57 n.2 (Defendants' Ex. 6, Docket No. 88-7). **Extrinsic evidence**: *Webster's New World Dictionary* at 1063 (3d college ed. 1993), "premise" (Defendants' Ex. 3, Docket No. 88-4 at 4); *Newton's Telecom Dictionary* at 546 (17th ed. 2001), "premises" (Defendants' Ex. 4, Docket No. 88-5 at 4); GAO Report at 46 (Plaintiff's Ex. M, Docket No. 84-13 at 3); European Telecommunications Standards Institute, TR 101 031 V1.1.1 *High Performance Radio Local Area Networks (HIPERLAN)* at 11 (July 1997) (Defendants' Ex. 7, Docket No. 88-8 at 4)

Plaintiff replies that, in the IPR Proceeding, the parties, PTAB and Federal Circuit all characterized the invention of the '931 patent without mention of any "fixed" nature of the wireless access devices. Plaintiffs submit that the patent expresses that the invention is applicable to any suitably arranged system and incorporates references describing mobile access devices. Plaintiffs further argue that the "wireless access devices" that are recited in the body of the claims are not introduced with a "the" or "said" and therefore do not necessarily refer back to the devices that are "disposed at a plurality of subscriber premises." Even if they did, Plaintiffs contend, the preambles' "subscriber premises" should not be read as a limitation in claims 1 and 19, and it would be improper to interpret "disposed" as "fixed." Docket No. 92 at 6–12.

PETITIONER VERIZON
EX. 1013

Plaintiff cites further **intrinsic evidence** to support its position: '931 patent 11:55–64; IPR Final Written Decision[8] at 3–4 (Plaintiff's Ex. T, Docket No. 84-20[9]).

Analysis

The issue in dispute is whether the "wireless access devices" are necessarily "fixed" at a particular location. They are not.

The "wireless access devices" of the '931 patent are not necessarily "fixed at subscriber premises." While the specification makes clear that an important attribute of the invention is the base station's ***capability*** for "bidirectional time division duplex (TDD) communication with wireless access devices disposed at a plurality of subscriber premises," neither the specification nor the claims are necessarily restricted to such communication. In other words, the claims do not preclude base stations that can or do communicate with wireless devices that are not disposed at a subscriber's premises. They simply require base stations capable of communicating with wireless devices that are disposed at a subscriber's premises. Such an interpretation is consistent with the language of the claims because "wireless access devices disposed at . . . subscriber premises" are a subspecies of the category "wireless access devices." And, as set forth above, the recitation of "wireless access devices" in the claims does not necessarily refer to the "wireless access devices disposed at a plurality of subscriber premises." The term is not introduced with a definite article such as "the" or "said" that suggests reference to an antecedent.

Defendants' evidence does not rise to the exacting standard required to limit the wireless access devices to fixed wireless access devices. During prosecution, the Examiner identified mobile devices as satisfying the "wireless access device" limitation. For example, the Examiner

[8] Final Written Decision, *Sprint Spectrum L.P. v. General Access Solutions, Ltd.*, IPR2017-01889 (P.T.A.B. March 7, 2019), Paper No. 43.

[9] Plaintiffs only attach excerpts of the Final Written Decision to their briefing. *See* Docket No. 84-20. The Court takes judicial notice of the full opinion. *See* FED. R. EVID. 201(b)(2), (c).

PETITIONER VERIZON
EX. 1013

noted that "[i]n regards to claims 1, 10 and 19 Scott anticipates . . . wireless access devices (***figure 3a element 302***) disposed at a plurality of subscriber premises in an associated cell site (figure 3a, cells associated with user stations 302." '931 patent file wrapper June 7, 2006 Office Action at 2–3 (emphasis added), Docket No. 84-5 at 4–5. *Scott* teaches that device 302 is mobile. *See, e.g.*, *Scott* at 7:53–58 ("the mobility of user stations 302 leads to unpredictability in the propagation delay times of transmissions from the base station"), Docket No. 84-3. This suggests that one of ordinary skill in the art would have understood that the "wireless access devices" of the '931 patent are not restricted to fixed wireless access devices. *Salazar v. Procter & Gamble Co.*, 414 F.3d 1342, 1347 (Fed. Cir. 2005) ("Statements about a claim term made by an examiner during prosecution of an application may be evidence of how one of skill in the art understood the term at the time the application was filed."). Sprint Spectrum also appears to have argued in the IPR Proceeding that a mobile device satisfies the "wireless access device" limitations:

> Vornefeld discloses "a wireless access network comprising a plurality of base stations, each of said plurality of base stations capable of bidirectional time division duplex (TDD) communication with wireless access devices disposed at a plurality of subscriber premises in an associated cell site of said wireless access network" by describing "an example of a modern broadband wireless access system." (Ex. 1004 at 52.) Specifically, Vornefeld describes a "***cellular mobile communications*** system" with base stations having "multiple antenna beams that can be electronically ***directed to the mobile terminal (MT) locations***."

IPR Petition at 20 (emphasis added), Docket No. 84-7 at 3. The broadest reasonable interpretation claim-construction standard governing the IP Proceeding does not explain such a broad reading if, as Defendants here contend, the patent's specification mandates that the fixed location is an inherent aspect of the wireless access devices. *See, e.g.*, *In re Smith Int'l, Inc.*, 871 F.3d 1375, 1382 (Fed. Cir. 2017) ("The protocol of giving claims their broadest reasonable interpretation does not include giving claims a legally incorrect interpretation divorced from the specification and the record evidence." (quotation and modification marks omitted)).

PETITIONER VERIZON
EX. 1013

Notably, the patent itself suggests that the wireless access devices are not necessarily fixed. *See, e.g.*, '931 patent 11:52–54 ("the present invention may be implemented in any suitably arranged wireless access system"); 5:22–25 ("Fixed wireless broadband systems use a group of transceiver base stations to cover a region in the same manner as the base stations of a cellular phone system."), 7:10–20 (describing "[d]igital cordless phones" as "pico-cellular fixed access products"). Ultimately, the disclosures relied upon by Defendants do not meet the exacting standard required to limit the "wireless access devices" to fixed wireless access devices when the claims do not express a "fixed" limitation.

Similarly, "wireless access devices" that are "disposed" are not necessarily "fixed" at the subscriber premises. As set forth above, the invention is not limited to fixed wireless access devices. For the same reasons, the meaning of "disposed" is not narrowed to "fixed." "Disposed" is a broad term, and its meaning is plain. *See, e.g.*, *Webster's New International Dictionary* at 752 (2d ed. 1961) (defining "dispose" as "To distribute and put in place; to arrange; to set in order" and "disposed" as "Distributed; regulated; arranged; assigned"), Docket No. 84-10 at 5. Plaintiff is entitled to the full scope of "disposed." *Thorner v. Sony Comput. Entm't Am. LLC*, 669 F.3d 1362, 1367 (Fed. Cir. 2012) ("The patentee is free to choose a broad term and expect to obtain the full scope of its plain and ordinary meaning unless the patentee explicitly redefines the term or disavows its full scope.").

In the same way, and contrary to Plaintiff's contention, "premises" is used according to its customary meaning to refer to a building, a place in a building or the like, not simply to any location. For example, the '931 patent provides that "[s]ubscriber premises 121–123 may comprise many different types of residential and commercial buildings, including single family homes, multi-tenant offices, small business enterprises (SBE), medium business enterprises

PETITIONER VERIZON
EX. 1013

(MBE), and so-called "SOHO" (small office/home office) premises." '931 patent at 11:64–12:4. Under the doctrine of *ejusdem generis*, this suggests that premises are buildings or similar structures. *See, e.g.*, *IBM v. Iancu*, 759 F. App'x 1002, 1007–08 (Fed. Cir. 2019) (interpreting "a federation is a set of distinct entities, such as enterprises, organizations, institutions, etc." to be limited to "enterprises" and the like and to not encompass just any "entity" such as piece of physical equipment) (citing *Archer Daniels Midland Co. v. United States*, 561 F.3d 1308, 1313 (Fed. Cir. 2009) and *United States v. Nichols Copper Co.*, 29 C.C.P.A. 186, 191 (1941)). Indeed, understanding "premises" as a building or the like comports with the customary meaning of the term. *See, e.g.*, *Webster's New World Dictionary* at 1063 (3d college ed. 1993) (defining "premises" to mean "a piece of real estate; house or; building and its land *[*keep off the *premises]*" (brackets and italics in original)), Docket No. 88-4 at 4. Ultimately, Plaintiff's arguments and evidence do not support straying from the plain meaning of "premises."

Accordingly, the Court rejects: (1) Defendants' requirement that the "wireless access devices" be necessarily "fixed" at the premises and (2) Plaintiff's expansion of "premises" to encompass any "location." The Court further determines that "wireless access devices" and "wireless access devices disposed at a plurality of subscriber premises" each have their plain and ordinary meaning without the need for further construction.

PETITIONER VERIZON
EX. 1013

3. "directed scanning beam signal[s]"

Disputed Term	Plaintiff's Proposal	Defendants' Proposal
"directed scanning beam signal[s]"	No construction necessary; the words should be given their plain and ordinary meaning. To the extent the Court determines that a construction is necessary: • [an] antenna radiation pattern[s] aimed in [a] particular direction[s] OR • [a] beamformed signal[s] aimed in [a] particular direction[s]	signals transmitted using a beam pattern selected from a pre-programmed set of directed beam patterns

<u>The Parties' Positions</u>

Plaintiff submits that the "directed scanning beams signals" of the '931 patent are simply "beamformed signals directed to a portion of a cell site." In Plaintiff's view, the directed scanning beam signals are not necessarily pre-programmed. In fact, Plaintiffs say, the patent also teaches adaptive beam forming, which is the opposite of pre-programmed (citing '931 patent at 27:45–51). Plaintiffs point out that, in the IPR Proceeding, Sprint Spectrum's expert expressed his understanding that the "directed scanning beams signals" are not limited as Defendants propose here. Rather, the expert characterized building the beam signals with pre-programmed sets as "an embodiment" rather than limiting. Docket No. 84 at 27–32 (quoting Proctor IPR Dep.[10] at 10:16–11:10, Docket No. 84-19 at 6–7).

In addition to the claims themselves, Plaintiff cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence**: '931 patent at 9:26–29, 27:45–51; '931 patent

[10] Oral Deposition of James Proctor, Jr., M.S.E.E., *Sprint Spectrum L.P. v. General Access Solutions, Ltd.*, IPR2017-01885 (P.T.A.B. July 13, 2018). The document indicates that it was submitted as Exhibit 1011 in IPR2017-01889.

PETITIONER VERIZON
EX. 1013

file wrapper June 7, 2006 Office Action at 2–4, 8–9 (Plaintiff's Ex. E, Docket No. 84-5 at 4–6, 8–9), October 13, 2006 Pre-Appeal Brief Request for Review at 1–2 (Plaintiff's Ex. F, Docket No. 84-6 at 2–3); *Scott* at 22:57–63, 28:1–7, 29:21–24, 54:52–61 (Defendants' Ex. 5, Docket No. 88-6); IPR Final Written Decision at 15 (Plaintiff's Ex. T, Docket No. 84-20 at 7). **Extrinsic evidence**: *Webster's New World Dictionary* at 120 (3d college ed. 1993), "beam," (Plaintiff's Ex. I, Docket No. 84-9 at 5); *IEEE 1000 The Authoritative Dictionary of IEEE Standards Terms* at 92–93 (7th ed. 2000), "beam" and "beam steering" (Plaintiff's Ex. Q, Docket No. 84-17 at 4–5); Proctor IPR Decl.[11] ¶ 56. (Plaintiff's Ex. R, Docket No. 84-18); Proctor IPR Dep. 7:15 – 8:14, 10:16 – 11:10 (Plaintiff's Ex. S, Docket No. 84-19 at 3–4, 6–7).

Defendants contend that the'931 patent explicitly defines the term. Defendants point to the disclosure in the specification that "[t]he present invention uses pre-programmed sets of ***directed beam patterns*** to cover a cell in an angular fashion. ***This is referred to herein as 'beam scanning'***" (quoting '931 patent at 28:1–3, Defendants' emphasis). And, Defendants say, this is how Plaintiff characterized the term in the IPR Proceeding. Defendants contend that there is no description in the patent of any other approach to beam scanning or scanning beams. In Defendants' view, the "adaptive" beam scanning described in the patent is "selectively adaptable," which comports with the definition of selecting from among pre-programmed patterns, where "pre-programmed weights and delays are used." Defendants further argue that the "adaptive cancellation" described in the patent is not directed to transmitting the beam, as set forth in the claims. Rather, the disclosure is directed to cancellation of "unwanted or interfering signals." Finally, Defendants contend that Sprint's expert's position in the IPR Proceeding is irrelevant because that proceeding applies a different claim-construction standard. Docket No. 88 at 23–30.

[11] Expert Declaration of James A. Proctor Jr. for Inter Partes Review of U.S. Patent No. 7,230,931, *Sprint Spectrum L.P. v. General Access Solutions, Ltd.*, IPR2017-01889 (P.T.A.B. July 28, 2017), Exhibit 1003.

PETITIONER VERIZON
EX. 1013

In addition to the claims themselves, Defendants cite the following intrinsic and extrinsic evidence to support their position: **Intrinsic evidence**: ’931 patent at Figs.12A, 13A, 3:30–31, 26:29–31, 27:46–48, 27:61–67, 28:1–13, 28:30–31; IPR Patent Owner’s Response[12] at 7 (Defendants’ Ex. 8, Docket No. 88-9 at 4); Humphrey IPR Decl.[13] ¶ 27 (Defendants’ Ex. 9, Docket No. 88-10); *Scott* at Fig.10A, 22:57–63 (Plaintiff’s Ex. C, Docket No. 84-3) (Defendants’ Ex. 5, Docket No. 88-6); IPR Final Written Decision at 15 (Plaintiff’s Ex. T, Docket No. 84-20 at 7). **Extrinsic evidence**: IPR Petition at 12–13 (Defendants’ Ex. 10, Docket No. 88-11 at 3–4); Proctor IPR Dep. at 10:17–18 (Defendants’ Ex. 11, Docket No. 88-12 at 4).

Plaintiff replies that the ’931 patent describes a variety of beamforming techniques: analog and digital and for transmitting and receiving. In Plaintiff’s view, the “adaptive cancellation” embodiment is applicable to both transmitting and receiving, since cancelling interference is important both for transmitting signals and receiving signals. Plaintiff argues that the breadth of beamforming disclosed in the patent means that the language that Defendants contend is definitional is not, in fact, definitional. Docket No. 92 at 12–14.

Plaintiff cites further intrinsic and extrinsic evidence to support its position: **Intrinsic evidence**: ’931 patent at Figs. 9–11, 11:22–29, 25:54–57, 25:62–66, 26:10–18, 26:29–:27:60. **Extrinsic evidence**: Griffin Dep.[14] 188–89, 194 (Plaintiff’s Ex. Z, Docket No. 92-1 at 11–13).

Analysis

The issue in dispute is whether the ’931 patent’s “directed scanning beam signals” are necessarily selected from pre-programmed directed beam patterns. They are not.

[12] Patent Owner’s Response, *Sprint Spectrum L.P. v. General Access Solutions, Ltd.*, IPR2017-01889 (P.T.A.B. Aug. 3, 2018), Paper No. 25.
[13] Expert Declaration of Kurt Humphrey in Support of Patent Owner’s Response, *Sprint Spectrum L.P. v. General Access Solutions, Ltd.*, IPR2017-01889 (P.T.A.B. Aug. 3, 2018), Exhibit 2001.
[14] Oral and Videoconference Videotaped Deposition of Kirk Griffin (Aug. 4, 2020).

PETITIONER VERIZON
EX. 1013

The ’931 patent does not define “directed scanning beam signals.” In arguing to the contrary, Defendants rely on a passage in the specification that defines “beam scanning,” not “directed scanning beam signals”:

> ***The present invention uses pre-programmed sets of directed beam patterns*** to cover a cell in an angular fashion. ***This is referred to herein as “beam scanning***”. FIG. 12A illustrates exemplary beam scanning pattern 1210 according to one embodiment of the present invention. Beam scanning pattern 1210 covers an cell sector that is approximately 90 degrees wide. Beam scanning patter 1210 is covered by nine ***directed scanning beams***, each approximately 10 degrees wide. The base station establishes a set of beams to cover the cell. Based on physical location in the sector, a specific beam is used to communicate with one or more subscribers that lie in that sector. The nine scanning beams may be transmitted or received in any order.

’931 patent at 28:1–13 (emphasis added). This passage indicates that a beam pattern may be constructed with “directed scanning beams,” each scanning beam directed to a different sector in the cell. In other words, a scanning beam is expressly not coextensive with a beam pattern, as Defendants suggest.

The patent includes other disclosures like Defendants’ cited passage that suggest “beam scanning” is not an inherent attribute of the invention. For example, the patent provides:

> According to an ***advantageous embodiment*** of the present invention, the transceiver is associated with a first of the plurality of base stations and comprises transmit path circuitry associated with a beam forming network capable of transmitting ***directed scanning beam signals in a sector of a cell site*** associated with the first base station.

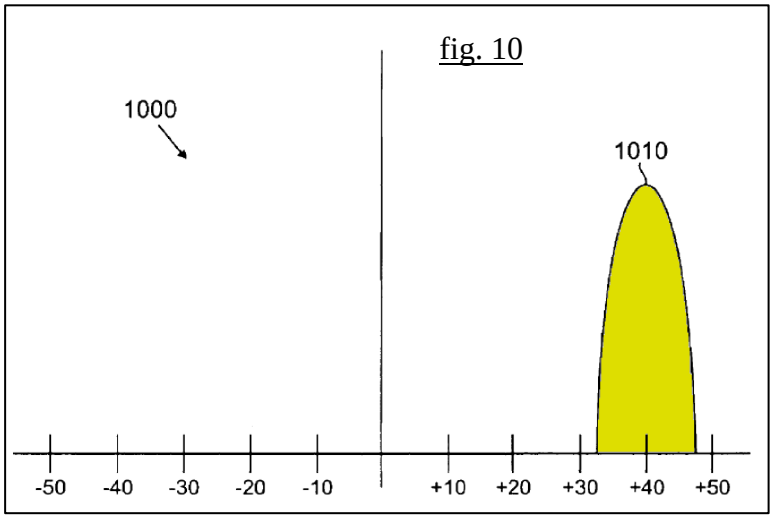
Id. at 9:23–29 (emphasis added). This suggests that directing scanning beams to different sectors may simply be an attribute of an embodiment rather than inherent to the invention as would be the case if the above-described “beam scanning” was definitional of the invention.

The ’931 patent also discloses structure for creating directed beams that suggests the beams can be directed in real time and are not limited to a pre-programmed set. For instance, the patent describes a “conventional analog beam-forming system” with reference to Figure 9:

PETITIONER VERIZON
EX. 1013

> Beam forming can be performed at RF frequencies using analog delay and phase elements or at baseband frequencies using digital techniques. FIG. 9 illustrates selected portions of the receive path of conventional analog beam-forming system 900. Analog beam-forming system 900 comprises beam-forming network 910, antennas 931-936, and modem/ MAC layer control block 950. Beam-forming network 910 comprises programmable delay and phase controller 920, delay (D) elements 921-926, and signal combiner 940. An incident wave front is detected by antenna 931 at time Tl, by antenna 932 at time T2, by antenna 933 at time T3, by antenna 934 at time T4, by antenna 935 at time TS, and by antenna 936 at time T6.
>
> As FIG. 9 illustrates, the delay of the signal wave at each element for a given angle of signal arrival is given by:
>
> $$t = L/c$$
>
> where c is the speed of light. The distance, L, between wave fronts to each element is based on the angle of arrival of the signal relative the antenna elements. As an example, if the delay, D, for the antenna elements are all set to be equal, then the antenna has maximum gain at 0 degrees. If the delays are incrementally set from delay element 926 to delay element 921 to have the values 0, W/4c, 2W/4c, 3W/4c, ... , 5W/4c, then the beam that is formed at the output of signal combiner 940 has maximum gain at 90 degrees (i.e., to the right).

Id. at col.26 ll.29–55. This teaches that the beam is directed through manipulation of antenna-element delays to create a preferential direction for antenna gain. An exemplary directional beam is depicted in Figure 10, reproduced here and annotated by the Court.



Item 1010 (shaded in yellow) is a formed receive beam of about 10° width, centered at about 40°. *See id*. at 26:56–63.

PETITIONER VERIZON
EX. 1013

A "beam pattern" formed of "transmit and receive" scanning beams is depicted in Figure 12B, reproduced here and annotated by the Court. In this exemplary pattern, there are nine beams, each about 10° wide, with centers about 10° apart. *Id*. at 28:1–23. A beam centered at 40° is shown shaded in yellow.

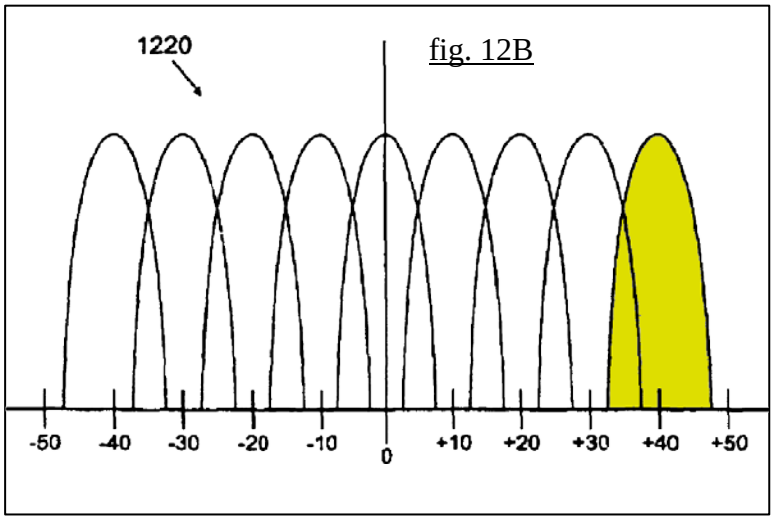


Figure 11 depicts a "conventional digital beam-forming system." This system includes a "programmable transmitter (TX) weight/delay controller 1112, and [a] programmable receiver (RX) weight/delay controller 1113." *Id*. at 27:7–16. "Programmable TX weight/delay controller 1112 performs the delay and phase adjustments to the signal to be feed to each antenna element." *Id*. at 27:37–39. Such a beam-forming system "allows for rapid calculation of adaptive cancellation." *Id*. at 27:45–49.

Defendants are incorrect in their assertion that the "disputed claim term is directed to transmission of desired directed scanning beam signals, not to the cancellation of unwanted or interfering signals." Docket No. 88 at 27–28. As the above-cited passages establish, the '931 patent teaches that directed scanning beams are formed by beam-forming systems, they are used for receiving and not just transmitting and beam forming may be via "rapid calculation of adaptive cancellation" rather than simply through "pre-programmed weights or delays." *Id*. at 27.

PETITIONER VERIZON
EX. 1013

Testimony from Sprint Spectrum's IPR expert—the only expert testimony on the subject—confirms that "directed scanning beam signal" is not limited as Defendants suggest here. He explained in his declaration that:

> The term "directed scanning beam signals" does not itself appear in the specification of the '931 Patent. Nor was it a term with a commonly understood meaning by a POSITA at the time of the invention of the '931 Patent. Nevertheless, the concept is clearly described in an illuminating passage shown below:
>
> > The present invention uses pre-programmed sets of directed beam patterns to cover a cell in an angular fashion. This is referred to herein as "beam scanning". FIG. 12A illustrates exemplary beam scanning pattern 1210 according to one embodiment of the present invention. Beam scanning pattern 1210 covers an cell sector that is approximately 90 degrees wide. Beam scanning patter [sic] 1210 is covered by nine directed scanning beams, each approximately 10 degrees wide. The base station establishes a set of beams to cover the cell. Based on physical location in the sector, a specific beam is used to communicate with one or more subscribers that lie in that sector. The nine scanning beams may be transmitted or received in any order.
>
> (Ex. 1001 at 28:1-13.) This section provides clear support for Petitioner's proposed construction. The '931 Patent describes how "the present invention" uses "pre-programmed sets of directed beam patterns to cover a cell in an angular fashion." (*Id.* at 28:1-3.) Each "beam pattern" comprises one or more "directed scanning beams." (*Id.* at 28:7-8.) Each beam is specifically directed to communicate with one or more subscribers within a sector of the cell. (*Id.* at 28:9- 11.) This is the only portion of the specification which describes the characteristics of the directed scanning beam signals. Thus, ***one skilled in the art at the time of the invention would understand the broadest reasonable interpretation of "directed scanning beam signals" to mean "signals transmitted using a beam pattern directed within a sector."***

Proctor IPR Decl. ¶ 56 (emphasis added), Docket No. 84-18 at 3–4. He elaborated on this point at his deposition:

> Q. Would it be fair to say since it says, you know, those first two lines and then this is referred to herein as beam scanning, that your second definition in paragraph 57 is "the broadest reasonable interpretation for 'directed scanning beam signals...'"?
> …
>
> THE WITNESS: I don't think I would say that. I would say that the broadest reasonable interpretation is the one I proposed and that this is an alternative one based on a particular implementation. This is an embodiment that's describing

> scanning beam signals and one way of building them with pre-programmed sets of direct beam patterns.
>
> Q. (BY MR. DOWELL) Isn't it fair though that when the patent uses -- when it sets forth a definition and then says, "This is referred to herein as beam scanning," that ***that should be the <u>definition</u> given to the term***? …
>
> THE WITNESS: ***I don't think I would agree with that statement. I think they refer to that as beam scanning but one could beam scan in <u>additional ways</u>. For instance, <u>having non-pre-programmed sets</u> that are steered***, right? That could still be considered potentially beam scanning.

Proctor IPR Dep. at 10:16–11:10 (emphasis added), Docket No. 84-19. Clearly, Sprint Spectrum's expert—a person of ordinary skill in the art—did not see in the patent the clear and unequivocal definition of claim scope that Defendants here advocate. And this understanding cannot simply be swept away by invoking the "broadest reasonable construction," as Defendants attempt to do. *See, e.g.*, *In re Smith Int'l, Inc.*, 871 F.3d at 1382 ("The protocol of giving claims their broadest reasonable interpretation does not include giving claims a legally incorrect interpretation divorced from the specification and the record evidence." (quotation and modification marks omitted)).

On balance, both the intrinsic and extrinsic evidence indicate that that the '931 patent does not define "directed scanning beam signal[s]" as Defendants suggest. Accordingly, the Court finds that this term has its plain and ordinary meaning, without the need for further construction.

PETITIONER VERIZON
EX. 1013

4. "[transmits/transmitting], in said downlink portion of said TDD frame, second downlink data traffic"

Disputed Term	Plaintiff's Proposal	Defendants' Proposal
"[transmits/transmitting], in said downlink portion of said TDD frame, second downlink data traffic"	No construction necessary; the words should be given their plain and ordinary meaning. To the extent the Court determines that the phrase "TDD frame" needs construction: • a set of uplink and/or downlink transmission time slots	[transmits/transmitting] second downlink data traffic in the same time frame and in the same spatial domain as the first downlink data traffic

The Parties' Positions

Plaintiff submits that claims 28 and 29 expressly state that the second downlink data traffic is sent to a different sector than the first downlink data traffic. In Plaintiff's view, as the sectors represent spatial domains, it is nonsensical to interpret the claims to require that the second downlink data traffic be sent to the same spatial domain as is the first downlink data traffic. Plaintiff further contends that, under the plain meaning of the claims, the second downlink data traffic is not necessarily in the same time frame as the first. Ultimately, Plaintiffs argue, nothing in the intrinsic record supports Defendants' proposed construction. Docket No. 84 at 32–36.

In addition to the claims themselves, Plaintiff cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence**: '931 patent at 15:10–15, 19:43–46; '931 patent file wrapper June 7, 2006 Office Action at 6 (Plaintiff's Ex. E, Docket No. 84-5 at 7); IPR Final Written Decision at 22–23 (Plaintiff's Ex. T, Docket No. 84-20 at 8–9); IPR Patent Owner's Response at 26 (Plaintiff's Ex. X, Docket No. 84-24 at 4). **Extrinsic evidence**: IPR Reply[15] at

[15] Petitioner's Reply to Patent Owner's Response, *Sprint Spectrum L.P. v. General Access Solutions, Ltd.*, IPR2017-01889 (P.T.A.B. Nov. 2, 2018), Paper No. 29.

PETITIONER VERIZON
EX. 1013

15–16 (Plaintiff's Ex. U, Docket No. 84-21 at 4–5); *IEEE 1000 The Authoritative Dictionary of IEEE Standards Terms* at 455 (7th ed. 2000), "frame" (Plaintiff's Ex. Q, Docket No. 84-17 at 6); *Webster's New International Dictionary* at 1000–1001 (2d ed. 1961), "frame," (Plaintiff's Ex. J, Docket No. 84-10 at 6–7).

Defendants respond by pointing to the IPR Proceeding, where Plaintiff represented to the PTAB that the TDD frame had both a time dimension and spatial dimension and that the claim required both the same frame time and spatial dimensions for the second downlink data traffic as for the first. Defendants argue that Plaintiff reiterated this position in its briefing to the Federal Circuit on the appeal from the IPR Proceeding. In Defendants' view, the PTAB and the Federal Circuit both agreed with Plaintiff's position, so this Court should similarly limit the claim. Docket No. 88 at 31–37.

In addition to the claims themselves, Defendants cite the following **intrinsic evidence** to support their position: '931 patent at 6:2–5; IPR Patent Owner's Response at 26 (Defendants' Ex. 8, Docket No. 88-9 at 7); IPR Final Written Decision at 23 (Plaintiff's Ex. T, Docket No. 84-20 at 9).

Plaintiff replies that, in the IPR Proceeding, Plaintiff, the PTAB and the Federal Circuit all noted that the distinction between claims 28 and 29 and *Vornefeld* is that *Vornefeld* does "not disclose sending downlink data to multiple sectors within the same TDD frame." Plaintiffs submit that "[n]othing in that conclusion, or in General Access's arguments, compels the conclusion that the elements of a TDD frame must always share the same 'spatial domain.' " Docket No. 92 at 15.

PETITIONER VERIZON
EX. 1013

Analysis

The issue in dispute distills to whether the TDD frame of the second downlink data traffic necessarily has the same time and spatial domain as the TDD frame of the first downlink data traffic. It does not.

Plaintiff did not redefine "TDD frame" in the manner Defendants suggest. The claims themselves provide significant guidance on this issue. Claim 28, which depends from claim 1, provides (in full context) as follows:

> **1.** For use in a wireless access network comprising a plurality of base stations, each of said plurality of base stations capable of bidirectional time division duplex (TDD) communication with wireless access devices disposed at a plurality of subscriber premises in an associated cell site of said wireless access network, a transceiver associated with a first of said plurality of base stations comprising:
>
> transmit path circuitry associated with a beam forming network capable of transmitting directed scanning beam signals each directed to substantially only wireless access devices within a different one of a plurality of sectors of a cell site associated with said first base station, wherein said transmit path circuitry
>
> ***transmits, at a start of a TDD frame***, a broadcast beam signal to wireless access devices ***within more than one of said sectors***, the broadcast beam signal comprising a start of frame field, and
>
> subsequently ***transmits, in a downlink portion of <u>said TDD frame</u>***, first downlink data traffic ***<u>to substantially only wireless access devices within one of said sectors</u>*** using one of said directed scanning beam signals.
>
> **28.** The transceiver as set forth in claim **1** wherein said transmit path circuitry ***transmits, in said downlink portion of <u>said TDD frame</u>***, second downlink data traffic ***to substantially only wireless access devices <u>within an other of said sectors</u>*** using an other of said directed scanning beam signals.

'931 patent at 30:31–52, 33:4–9 (emphasis added). And claim 29, which depends from claim 19, provides (in full context) as follows:

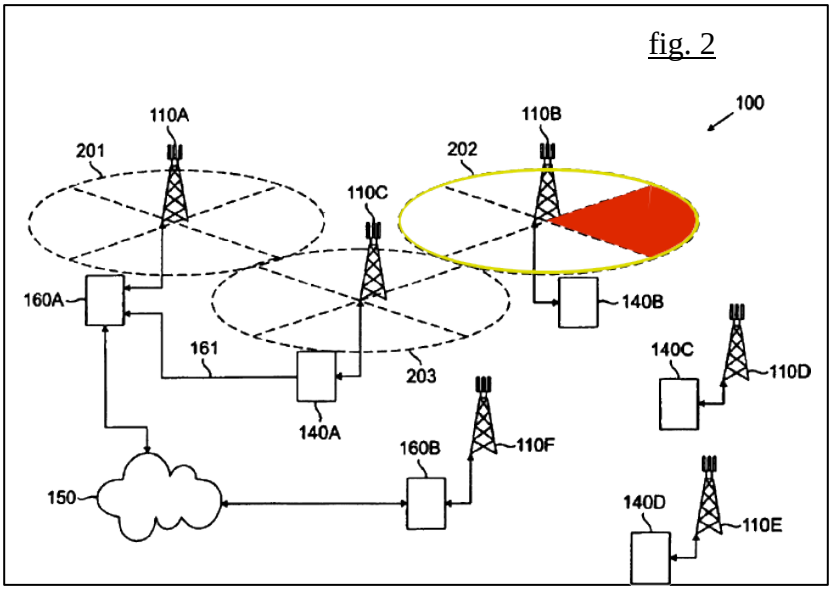
> **9.** For use in a wireless access network comprising a plurality of base stations, each of said plurality of base stations capable of bidirectional time division duplex (TDD) communication with wireless access devices disposed at a plurality of subscriber premises in an associated cell site of said wireless access network, a method of communicating with a first of said plurality of base stations comprising the steps of:

PETITIONER VERIZON
EX. 1013

> ***transmitting, at a start of a TDD frame***, a broadcast beam signal to wireless access devices ***within more than one of a plurality of sectors*** within said associated cell site, the broadcast beam signal comprising a start of frame field capable of synchronizing receivers in said wireless access devices; and
> ***transmitting, in a downlink portion of <u>said TDD frame</u>***, first downlink data traffic ***to substantially only wireless access devices in <u>a first of said sectors</u>*** using a first directed scanning beam signal.
>
> **29.** The method as set forth in claim **19,** further comprising:
> ***transmitting, in said downlink portion of <u>said TDD frame</u>***, second downlink data traffic ***to substantially only wireless access devices in <u>a second of said sectors</u>*** using a second directed scanning beam signal.

'931 patent at 32:16–34, 34:1–6 (emphasis added). As is plain from the claim language: (1) downlink data traffic is transmitted in a downlink data portion of the TDD frame to devices in one of the sectors (claims 1 and 19), and (2) second downlink data traffic is transmitted in the same downlink portion of the same TDD frame to devices in a different sector (claims 28 and 29).

The two instances of downlink data traffic are expressly directed to different sectors and are therefore directed to different spatial domains within the cell site. The '931 patent explains that sectors are spatial portions of a cell. For example, in Figure 2, reproduced here and annotated by the Court, cells 201, 202 and 203 are each divided into four sectors. *Id*. at 13:18–20. One sector in cell 202 (outlined in yellow) is shaded red here for illustration. *See also id*. at 8:13–15 ("A cell may consist of M sectors, wherein each sector

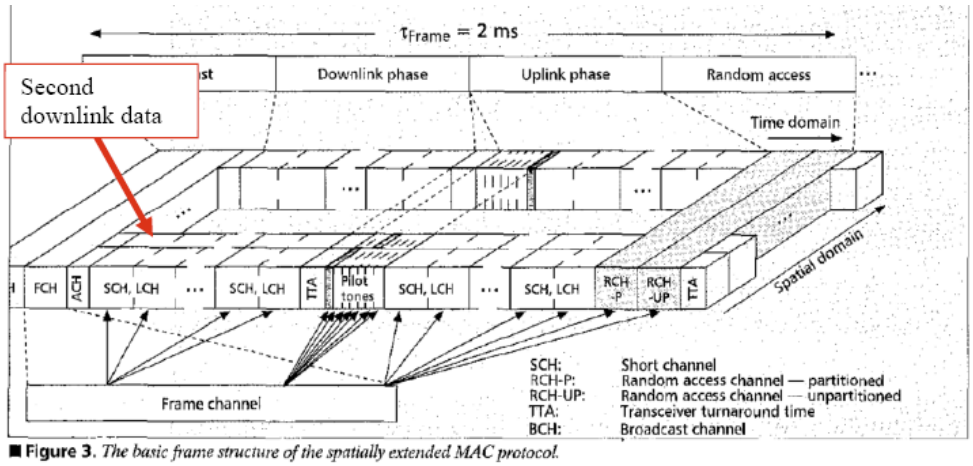


PETITIONER VERIZON
EX. 1013

generally covers a 360/M degree arc around the cell site."). Thus, TDD frames transmitted to two different sectors are necessarily in two different spatial domains.

During the IPR Proceeding, Plaintiff distinguished *Vornefield* as follows:

> Petitioner argues that required elements of dependent claims 28 and 29 are disclosed by the "second data link" disclosed in Vornefeld. According to Petitioner, the second downlink data is shown in Figure 3 of the Vornefeld reference, as shown in Petitioner's annotated diagram shown below.



■ **Figure 3**. *The basic frame structure of the spatially extended MAC protocol.*

> (Petition at 35 and 50; EX1003 at ¶ 218.) ***The second downlink data identified by Petitioner, however, is in a different, spatially-separated, simultaneous TDD frame <u>but not necessarily in a different sector as required by Claims 28 and 29</u>***. Claims 28 and 29 require that the second downlink data traffic be transmitted in "said TDD frame," to wireless devices within another sector. This is not shown or disclosed in Vornefeld. (EX2001 at ¶ 51.)
>
> In addition, Vornefeld does not disclose or teach using a different directed scanning beam signal within a TDD frame to transmit downlink data to a wireless device in another sector, as also required by dependent claims 28 and 29. Although Vornefeld discloses directive beams, Vornefeld does not discuss or disclose using different or multiple beams in the same TDD frame to transmit to devices in another sector. (EX2001 at ¶ 52.)

IPR Patent Owner Response at 25–26 (emphasis added), Docket No. 88-9 at 6–7. Defendants interpret this statement incorrectly. Plaintiff did not state that downlinks sent in spatially separated frames are necessarily not in the same TDD frame. Rather, it argued to the PTAB that such spatial separation does not necessarily equate to the different sectors that the claims require. At best for Defendants, the argument is ambiguous, and their proposed interpretation is one of several

reasonable options. It therefore does not rise to a disclaimer that would preclude spatial separation where the claims otherwise require spatially separate beams. *See 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.").

Neither the PTAB nor the Federal Circuit construed the claim language at issue here. Both ultimately determined that Sprint Spectrum had failed to establish that *Vornefeld* taught the limitations of claims 28 and 29. The PTAB found that "Petitioner does not establish Vornefeld discloses using different beams in the same TDD frame (i.e., second downlink data traffic, transmitted in 'said downlink portion of said TDD frame') to transmit to devices within a different sector." IPR Final Written Decision at 23, Docket No. 84-20 at 9. This is not inconsistent with Plaintiff's position that *Vornefeld* fails to teach transmitting to different sectors even though it teaches spatial separation. The Federal Circuit upheld the PTAB's finding, noting that *Vornefeld's* "depiction of components in parallel in the spatial domain could illustrate to an ordinarily skilled artisan that multiple frames are sent simultaneously to different locations in three-dimensional space." *Sprint Spectrum L.P. v. Gen. Access Sols., Ltd.*, 812 F. App'x 999, 1006–07 (Fed. Cir. 2020). While the Federal Circuit focused on spatial separation, it held only that such spatial separation in *Vornefeld* could illustrate multiple TDD frames rather than a single TDD frame. Notably, the Federal Circuit did not hold that spatial separation necessarily indicated the presence of different TDD frames, as Defendants advocate here.

Ultimately, (1) the claims require spatial separation in that they require data in a single TDD frame to be transmitted to diverse sectors, and (2) the IPR Proceeding does not unambiguously establish that spatial separation necessitates different TDD frames. Without clear

PETITIONER VERIZON
EX. 1013

and unmistakeable disclaimer, the Court will not restrict "said TDD frame" to "in the same time frame and in the same spatial domain" as Defendants propose.

Accordingly, the Court rejects Defendants' construction and determines that this term has its plain and ordinary meaning, without the need for further construction.

5. "a first beam map containing scanning beam information usable by said wireless access devices to [detect/receive] said [first] directed scanning beam signal[s]"

Disputed Term	Plaintiff's Proposal	Defendants' Proposal
"a **first beam map** containing **scanning beam information usable by said wireless access devices to detect said directed scanning beam signals**"	The phrases in bold should be construed separately. • "a first beam map" means "scheduling information for one or more beams" • "scanning beam information usable said wireless access devices to detect said directed scanning beam signals" means "any information that is usable by said wireless access devices to detect said directed scanning beam signals"	The entire portion of the claim should be construed together to mean • "scheduling information for one or more beams containing any information that is usable by said wireless access devices to detect said directed scanning beam signals"
"a first beam map containing scanning beam information usable by said wireless access devices to receive said first directed scanning beam signal"[16]		

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

<u>The Parties' Positions</u>

Plaintiff submits that the Court should adopt the PTAB's construction of "first beam map" and the Federal Circuit's construction of "scanning beam information usable by said wireless access devices to detect said first directed scanning beam signals." Docket No. 84 at 36–37.

[16] In their P.R. 4-5(d) Joint Claim Construction Chart, the parties identified claim 20 as including the disputed claim language but only provided the language from claims 1 and 11.

PETITIONER VERIZON
EX. 1013

In addition to the claims themselves, Plaintiff cites the following **intrinsic evidence** to support its position: IPR Final Written Decision at 10–12 (Plaintiff's Ex. T, Docket No. 84-20 at 4–6).

Defendants respond that Plaintiff's proposed language is fine, but the entire term should be construed holistically (*i.e.*, together) instead of piecemeal. Docket No. 88 at 37 n.20.

In addition to the claims themselves, Defendants cite the following **intrinsic evidence** to support their position: IPR Final Written Decision at 14–15 (Defendants' Ex. 12, Docket No. 88-13 at 4–5).

Analysis

The issue in dispute is whether the claim language should be construed in its constituent parts or in its entirety. The parties do not present any dispute as to scope.

The Court construes the terms as follows:

- "a first beam map containing scanning beam information usable said wireless access devices to detect said directed scanning beam signals" means "scheduling information for one or more beams containing any information that is usable by said wireless access devices to detect said directed scanning beam signals" and
- "a first beam map containing scanning beam information usable by said wireless access devices to receive said first directed scanning beam signal" means "scheduling information for one or more beams containing any information that is usable by said wireless access devices to receive said first directed scanning beam signal."

PETITIONER VERIZON
EX. 1013

V. CONCLUSION

The Court adopts the constructions above for the disputed terms of the '931 Patent. Furthermore, the parties should ensure that all testimony that relates to the terms addressed in this Order is constrained by the Court's reasoning. In the jury's presence, 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.

So ORDERED and SIGNED this 29th day of September, 2020.

ROBERT W. SCHROEDER III
UNITED STATES DISTRICT JUDGE

PETITIONER VERIZON
EX. 1013