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

WI-LAN INC., Plaintiff, v. ALCATEL-LUCENT USA INC.; TELEFONAKTIEBOLAGET LM ERICSSON; ERICSSON INC.; SONY ERICSSON MOBILE COMMUNICATIONS AB; SONY ERICSSON MOBILE COMMUNICATIONS (USA) INC.; HTC CORPORATION; HTC AMERICA, INC.; EXEDEA INC.; LG ELECTRONICS, INC.; LG ELECTRONICS MOBILECOMM U.S.A., INC.; LG ELECTRONICS U.S.A., INC. Defendants.	§ § § § § § § § § § § § § § § § §	Civil Action No. 6:10-cv-521-LED JURY TRIAL DEMANDED

PLAINTIFF WI-LAN INC.'S OPENING CLAIM CONSTRUCTION BRIEF

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I. INTRODUCTION

Wi-LAN, Inc. ("Wi-LAN") is the assignee of U.S. Patent Nos. 6,088,326 ("'326 Patent") (attached as Exh. A[1]); 6,195,327 ("'327 Patent") (attached as Exh. B); 6,222,819 ("'819 Patent") (attached as Exh. C); and 6,381,211 ("'211 Patent") (attached as Exh. D) (collectively, the "Patents-in-suit"). The Patents-in-suit are directed toward techniques for transmitting data over wireless links in a cellular communications network. The inventions disclosed in the Patents-in-suit were novel when they were invented in the mid-1990s and have since been adopted for use in wireless communications industry standards.

Defendants[2] manufacture user equipment (*e.g.*, mobile and smart phones) and/or base stations that practice the inventions claimed in the Patents-in-suit. Now that they have been sued for infringement, Defendants seek to import limitations into the claims from the preferred embodiments and extrinsic evidence to impermissibly narrow the Patents-in-suit. The proper constructions, however, give the claims the full breadth of their plain and ordinary meaning to one of ordinary skill in the art in the telecommunications field at the time the Patents-in-suit were filed.

II. BACKGROUND

Wi-LAN was founded in 1992 by Dr. Hatim Zaghloul and Dr. Michel Fattouche to commercialize inventions in the field of wireless networking and telecommunications. Soon after its formation, Wi-LAN established itself as a pioneer in the field of high-speed Wi-Fi networks. Wi-LAN's innovations, such as those in the area of Wi-Fi networks and wireless communications, among others, are widely recognized. Today, Wi-LAN holds approximately 3,000 patents and pending applications. In 2007, Wi-LAN acquired the Patents-in-suit from Airspan Networks, Inc. ("Airspan").

[1] Unless otherwise indicated, "Exh. __" refers to the exhibits attached to the Declaration of Jeffrey T. Han in Support of Wi-LAN's Opening Claim Construction Brief, filed Mar. 16, 2012.

[2] Alcatel-Lucent USA Inc., Telefonaktiebolaget LM Ericsson, and Ericsson Inc. manufacture and sell base stations for cellular networks. Sony Ericsson Mobile Communications AB; Sony Ericsson Mobile Communications (USA) Inc.; HTC Corp.; HTC America, Inc.; and Exedia Inc. manufacture and sell mobile cellular devices such as cell phones. (Collectively, "Defendants").

These patents claim priority to foreign applications filed in December 1996.

A. Wireless Communications Systems Generally

In cellular communication, radio waves carry information between a user's phone and a cellular antenna tower, which is connected to a base station (also known as a "central terminal") that provides cell phone service in a given area. The central terminals are geographically situated so as to eliminate areas with no cell phone coverage. Cell phones get their name from the configuration of the antenna towers that wirelessly transmit/receive data to/from the phones. These areas of cell phone coverage are known as "cells."

In addition to their wireless links with cell phones, the central terminals are connected to a main network that today connects nearly the entire world. The number of users that can be serviced simultaneously in each cell is limited by *inter alia* the number of frequencies that are allocated to the base station in that cell. Given the meteoric rise in cell phone use (and more recently smart phone use), the growth of cellular communication has long depended on the development of techniques to more efficiently share those limited frequency resources.

Prior to the Patents-in-suit, wireless communication systems were poorly equipped to provide service to an ever-increasing number of users. Due to the limited frequencies available to each base station, it was not desirable for each user device to have its own dedicated channel for communicating with the base station. Time division multiplexing ("TDM") techniques and code division multiple access ("CDMA") techniques were developed to allow multiple wireless signals to be transmitted from a central terminal on a single frequency channel. TDM worked by dividing up the frequency channel into time slots and assigning a time slot to a user so that multiple user devices could share a frequency by taking turns. CDMA worked by encoding each wireless signal with a different code and creating multiple code channels within a single frequency channel. A base station could use TDM or CDMA techniques to transmit data to a larger number of users, but it was still not enough to meet demand.

B. The Inventions of the Patents-in-Suit

The inventions claimed in the Patents-in-suit were developed by Martin Lysejko, an engineer at Airspan, and his colleagues in 1995–96. Lysejko foresaw the need to develop techniques to enable an increasingly large number of users to simultaneously transmit data of differing types on a cellular network. One problem, however, was that increasing the number of users would result in increased interference amongst all the different wireless links both within a given cell and from neighboring cells. To address these challenges, the inventors developed new ways to expand cellular network capacity and invented an interference controlling mechanism.

One aspect of their invention was to invent a way to effectively combine CDMA and TDM techniques. This enabled the central terminal to divide each code channel into multiple time-slots, which allowed a larger number of data signals of varying size to be efficiently transmitted in each channel. To limit the effect of same-cell interference, the invention used a type of CDMA code known as "orthogonal codes." Lysejko and his colleagues also developed a technique to expand the number of code channels by using what they called "overlay codes" to increase the total number of orthogonal channels over which data could be transmitted. The inventors combined TDM techniques with orthogonal and overlay codes to develop a completely new way to transmit data objects of varying sizes between user devices and central terminals in a wireless network. The '819, '211, and '326 Patents are generally directed to these inventions.

Furthermore, in order to reduce the effect of interference from other cells, Lysejko and two of his colleagues, Joemanne Chi Cheung Yeung and Paul Struhsaker, developed an interference controller that analyzed signal parameters to determine the effect of interference from other cells and reduced the effect of that interference by reducing the number of CDMA code channels used in the cell. The '327 Patent is generally directed to this invention.

C. The Parties' Claim Construction Positions

The parties have agreed upon the following claim constructions:

CLAIM TERM[3]	AGREED CONSTRUCTION
orthogonal codes	"codes that cross-correlate to zero"
selectively designate one or more of said traffic channels as locked channels	"make one or more data channels unavailable for transmission"
wireless link	"a radio connection between a central terminal and a particular subscriber terminal for communicating data items therebetween"

The parties dispute the construction of ten other claim terms that appear in one or more of the Patents-in-suit. While the parties agree those terms should be given the same construction for each of the claims/patents in which they appear, they disagree about how to construe them. Wi-LAN proposes constructions that give the disputed claim terms the full breadth of their plain and ordinary meaning to one of skill in the art in light of the intrinsic record. Defendants, however, take the wrong approach, relying on aspects of the preferred embodiments and extrinsic evidence to import limitations that would narrow the broader ordinary meaning of the claim language.

III. APPLICABLE LEGAL STANDARDS FOR CLAIM CONSTRUCTION

The general rule is that claim terms should be given their ordinary and customary meaning to one of skill in the art in light of the intrinsic record. *Thorner v. Sony Computer Entm't Am. LLC*, --- F.3d ---, 2012 WL 280657, at *2 (Fed. Cir. Feb. 1, 2012) (citing *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc)). "There are only two exceptions to this general rule: 1) when a patentee sets out a definition and acts as his own lexicographer, or 2) when the patentee disavows the full scope of a claim term either in the specification or during prosecution." *Id.* Absent one of these exceptions, it is impermissible to import a limitation to otherwise broad claim language. *Id.*

[3] The term "orthogonal codes" appears in asserted claims 1 and 3–5 of the '326 Patent; claims 1 and 3–5 of the '211 Patent; claims 1, 3, 5, 7, 12, 14, 16, 21, and 22 of the '819 Patent; and claims 10, 12, 13, and 15 of the '327 Patent. The term "selectively designate one or more of said traffic channels as locked channels" appears in asserted claim 5 of the '327 Patent. The term "wireless link" appears in asserted claims 1, 2, 5, and 9 of the '326 Patent; claims 1, 2, and 5 of the '211 Patent; claims 1, 7, 8, 11, 12, 21, and 22 of the '819 Patent; and claims 1, 11–13, 15, 17, and 19 of the '327 Patent. Hereinafter, the list of claims in which each claim term appears will list only the asserted claims.

The specification "is always highly relevant to the claim construction analysis." *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996). One of the ways that the specification is helpful is through the description of the preferred embodiments of the invention. While it is improper to limit the claims to the preferred embodiments, claim constructions that exclude a preferred embodiment from the scope of the claims are "rarely, if ever, correct" and can be established only with "highly persuasive evidentiary support." *Id.* at 1583; *see also Oatey Co. v. IPS Corp.*, 514 F.3d 1271, 1276 (Fed. Cir. 2008).

Beyond the intrinsic evidence, the Court may also consider extrinsic evidence. *Phillips*, 415 F.3d at 1318. However, "[e]xtrinsic evidence is to be used for the court's understanding of the patent, not for the purposes of varying or contradicting the terms of the claims." *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 981 (Fed. Cir. 1995). Put plainly, the intrinsic record takes precedence over any extrinsic evidence in the claim construction analysis. *See Phillips*, 415 F.3d at 1318–19.

Finally, if the meaning of particular claim language is already clear, there is no reason for the Court to rearticulate that language—and potentially import erroneous limitations—through claim construction. *O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1362 (Fed. Cir. 2008).[4] Courts commonly decline to further construe claim language that is already clear on its face. *See, e.g., Motorola, Inc. v. VTech Commc'ns, Inc.*, No. 5:07CV171, 2009 WL 2026317, at *8 (E.D. Tex. July 6, 2009) ("[W]here additional language may be unduly limiting, confusing, or redundant, it is in a court's power to determine that no construction is necessary.").

IV. ARGUMENT FOR DISPUTED CLAIM TERMS

A. Subscriber terminal[5]

[4] *See also U.S. Surgical Corp. v. Ethicon, Inc.*, 103 F.3d 1554, 1568 (Fed. Cir. 1997) ("Claim construction is a matter of resolution of disputed meanings and technical scope, to clarify and when necessary to explain what the patentee covered by the claims, for use in the determination of infringement. It is not an obligatory exercise in redundancy.").

[5] *See* '326 Patent cls. 1, 6, 8–10; '211 Patent cls. 1, 5; '819 Patent cls. 1, 8–12, 21, 22; '327 Patent cls. 1, 11, 13, 15,

WI-LAN'S PROPOSED CONSTRUCTION	DEFENDANTS' PROPOSED CONSTRUCTION
"User equipment"	"A fixed-location device"

There is no dispute that the term "subscriber terminal" refers to the user equipment or device used to establish a wireless link with the network. But the parties disagree as to whether the term "subscriber terminal" is broad enough to encompass both fixed-location and mobile devices, such as smart phones. In addition, the Court should resolve whether the term "subscriber terminal" limits those claims in which the term appears only in the preamble.

There is nothing in the ordinary meaning of the term "subscriber terminal" that limits the mobility of the user's equipment. The word "subscriber" refers to a user and the "terminal" is the equipment they use to connect to the central terminal. *See, e.g.,*'326 Patent col. 1 ll. 15–45; *id.* col. 6 l. 32–col. 7 l. 4; *id.* col. 15 l. 67–col. 17 l. 7.[6] The specification describes the invention, not as a particular type of subscriber terminal, but rather the "techniques" used to send data to and from that equipment: "The present invention relates in general to wireless telecommunications systems and more particularly to ***techniques for processing data transmitted and received over a wireless link*** connecting a central terminal and a subscriber terminal of a wireless telecommunications system." *Id.* col. 1 ll. 8–12 (emphasis added).[7] Nothing about the techniques of the present invention restricts their use to "fixed-location" subscriber terminals, as Defendants contend. Indeed, the specification never once describes the invention as being limited to subscriber terminals that are fixed-location devices, nor is there a clear and unmistakable disclaimer of mobile subscriber terminals in the prosecution history.

It is improper to narrow the broader ordinary meaning of a claim term absent a clear lexicographer-type redefinition of the term in the specification, or a clear and unmistakable disclaimer in the intrinsic record. The Federal Circuit recently reiterated that these are the "only two exceptions"

17, 19.

[6] Most of the specification is the same for each of the four Patents-in-suit. The portions of the specifications cited herein appear in all of the Patents-in-suit, unless otherwise indicated.

[7] Quote appears only in the '326, '211, and '819 Patents.

to the "rule" that claim terms are construed to have their ordinary and customary meaning. *Thorner*, 2012 WL 280657, at *2. Because there is nothing in the intrinsic record that qualifies for one of these exceptions, Defendants' "fixed-location" construction should be rejected.

The only reference to a "fixed" location subscriber terminal anywhere in the intrinsic record is found in the description of the preferred embodiment—which is ***never*** a proper basis to import a limitation like this into the claims. *See, e.g., Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 906 (Fed. Cir. 2004) ("Even when the specification describes only a single embodiment, the claims of the patent will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using words or expressions of manifest exclusion or restriction." (quotations omitted)). The reason is simple. The claims define the metes and bounds of the invention, whereas the preferred embodiment is just an example of things that fall therein. *Phillips*, 415 F.3d at 1313. The Patents-in-suit make this clear. While the wireless telecommunications system of Figure 1 depicts subscriber terminals "at fixed locations," *see* '326 Patent col. 6 l. 61–col. 7 l. 7, the same passage states that these figures are just "***an example***" of such, *id.* col. 6 ll. 32–33 (emphasis added).[8] Indeed, the specification states that "the invention is not limited []to" this particular embodiment of the claimed inventions. *Id.* col. 28 ll. 13–16.

Moreover, other portions of the specification expressly contemplate telecommunications systems wherein "subscriber terminals" may be mobile devices. *See id.* col. 6 ll. 40–54. The specification addresses the concept of "subscriber density," *i.e.*, the number of subscriber terminals within the geographical area of a cell in the wireless network, and teaches that the area of a cell may be chosen based upon the "expected or actual" subscriber density. *See id.* col. 6 ll. 46–50. That the specification draws a distinction between expected and actual subscriber densities is meaningful

[8] *See also* '326 Patent col. 5 ll. 38–44 (explaining that FIG. 1 is "an example of a wireless telecommunications system" and FIG. 2 is "an example of a subscriber terminal of the telecommunications system of FIG. 1").

because one of skill in the art would understand that the number of subscriber terminals in a cell employing the claimed inventions may change for a variety of reasons, including when mobile subscriber terminals move into and out of that cell. Accordingly, this passage provides yet another reason to reject Defendants' attempt to import a "fixed-location" limitation into the claims.

Finally, the Court should resolve any dispute regarding the extent to which the term "subscriber terminal" limits those claims where it appears only in the claim preamble. As a general rule, terms in the preamble are ***not*** limiting. *Aspex Eyewear, Inc. v. Marchon Eyewear, Inc.*, --- F.3d ---, 2012 WL 833896, at *11 (Fed. Cir. Mar. 14, 2012). To the extent Defendants disagree, it is their burden to show that the general rule does not apply. *See id.*

The references to "subscriber terminal" in asserted claim 1 of the '326 Patent; claims 1 and 12 of the '819 Patent; and claims 1, 11, 13, 15, 17, and 19 of the '327 Patent (the "Central Terminal claims") fall within the general rule and thus are not limiting.[9] Each of these claims is directed to an invention other than a subscriber terminal, specifically the central terminal or components thereof, such as a transmission controller. The bodies of these claims recite structurally complete inventions and do not rely on the reference to "subscriber terminal" in the preamble for antecedent. *See Aspex*, 2012 WL 833896, at *11 (holding that preamble language is not limiting where the claims recite "structurally complete inventions without the preamble"). The reference to "subscriber terminal" in the preamble of these claims is, at most, only a description of the overall telecommunications system in which the claimed invention may be used. *See, e.g.*, '819 Patent cl. 1 ("A transmission controller for processing data items to be transmitted over a wireless link connecting a central terminal and a subscriber terminal of a wireless telecommunications system . . . ."). Such description of the "purpose or intended use for the invention" in the preamble does not constitute a claim limitation. *Catalina Mktg. Int'l, Inc. v.*

[9] Wi-LAN does not dispute that "subscriber terminal" limits those claims where the term appears in the body of the claim. Nor does Wi-LAN dispute that "subscriber terminal" limits claim 5 of the '211 Patent and claims 21 and 22 of the '819 Patent, each of which is specifically directed to a subscriber terminal.

Coolsavings.com, Inc., 289 F.3d 801, 808 (Fed. Cir. 2002).

Moreover, as the Federal Circuit recently held in *Aspex*, the fact that other claims are directed to a subscriber terminal further supports that "subscriber terminal" does not limit the Central Terminal claims. Like the Patents-in-suit, the patent in *Aspex* was directed to multiple inventions, specifically a "primary spectacle frame," an "auxiliary spectacle frame," and the combination of the two, which the specification referred to as an "eyeglass device." *Aspex*, 2012 WL 833896, at *11. The court rejected the defendant's argument that the reference to "eyeglass device" in the preamble limited those claims drawn to the auxiliary or primary frame, explaining:

> The fact that among numerous claims to the combination of primary and auxiliary frames the patentee chose to include some claims limited to auxiliary frames and some limited to primary frames supports the inference that the claims drawn to primary or auxiliary frames alone are not intended, by operation of the preamble, to require the presence of the other frame as well.

Id. This same rationale applies here. Some claims of the Patents-in-suit are drawn to the subscriber terminal, *see, e.g.*, '211 Patent cl. 5; '819 Patent cl. 21, and others are drawn to a "wireless telecommunications system" with both central and subscriber terminals recited as limitations in the claim body, *see* '819 Patent cl. 23. The fact that the patentee deliberately chose to direct the Central Terminal claims to different inventions further emphasizes that these claims should not be limited by the reference to "subscriber terminal" in their preamble.

B. Orthogonal channel/Orthogonal channels[10]

WI-LAN'S PROPOSED CONSTRUCTION	DEFENDANTS' PROPOSED CONSTRUCTION
Wi-LAN proposes construing "orthogonal channels" (in the plural) and "orthogonal channel" (in the singular) separately, as follows: Orthogonal channels: "A set of channels that cross-correlate to zero with respect to each other." Orthogonal channel: "One of the set of orthogonal channels."	Orthogonal channel: "A communication channel defined by an orthogonal code."

[10] *See* '326 Patent cls. 1, 2, 5–10; '211 Patent cls. 1, 2, 5; '819 Patent cls. 1, 7–12, 21, 22; '327 Patent cls. 10, 13, 15.

Wi-LAN's proposed construction provides the plain and ordinary meaning of "orthogonal channel" as described in the intrinsic record. Both the claims and specification teach that orthogonal codes are used to create orthogonal channels. *See, e.g.*, '326 Patent cl. 1 ("orthogonal code from a set of 'm' orthogonal codes ***used to create*** 'm' orthogonal channels within the single frequency channel" (emphasis added)); *id.* col. 2 ll. 14–17 ("an orthogonal code generator for providing an orthogonal code from a set of 'm' orthogonal codes used to ***create*** 'm' orthogonal channels within the single frequency channel" (emphasis added)). The specification expressly defines orthogonal codes as follows: "Orthogonal codes have the property that, when perfectly aligned, all codes cross-correlate to zero . . . ."[11] *Id.* col. 1 ll. 40–42. Thus, the "orthogonal channels" created from these orthogonal codes are a set of channels that cross-correlate to zero with respect to each other.

The fact that the orthogonal channels of the claimed inventions cross-correlate to zero is important because it reduces signal interference. As the specification explains, the use of orthogonal codes "mak[es] it possible to decode a signal [*i.e.*, a channel] to which one orthogonal code has been applied while cancelling interference from signals to which different orthogonal codes have been applied." *Id.* col. 1 ll. 42–45. The specification further discusses a particular type of orthogonal codes, called "RW codes," and reiterates the fact that, because such codes are "orthogonal," they cross correlate to zero, thereby canceling out interference:

> Once the bit stream is orthogonally isolated using the RW codes, the signals for respective subscriber links do not interfere with each other. Since RW codes are orthogonal, when perfectly aligned all codes have zero cross-correlation, thus making it possible to decode a signal while cancelling interference from users operating on other RW codes.

Id. col. 11 ll. 13–19.

It is unclear whether Defendants actually dispute any of this, but their proposed construction is

[11] This means that when any two codes that are orthogonal to each other are multiplied together the result is zero. *See* '326 Patent col. 10 ll. 50–55 & Table 1 (explaining the mathematical function of "orthonormality").

lacking in several respects. First, it is not helpful to simply parrot the term "orthogonal," as Defendants' propose. That term, while readily understood by those of skill in the art, is not part of everyday parlance. The explanation Wi-LAN seeks to provide will help the jury. *See Sulzer Textil A.G. v. Picanol N.V.*, 358 F.3d 1356, 1366 (Fed. Cir. 2004) (explaining that the Court should construe claim terms "so that the jury will be able to intelligently determine the questions presented").

Second, Defendants' construction is overbroad to the extent it encompasses orthogonal channels that do not cross-correlate to zero with respect ***to each other***. If two channels were created from two entirely different sets of orthogonal codes, those channels would not necessarily cross-correlate to zero with respect to each other, resulting in substantial interference.[12] That result, while encompassed by Defendants' proposed construction, is directly contrary to the teaching of the specification. *See* '326 Patent col. 1 ll. 40–45 ("Orthogonal codes . . . cross-correlate to zero, thus making it possible to decode a signal to which one orthogonal code has been applied while cancelling interference from signals to which different orthogonal codes have been applied.").

Finally, the phrase "defined by" in Defendants' proposed construction is not supported in the intrinsic record. Nowhere does the intrinsic record say that an orthogonal channel is "defined by" an orthogonal code. Instead, it teaches that orthogonal codes are used to "create" orthogonal channels. *See, e.g., id.* col. 2 ll. 14–17; *id.* cl. 1. To the extent Defendants' "defined by" phrase is intended to mean that only the orthogonal code defines the orthogonal channel, as opposed to that code being used along with other elements to create the orthogonal channel, that construction is an improper attempt to narrow the claims—all of which are "comprising" claims. *Genentech, Inc. v. Chiron Corp.*, 112 F.3d 495, 501 (Fed. Cir. 1997) (noting that claims with the "open-ended term 'comprising'" encompass embodiments with additional un-recited elements). In any event, "defined by" is unnecessarily

[12] This is because, while the codes in each set will all cross-correlate to zero, multiplying codes ***from different sets*** together might not result in a zero product.

confusing and should be rejected in favor of Wi-LAN's proposed construction.

C. Time division multiplexing (TDM) techniques[13]

WI-LAN'S PROPOSED CONSTRUCTION	DEFENDANTS' PROPOSED CONSTRUCTION
"Techniques for allocating an interval of time within a predetermined frame period to a data item, based on one or more characteristics associated with the data item"	"Methods in which a communication channel is shared among multiple wireless links by allowing each to use the channel for a given period of time in a defined, repeated sequence"

Although the proposed language differs, the parties agree that time division multiplexing ("TDM") techniques are methods for allocating time slots within a frame period to data items from multiple wireless links. *See, e.g.,* '326 Patent col. 2 ll. 25-30 (describing the "present invention" as including a "TDM encoder arranged to apply time division multiplexing (TDM) techniques to the data item in order to insert the data item within a time slot of the orthogonal channel, where by a plurality of data items relating to different wireless links may be transmitted within the same orthogonal channel during a predetermined frame period.").[14] Wi-LAN's proposed construction closely follows the language of the intrinsic record, which teaches that the time slots may be dynamically allocated depending on the particular data being transmitted, *e.g.*, if one device is retrieving a larger data item, it may be allocated a larger time slot. Defendants, however, attempt to use a cherry-picked dictionary definition to import a requirement that time slots must be allocated in a "defined, repeated sequence" regardless of the size of the data item or whether a particular subscriber terminal is actively sending or receiving data. That "defined, repeated sequence" limitation should be rejected because it is not in the claims and is contrary to the intrinsic record.

The intrinsic record describes the dynamic allocation of time slots of varying length within frame periods of varying length with no requirement that the allocation occurs in a "defined, repeated sequence." The specification teaches the use of TDM techniques to subdivide a single orthogonal channel into time slots of varying length so that data items of varying sizes can be sent to different

[13] *See* '326 Patent cls. 1, 5–8; '819 Patent cl. 11; '327 Patent cl. 15.
[14] Quote appears in the '326, '211, and '327 Patents.

subscriber terminals over the same orthogonal channel. For example, one frame in an orthogonal channel may be divided into four time slots or only two, in order to provide the necessary bandwidth for each data item on a "per frame" basis:

> This gives a great deal of ***flexibility*** in how channels are used, since some can be subdivided in the time dimension whilst others are not, and those which are subdivided ***can be subdivided differently to yield differing numbers of time slots per frame period***. . . . This ***flexibility*** is useful, since for some communications, eg. fax, a rate of 40 kb/s may not be acceptable, and hence the use of four time slots would not be suitable.

'326 Patent col. 3 l. 59–col. 4 l. 12 (emphases added).[15]

Figure 15A of the Patents-in-suit gives an example of how the orthogonal channels may be dynamically divided into time slots of varying length depending on the data items being transmitted.

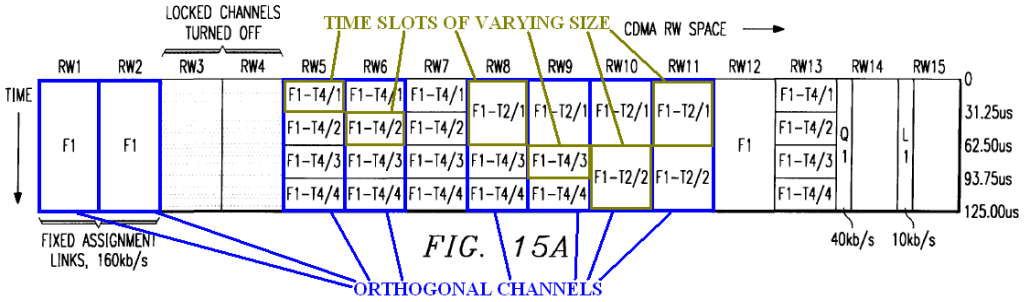


FIG. 15A

Each column labeled with an "RW" number is a different orthogonal channel. Some orthogonal channels, such as RW1 and RW2, are not divided at all. Some, such as RW10 and RW11, are divided into two equal time slots, while others, such as RW5 and RW6, are divided into four equal time slots.[16] This allows a data item to be assigned a smaller or larger time slot as needed based on its size or importance. Moreover, the description of the preferred embodiment indicates that the invention may be implemented with frame periods of varying length. For example, Figures 13A and 13B depict an embodiment with a "125 µs subframe format" that is repeated through a longer frame "typically lasting

[15] Quote appears in the '326 and '211 Patents.

[16] Defendants' Technology Tutorial incorrectly states that the last digit in the time slot designations, *e.g.*, "F1-T4/1, F1-T4/2," etc., shown in Figure 15A indicates the user to which the time slot is assigned. *See* Defendants' Technology Tutorial, ch. 13, 0:46–0:55. The specification, however, explains that this last digit is the number of the "selected traffic timeslot." '326 Patent col. 18 ll. 33–38. The allocation of different timeslots to different users is not depicted in the Figure itself.

for 4 milliseconds." *Id.* col. 17 ll. 33–35. But for embodiments shown in other figures, the entire frame is described as 125 µs in length with no repeated subframes. *See id.* col. 15 ll. 44–47 (describing the use of TDM to allow "up to four signals" during a "125 µs frame" in Figure 9B); *see also id.* col. 2 ll. 53–60; *id.* col. 3 l. 63–col. 4 l. 3. Thus, the 125 µs period shown in Figure 15A can be implemented as the entire frame or it can be repeated as a subframe—both embodiments are described.

Furthermore, even in the preferred embodiment, time slots need not be assigned in a "defined, repeated sequence," but rather may be reallocated to different subscriber terminals as needed. The description of the preferred embodiment states that channels and time slots are assigned based on demand. *See id.* col. 6 l. 65–col. 7 l. 2 ("[I]n preferred embodiments demand-based access is provided, so that the number of subscribers which can be supported exceeds the number of available wireless links."); *id.* col. 21 l. 4–col. 22 l. 4. This demand-based access means that instead of maintaining an open connection to a central terminal through the allocation of the same time slot in each successive frame, a subscriber terminal will only be able to make incoming and outgoing calls if there are available channel resources for it to secure a free "traffic channel." *See id.* col. 21 ll. 13–16, 45–47 ("If the Free list is empty the outgoing call is blocked."). When the call is complete, the subscriber terminal releases the traffic channel, which is then available for use in wireless links with other subscriber terminals. *Id.* col. 23 ll. 5–6. Because the subscriber terminals of the preferred embodiment are constantly reserving and releasing traffic channels, *i.e.*, sending data in time slots and then releasing the time slots for others' use, those time slots are not allocated in a "defined, repeated sequence." Accordingly, Defendants' proposed construction would actually read out at least some of the preferred embodiments described in specification. A construction that excludes the preferred embodiment is "rarely, if ever, correct." *See Vitronics*, 90 F.3d at 1583.

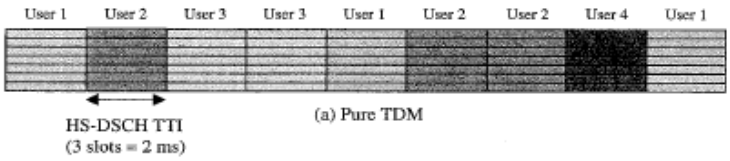
Defendants' "defined, repeated sequence" limitation is apparently drawn exclusively from

extrinsic evidence. Defendants cite to a dictionary, which uses the phrase "defined, repeated sequence" in only one of the two definitions it provides for the term "time-division multiplexing (TDM)." *See The IEEE Standard Dictionary of Electrical and Electronics Terms* 1115 (6th ed. 1996) (attached as Exh. E). The other definition in the same dictionary does not support such a limitation. Rather, it defines "TDM" as "[a] method by which two or more channels of information are transmitted over the same link by allocating a different time interval for the transmission of each channel." *Id.* This definition is consistent with the teachings of the specification and supports the fact that one of skill in the art would understand that TDM techniques do not require time slots to be allocated "in a defined, repeated sequence." Likewise, most of the other dictionaries Defendants cite do not limit "TDM" to the creation and allocation of time slots "in a defined, repeated sequence."[17]

An extrinsic dictionary definition, particularly one that Defendants have cherry-picked from among other broader definitions, is not a proper basis to import a limitation that does not appear in the claim language itself. *See Phillips*, 415 F.3d at 1321–22; *see also Ultimax Cement Mfg. Corp. v. CTS Cement Mfg. Corp.*, 587 F.3d 1339, 1347 (Fed. Cir. 2009) ("[T]he court erroneously relied on expert testimony and a single dictionary definition to the exclusion of other dictionary definitions and, most importantly, the context in which the term was used within the claim and the specification."). More importantly, regardless of the dictionary one chooses, extrinsic evidence cannot be used to contradict the otherwise broader teachings in the intrinsic record. *See Phillips*, 415 F.3d at 1324 (explaining that extrinsic evidence may not be "used to contradict claim meaning that is unambiguous in light of the intrinsic evidence").

[17] *See, e.g.*, Alan Freedman, *The Computer Glossary* 394 (7th ed. 1995) (attached as Exh. F) (defining TDM as "[a] technique that interleaves several low-speed signals into one high-speed transmission"); Harry Newton, *Newton's Telecom Dictionary* 606 (11th ed. 1996) (attached as Exh. G) (defining TDM as "[a] technique for transmitting a number of separate data, voice and/or video signals simultaneously over one communications medium by quickly interleaving a piece of each signal one after another"); Ramjee Prasad, *CDMA for Wireless Personal Communications* 20–21 (1996) (attached as Exh. H) (discussing Time Division Multiple Access (TDMA), not time division multiplexing (TDM)); Theodore S. Rappaport, *Wireless Communications* 400–01 (1996) (attached as Exh. I) (same).

Finally, Defendants' construction is contradicted by other extrinsic evidence, including an article authored by one of the Defendants' own engineers ("the Su reference"). Shing-Fong Su, *The UMTS Air-Interface in RF Engineering* 253 (2007) (attached as Exh. J) (authored by a "Distinguished Member of Technical Staff" at Alcatel-Lucent). Figure 11.3(a) of the Su reference, reproduced below, shows the use of TDM in seven code channels (depicted as the seven horizontal rows), in which all of the channels are assigned to a single user (*e.g.*, "User 1," "User 2," etc.) during each time slot (herein referred to as a transmission time interval or "TTI").



The nine columns in the figure are nine TTIs, which corresponds to 1.8 frames.[18] In the first frame, the time slots are allocated to different wireless links as follows: User 1, User 2, User 3, User 3, User 1. That sequence is ***not*** repeated in the next frame, where the first four slots are assigned: User 2, User 2, User 4, User 1. While the Su reference post-dates the filing of the Patents-in-suit, its teaching regarding TDM is consistent with both the teaching in the specification that time may be dynamically allocated amongst different wireless links as needed, as well as the broader dictionary definitions discussed above. Thus, the Su reference further evidences the understanding in the art that time need not be allocated in a defined, repeated sequence from frame to frame.

D. Time slot[19]

WI-LAN'S PROPOSED CONSTRUCTION	DEFENDANTS' PROPOSED CONSTRUCTION
"An interval of time"	ideo signals simultaneously over one communications k is permitted to use a shared communication channel"

The parties agree that the term "time slot" refers to the intervals or periods of time within a

[18] The figure depicts HSDPA code channels. HSDPA is a standardized cellular communication protocol in which there are five TTIs per frame. Su, *supra*, at 259; 3GPP TS 25.211, v.6.10.0, § 5 (Release 6) (attached as Exh. K).
[19] *See* '326 Patent cls. 1, 5, 7; '211 Patent cls. 1, 5; '327 Patent cl. 15.

frame that are allocated using the TDM techniques discussed above. The rest of Defendants' construction, however, is wrong because it suggests that only a single wireless link can use the ***entire frequency channel*** during this interval of time. Such a requirement ignores the surrounding claim language, which states that data items are inserted "within a time slot of the *orthogonal channel*," not the shared communication or frequency channel, as Defendants urge.[20]

The claim language consistently states that the time slots are "of the orthogonal channel," '326 Patent cls. 1, 5; '327 Patent cl. 15, or "within said orthogonal channel," '211 Patent cls. 1, 5. In other words, the time slots are subdivisions within each orthogonal channel created using TDM techniques, while the orthogonal channels are themselves created within the single frequency or communication channel. This is illustrated in Figure 15A of the Patents-in-suit.

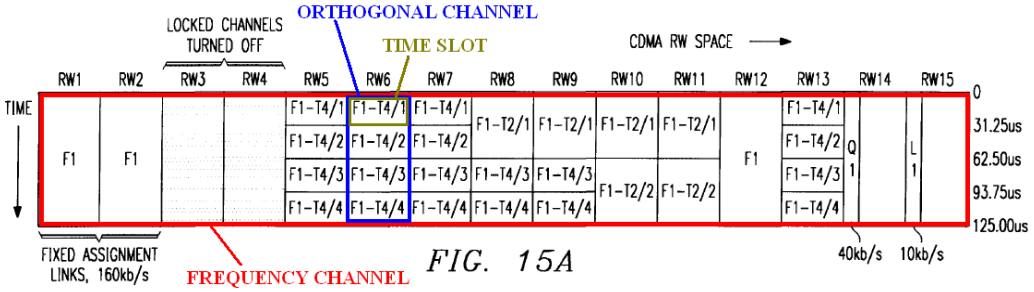


FIG. 15A

By creating these time slots, multiple wireless links can operate within a given orthogonal channel (depicted as the columns labeled RW1 through RW15) in a given frame period.

Defendants' construction incorrectly suggests that only one wireless link can use the frequency or communication channel during a particular time slot. This ignores the Patents-in-suit's teaching that the time slots further subdivide orthogonal channels, which allows different wireless links to operate at exactly the same time by using time slots in different orthogonal channels. This is again illustrated in Figure 15A, which shows that three different wireless links, for example, could transmit at the same time by using the first time slot in RW5, RW6, and RW7, respectively. If Defendants' construction

[20] At the very least, Defendants' reference to a "shared communication channel" is confusing and unnecessary because the claims already state that the time slots are created within the orthogonal channels.

were adopted, it would read out the divisions between orthogonal channels described in the specification and depicted in Figure 15A. *See Vitronics*, 90 F.3d at 1583 (explaining that a construction that results in the preferred embodiment not falling within the scope of the patent claim "is rarely, if ever, correct"). It would also be contrary to the express language of the claims, which states that the time slots are created *within* the orthogonal channels.

E. TDM encoder[21] / TDM decoder[22]

WI-LAN'S PROPOSED CONSTRUCTION	DEFENDANTS' PROPOSED CONSTRUCTION
"Hardware or software for applying TDM techniques"	"A device that applies time division multiplexing (TDM) techniques to share a communication channel among multiple wireless links"
"Hardware or software for extracting a data item from a predetermined time slot within the orthogonal channel"	"A device used to extract information from a communication channel that is shared among multiple wireless links by allocating a given period of time to each such link in a defined, repeated sequence"

Wi-LAN's constructions for the "TDM encoder" and "TDM decoder" terms are based on the intrinsic record. Defendants' proposed constructions are largely consistent with Wi-LAN's, but differ in two significant respects: (1) Defendants refer to the encoder and decoder as "a device," which incorrectly implies that they are limited to hardware as opposed to software; and (2) Defendants again try to import a "defined, repeated sequence" limitation, this time into the "TDM decoder" term. Wi-LAN disputes these attempts to narrow the plain and ordinary meaning of these terms.[23]

The TDM encoder and TDM decoder serve complementary functions in the claimed inventions. The central terminal uses a TDM encoder to place data intended for various subscriber terminals in the appropriate time slots of an orthogonal channel, to allow data for multiple subscriber terminals to be transmitted on any given orthogonal channel. *See* '326 Patent col. 13 ll. 36–53 ("[T]he

[21] *See* '326 Patent cls. 1, 2, 5, 8–10; '819 Patent cl. 11; '327 Patent cl. 15.
[22] *See* '211 Patent cls. 1, 2, 5.
[23] Further, the use of "communication channel" in Defendants' constructions of both "TDM encoder" and "TDM decoder" is confusing because it suggests that TDM techniques are applied to the overall frequency or communication channel. *See supra* Part IV.D (discussion of "time slot"). It is more accurate to say that these techniques may be applied to various orthogonal channels within the overall communication channel, as explicitly stated in the claim language. *See, e.g.*, '326 Patent cl. 1; '211 Patent cl. 1.

TDM encoder will apply appropriate TDM encoding to enable the data to be inserted in the appropriate time slot."). The TDM decoder retrieves the data intended for that subscriber terminal from the appropriate time slots of the orthogonal channel. *See id.* col. 14 ll. 38–41 ("[T]he output . . . is then passed through TDM decoder **183** to extract the call data from the particular time slot in which it was inserted by the CT [central terminal] TDM encoder **105**.").

Defendants appear to contend that the TDM encoder and decoder must be a hardware device and that the claims do not encompass software-based encoders and decoders.[24] But nothing in the intrinsic record limits encoders and decoders to hardware. To the contrary, the specification contemplates compatibility with both "hardware and software equipment." *Id.* col. 2 l. 62. Moreover, the specification gives an example of a decoder, called a "Viterbi decoder," *see id.* col. 14 ll. 34–37, which one of ordinary skill in the art would understand could be implemented by hardware or software.[25]

Further, Defendants' proposed construction for the "TDM decoder" term is wrong because it contains the same "defined, repeated sequence" limitation that Defendants try to import into "TDM techniques." As discussed above, Defendants' attempt to import that limitation should be rejected for a variety of reasons that apply with equal force to the "TDM decoder" term. *See supra* Part IV.C. Defendants' attempt to restrict the claimed inventions to the allocation of time slots in a "defined, repeated sequence" should be rejected.

F. Overlay code[26]

WI-LAN'S PROPOSED CONSTRUCTION	DEFENDANTS' PROPOSED CONSTRUCTION
"Orthogonal codes used to increase the number orthogonal channels that would otherwise be available"	"A second code applied in series with the orthogonal code"

[24] To the extent Defendants contend that their construction does not so limit the claims, then the phrase "hardware or software," as set forth in Wi-LAN's proposals, is clearer on this point and should be adopted instead.

[25] *See, e.g.*, Jean Conan & Rolando Oliver, *Hardware and Software Implementation of the Viterbi Decoding Algorithm for Convolutional Codes, in MIMI 76: Proceedings of the International Symposium on Mini and Micro Computers* 190 (M.H. Hamza ed., 1977) (attached as Exh. L).

[26] *See* '326 Patent cls. 2, 5, 9, 10; '211 Patent cls. 2, 5; '819 Patent cls. 1, 2, 4, 6–10, 12, 13, 15, 17, 21, 22; '327 Patent cl. 13.

Overlay codes are additional orthogonal codes that can be used to subdivide an orthogonal channel to create additional channels. '819 Patent col. 2 ll. 54–57 ("By using overlay codes in addition to the known set of orthogonal codes, it is possible for selected orthogonal channels to be subdivided to form additional orthogonal channels."); *id.* col. 3 ll. 31–36.[27] There appears to be no dispute on this point. Defendants, however, attempt to limit ***the order in which*** the overlay codes must be applied. They contend the claimed overlay codes must be applied "in series" with the orthogonal code, that is, either before or after, but not simultaneously.

Of course, nothing in the claim language itself so restricts the invention. All the claims require is that both overlay and orthogonal codes are applied: "a first encoder for combining a data item to be transmitted on the single frequency channel with said orthogonal code . . . a second encoder arranged to apply the overlay code from the overlay code generator to said data item." *See, e.g., id.* cl. 1. The fact that some of the claims refer to a "first" and "second" encoder for applying these codes does not impose a serial or temporal limitation on the order in which the codes are applied. Indeed, the Federal Circuit has specifically rejected that claim construction argument:

> 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 the context of claim 1, the use of the terms "first . . . pattern" and "second . . . pattern" is equivalent to a reference to "pattern A" and "pattern B," and ***should not in and of itself impose a serial or temporal limitation*** . . . .

3M Innovative Props. Co. v. Avery Dennison Corp, 350 F.3d 1365, 1371 (Fed. Cir. 2003) (citations omitted) (emphasis added); *see also Performance Pricing, Inc. v. Google Inc.*, No. 2:07cv432, 2009 WL 2497102, at *9 (E.D. Tex. Aug. 13, 2009).

The claims are silent as to the order in which the overlay and orthogonal codes are applied because the order is not important to the invention. What matters is only that both types of codes are used to make more channels: "By using overlay codes ***in addition*** to the known set of orthogonal

[27] Quoted and cited text appears in only the '819 Patent.

codes, it is possible for selected orthogonal channels to be subdivided to form ***additional orthogonal channels***." '819 Patent col. 2 ll. 54–57 (emphases added)[28]; *see also* '326 Patent col. 15 ll. 42–44 (describing Figure 9A, stating, "When using overlay codes, an RW code is split in the RW space domain to allow up to four sub channels to operate at the same time."). Whether the overlay codes are applied before, after, or simultaneously with the orthogonal codes, additional channels are created just as the specification describes.

Defendants cannot point to a lexicographer redefinition of the term "overlay code," nor an affirmative disclaimer of simultaneous application of these codes, to support their proposed construction because there is none. *See, e.g., Retractable Techs., Inc. v. Becton, Dickinson & Co.*, 659 F.3d 1369, 1371 (Fed. Cir. 2011) (explaining that claims are given their ordinary meaning, unless the applicant "acted as his own lexicographer or intentionally disclaimed or disavowed claim scope"). While it is true that in the preferred embodiments, the overlay codes are applied before the orthogonal codes,[29] this is no reason to so limit the claims. *See Liebel-Flarsheim Co.*, 358 F.3d at 906. Indeed, even Defendants do not urge that overlay codes can be applied ***only before*** the orthogonal codes.

The extrinsic dictionary definitions that Defendants cite are not a proper basis for importing an "in series" limitation into the claims. None of these definitions purports to define the term "overlay code," much less define the term as it is used in the intrinsic record of the Patents-in-suit. For example, Defendants cite a general purpose dictionary, which defines the noun form of "overlay" as "something laid as a covering over something else." *See* Definition for Overlay, Oxford Dictionaries Online, http://oxforddictionaries.com/definition/overlay?q=overlay (attached as Exh. M). But "overlay" is used as an adjective in the claims. And even in the preferred embodiment, the overlay code is not "laid . . . over" the orthogonal code; rather in that embodiment it is applied before the orthogonal code. *See*

[28] Quote appears only in the '819 Patent.

[29] '326 Patent col. 12 l. 63–col. 13 l. 13, figs. 7A & 7B (showing that spreader **111** applies overlay codes from overlay code generator **113** before spreader **116** applies orthogonal codes from RW code generator **112**).

supra note 29. Such inconsistency highlights why these dictionaries are not pertinent to the proper construction of "overlay code." Defendants' dictionaries define ***different*** terms in ***different*** contexts ***in ways that differ*** from the use of the actual claim term in the intrinsic record. *See Phillips*, 415 F.3d at 1321 ("[H]eavy reliance on the dictionary divorced from the intrinsic evidence risks transforming the meaning of the claim term to the artisan into the meaning of the term in the abstract, out of its particular context, which is the specification.").

Because the claims do not limit the order in which the overlay and orthogonal codes are applied, and there is nothing in the intrinsic record that affirmatively bars their simultaneous application, Defendants' attempt to import an "in series" limitation should be rejected.

G. Parameters pertaining to a wireless link within the cell indicative of whether that wireless link is subject to interference from signals generated by other cells[30]

WI-LAN'S PROPOSED CONSTRUCTION	DEFENDANTS' PROPOSED CONSTRUCTION
Plain and ordinary meaning	"Two or more indicators that an individual wireless link is experiencing interference from other cells"

In order to reduce the effect of interference from other cells, the '327 Patent claims an interference controller that analyzes parameters or indicators of signal interference and, based on that analysis, reduces the number of CDMA channels in use. Wi-LAN does not dispute that the claims refer to "an analyzer for receiving parameters," with "parameters" being a plural term. *See* '327 Patent cls. 1, 5, 11. That much is clear on its face, and no construction is necessary to make that point. Instead, the parties dispute whether the term "parameters" means that the analyzer must be capable of receiving "two or more" ***different*** types of indicators, or whether the claims also encompass embodiments where the "parameters" are multiple values of the ***same*** indicator.

The plain and ordinary meaning of this term encompasses both of these possibilities. Whether the values the "analyzer" is capable of receiving are measurements of the same indicator or

[30] *See* '327 Patent cls. 1, 5, 11.

measurements of two or more different indicators, those values are still "parameters." This is consistent with everyday parlance. For example, if one has received "awards" for his work, that could mean he received two or more different awards, but it could just as readily mean that he received the same award two or more years in a row.

Nothing in the specification disclaims the use of multiple values of the same indicator. In fact, the intrinsic record teaches that the analyzer need not rely on two or more types of indicators to control interference. At least some of the preferred embodiments make the decision to reduce the number of CDMA channels based solely on the bit error rate ("BER"). *See* '327 Patent col. 25 ll. 53–67 ("[I]f the actual bit error rate exceeds the BER goal . . . then the dynamic pool sizing function **360** may be arranged to send a pool sizing request to the demand assignment ["DA"] engine **380**. . . . [T]hen the DA engine **380** can disable one or more of the modems, this causing the interference, and hence the actual BER, to be reduced."). Moreover, the dependent claims of the '327 Patent teach that the number of CDMA channels may be adjusted based solely on a single type of parameter, such as the BER or the grade of service ("GOS"), being above or below a threshold value. *See, e.g.*, *id.* cls. 2 ("the channel controller being responsive to the analyser indicating that the BER exceeds the predetermined maximum acceptable BER to remove a code division multiplexed channel from the channel pool"), 3 (similar with GOS); *see also id.* cls. 6, 7, 23, 24.

Defendants' construction is drawn from a single embodiment in the specification that discloses the use of two different indicators (BER and GOS). *See id.* col. 25 ll. 11–31. But that is no reason to exclude from the claims the other disclosed embodiments that use only one type of indicator to gauge the level of interference. *See Liebel-Flarsheim Co.*, 358 F.3d at 906 (holding that it is improper to limit the scope of the claims based on a single disclosed embodiment). The ordinary meaning of "parameters" is consistent with the examples in the specification and includes embodiments where the

claimed "parameters" are multiple values of the same indicator.

H. Channel pool[31]

WI-LAN'S PROPOSED CONSTRUCTION	DEFENDANTS' PROPOSED CONSTRUCTION
Plain and ordinary meaning	"The set of orthogonal channels available to a central terminal to use to establish wireless links"

The parties agree that a "channel pool" is simply a pool of channels available to establish wireless links. This is exactly what the claims already say on their face: "a channel pool of code division multiplexed channels available for the establishment of said wireless links." '327 Patent cls. 1, 11. Because the claim language is already clear, there is no need for additional construction of this term. *See O2 Micro*, 521 F.3d at 1362.

V. ARGUMENT FOR DISPUTED MEANS-PLUS-FUNCTION CLAIM TERMS

A. Legal Principles for Construing Means-Plus-Function Claim Terms

"The first step in construing a means-plus-function claim limitation is to define the particular function of the claim limitation." *Golight, Inc. v. Wal-Mart Stores, Inc.*, 355 F.3d 1327, 1333 (Fed. Cir. 2004). "The court must construe the function of a means-plus-function limitation to include the limitations contained in the claim language, and only those limitations." *Cardiac Pacemakers, Inc. v. St. Jude Med., Inc.*, 296 F.3d 1106, 1113 (Fed. Cir. 2002). The next step "is to look to the specification and identify the corresponding structure for that function." *Golight*, 355 F.3d at 1334.

"For computer-implemented means-plus-function claims where the disclosed structure is a computer programmed to implement an algorithm, the disclosed structure is not the general purpose computer, but rather the special purpose computer programmed to perform the disclosed algorithm." *Finisar Corp. v. DirecTV Grp., Inc.*, 523 F.3d 1323, 1340 (Fed. Cir. 2008) (quotation omitted). This requirement "does not impose a lofty standard." *Id.* at 1341. A patentee may "express that algorithm in ***any understandable terms*** including as a mathematical formula, in prose, or as a flow chart, or in

[31] *See* '327 Patent cls. 1, 2, 5, 6, 11.

any other manner that provides sufficient structure." *Id.* at 1340 (citation omitted) (emphasis added). "Sufficient structure must simply 'permit one of ordinary skill in the art to know and understand what structure corresponds to the means limitation' so that he may 'perceive the bounds of the invention.'" *In re Aoyama*, 656 F.3d 1293, 1298 (Fed. Cir. 2011) (quoting *Finisar Corp.*, 523 F.3d at 1340–41).

Defendants contend that the means-plus-function terms in the Patents-in-suit are invalid because no structure is disclosed. To prove this, they must overcome a high burden. A finding of indefiniteness is proper only "if the construction remains insolubly ambiguous." *Star Scientific, Inc. v. R.J. Reynolds Tobacco Co.*, 655 F.3d 1364, 1373 (Fed. Cir. 2011). "Absolute clarity is not required to find a claim term definite. [The Federal Circuit] has held that a claim term may be definite even when discerning the meaning is a formidable [task] and the conclusion may be one over which reasonable persons will disagree." *Id.* (quotation omitted).

B. Channelisation means for determining which of the orthogonal channels will be subject to TDM techniques[32]

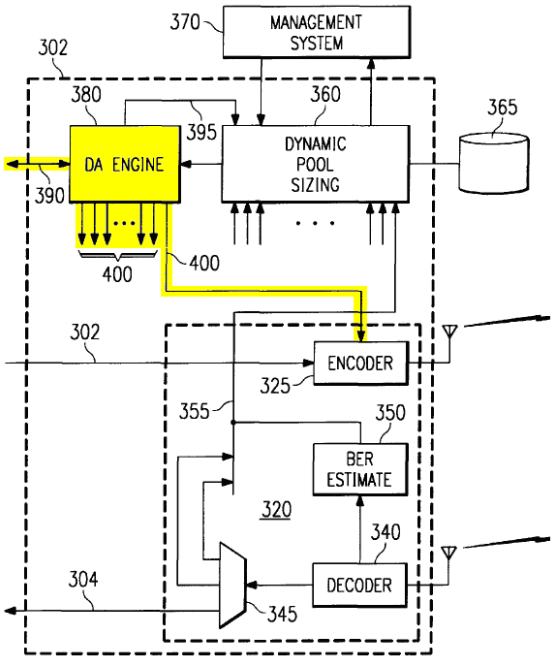
WI-LAN'S PROPOSED CONSTRUCTION	DEFENDANTS' PROPOSED CONSTRUCTION
Function: determining which of the orthogonal channels will be subject to TDM techniques Corresponding Structure: A demand assignment engine connected to a network and one or more modems. The demand assignment engine determines which of the orthogonal channels will be subject to TDM techniques based on information regarding the capability of subscriber terminals to support TDM techniques and/or the type of data items to be transmitted.	Indefinite under 35 U.S.C. § 112

Wi-LAN's construction is directed to the function recited in the claim and the structure disclosed in the specification. Defendants contend this term is indefinite because the specification discloses no structure. They are wrong.

The Patents-in-suit disclose a structure called the demand assignment engine, or "DA engine," which performs the claimed function of "determining which of the orthogonal channels will be

[32] *See* '326 Patent cl. 6.

subject to TDM techniques." Figure 17, reproduced here, shows the DA engine with its connections to the network and modems highlighted. The DA engine receives all incoming call information that is destined for subscriber terminals from a network over line **390**. '326 Patent col. 23 ll. 58–62. "The DA engine **380** includes a call control function," which determines how to set up the channels for transmission. *Id.* col. 23 ll. 62–63. The DA engine controls the number of channels by "provid[ing] modem enable signals . . . to each of the modems on the [central terminal] modem shelf." *Id.* col. 24 ll. 20–22. Figure 17 shows the DA engine **380** connected to the encoder **325** in the modem **320**. This configuration enables the DA engine to control the channels. The DA engine determines which orthogonal channels will use TDM techniques and which ones will use overlay codes and "provid[es] the encoders **325** with instructions on which set of overlay codes or how many TDM slots to be used for signals to be transmitted to the [subscriber terminals] **20**." *Id.* col. 24 ll. 27–30.



The algorithm the DA engine uses to determine which of the orthogonal channels will be subject to TDM techniques is based upon one or both of two inputs. First, the DA engine looks to whether the subscriber terminal to which data will be transmitted "incorporate[s] the features necessary to support TDM techniques." *Id.* col. 3 ll. 44–53.[33] Those that do not support TDM "require the full orthogonal channel for the whole frame period," which means that TDM techniques will not be used on those orthogonal channels. *Id.* col. 3 ll. 53–55[34]; *see also id.* col. 18 ll. 50–54, 58–64. Second, the DA engine might also consider the type of data that is to be transmitted in an orthogonal channel to

[33] Quote appears only in the '326 and '211 Patents.
[34] Quote appears only in the '326 and '211 Patents.

determine whether to implement TDM techniques. For example, in the preferred embodiment an orthogonal channel might be dedicated to transmitting a particular type of data called "call control information," in which case the preferred embodiment will not use TDM techniques for that channel regardless of whether the subscriber terminals support TDM. *Id.* col. 12 ll. 12–14; *id.* col. 19 ll. 12–17. Thus, the DA engine determines whether to use TDM techniques based on information regarding the capability of subscriber terminals to support TDM techniques and/or the type of data items to be transmitted.

In light of this disclosure, Defendants cannot prove by clear and convincing evidence that this term is indefinite. This is particularly so given that the PTO considered this very issue and presumably determined that the specification discloses sufficient structure.[35] The disclosure of the algorithm the DA engine uses to perform the claimed function is sufficient for "one of skill in the art [to understand the] disclosure to encompass software [to perform the function] and be[] able to implement such a program." *Med. Instrumentation & Diagnostics Corp. v. Elekta AB*, 344 F.3d 1205, 1212 (Fed. Cir. 2003) (emphasis omitted). Accordingly, the Court should adopt the structure and function as identified in Wi-LAN's proposed construction.

C. Channelisation means for determining, for those orthogonal channels subject to TDM techniques, how many time slots will be provided within each orthogonal channel[36]

WI-LAN'S PROPOSED CONSTRUCTION	DEFENDANTS' PROPOSED CONSTRUCTION
Function: determining, for those orthogonal channels subject to TDM techniques, how many time slots will be provided within each orthogonal channel Corresponding Structure: A demand assignment engine connected to a network and one or more modems. The demand assignment engine determines how many time slots will be provided within each orthogonal channel based on information regarding the type of data items to be transmitted.	Indefinite under 35 U.S.C. § 112

[35] *See Manual of Patent Examining Procedure* (6th ed. rev. 3, July 1997) §§ 2106(V)(A) (requiring an examiner to "Determine Whether the Claimed Invention Complies with 35 U.S.C. 112, Second Paragraph Requirements" and noting the scope of a "means" limitation), 2181 (setting forth "guidelines for the examination of 35 U.S.C. 112, sixth paragraph, 'means or step plus function' limitations in a claim") (attached as Exh. N).
[36] *See* '326 Patent cl. 7.

This term is directed to an additional function of the channelisation means. As before, Wi-LAN's construction is directed to the function recited in the claim and the structure disclosed in the specification for performing that function.

The specification teaches that the demand assignment engine determines both whether TDM techniques will be applied to an orthogonal channel and, if so, how many time slots will be provided: "the DA engine is also responsible . . . for providing the encoders **325** with instructions on . . . how many TDM slots to be used for signals to be transmitted to the [subscriber terminals] **20**." '326 Patent col. 24 ll. 27–30. The specification further teaches that the DA engine makes this determination based on information regarding the type of data items to be transmitted:

> For instance, if an orthogonal channel operates at 160 kb/s, and four time slots are provided within that orthogonal channel in order to carry data items pertaining to four different wireless links during one frame period, then each ST receiving data from said orthogonal channel will receive data at a rate of 40 kb/s . . . . If, alternatively, two time slots are provided within the orthogonal channel, then data items pertaining to only two different wireless links will be transmitted per frame period, and the two STs receiving data will do so at a rate of 80 kb/s . . . . ***This flexibility is useful, since for some communications, eg. fax, a rate of 40 kb/s may not be acceptable, and hence the use of four time slots would not be suitable.***

Id. col. 3 l. 63–col. 4 l. 12 (emphasis added)[37]; *see also id.* col. 18 ll. 64–67, fig. 15A. In other words, larger or more important data items need more bandwidth, which means that the DA engine will give instructions to the encoders to provide fewer (but larger) time slots in those orthogonal channels. The algorithm disclosed in the specification, wherein the DA engine determines the number of time slots to provide based on the type of data to be transmitted, is fully captured in Wi-LAN's proposed construction. Defendants' argument that this term is indefinite should be rejected.

[37] Quote appears in the '326 and '211 Patents.

D. Channelisation means for determining which of the orthogonal channels will be subject to overlay codes[38]

WI-LAN'S PROPOSED CONSTRUCTION	DEFENDANTS' PROPOSED CONSTRUCTION
Function: determining which of the orthogonal channels will be subject to overlay codes Corresponding Structure: A demand assignment engine connected to a network and one or more modems. The demand assignment engine determines which of the orthogonal channels will be subject to overlay codes based on information regarding the capability of subscriber terminals to support TDM techniques and/or the type of data items to be transmitted.	Indefinite under 35 U.S.C. § 112

This channelisation means term is similar to the others. The demand assignment engine is the corresponding structure that performs the recited function, *i.e.*, "determining which of the orthogonal channels will be subject to overlay codes." As explained above, the DA engine determines which orthogonal channels will use TDM techniques and which ones will use overlay codes and "provid[es] the encoders **325** with instructions on which set of overlay codes or how many TDM slots to be used for signals to be transmitted to the [subscriber terminals] **20**." '819 Patent col. 23 ll. 44–48. Because the overlay codes are applied to channels where TDM techniques are not applied, the same algorithm for determining whether to apply TDM techniques (*i.e.*, basing the determination on information regarding the capability of subscriber terminals to support TDM techniques and/or the type of data items to be transmitted) also determines whether to apply overlay codes to an orthogonal channel.[39]

E. Channelisation means for transmitting information to a plurality of subscriber terminals[40]

WI-LAN'S PROPOSED CONSTRUCTION	DEFENDANTS' PROPOSED CONSTRUCTION
Function: transmitting that information to a plurality of subscriber terminals Corresponding Structure: The modem shelf 46, the power supply 44, and the RF combiner 42.	Indefinite under 35 U.S.C. § 112

After determining which of the orthogonal channels will be subject to TDM techniques, as

[38] *See* '819 Patent cl. 10.

[39] For example, in the preferred embodiment, when a particular type of data referred to as call control information is transmitted, the DA engine provides instructions for the encoders to use overlay codes. *See* '819 Patent col. 13 ll. 38–44; *id.* col. 18 ll. 29–34.

[40] *See* '326 Patent cl. 6; '819 Patent cl. 10.

recited in claim 6 of the '326 Patent, or which of the orthogonal channels will be subject to overlay codes, as recited in claim 10 of the '819 Patent, the channelisation means recited in those claims performs the function of transmitting that information to a plurality of subscriber terminals.

The corresponding structure for the claimed "transmitting" function is the modem shelf **46**, the power supply **44**, and the RF combiner **42**. These components are each depicted in Figure 3 of the Patents-in-suit. The specification discloses that the "transmitting" function begins at the modem card: "The modem cards perform the baseband signal processing of the transmit and receive signals to/from the subscriber terminals **20**." '326 Patent col. 8 ll. 32–34. These modem cards are part of the modem shelf. *See id.* col. 8 ll. 22–31, fig. 3A. The RF combiner then "combines and amplifies the power of [the] transmit signals, each transmit signal being from a respective one of the . . . modem shelves." *Id.* col. 7 ll. 43–45. The RF combiner finally passes the signal to the central terminal's antenna for transmission to the subscriber terminal. *See id.* col. 7 ll. 50–53. In order that these electronic components may function, "power supply shelf **44** provides a connection to the local power supply." *Id.* col. 7 ll. 48–49. Since these are the structures disclosed for performing the claimed function, the Court should adopt Wi-LAN's proposed construction for this term. *See, e.g.*, *Golight*, 355 F.3d at 1334–35 (affirming district court construction of corresponding structure based on disclosure in specification of an assembly that performed the claimed function).

CONCLUSION

For the reasons set forth above, Wi-LAN respectfully requests that each of its proposed constructions of disputed claim terms be adopted by the Court.

Dated: March 16, 2012

Respectfully submitted,

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