IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION

IN RE NEO WIRELESS, LLC PATENT LITIG.	§ § § § § § §	2:22-MD-03034-TGB HON. TERRENCE G. BERG

PLAINTIFF NEO WIRELESS, LLC'S
OPENING CLAIM CONSTRUCTION BRIEF

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I. INTRODUCTION

As the Court noted in its order regarding claim narrowing, "The Court fully expects the parties and their attorneys to limit the terms they submit [for construction] to those that might be unfamiliar to the jury, confusing to the jury, or affected by the specification or the prosecution history." Dkt. 99 at 8. Neo has tried to adhere to that guidance, proposing constructions only where clarification of a claim term is genuinely warranted to clarify the patentee's meaning. Defendants, on the other hand, repeatedly seek to add limitations to the plain language of the claims that are not called for by the plain meaning of the terms or the intrinsic record, and in many cases would only add *more* confusion to the claims. For the reasons set forth below, the Court should reject Defendants' proposed constructions.

II. LEGAL AUTHORITY

Claim construction is a question of law for the Court, *see Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 384 (1996), although it may involve subsidiary factual questions. *See Teva Pharms. USA, Inc. v. Sandoz, Inc.*, 574 U.S. 318, 324–28 (2015). In construing the claims of a patent, the words comprising the claims "are generally given their ordinary and customary meaning" as understood by "a person of ordinary skill in the art in question at the time of the invention." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (*en banc*)

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(cleaned up); *see also Thorner v. Sony Comp. Ent. Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012). Claim construction begins with the language of the claims, as "the claims provide substantial guidance as to the meaning of particular claim terms." *Phillips*, 415 F.3d at 1314. The claims "do not stand alone" and are read in light of the accompanying specification, *id.* at 1315, but Courts must "avoid the danger or reading limitations from the specification into the claim[.]" *E.g.*, *id.* at 1323. Finally, Courts "should also consider the patent's prosecution history, if it is in evidence[,]" *id.* at 1317, but prosecution history is often "less useful for claim construction purposes." *Id.* As such, prosecution disclaimer only applies to claim language when "the alleged disavowing actions or statements made during prosecution [are] both clear and unmistakable." *Omega Eng'g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1326 (Fed. Cir. 2003). Prosecution statements that are "too vague or ambiguous" fail to "qualify as a disavowal of claim scope." *Id.* at 1325.

Indefiniteness is a question of law for the court to evaluate from the perspective of someone skilled in the relevant art at the time the patent was filed. *H–WTech., L.C v. Overstock.com, Inc.*, 758 F.3d 1329, 1332 (Fed. Cir. 2014). As the parties challenging validity, Defendants bear the burden of demonstrating that a claim is indefinite. *Warsaw Orthopedic, Inc. v. NuVasive, Inc.*, 778 F.3d 1365, 1371 (Fed. Cir. 2015). Further, "[a]ny fact critical to a holding on indefiniteness . .

. must be proven by [Defendants] by clear and convincing evidence." *Intel Corp. v. VIA Techs., Inc.*, 319 F.3d 1357, 1366 (Fed. Cir. 2003).

"A patent is invalid for indefiniteness if its claims, read in light of the patent's specification and prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention." *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901 (2014). But "a patentee need not define his invention with mathematical precision in order to comply with the definiteness requirement." *Invitrogen Corp. v. Biocrest Mfg., L.P.*, 424 F.3d 1374, 1384 (Fed. Cir. 2005) (citation omitted). The primary purpose of the definiteness requirement is to ensure that patent claims are written in such a way that they give reasonable notice to the public of what falls within the claims. *All Dental Prodx, LLC v. Advantage Dental Prods., Inc.*, 309 F.3d 774, 779–80 (Fed. Cir. 2002).

III. BACKGROUND OF THE PATENTED TECHNOLOGY

A. The Asserted Patents

Neo Wireless has asserted six patents in this case (collectively the Asserted Patents): U.S. Pat. No. 8,467, 366 ('366 Patent); U.S. Pat. No. 10,833,908 ('908 Patent); U.S. Pat. No. 10,447,450 ('450 Patent); U.S. Pat. No. 10,075,941 ('941 Patent; U.S. Pat. No. 10,771,302 ('302 Patent); and U.S. Pat. No. 10,965,512 ('512 Patent). As discussed in Neo Wireless's first and second technology tutorials, the Asserted Patents all relate to improvements in Orthogonal Frequency Division

Multiple Access (OFDMA) cellular networks, and particularly in mobile devices for use in those networks.

B. The Level of Ordinary Skill in the Art

For the asserted patents, a person of ordinary skill in the art ("POSITA") at the time of the invention would have a Bachelor of Science degree or higher in Electrical Engineering with 2 or more years of experience designing or implementing wireless telecommunications systems or transceivers. Declaration of Bill Alberth ("Alberth Decl.") ¶ 18.

IV. AGREED CLAIM TERMS

In addition to the agreed claim terms set out in Exhibit B to the parties' Joint Claim Construction Statement (Dkt. 114-2), the parties have also agreed that the term "configured to," as used in all six asserted patents, should be construed as "designed to."

V. DISPUTED CLAIM TERMS

The parties have outstanding disputes about fourteen claim terms across the six asserted patents. The Court asked the parties to "prioritize and list the terms in order of most importance." Dkt. 99 at 8. Because the terms span multiple patents, Neo has grouped them by patent to keep related terms together. But where multiple terms have been proposed for a given patent, Neo has ordered them according to Neo's assessment of the overall impact of the dispute.

A. '366 Patent Terms

1. "the ranging signal exhibits a low peak-to-average power ratio in the time domain"

Neo's Proposal	Defendants' Proposal
Plain and ordinary meaning. No construction necessary.	Indefinite.

Defendants allege that this term is indefinite simply by virtue of the fact that it employs a term of degree—requiring a "*low* peak-to-average power ratio" or PAPR. But "[c]laim language employing terms of degree has long been found definite where it provided enough certainty to one of skill in the art when read in the context of the invention." *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1370 (Fed. Cir. 2014). Because a POSITA would understand how to compare this claim term to real-world products and systems using the description of the patent and other aspects of the intrinsic record, Defendants have not shown by clear and convincing evidence that this term is indefinite—indeed, a POSITA would, with reasonable certainty, understand the plain and ordinary meaning of this term in the context of the patented claims and specification.

In evaluating a term of degree, "absolute or mathematical precision is not required[.]" *Id.* "Where intrinsic evidence provides some guidance as to the scope of such terms, the Federal Circuit has held they satisfy the definiteness requirement under Section 112." *Tecnomatic S.p.A. v. ATOP S.p.A.*, No. 2:18-cv-12869, 2021

WL 1410036, at *20 (E.D. Mich. Feb. 23, 2021), *adopted by* 2021 WL 2309933 (E.D. Mich. June 7, 2021). The ’366 Patent contains ample guidance.

One type of guidance consulted by the Special Master in *Tecnomatic* was the surrounding claim language. There, the Special Master observed that the term of degree “in a process suitable for mass production” could be reasonably understood by reference to other claim language which specified that the process involved “automatic” (rather than manual) machinery. 2021 WL 1410036, at *20. Other claim elements can provide objective criteria for how to accomplish a claimed term of degree. In this case, using claim 1 as an example, the claims of the ’366 Patent specify that the ranging signal at issue exists “[i]n a multi-cell orthogonal frequency division multiple access (OFDMA) wireless communication system.” Accordingly, a POSITA would not have to subjectively judge how “low” a PAPR is in a vacuum; by contrast, he or she would know to evaluate the PAPR relative to the PAPRs typically found in that specific subset of systems encompassed by the claims and the specific OFDMA system being implemented. A POSITA would know that a “low” PAPR is one that falls below the baseline for a given system, so that the transmitter does not have to be designed for the special case of this one signal. Alberth Decl. ¶¶ 24–25. As one example, in a cellular system using conventional OFDMA at the time of the invention, a POSITA would have known that the baseline PAPR of that form of OFDMA system was approximately 12dBs.

Id. ¶ 25. Thus, as explained in more detail below, a POSITA would recognize that a reduction of 3dBs or more would result in a "low" PAPR of 9 dBs. *Id.* ¶¶ 25–26. Courts have found that this type of "implementation-specific" meaning is appropriate and does not render a claim term indefinite. *See St. Lawrence Comms., LLC v. ZTE Corp.*, No. 2:15-CV-00349, 2016 WL 6275390, at *57–59 (E.D. Tex. Oct. 25, 2016) (finding the term "low frequency portion" definite since "the use of the word 'low' is appropriate because the relative bandwidths and the precise manner of filtering are implementation-specific details" (citing *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 806 F.2d 1565, 1576 (Fed. Cir. 1986))).[1]

Furthermore, the patent's specification provides additional objective criteria when it explains that a "relatively low peak-to-average power ratio . . . improves the power efficiency of the mobile station transmission power amplifier." '366 Patent 4:34–38. There is a practical amount of reduction in PAPR that a POSITA would consider an improvement of the efficiency of the mobile station's transmitter. Alberth Decl. ¶¶ 24–26. This, again, is just like *Tecnomatic*, where the Special Master credited language in that specification which described the claimed

[1] *See also Fractus, S.A. v. AT&T Mobility LLC*, No. 2:18-CV-00135, 2019 WL 1641357, at *24 (E.D. Tex. Apr. 16, 2019) ("Defendants have not shown, however, that the possibility of different frequency bands being defined in different ways or with different bandwidths gives rise to any lack of reasonable certainty as to the meaning of the present disputed terms. Instead, these are implementation-specific details.").

process as less "labor intensive." 2021 WL 1410036, at *20. Just as that language provided reasonable certainty, here the specification's discussion of improving power efficiency provides guidance as to the meaning of "low PAPR." And as in *Tecnomatic*, "neither the recited claim phrase . . . nor the guidance described in the specification . . . draw bright lines, *but that is not the test*." *Id.* (emphasis added). It is entirely appropriate for a patent to use language designed *not* to employ a strict numerical boundary. *See Braintree Labs., Inc. v. Novel Labs., Inc.*, 749 F.3d 1349, 1360 (Fed. Cir. 2014) ("Descriptive words like 'copious' are commonly used in patent claims, to 'avoid[] a strict numerical boundary to the specified parameter.'" (quoting *Pall Corp. v. Micron Separations, Inc.*, 66 F.3d 1211, 1217 (Fed. Cir. 1995))).

In sum, the plain language of the '366 Patent's claims and specification provide sufficient objective criteria from which a POSITA would understand the scope of the disputed term. This is not like the cases where the Federal Circuit has found terms "purely subjective," or where the intrinsic record "fails to provide *any* guidance." *See Tecnomatic*, 2021 WL 1410036, at *20 (citing *Interval Licensing*, 766 F.3d at 1368) (emphasis in original). By contrast, in light of the intrinsic evidence, the ranging signal which "exhibits a low peak-to-average power ratio in the time domain" would be understood in the objective, technical context of the implementation of a certain wireless system, not merely the subjective personal

preference of a user. For at least these reasons, the Court should reject Defendants' indefiniteness argument and give the term its plain and ordinary meaning.

Finally, while Neo believes a precise numerical boundary is inappropriate for this term given the intentionally implementation-specific nature of the term, if the Court is inclined to give an affirmative construction with a precise numerical boundary, Neo would propose the construction "exhibits a peak-to-average power ratio in the time domain of 9dBs or less." Though other types of OFDMA systems are contemplated by the claims, the most common conventional OFDMA cellular system at the time of the patent would have a baseline PAPR of approximately 12dBs, as alluded to above. Alberth Decl. ¶¶ 26–27. Accordingly, to the extent a POSITA would ascribe a specific numerical boundary to the term, a "low" PAPR would be a PAPR of 9dBs or less—corresponding to a marked reduction of the PAPR that practically impacts the transmission efficiency and does not require special attention in designing the transmitter in that conventional OFDMA system. *See id.* ¶¶ 22–28.

2. "a ranging sequence selected from a set of ranging sequences"

Plaintiff's Proposal	Defendants' Proposal
Plain and ordinary meaning. No construction necessary.	"a ranging sequence selected **by said apparatus** from a set of ranging sequences"

Claims 1 and 17 of the ’366 Patent describe, in pertinent part, a mobile station that sends a ranging signal to a base station. That ranging signal is “formed from a ranging sequence selected from a set of ranging sequences *associated with the cell for identifying the mobile station*.” The plain meaning of this phrase, read as a whole, is clear: the purpose of a ranging signal is to allow a mobile station and base station to initiate communication with one another, and thus the ranging sequence used by the mobile station to form the ranging signal cannot be just *any* sequence; rather it must be from a particular set so that the sequence can *identify the mobile station to the base station*. *See* ’366 Patent 3:43–47 (explaining how “multiple ranging sequences are permitted in a cell” and how the mobile station “uses the sequence to identify itself in the initial communication with a base station”).

Defendants’ proposed construction seeks to complicate this plain claim language by improperly limiting the claim to a particular embodiment from the specification: one where the mobile station itself “selects” the ranging sequence. But the plain language of the claim is about ***how*** and ***why*** the ranging signal is formed; it is entirely agnostic to who or what “selects” the ranging sequence used in that formation. Thus, to achieve their construction, Defendants do not alter, omit, or replace any of the existing claim language; they just add a brand new limitation from whole cloth. But, other than wanting to reduce the scope of the

claim to avoid infringement, Defendants have no basis to suggest that the plain language needs such a narrowing. On the contrary, as described in Neo's second technology tutorial and reiterated here by Mr. Alberth, it would have been well known how a base station (rather than the mobile station) could also select the random access sequence for a mobile station, to avoid contention between mobile stations that may simultaneously request access to the base station ("non-contention-based random access"). Alberth Decl. ¶¶ 29–31. In both scenarios—where a mobile station or the base station selects the ranging sequence—the mobile station would still use the ranging signal to establish a connection with the base station.

Further, Defendants cannot justify their improper narrowing of the claims to a single embodiment with any disavowal or intention by the patentees to limit their inventions to that embodiment. They may point to the specification's passing reference that "a mobile station chooses a ranging sequence." '366 Patent 3:45–46. But there is no disclosure in that portion of the specification (nor anywhere else in the record) that the claimed mobile station is *required* to make that selection. *See, e.g.*, *Seabed Geosolutions (US) Inc. v. Magseis FF LLC*, 8 F.4th 1285, 1288 (Fed. Cir. 2021) ("[S]ilence does not support reading the claims to exclude [an embodiment]."). Indeed, notwithstanding that preferred embodiment, when drafting the claims, the patentees chose *not* to include any affirmative selection

step in the claimed method, nor identify a particular selector, and instead merely required the ranging sequence be "selected from" a set of ranging sequences. A POSITA would recognize this choice to not limit the claims to selection by the mobile station, and a POSITA would understand that other entities, including the recited base station, could make the selection in a variety of circumstances. Alberth Decl. ¶¶ 29–31; *see also i4i Ltd. P'ship v. Microsoft Corp.*, 598 F.3d 831, 843 (Fed. Cir. 2010) ("Had the inventors intended [the selection to be a step performed by the mobile device], they could have drafted the claims to expressly include it."). Thus, Defendants' proposed construction should be rejected at least because it narrows the claim beyond the term's full scope under its plain and ordinary meaning.

B. '908 Patent Terms

1. "wherein the portion of the frequency band used for transmission of the random access signal does not include control channels"

Plaintiff's Proposal	Defendants' Proposal
"wherein the portion of the frequency band used for transmission of the random access signal does not **overlap with the portions of the frequency band used for** control channels"	"wherein the portion of the frequency band used for transmission of the random access signal does not include **channels carrying control information**"

With their proposed constructions, both parties seek very different outcomes for this term. Neo's proposed construction simply clarifies any ambiguity in the concept of a frequency band "including" or "not including" specific channels, as

supported by the ’908 Patent’s specification. The Defendants, however, seek to redefine “control channels,” without support from intrinsic evidence and despite the term’s well-understood meaning and widespread use in the art of wireless communications. The Court should adopt Neo’s proposed construction.

Neo’s proposed construction merely adopts like terms to make the claim language more readable. It clarifies that the “portion of the frequency band” used for random access “does not include control channels” when that portion does not overlap, in the frequency domain, with “the portions of the frequency band” used for control channels. This understanding is consistent with evidence in the specification. For example, one portion of the patent describes ways “to have a better protection” for “the control subcarriers,” ’908 Patent 8:12–14, including having other signals having null values at the control subchannels “to avoid excess interference with the uplink control signals.” *See id.* 8:15–20, Fig. 15. Another example places the potentially interfering signal in a smaller portion of the overall frequency spectrum, so as to minimize interference with subcarriers in the non-overlapping portions of the spectrum. *See id.* 8:20–29, Fig. 16. Both examples support Neo’s construction—that the portion used for the random access signal is separate from (does not overlap) with portions used for control channels. The Court should adopt Neo’s clarifying construction.

Defendants, however, want to replace the term "control channels" with "channels carrying control information." This redefinition is unnecessary—a person skilled in the art of wireless communications would understand the term "control channels" as it is commonly used in the art. Alberth Decl. ¶ 42. Defendants know this—their first technology tutorial presented the concept of control channels as background for the relevant art. *See* Defs.' First Tech. Tutorial at 36–37. In addition, while true that, in general, control channels carry control information, the logical converse is not true: that any channel that carries *some* control information is a control channel. Alberth Decl. ¶ 42. Defendants also know this—it was also explained in their first technology tutorial. *See id.* (providing examples of channels that are not control channels yet can carry control information). By substituting one commonly understood term for another with no apparent basis, Defendants are attempting to improperly broaden the claim's negative term ("the portion . . . does *not* include . . . .") in order to narrow the claim's overall scope. Defendants' sleight of hand should be rejected.

Defendants' changing of the claim language is also not supported by the intrinsic evidence. The specification does not "clearly set forth a definition of the disputed claim term" as required to change the ordinary meaning of "control channels." *Thorner v. Sony Comp. Ent. Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012). Nor is it supported by the prosecution history. In fact, during the

prosecution of U.S. Application No. 14/321,615 (a parent application to the '908 Patent's application sharing the same disclosure as the '908 Patent's specification), the pending claims were amended to add the element "the mobile device transmitting data information on data subcarriers and control information on control subcarriers[.]" Ex. A at 2 (10/21/2016 Resp. to Non-Final Office Action at 2). This prosecution history is relevant as it shows an example of same applicant distinguishing *in the claims* between a "control subcarrier" and the concept of merely carrying "control information." This evidence supports the idea that, without additional definition, any channel that carries control information is not automatically a "control channel" or "control subcarrier" as disclosed in the specification.

In all, the Court should adopt Neo's construction of this term.

2. "associated with"

Plaintiff's Proposal	**Defendants' Proposal**
Plain and ordinary meaning. No construction necessary.	"identifying"

In the '908 Patent, the claim term "associated with" describes the relationship between the claimed "sequence" in a random access signal and the base station with which the claimed mobile station seeks to connect using the random access process. In this context, the term "associated with" requires no construction. As the Federal Circuit has recognized, "[i]n some cases, the ordinary

meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words." *Phillips*, 415 F.3d at 1314. Here, Defendants' proposed term presents such a case. The phrase "associated with" is a simple English phrase with a readily understood meaning. *See Flypsi, Inc. v. Dialpad, Inc.*, No. 6:21-cv-00642, 2022 WL 3593131, at *5 (W.D. Tex. Aug. 22, 2022) ("[T]he words 'associated with' have a common meaning."); *Raytheon Co. v. Cray, Inc.*, No. 2:15-cv-1554, 2017 WL 2537580, at *7 (E.D. Tex. June 12, 2017); *Joao Control & Monitoring Sys., LLC v. Protect Am., Inc.*, No. 1-14-cv-134, 2015 WL 4937464, at *8 (W.D. Tex. Aug. 18, 2015) ("The words 'associated with' are a common English phrase with a clear meaning and connotation, and the fact that the phrase is used in a patent claim does not somehow render the words ambiguous."); *Stanacard, LLC v. Rebtel Networks, AB*, 680 F. Supp. 2d 483, 495 (S.D.N.Y. 2010). As such, construction of this term is not necessary—this Court should simply apply its ordinary, readily apparent meaning. *Cf, e.g.*, *Visteon Global Techs., Inc. v. Garmin Int'l, Inc.*, No 2:10-cv-10578, 2011 WL 13103572, at *7 (E.D. Mich. May 2, 2011) (declining to construe "on" because it was "an ordinary word with a clear and unquestionable meaning").

Defendants know this term requires no construction. In the ’366 Patent, which also deals with random access signals, claim 1 contains a nearly identical term (“a ranging sequence . . . associated with a cell”). Yet Defendants do not propose to construe that term in the ’366 Patent, recognizing it has a plain meaning. Nevertheless, in the ’908 Patent, Defendants assert that the Court should exchange the plain words “associated with” with “identifying.” Nothing in the intrinsic record of the ’908 Patent provides a basis for this separate treatment. While a sequence associated with a base station may indeed be used to identify it, nothing in the ’908 Patent’s claim language suggests a sequence “associated with” the base station *must* “identify” the base station. Nor does the specification, which provides at least one example of a sequence “associated with” a base station, describing it as “a certain code or sequence that is designated to the corresponding base station[.]” ’908 Patent 8:53–54. Even if this example were limiting, it would still not require the sequence to “identify” the base station.

Finally, to the extent Defendants suggest that Neo disclaimed the scope of this term in a prior IPR, they are wrong. In *Dell Inc. v. Neo Wireless, LLC*, IPR2022-00277, Paper 3 at 67 (PTAB Dec. 14, 2021), the petitioner argued that a reference (“Walton”) disclosed the claimed “sequence associated with the base station” by describing a user terminal MAC ID. In its preliminary response, Neo made the simple argument that the MAC ID disclosed in Walton was *actually*, at

best, associated with the disclosed mobile station, not the base station, and it therefore failed to invalidate the patented claims. *Id.*, Paper 9 at 31, 34–35, 37. To support this point, Neo pointed to the fact that the disclosed user terminal MAC ID's function was to uniquely identify the mobile station. *Id.*, Paper 9 at 37. This fact supported Neo's argument—that the user terminal MAC ID was actually "associated with" the mobile station. The PTAB, in denying institution, agreed with Neo. *Id.*, Paper 10 at 32. The petitioner's reference had simply disclosed a sequence "associated with" the incorrect element—the mobile station. Nothing about this argument required a construction or disclaimer of claim scope as to the term "associated with," let alone any clear and deliberate disclaimer that a sequence is only "associated with" the base station if it identifies the base station. *Cf. Zak v. Facebook, Inc.*, No. 4:14-cv-13437, 2020 WL 589433, at *4 (E.D. Mich. Feb. 6, 2020) ("Critically, prosecution statements that are vague or ambiguous do not qualify as a disavowal of claim scope. Such disavowing statements must be both clear and deliberate." (internal citation omitted)).

In all, the intrinsic evidence—including the discussed IPR—does not support a departure from this term's ordinary meaning. This Court should simply apply this term's plain meaning, as many others have done.

3. "random access signal"

Plaintiff's Proposal	Defendants' Proposal

Plain and ordinary meaning. No construction necessary.	"direct sequence spread spectrum signal"

With this term, Defendants show little regard for the repeated warnings of the Federal Circuit "to avoid the danger of reading limitations from the specification into the claim[.]" *Phillips*, 415 F.3d at 1323. "In particular," the Federal Circuit has "expressly rejected the contention that if a patent describes only a single embodiment, the claims of the patent must be construed as being limited to that embodiment." *Id.*; *see also Thorner*, 669 F.3d at 1366–67 ("It is likewise not enough that the only embodiments, or all of the embodiments, contain a particular limitation. We do not read limitations from the specification into claims; we do not redefine words. Only the patentee can do that."). The Defendants here invite the Court to do just that. Defendants' proposal should be rejected.

First, the language of the claims does not support Defendants' construction. Nothing about the term "random access signal" on its face suggests it should be limited to a "direct sequence spread spectrum signal," since a random access signal is a well-known term in the art and can take various forms. Alberth Decl. ¶ 43. And if there were any doubt, the surrounding claim language confirms unmistakably that it should not be so limited. Claim 8, an asserted claim, claims "[t]he mobile station of claim 1, wherein the random access signal is a spread spectrum signal." '980 Patent 11:54–55. Claim 8 expressly *adds* the limitation that the random access signal is a spread spectrum signal. The term "random access signal" is therefore

presumed to not be limited to spread spectrum signals, much less a particular *type* of spread spectrum signal. *See Phillips*, 415 F.3d at 1314–15 ("For example, the presence of a dependent claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim."). Adopting Defendants' construction would make Claim 8 superfluous. *See Comark Comms., Inc. v. Harris Corp.*, 156 F.3d 1182, 1187 (Fed. Cir. 1998) ("To the extent that the absence of such a difference in meaning and scope would make a claim superfluous, the doctrine of claim differentiation states the presumption that the difference between the claims is significant.").

The specification offers nothing to overcome this strong presumption. Though the specification does not set out an express definition for the term "random access signal," it does describe an example of claimed random access procedure. It begins this description, in no uncertain terms, with "*[i]n one embodiment*, the DSSS signal is used for initial random access . . . ." '980 Patent 8:37–38 (emphasis added). This embodiment is expressly not intended to limit the claimed inventions. *See id.* 10:28–39; *see also Virtek Vision Int'l ULC v. Assembly Guidance Sys., Inc.*, No. 20-cv-10857, 2023 WL 349922, at *3 (D. Mass. Jan. 20, 2023) (declining to "add limitations to the terms that are beyond the term's plain and ordinary meaning" where the specification "expressly disclaims limiting the invention to the embodiment described in the specification"); *Packaging*

Specialties, Inc. v. Anchor Bay Packaging Corp., 2010 WL 5146423, at*8 (E.D. Mich. Dec. 13, 2010) (determining it was "not the rare case in which the Court will limit the claims to the preferred embodiment" when, "[t]hroughout the specification, the inventors explicitly state that the embodiment described therein is merely illustrative . . ."). The Court should not accept Defendants' invitation to ignore this language and limit this term to a disclosed embodiment. Rather, consistent with its use throughout the claims, the Court should construe "random access signal" with its ordinary meaning.

C. '450 Patent Terms

1. "time-frequency resource unit"

Plaintiff's Proposal	Defendants' Proposal
Plain and ordinary meaning. No construction necessary.	"a combination of time and frequency units designed according to the application requirements of the application that is being grouped"

Defendant Volkswagen, in its IPR petition that it alone filed and to which the other Defendants appear to be deferring, agrees with Neo that no construction of this term is necessary and that "time-frequency resource unit" was a term "well-known" and "fully developed" in the art "before the '450 patent." *Volkswagen Grp. of Am., Inc. v. Neo Wireless, LLC*, IPR2022-01567, Paper 2 at 1, 18 (PTAB Sept. 27, 2022). Nevertheless, the remainder of the Defendants again commit "one of the cardinal sins of patent law—reading a limitation from the written description

into the claims." *SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys., Inc.*, 242 F.3d 1337, 1340 (Fed. Cir. 2001). The Court should reject this attempt.

The '450 Patent teaches that the invention's use of basic resource units (or "time-frequency resource units," as recited in the independent claims) significantly and innovatively reduced the overhead previously required to transmit and recover data in a multi-carrier packet communication system. Alberth Decl. ¶¶ 37–40. This reduction in overhead was made possible by grouping packet streams, according to certain shared parameters, into regularly shaped time-frequency units. *Id*. ¶ 40. *Certain* of the embodiments of the '450 patent teach that packet streams may be grouped according to application type. *Id*. ¶ 41; *see also, e.g.*, '450 Patent 5:24–8:35 (discussing Fig. 6). Time-frequency resource units are not limited to grouped applications, however, because other embodiments teach that the packet streams may also be grouped or classified "based on application type, quality of service (QoS) requirement, or other properties." Alberth Decl. ¶ 41; '450 Patent 8:55–9:3 (discussing Fig. 7). Accordingly, Defendants' proposed construction improperly (1) reads limitations from the specification into the clear meaning of the claims, and (2) specifically excludes embodiments where the time-frequency resource units are grouped in other ways besides application type. *See SciMed*, 242 F.3d at 1340; *Oatey Co. v. IPS Corp.*, 514 F.3d 1271, 1276 (Fed. Cir. 2008) ("We

normally do not interpret claim terms in a way that excludes embodiments disclosed in the specification.”).

Further, other patent family members listed on the face of the ’450 Patent have independent claims with specific limitations directed toward grouping packet streams by “application type” *in addition to* using the bare term “time-frequency resource unit.” *See, e.g.*, U.S. Patent No. 7,948,944 Claim 1; U.S. Patent No. 9,042,337 Claim 1. Claim terms must be interpreted consistently across family members deriving from the same parent application. *SightSounds Techs., LLC v. Apple Inc.*, 809 F.3d 1307, 1316 (Fed. Cir. 2015). And because “all the limitations of a claim must be considered meaningful,” *ERBE Elektromedizin GmbH v. Canady Tech. LLC*, 629 F.3d 1278, 1286 (Fed. Cir. 2010) (alternation omitted), Defendants’ proposed construction that seeks to *include* requirements for grouping packet streams by application type *within* the term “time-frequency resource unit” improperly renders as mere surplusage many specific limitations of the claims in the patent family directed toward grouping by application. *See also Saunders Group, Inc. v. Comfortrac, Inc.*, 492 F.3d 1326, 1335–36 (Fed. Cir. 2007).

During the meet and confer process, Defendants (other than Volkswagen) indicated that they believe their proposed construction is proper based on alleged prosecution history disclaimer due to statements made by Neo and its expert during *Dell Inc. v. Neo Wireless LLC*, IPR2021-01486 (PTAB filed Sept. 16, 2021). In the

pertinent portion of Neo's response to that IPR, the main issue being addressed by Neo was the "one-dimensionality" of the "time-frequency coordinate" called for in the claims—an issue Defendants in this litigation concede. *See* Dkt. 114-1 at 5 (agreed construction for "time-frequency coordinate"). In explaining the purpose and operation of this one-dimensionality, Neo explained the background of the patented invention by reference to a particular embodiment of the '450 Patent—the one reflected in Fig. 6 of the patent—where resources *are* grouped by application type. Defendants will not be able to demonstrate that any "clear and unmistakable" statements were made that are not "subject to multiple reasonable interpretations" and that exclude *any* possibility of other forms of grouping as taught by the '450 Patent. *See 3M Innovative Props. Co. v. Tredegar Corp.*, 725 F.3d 1315, 1325 (Fed. Cir. 2013); *Golight, Inc. v. Wal-Mart Stores, Inc.*, 355 F.3d 1327, 1332 (Fed. Cir. 2004). Accordingly, Neo respectfully requests that the Court adopt its construction: that the term "time-frequency resource unit" should be given its plain and ordinary meaning.

D. '941 Patent Terms

1. "the antenna transmission scheme comprising a transmission diversity scheme or a multiple-input multiple-output (MIMO) scheme"

Plaintiff's Proposal	Defendants' Proposal
"the antenna transmission scheme is capable of comprising either a MIMO	"the mobile-station specific transmission parameters alternatively indicate an antenna transmission scheme that comprises a MIMO

scheme or a transmission diversity scheme other than MIMO. To avoid any doubt, this requires supporting both MIMO and non-MIMO transmission diversity systems."	scheme or an antenna transmission scheme comprising a transmission diversity scheme other than MIMO, wherein the antenna transmission scheme is capable of comprising either a MIMO scheme or a transmission diversity scheme other than MIMO. To avoid any doubt, this requires supporting both MIMO and non-MIMO transmission diversity systems."

One of the improvements in OFDM networks addressed by in the '941 Patent is the use of different antenna transmission schemes to adapt to different operating conditions of a mobile station in the system. For example, the patent describes using a scheme in favorable conditions that increases transmission throughput by transmitting different data from each antenna ("MIMO"), or using a scheme in unfavorable conditions that sends the same data on multiple antennas to "improve the transmission robustness" ("transmission diversity"). '941 Patent 6:60–65; Alberth Decl. ¶ 33.

The claim term at issue deals with these antenna scheme options, and the core of this construction is undisputed: that the claims require the claimed system to be able to support *both* MIMO schemes and transmission diversity schemes. This same basic premise was also agreed in prior litigation between Neo and Dell. Neo's proposed construction intends to clarify, as simply as possible, this undisputed matter, while avoiding a potential misreading that would narrow the claim language unnecessarily. Neo's proposal simply makes clear the undisputed

fact that, although the antenna transmission scheme may comprise either a MIMO scheme or a transmission diversity scheme, both MIMO and transmission diversity schemes need to be supported in the system.

In contrast, Defendant's proposed construction goes further and seeks to limit the claimed system to one that can *only* "alternatively indicate" MIMO or transmission diversity schemes (to the exclusion of others). As Defendants would have it, the indicated transmission scheme can only be a transmission diversity scheme or a MIMO scheme, excluding any other possible antenna transmission schemes, such as single-antenna schemes SISO or SIMO.

During the meet and confer process, Defendants indicated that they were relying on the parties' agreed construction in *Neo Wireless LLC v. Dell Techs. Inc.*, No. 1:22-CV-00060-DAE (W.D. Tex. filed Jan. 12, 2021) (the *Dell* case). To be clear, Neo stands fully behind its agreed construction in the *Dell* case. But that construction was the bulky, imprecise product of lengthy negotiations to arrive at an agreement, and Defendants are intentionally misinterpreting it in this case to their benefit. In the *Dell* case, the only reason for the inclusion of the language "alternatively indicate" was to clarify that a scheme cannot be both MIMO and not MIMO at the same time (because that is physically impossible). In other words, "the system requires supporting both MIMO and non-MIMO transmission diversity systems [but obviously not both at once]." But here, Defendants are

misreading that language to introduce a new dispute not present in *Dell*: whether the system disallows a possible third transmission scheme other than MIMO and transmission diversity.

In that light, Defendants' proposal is not consistent with the intrinsic evidence. For example, one portion of the patent describes that "[s]ome multiple antenna techniques, such as transmission diversity, are used to improve the transmission robustness against fading channel effects, whereas other multiple antenna techniques such as multiple-input multiple-output (MIMO) schemes are used to improve transmission throughput in favorable channel conditions." '941 Patent 6:60–65 (emphasis added). The applicant intentionally used the phrase "such as" so as to not exclude the possibility that there could be other schemes that are neither transmission diversity nor MIMO. Moreover, the claim term's plain language explicitly states the antenna transmission scheme "compris[es]" a transmission diversity scheme or a MIMO scheme, without any indication that it is to be limited to only these two options. It is well established by the Federal Circuit that the transitional term "comprising" is inclusive and open-ended. *Invitrogen Corp.*, 327 F.3d at 1368 ("The transition 'comprising' in a method claim indicates that the claim is open-ended and allows for additional steps."). A POSITA would understand that an antenna transmission scheme comprising a transmission

diversity scheme or a MIMO scheme could also comprise other transmission schemes. Alberth Decl. ¶ 35.

Since Defendants' proposal is not supported by any intrinsic or extrinsic evidence, Neo respectfully requests that the Court adopt its proposed construction and reject the construction proposed by Defendants.

2. "the mobile station-specific transmission parameters indicate … a corresponding subchannel configuration … the corresponding subchannel configuration characterized by distributed subcarriers or localized subcarriers in the frequency domain"

Plaintiff's Proposal	Defendants' Proposal
"the mobile station-specific transmission parameters indicate…a corresponding subchannel configuration…the corresponding subchannel configuration characterized by distributed subcarriers or localized subcarriers in the frequency domain, wherein the subchannel configuration is capable of comprising either localized or distributed subcarriers. To avoid any doubt, this requires supporting both localized and distributed subchannel configurations."	"the mobile station-specific transmission parameter alternatively indicates either distributed subcarriers or localized subcarriers in the frequency domain as subchannel configurations"

As with the previous term, the core limitation of this term is undisputed, and Neo's proposal makes clear, as simply as possible, that both localized and distributed subchannel configurations must be supported in the system.

But again, Defendants reach too far and attempt to add additional limitations not present in the claim's plain language. For instance, Defendants' proposed construction intentionally omits key wording from the claim: that the subchannel configuration is "characterized by" localized or distributed subcarriers. In the

original claim term, there are three distinct elements or steps involved, including: (a) the mobile station-specific transmission parameters, which indicate (b) a subchannel configuration, which is (c) *characterized by* distributed or localized subcarriers. However, in Defendants' proposed construction, the second and third steps collapse. Defendants' proposal confuses these two elements and rewrites the claim so that, the transmission parameter for subchannel configuration must *indicate*, rather merely be characterized by, distributed or localized subcarriers.

Neo assumes that the purpose behind Defendants' proposal is to import an arbitrary limitation that the subchannel configuration must take the form of an indicator flag, which, for example, has a value of 0 for distributed subcarriers and has a value of 1 for localized subcarriers. This attempt to rewrite the claim lacks support and is contrary to the plain language of the claim. A POSITA would understand that a subchannel configuration in the context of this patent need not *announce* that it is localized or distributed to nevertheless be *characterized by* localized or distributed subcarriers. Alberth Decl. ¶ 36.

Accordingly, Neo respectfully requests that the Court adopt its proposed construction and reject the construction proposed by Defendants.

E. '302 Patent Terms

1. "probing signal"

Plaintiff's Proposal	Defendants' Proposal

Plain and ordinary meaning. No construction necessary.	direct sequence spread spectrum signal

Just as they did with respect to the ’908 Patent, Defendants again improperly attempt to limit the term “probing signal” to a “direct sequence spread spectrum signal.” Neo disagrees for similar reasons presented above rebutting Defendants’ attempt to apply the ***exact*** same construction to an entirely different term, “random access signal,” in the ’908 Patent. Analogously, nothing in the ’302 Patent limits “probing signal” to a direct sequence spread spectrum signal.

Here, Defendants’ proposal ignores basic tenets of claim construction by attempting to rewrite the claim language to not only import a particular embodiment from the specification, but further exclude embodiments disclosed by the ’302 Patent. *See Thorner*, 669 F.3d at 1366 (“We do not read limitations from the specification into claims; we do not redefine words. Only the patentee can do that.”). In particular, the specification does not limit the scope of the patentees’ inventions to require using a direct sequence spread spectrum signal, but instead uses a DSSS as an embodiment to *describe* particular aspects of their inventions. In both the ’302 and ’908 Patents, the specification uses the concept of a direct sequence spread spectrum (DSSS) signal to illustrate that the claimed random access and probing signals ought to be distinct from the data signals and pilot signals sent in the same system. *See* ’302 Patent 8:66–9:17; ’908 Patent 8:34–55. In the ’302 Patent, the probing signal used for channel probing is a distinct signal

that is sent over a broad spectrum of frequency resources in order for the receiving base station to estimate the channel conditions across most, if not all, of the frequency channel used for data communications. Alberth Decl. ¶ 45.

But that distinction does not require that the clamed probing signal must be a DSSS. In the OFDM context to which the '302 Patent claims are directed, a POSITA would understand that the probing signal could take the form of other, non-DSSS signals that are carried across multiple OFDM subcarriers, such as a probing signal assigned to all or most of the available subcarriers that would be used for data transmissions at different times. *Id.* ¶ 46. For example, a probing signal can be assigned a set of subcarriers in one symbol that are normally used for data transmissions in the uplink direction. Since the probing signal is assigned overlapping subcarriers, the base station can use the received probing signal to directly evaluate the channel conditions for the specific subcarrier range used for data. As a result, the base station can allocate resources for subsequent uplink transmissions from the mobile station with better precision. Consistent with such an embodiment, a probing signal that can provide channel information to the base station on frequencies that are later used for data signals. *Id.*

Given this context, Defendants cannot point to any "expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope [of non-DSSS probing signals]." *Continental Circuits LLC v. Intel Corp.*, 915 F.3d 788,

797 (Fed. Cir. 2019) (quoting *Retractable Techs., Inc. v. Becton, Dickinson & Co.*, 653 F.3d 1296, 1306 (Fed. Cir. 2011)). Again, while the '302 Patent's specification describes probing signals using a DSSS signal as an example, the specification does not expressly limit "probing signal" to mean exclusively a "direct sequence spread spectrum signal." Indeed, Defendants' proposal should still be rejected even if DSSS signals were the *only* disclosed embodiment. *Phillips*, 415 F.3d at 1323 (confirming that the Federal Circuit has "expressly rejected the contention that if a patent describes only a single embodiment, the claims of the patent must be construed as being limited to that embodiment"). Accordingly, Defendants' proposal should be rejected.

2. "the probing signal is configured to occupy a portion of spectrum in the uplink frequency band not designated for transmission of uplink control signals in the system"

Plaintiff's Proposal	**Defendants' Proposal**
Plain and ordinary meaning. No construction necessary.	the probing signal is configured to occupy a portion of spectrum in the uplink frequency band not designated for transmission of uplink control signals in the Orthogonal Frequency Division Multiplexing (OFDM) communication system

The plain and ordinary meaning of this term is clear and easily understood: that the probing signal is formed using resources in the frequency spectrum that are not used for uplink control signals. The parties do not dispute the meaning of the words actually contained in the claim.

Yet despite that agreement, Defendants' proposal injects unnecessary language into the claim term in an apparent effort to bolster their noninfringement position related to uplink signals in the accused network technology. As discussed in the parties' technology tutorials, Defendants appear to be previewing a potential infringement dispute in this case centered around whether the SC-FDMA scheme used for uplink in the LTE standard is nevertheless part of an "OFDM system" as called for by the claims. As Neo has explained, SC-FDMA is an implementation of OFDM, which no party appears to dispute, and a form of OFDMA. But Defendants clearly intend to press some form of argument otherwise.

Thus, while Defendants may allege that their proposal merely provides an antecedent basis for "the system" consistent with the preamble, their real aim is to reinforce their potential non-infringement position by having it repeated twice in the same claim. But that, again, is unnecessary. Both parties agree that the claim 23 preamble is limiting and that "the system" in this claim term refers to the "system" introduced in the preamble. There is no dispute here that warrants insertion of this redundant claim language.

By unnecessarily reinjecting the additional descriptive language, Defendants' proposal does nothing to aid the Court or the jury as to the claim's scope, but instead may achieve the opposite, making the term cumbersome and

opaque to apply to the facts in this case. Accordingly, Defendants' proposal should be rejected.

3. "a receiver configured to receive a request for a probing signal from a base station in the system"

Plaintiff's Proposal	Defendants' Proposal
Plain and ordinary meaning. No construction necessary.	"a receiver configured to receive a request for a probing signal from a base station in the Orthogonal Frequency Division Multiplexing (OFDM) communication system"

4. the probing signal is configured to overlap, in the time domain, with uplink signals transmitted over an uplink frequency band by other mobile devices in the system"

Plaintiff's Proposal	Defendants' Proposal
Plain and ordinary meaning. No construction necessary.	"the probing signal is configured to overlap, in the time domain, with uplink signals transmitted over an uplink frequency band by other mobile devices in the Orthogonal Frequency Division Multiplexing (OFDM) communication system"

Defendants' proposed construction for these two claim terms mirror their proposal for the previous term—merely adding the phrase "Orthogonal Frequency Division Multiplexing (OFDM) communication," in front of "system." Indeed, the fact that Defendants propose adding this redundant phrase to three separate claim terms further detracts from any contention that it would aid in clarity or better understanding of the scope of the claims. Instead, for reasons presented above, Defendants' proposals should be rejected as unnecessary and confusing.

F. ’512 Patent Terms

1. “wherein the first plurality of subcarriers and the second plurality of subcarriers are received in at least one of the time slots”

Plaintiff’s Proposal	Defendants’ Proposal
“wherein the first plurality of subcarriers and the second plurality of subcarriers are received in at least one of the same time slots”	Plain and ordinary meaning.

The ’512 Patent describes the use of two different types of pilot signals sent on respective pluralities of subcarriers that can be used by the receiving mobile station to evaluate the wireless channel conditions. But, the assignment of pilots also includes assigning the timing of when those subcarriers are to be used for the pilots. Neo’s proposed construction clarifies, consistent with the term’s plain and ordinary meaning, that subcarriers for the respective pilots are “received in at least one of the ***same*** time slots.” Alberth Decl. ¶¶ 47–49. Figure 5 of the patent depicts this understanding of the plain meaning, showing a base station (p) transmitting common pilots (c) and cell-specific pilots (s) at the same time. *See id.* ¶ 50; ’512 Patent 5:34–38.

Neo identifies the need for this clarification based on a possible incorrect reading of the claim to suggest that the respective subcarriers can merely be “received in at least one of the time slots” generally, such that there is no requirement of the relative time resources on which the respective plurality of

subcarriers are received. Indeed, such an interpretation would render the claim term superfluous since all subcarriers are sent in at least one time slot by the inherent nature of the system. Alberth Decl. ¶ 51. As both parties have agreed, the preamble is limiting and recites "[a]n orthogonal frequency division multiple access (OFDMA)-compatible mobile station that uses subcarriers in a frequency domain and ***time slots in a time domain***" (emphasis added). Accordingly, the Court should adopt Neo's proposed construction to avoid any potential confusion as to the term's scope.

2. "second pilots of a second type"

Plaintiff's Proposal	**Defendants' Proposal**
Plain and ordinary meaning. No construction necessary.	"pilots possessing a set of characteristics common to all base stations of the system"

As in so many instances above, Defendants' proposal should be rejected because it attempts to exclusively limit the claim language to a specific embodiment in the specification. *See Thorner*, 669 F.3d at 1366. The specification describes the use of at least two sets of pilot signals, including "cell-specific pilots" specifically claimed as the "first pilots of a first type" in the '512 Patent's claims. But, while the specification describes, as a potential second set of pilots, "common pilot sub-carriers" which multiple cells can share, there is no limitation, express or inherent, to that specific embodiment in the claims. *See Continental Circuits LLC*, 915 F.3d at 797 (claims not limited without "expressions of manifest exclusion or

restriction, representing a clear disavowal of claim scope . . . ."). Indeed, the claims are drafted such that the second pilots can be of a "different type" and data can be recovered "using channel estimates from at least the second pilots." A POSITA would recognize that the "second pilots" need not be common to all cells, but could include any additional type of pilots with "distinct requirements" that could be used conjointly with the "first pilots" to recover data. Alberth Decl. ¶ 52; '512 Patent 3:4–16 (describing generally how "pilot subcarriers are divided into two different groups according to their functionalities, and hence their distinct requirements."). For example, just as "cell-specific" and "common" vary based on specificity, the "second pilots" could also have varying specificity if they were, for example, specific to a specific antenna within the cell, or specific to the receiving mobile station. Alberth Decl. ¶ 52.

Further, Defendants cannot show "a clear intention to limit the claim scope" to limit the "second pilots" to the disclosed "common" pilots on the mere basis that this is the only embodiment disclosed in the specification. *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 906 (Fed. Cir. 2004); *see also Phillips*, 415 F.3d at 1323 (confirming that the Federal Circuit has "expressly rejected the contention that if a patent describes only a single embodiment, the claims of the patent must be construed as being limited to that embodiment"). For at least these reasons, Defendants' proposal should be rejected.

VI. CONCLUSION

For the foregoing reasons, Plaintiff respectfully requests that the Court adopt its proposed constructions and reject Defendants' proposals.

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CERTIFICATE OF SERVICE

The undersigned certifies that on February 16, 2023, the foregoing document was filed electronically with the Clerk of Court using the CM/ECF system, which will send notification of such filing to all attorneys of record.

/s/ Christopher S. Stewart
Christopher S. Stewart